

ADEM NPDES CONSTRUCTION STORMWATER INSPECTION REPORT AND BMP CERTIFICATION

RESPOND WITH "N/A" AS APPROPRIATE. FORMS WITH INCOMPLETE OR INCORRECT ANSWERS, OR MISSING SIGNATURES WILL BE RETURNED AND MAY RESULT IN APPROPRIATE COMPLIANCE ACTION BY THE DEPARTMENT. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. PLEASE TYPE OR PRINT IN INK.

Item I.

Permittee Name:	Facility/Site Name:
Permit Number:	County:
Facility Entrance Latitude & Longitude:	Phone Number:
Facility Street Address or Location Description:	

Item II.

List name of current ultimate receiving water(s) (indicate if through MS4) and the number of disturbed acres which drains through each treatment system or BMP: Add additional sheet(s) if necessary.			
Receiving Water	Disturbed Acres	Discharge Point #	Representative Outfall
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

Item III.

1. <input type="checkbox"/> YES <input type="checkbox"/> NO Did discharges of sediment or other pollutants occur from the site? If "Yes", please list a description of the discharge(s) and their location(s):
2. <input type="checkbox"/> YES <input type="checkbox"/> NO Were BMPs properly implemented and maintained at the time of inspection? If "No", please provide location(s) and descriptions of BMPs that need maintenance:
3. <input type="checkbox"/> YES <input type="checkbox"/> NO Are BMPs needed in addition to those already present onsite at the time of inspection? If "Yes" please provide a description and location of additional BMPs that are needed:
4. <input type="checkbox"/> YES <input type="checkbox"/> NO Have any BMPs failed to operate as designed? If "Yes", please provide location(s) and description of BMP(s) that failed:
5. <input type="checkbox"/> YES <input type="checkbox"/> NO Were there BMPs required by the CBMPP that were not installed or installed in a manner not consistent with the CBMPP? If "Yes", please provide a description and location where the BMPs were not installed or installed incorrectly:

Item IV.

The Permittee shall conduct turbidity monitoring in accordance with Part V of the permit:
1. <input type="checkbox"/> YES <input type="checkbox"/> NO Is this facility a Priority Construction Site?
2. <input type="checkbox"/> YES <input type="checkbox"/> NO Has the facility disturbed greater than 10 acres?
3. <input type="checkbox"/> YES <input type="checkbox"/> NO Was the site discharging at the time of inspection?
4. <input type="checkbox"/> YES <input type="checkbox"/> NO Samples collected, if "Yes", sampling data must be attached.

ADEM NPDES CONSTRUCTION STORMWATER NONCOMPLIANCE NOTIFICATION REPORT

RESPOND WITH "N/A" AS APPROPRIATE. FORMS WITH INCOMPLETE OR INCORRECT ANSWERS, OR MISSING SIGNATURES WILL BE RETURNED AND MAY RESULT IN APPROPRIATE COMPLIANCE ACTION BY THE DEPARTMENT. IF SPACE IS INSUFFICIENT, CONTINUE ON AN ATTACHED SHEET(S) AS NECESSARY. PLEASE TYPE OR PRINT IN INK.

Complete this form, attach additional information as necessary, and send report to ADEM.

Item I.

Permittee Name		Facility/Site Name	
NPDES ALR10	County	Facility Contact and Title	
Facility Street Address <u>or</u> Location Description		City	State Zip
Phone Number	Fax Number	E-Mail Address	

Item II.

DESCRIPTION OF NONCOMPLIANCE OR NONCOMPLIANT DISCHARGE:

Item III.

INSPECTION AND BMP CERTIFICATION REPORT(S), ANY PHOTOGRAPHS, AND ANY SAMPLING RESULTS ARE ATTACHED. IF NOT, PLEASE EXPLAIN:

Item IV.

CAUSE OF NONCOMPLIANCE:

Item V.

PERIOD OF NONCOMPLIANCE: (Include exact date(s) and time(s) or, if not corrected, the anticipated time the noncompliance is expected to continue):

Item VI.

DESCRIPTION OF STEPS TAKEN AND/OR BEING TAKEN (PROPOSED COMPLIANCE SCHEDULE) TO REDUCE AND/OR ELIMINATE THE NONCOMPLYING DISCHARGE, REPAIR/REPLACE/UPGRADE BMPs, AND TO PREVENT ITS RECURRENCE:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that this form has not been altered, and if copied or reproduced, is consistent in format and identical in content to the ADEM approved form. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Name & Designation of QCP	Signature	Date
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Name & Title of Permittee Responsible Official	Signature	Date
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Item V.

Weather Conditions:			
Discharge Point #	Date, Time, and Location of Samples Collected	Sample Results	Analytical Method(s)

“Based upon the inspection of (date & time) _____ conducted by the QCP, QCI, or a qualified person (list: _____) under the direct supervision of the QCP identified below. The QCI or QCP identified below certifies that effective structural and non-structural BMPs have been fully implemented and regularly maintained to the maximum extent practicable for the prevention and minimization of all sources of pollution in stormwater and authorized related process wastewater runoff, **except for those deficiencies noted above**, in accordance with the facility’s CBMPP, good sediment, erosion, and other pollution control practices, and the requirements of the permit. I certify that discharges have been tested or evaluated for the presence of non-stormwater and non-authorized process wastewaters. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that this form has not been altered, and if copied or reproduced, is consistent in format and identical in content to the ADEM approved form. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.”

Name & Designation of QCI or QCP	Signature	Date
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Name & Title of Permittee Responsible Official	Signature	Date
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APPENDIX H

CONSTRUCTION QUALITY ASSURANCE PLAN

Appendix H

**Construction Quality Assurance Plan
RSA-122, Dismantled Lewisite Manufacturing Plant Sites,
Operable Unit 06
and
RSA-183, Former Lewisite Manufacturing Plants 1 and 2
Sites, Operable Unit 05U.S. Army Garrison-Redstone
Madison County, Alabama
EPA ID No. AL7 210 020 742**

Prepared for:

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**Contract No. W912DY-17-D-0003
Delivery Order No. W912DY19F1116**

May 2022

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H1.0 Introduction

This construction quality assurance plan (CQAP) presents the overall program for construction quality assurance (CQA) to be implemented during corrective measures implementation (CMI) activities at RSA-122 and RSA-183. This document establishes a program to comply with requirements established in the CMI work plan and those of the Alabama Department of Environmental Management (ADEM) and U.S. Environmental Protection Agency. The scope of work for the project is detailed in the CMI work plan for RSA-122 and RSA-183 (to which this CQAP is an appendix).

H1.1 Overall Directive

The procedures and practices set forth in the CQAP should be adhered to and specifically applied to all quality-related work on the project. It is the responsibility of all personnel performing work on the project to be familiar with and implement the technical requirements referenced in this CQAP or otherwise specified for the project, as included in the CMI work plan.

Conformance to the requirements of this CQAP will provide results which will verify that the contract, when completed, will conform to the specified requirements and will be documented by defensible evidence that the work performed meets or exceeds the standards set forth for the project.

H1.2 Project Background

H1.2.1 RSA-122

RSA-122 is included in Operable Unit 6 and consists of an approximately 42-acre area located in the central portion of RSA that was the former site of lewisite manufacturing operations. This area is located just west of Patton Road, north of Viper Road, south of Metrology Drive, and east of Jungerman Road (Figure 1-1 of the CMI work plan). RSA-122 consists of an area formerly occupied by plants that manufactured the chemical agent (CA) lewisite and its raw materials. RSA-056 and RSA-139 are located within the RSA-122 site boundary and consist of the waste disposal ponds built to contain waste material generated from the production of lewisite. The present RSA-122 boundary encompasses all the areas where surface media (soil, surface water, and sediments) are known or suspected to be contaminated due to manufacturing operations at the former lewisite plants.

RSA-122 also includes an area formerly used to produce sulfur monochloride and arsenic trichloride, components of the lewisite manufacturing process, and includes areas historically used for materials stockpiling, waste processing, and waste disposal (Shaw Environmental, Inc.

[Shaw], 2009). Several of the process areas within the boundaries of RSA-122 have been identified as separate solid waste management units (SWMU) and have completed environmental investigations. These sites, shown on Figure 1-2 of the CMI work plan and listed below, will be directly or indirectly affected by corrective measures conducted at RSA-122.

- RSA-033, Plating Room Floor Drains, Building 5432
- RSA-043, Underground Used Oil Storage Tank, Building 5435A
- RSA-044, Underground Used Oil Storage Tank, Building 5435B
- RSA-056, Closed Arsenic Waste Ponds (South) Area U
- RSA-127, Photo Lab Process Wastewater Sump, Building 5451
- RSA-139, Closed Arsenic Waste Pond (North) Area U.

Investigations are complete at RSA-033 (Shaw, 2004a; Alabama Department of Environmental Management [ADEM], 2008), RSA-043 (A.T. Kearney, Inc., 1989; Geraghty and Miller, Inc., 1991; ADEM, 2008), RSA-044 (Shaw, 2004b; ADEM, 2008), and RSA-127 (Shaw, 2005a,b; ADEM, 2008), and these sites are currently listed in Table VI.3 of the Alabama Hazardous Wastes Management and Minimization Act Permit (hereinafter specified as the Permit) (ADEM, 2021) for RSA as SWMUs requiring no further action. Investigations are also complete at RSA-056 and RSA-139 and interim remedial actions (RA) (e.g., placing soil covers over the waste ponds) were conducted in 1995 and 2001 (Shaw, 2003; 2004c). RSA-056 and RSA-139 are listed on Table VI.6 of the RSA Permit as SWMUs requiring a CMI work plan (ADEM, 2021). The CMI work plan for RSA-056 and RSA-139 (Aptim Federal Services, LLC [APTIM], 2018a) has received ADEM concurrence and was included in the Permit (ADEM, 2021); corrective measure tasks planned at RSA-056/RSA-139 include implementation of land-use controls and long-term groundwater monitoring.

A north-south-trending perennial unnamed creek flows through RSA-122 adjacent to the former waste ponds RSA-056 and RSA-139. Figure 2-1 of the CMI work plan provides a map of the surface drainage features and site topography. The unnamed creek ultimately discharges to Huntsville Spring Branch.

The site encompasses approximately 42 acres of land in the central portion of RSA (Figure 1-1 of the CMI work plan) where the Army manufactured the CA lewisite. Of those 42 acres, approximately 0.1 acre has a chemical warfare materiel (CWM) probability designation of “Occasional,” and 1.5 acres have a CWM probability designation of “Seldom” (Figure 2-13 of the CMI work plan). None of the cleanup actions to date have reduced the CWM probabilities. The unexploded ordnance (UXO) probability for RSA-122 is “None.”

H1.2.2 RSA-183

RSA-183 encompasses approximately 157 acres of land in the central portion of RSA (Figure 1-1 of the CMI work plan). The site has been divided into two areas, the Plants Area (the northern 35 acres), where the Army manufactured the CA lewisite in two plants (Plants 1 and 2), and the Sinkhole Area, which encompasses a large (122 acres) sinkhole south of the Plants Area. In addition to Lewisite Plants 1 and 2, the Plants Area includes a former motor pool (Building 4381, post-lewisite manufacture), a former unit electrical substation, and a former chemical storage facility (Building 4496, post-lewisite manufacture). A north-south-trending drainage ditch exits the Plants Area.

Also within the Plants Area are two separate environmental sites: RSA-049 (Capped Arsenic Waste Lagoons - West, Area F) and MSFC-052e (Portion of Industrial Sewer East of MSFC Property). RSA-049 occupies approximately 12.5 acres within the 35-acre Plants Area (Figure 1-2 of the CMI work plan) and, during the period of lewisite manufacture, was an unlined pond used to dispose of arsenic-contaminated wastes generated from operations at Plants 1 and 2. After lewisite manufacturing ceased, the RSA-049 pond was used for rubble disposal until its closure in 1977. RSA-049 was closed by covering and capping the pond area and seeding the area with grass and trees (Shaw, 2007a). RSA-049 is currently listed on Table VI.6 of the Alabama Hazardous Wastes Management and Minimization Act Permit (ADEM, 2021), indicating that groundwater beneath RSA-049 is to be included with the investigation and/or remediation conducted as part of the RSA-148 groundwater unit. However, no further actions for soil are required for this site. Semiannual groundwater monitoring is ongoing at RSA-049 to confirm that the multilayer cap constructed over RSA-049 continues to perform as designed by minimizing infiltration to groundwater and the potential leaching of contaminants from soil to groundwater within the former landfill (APTIM, 2018b).

MSFC-052e is identified in the NASA Appendix A to the Federal Facilities Agreement Site Management Plan, FY 2017 (NASA, 2017) as the “Portion of Industrial Sewer East of Eastern MSFC/RSA Boundary” that serviced former Lewisite Plants 1 and 2 (RSA-183 Plants Area) (CH2M Hill, 2009). MSFC-052e is currently listed on Table VI.3 of the Permit (ADEM, 2021) as a SWMU requiring no further action. The site is considered a daughter site to RSA-183, and the Army has accepted responsible for that portion of the industrial sewer beneath RSA-183 (Figure 1-2 of the CMI work plan).

The following sites are adjacent to the RSA-183 Plants Area:

- MSFC-027, Inactive (M-1) Waste Accumulation Area
- MSFC-034, Former Chemical Production Area.

MSFC-027 is a 24-acre site located west of the RSA-183 Plants Area (Figure 1-2 of the CMI work plan). This site was utilized for bulk aboveground storage of fuel oil and ethanol, supporting the production of ethylene gas used in the manufacturing of the CA mustard in 1943. Investigation of MSFC-027 is complete, with Resource Conservation and Recovery Act facility investigation (RFI) concurrence being received from ADEM in August 2014. A CMI work plan (CB&I Federal Services LLC [CB&I], 2016) received ADEM concurrence, and corrective measures for soil were completed in July 2018. The CMI report (APTIM, 2019) received ADEM concurrence in a letter dated August 16, 2019. The site is currently listed in Section VIII.C as no further action required for surface media (i.e., surface soil, subsurface soil, surface water, sediment, spring water, and soil vapor). The groundwater shall be investigated and/or remediated as part of MSFC.

MSFC-034 is a 54-acre former chemical (mustard) production and filling area located west of the RSA-183 Plants Area (Figure 1-2 of the CMI work plan). MSFC-034 facilities were used for mustard agent manufacturing and projectile filling. The site is currently listed on Table VI.2 of the Permit as a SWMU requiring an RFI (ADEM, 2021), which is currently ongoing; the Army is responsible for soil and groundwater cleanup at MSFC-034.

Surface water at the RSA-183 Plants Area flows with topography to constructed ditches in the southern and eastern portions of the site (Shaw, 2007c). These shallow, grass-lined ditches discharge to the main drainage feature flowing to the south, past Fowler Road. The main drainage feature south of the Plants Area coincides with the surface expression of a large, trough-like, north-south-trending sinkhole. The sinkhole, approximately 8 feet in depth, becomes inundated during wetter months and holds water that eventually drains/infiltrates into the subsurface karst features. Several smaller engineered drainage ditches discharge into the main north-south-trending drainage feature.

The RSA-183 site encompasses approximately 157 acres of land in the central portion of RSA (Figure 1-3 of the CMI work plan), a small portion of which (Plants Area) is where the Army manufacture the CA lewisite. The Plants Area currently includes two small tracts, totaling 0.1 acre, that have a CWM probability designation of “Occasional” and areas surrounding the “Occasional” areas that have a CWM probability designation of “Seldom,” which total approximately 1.2 acres (Figure 2-14 of the CMI work plan). None of the cleanup actions to date have reduced the CWM probabilities. The UXO probability for RSA-183 is “None.”

H1.3 Objectives of the Construction Quality Assurance Program

The objective of the CQA program is to provide a system of procedures, practices, guidelines, and controls which, when implemented, will provide the confidence that project activities are

accomplished in accordance with the specified contracts, design criteria, plans, drawings, and CMI plan developed during implementation of the corrective measures. This CQAP establishes requirements for developing the overall site-specific construction quality control (CQC) system to be implemented at RSA-RSA-122 and RSA-183. The CQAP will be implemented during all phases of the project, including preliminary site activities, remediation, and close-out activities.

The Army will select a contractor to implement corrective measures at RSA-122 and RSA-183. The Army Site Manager and/or U.S. Army Engineering and Support Center, Huntsville (CEHNC) Technical Manager will observe the work during its performance by the contractor and subcontractors and approve the work upon acceptable completion. APTIM has prepared a Quality Assurance Surveillance Plan under this contract; this plan sets forth procedures and guidelines that the CEHNC will use in evaluating the technical and safety performance of the contractor and its subcontractors (APTIM, 2019).

The CQAP is also applicable to off-site suppliers of equipment or services to the project, which could affect the quality of the CMI. In particular, the following items must be adhered to during the CQA activities:

- Guidelines and requirements prepared and documented in the CMI work plan
- Construction verification as it is performed, by inspection and verification testing, so that the design features are implemented as intended
- Evaluation of variance to the design that may occur during construction and remediation and its effect upon system performance
- Complete documentation prepared and maintained during and after construction and remediation so that it can be demonstrated that the design has been implemented and that the performance requirements have been met.

H1.4 Presentation of the Construction Quality Assurance Plan

This CQAP is designed so that the CQC activities for all portions of the remediation are executed and managed from a common set of quality objectives and practices as described in the CQC plan and the project-specific quality assurance project plan (QAPP) (CMI Work Plan Appendix D). The CQA and CQC activities, as described herein, serve as the minimum requirements to verify that all work is in compliance with the quality requirements set forth in the CMI work plan and is consistent with the local, state, federal, and other appropriate regulatory agencies for the types of environmental activities performed.

H2.0 Responsibility and Authority

The Army will select a contractor to implement the CMI for RSA-122 and RSA-183. The RSA Site Manager and/or CEHNC Technical Manager or designee will observe the work as it is performed to ensure compliance with the CMI work plan. ADEM personnel may be present during some or all of the corrective measures at RSA-122 and RSA-183 as their schedule allows.

It is the responsibility of all project personnel to report activities that could adversely affect the CQC requirements set forth by the contract documents. The dedicated Quality Control Site Manager (QCSM) is responsible for identifying, reporting, and documenting activities affecting quality and for verifying correction of materials and activities that do not conform to the specified contract requirements. The QCSM will maintain a close working relationship with the Project Manager (PM), RSA Site Manager, and CEHNC Technical Manager, keeping them advised of all situations that if not corrected or controlled could affect the resulting quality of the project.

The contractor will designate an authorized representative to be responsible for CQA, referred to as the QCSM. The RSA Site Manager will ultimately be responsible for providing the relevant documentation to the oversight agency (ADEM). The contractor will be responsible for furnishing appropriate documentation (outlined in this CQAP) to RSA and CEHNC for submittal to the oversight agencies, as required.

H2.1 CQA Organization and Key Elements

The contractor's PM will be responsible to ensure the execution of the CQA duties for RSA-122 and RSA-183, which will be performed by the QCSM. CEHNC has retained the services of the contractor to perform the required CMI at the site. The contractor, including its subcontractors, will be responsible for field activities and laboratory testing requirements for the project CQC. The responsibility of key personnel involved in the CQA and CQC activities are described Sections H2.1.1 through H2.1.6.

H2.1.1 Project Manager

The PM has the overall responsibility to ensure the execution of the work to be performed by the contractor, including efforts to ensure compliance with the requirements of ADEM. Among other duties, the PM will coordinate all financial and project-required resources (technical as well as administrative) necessary for the implementation of the project. The PM will maintain overall responsibility of the project through coordination activities with contractor personnel, ADEM, and the Army. The PM will verify that the corrective measures have been implemented in

accordance with the CMI work plan. The PM has the authority to select and dismiss organizations charged with implementation of the corrective measures and is vested with the authority to stop work if conditions adverse to quality are persistent and need to be corrected before proceeding further.

H2.1.2 Oversight Agency (ADEM)

The primary oversight agency for the RSA-122 and RSA-183 CMI is ADEM. The oversight agency will provide review and comment on the CQAP to ensure that the proposed CQA program will provide for sufficient confirmation that work is being performed as intended. The oversight agency has the responsibility to review CQA documentation and, upon completion of the corrective measures, confirm that the CQAP has been followed and that the construction/remediation has been performed in accordance with the regulatory requirements.

H2.1.3 Quality Control Site Manager

The QCSM will be responsible for the review and approval of the equipment and materials supplied by the contractor (including its subcontractors). The QCSM reports directly to the contractor's Corporate Quality Management Director. The work that the QCSM produces is subject to the review and approval of the PM, the Program Quality Management Director, and the contractor's Project Engineer.

A few deviations from the CMI work plan are not uncommon during the implementation of remedial actions. As such, activities may need to be adjusted accordingly during the progress of construction and remediation. The QCSM may be requested to change some aspects of the design and/or CMI work plan if unexpected conditions (e.g., a change in site conditions, unanticipated logistical problems, change in construction or remediation methodology, or lack of availability of certain materials) are encountered during the construction work. Accordingly, the QCSM will be responsible for preparing the appropriate variances and providing necessary feedback to the PM or the Quality Management Director.

The QCSM is responsible for coordinating all required field activities and laboratory CQC testing activities, including sample collection and shipment and verification of the test results. The results will be documented on the daily construction log. Additional responsibilities include preparing addenda to the CQAP and formulating corrective actions or variances when required.

H2.1.4 CQC Analytical Laboratory

In accordance with the contract documents, CQC activities will be performed by a subcontracted laboratory for confirmation analysis with the soil excavation. The testing laboratory must have its own internal quality control (QC) procedures to ensure that laboratory analyses conform to

the appropriate regulatory requirements and applicable testing standards. The CQC laboratory is responsible for ensuring that analyses are performed in accordance with applicable test methods and standards for following internal QC procedures, for maintaining sample chain-of-custody records, and for reporting data. In addition, the CQC laboratory must be willing to allow announced or unannounced inspections by authorized project personnel, including representatives from RSA and ADEM in order to observe the sample preparation and analysis procedures. The laboratory must be willing to accommodate such inspection as long as the observer does not interfere with the testing process.

H2.1.5 The Contractor and Subcontractors

The contractor has the overall responsibility for conducting the remediation in accordance with the approved CMI work plan. The contractor, including its subcontractors, must perform CQC tests, as required by the CMI work plan, during project remediation activities and provide CQC documentation as specified and report variances and nonconformances as outlined in this CQAP.

H2.1.6 Construction Quality Control Personnel

Field quality assurance (QA)/QC personnel are individuals designated by the contractor and its subcontractors whose duty it is to ensure products and services are provided to RSA and CEHNC in accordance with the CMI work plan.

H2.2 Qualifications

CQA and CQC activities will be accomplished by appropriately qualified personnel. Each individual will understand and enforce the specified quality requirements and recommend improvements in processes and/or services which, when implemented, could affect the cost, schedule, and quality of the project in a positive manner.

The key personnel involved in the CQA/CQC program and their minimum recommended qualifications are provided in the following table:

Key Personnel in CQA/CQC Organization	Role/Minimum Qualifications Requirements
PM	The specific individual(s) to certify that the construction activities have been completed in accordance with project design CMI Plan.
Project Engineer	The individual who prepared the CMI work plan and designated representative of the contractor with knowledge of the design and contract requirements.
Contractor’s Quality Management Director	Independent supervisor of the field QA/QC personnel. Five years of QA/QC project work.
Qualified Credentialed Inspector	The individual responsible for completing the Construction Storm Water Inspections.

Key Personnel in CQA/CQC Organization	Role/Minimum Qualifications Requirements
Qualified Credentialed Professional	Responsible for updating the Best Management Practices Plan and certifying the plan.
QCSM	Responsible for the review and approval of the equipment and materials and coordinating all required field and laboratory CQC testing activities, including record keeping, and sample collection and shipment. Five years project work; college degree in science or technical field.
Field QA/QC Personnel	Designated contractor and/or subcontractor personnel (or independent third parties) to perform specific CQC testing. Training required when appropriate (moisture-density testing, concrete testing, etc.) for assigned tasks, certifications.

H2.3 Personnel Training

The contractor’s personnel assigned to the project, including subcontractors, are trained to ensure competence commensurate with the responsibility and qualifications necessary to perform the tasks to which they are assigned. In addition to education and experience, job-specific training may be required to qualify individuals to perform certain activities. The PM and QCSM will review and document the personnel qualifications and training to verify compliance to the subcontract requirements.

All personnel will be trained per Occupational Safety and Health Administration (OSHA) Section 1910.120. Project personnel will receive an orientation to the CMI work plan as appropriate to their responsibilities before participation in project activities.

The PM and QCSM will review the qualifications and training of all personnel assigned to the project. Training and qualification records will be maintained at the project site and available for review. Training of site personnel will be verified and documented as applicable to the work to be performed. The QCSM will monitor the training activities to verify all required training is completed for personnel performing work on the project and verify that the training is documented and that current records are maintained.

Training will include all phases of the work as necessary and will be commensurate with the complexity of the activities being performed. Training methods may include formal classroom, required reading, on-the-job training, or combination of these methods. Training procedures will be reviewed and approved by qualified CMI contractor project personnel.

Training programs are conducted according to organizational needs and policies so that personnel:

- Have an acceptable understanding of the safety consideration of the work tasks
- Possess knowledge of the processes adequate to perform assigned tasks
- Have a working knowledge of the project or facility basis requirements
- Have an understanding of systems, terminology, reasons for performance of specific control functions and the acceptance and rejection criteria for the work
- Know the consequences of inadequate quality attainment.

The training program will be evaluated to determine the effectiveness of the program and instruction. If it is determined that the program content, instructor capabilities, or other conditions require changes, the program will be updated at that time. At a minimum, the training will be reviewed as part of the management assessment.

The contractor shall maintain qualification and training records for each employee. Training records should include all documents that establish the employee's capabilities, including outside training and training performed by approved training organizations. The QCSM will verify compliance with the project requirements.

H2.4 Communication Within the CQA Organization

Communication between the CQA program participants includes the exchange of information that allows work to proceed and the required reporting so that activities can be reviewed. Communication in the form of construction documents, inspection reports, audit reports, verification test results, and daily CQC reports must be timely so that reviews and evaluations can be performed by all the parties responsible for execution of the work.

CQA personnel, the PM, and the subcontractors must communicate as required and as addressed in this CQAP to maximize the efficiency and effectiveness of the CMI and to minimize variance or nonconformance.

H2.5 CQA Meetings

CQA meetings will be held throughout the progression of construction and remediation activities on an as-needed basis. Progress meetings will be documented in the form of meeting minutes prepared by the QCSM and maintained in the on-site CQA files.

H3.0 Contract Scope of Work

The complete and detailed scope of work for the planned construction/remediation activities are presented in the CMI work plan and the supporting documents therein. Additionally, the CMI work plan provides the proposed schedule and sequencing of the activities. This chapter provides a general overview of the activities and an outline of the CQC testing requirements referenced in the CMI work plan. Subsequent to this chapter, Chapters 4.0 through 10.0 present the necessary supporting aspects of the CQC/CQA program that must be implemented to ensure the overall objectives of the program are met and to provide evidence of compliance with all applicable project and regulatory requirements.

H3.1 Proposed Work Activities

The general scope of work for RSA-122 and RSA-183 includes the following:

- Obtain a permit under the General National Pollutant Discharge Elimination System permit coverage for stormwater discharges
- Mobilization/demobilization
- Utility clearance and marking
- Installation of surface water and erosion controls
- Vegetation clearance
- Protection and/or closure of existing monitoring wells
- On-site UXO support
- Surveying and marking of the proposed excavation areas
- Excavation of contaminated soil and removal of relict structures
- Post-excavation soil confirmation sampling and analysis
- Waste characterization sampling
- Soil stabilization, if necessary
- Soil gas sampling at RSA-183 to perform a vapor intrusion evaluation
- Transport and disposal of excavated soils contaminated with arsenic to a waste disposal facility

- Site restoration, including application of backfill and topsoil and revegetation with approved grass mixtures
- Implementation of land-use controls.

H3.2 CQC Requirements and Responsibilities

Sections H3.2.1 through H3.2.4 present a summary of the CQC testing requirements and responsibilities of the contractor's QCSM during implementation of corrective measures at RSA-122 and RSA-183. The information presented herein is intended only to provide an overview of the requirements; the complete and full details of the planned work is contained in the CMI work plan and supporting documents.

H3.2.1 Preliminary Activities

Preliminary activities include permitting, mobilization, requirements for base access, dig permits and utility marking, site control, surveying of excavation areas and locating stockpile areas, and protection of existing site features (e.g., boundary fencing and monitoring wells), and closure of monitoring wells within or adjacent to the proposed excavation boundary. The dig permit will be obtained from the RSA Directorate of Public Works ([256] 876-9881) prior to commencement of the CMI. During these activities, the QCSM will be responsible for reviewing purchase orders and packing slips to ensure all materials received are in accordance with the CMI specifications. As the excavation at RSA-122 and RSA-183 will be greater than 1 acre in size, a construction storm water general permit (CSWGP) issued by the ADEM will be required. To obtain coverage under the CSWGP, a Notice of Intent must be submitted to ADEM prior to initiation of construction activities. Storm water erosion and sediment controls will be implemented in compliance with the *Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas* (Alabama Soil and Water Conservation Committee [ASWCC], 2018). Site controls will be enforced in accordance with the site-specific safety and health plan prepared by the contractor. A licensed land surveyor will be subcontracted to delineate the project work boundary and mark the excavation and soil stockpile areas.

H3.2.2 Soil Excavation and Removal of Relict Structures

Soil will be excavated to meet the cleanup goals specified in the CMI work plan. Excavation will be accomplished according to the Safety and Health Regulations for Excavations (OSHA 29 Code of Federal Regulations Part 1926 Subpart P). A licensed land surveyor will be contracted to survey the final excavation limits at each area. Surveying will be conducted in accordance with the Alabama Society of Professional Land Surveyors Standards of Practice for Surveying in Alabama (www.aspls.org).

Contaminated soils will be stockpiled during the excavation at RSA-122 and RSA-183. Based on site knowledge and data from similar sites, it is expected that most excavated soils will be managed as a nonhazardous special waste and that the soil will likely be able to be disposed as special waste (nonhazardous) at a Subtitle D landfill. However, soil surrounding former storage tanks 733C and 733D near Building 5436 at RSA-122 will be considered listed for arsenic (P012) and will be managed and disposed as hazardous waste at a Subtitle C landfill. The contractor will employ a licensed transportation and disposal subcontractor to complete these activities. The waste characterization results will be submitted to the landfill for approval. An ADEM waste certification number will be obtained prior to disposal of any excavated soils at a landfill in Alabama.

H3.2.3 Backfill and Revegetation

Upon completion of all soil excavation activities, clean fill material may be brought in from an RSA borrow area or another approved off-site borrow source to supplement backfill and excavated soil that is determined usable as backfill (e.g., concentration of arsenic is below depth-specific cleanup goals). If sampling of the borrow source material has not been conducted, the contractor will sample the material to confirm it is acceptable for use as backfill at the site. The borrow material sampling, if required, will include one 5-point composite sample analyzed for target compound list (TCL) semivolatile organic compounds, TCL pesticides/polychlorinated biphenyls, and target analyte list metals, and one sample analyzed for TCL volatile organic compounds. The backfill material will be placed by the excavator, spread in maximum 12-inch loose lifts, and compacted using the excavator. Any uncontaminated soil removed during excavation activities will also be placed in the excavation. Once the areas have been backfilled and compacted, clean topsoil will be placed over the affected areas.

Soil excavation will disturb/destroy site vegetation. Any vegetated areas that are disturbed or destroyed will be restored following completion of the remediation and removal of all equipment. Restoration will include reseeding and mulching the area. The ASWCC should be consulted to determine the grass species to use. The QCSM will be responsible for verifying the proper fill and revegetation materials are used.

H3.2.4 Final Inspection and Demobilization

When planned remediation activities have been completed, temporary field structures (e.g., fencing and best management practices) will be removed and disposed off site. A final inspection of the project site will then be conducted in accordance with the requirements as outlined in this CQAP.

After the completed work has been accepted by RSA and/or CEHNC, all personnel and equipment will be demobilized from the project site. During these activities, the QCSM will be responsible for the performance or oversight of the following:

- Oversee the removal of temporary field structures.
- Obtain required waste characterization samples as necessary for off-site disposal.
- Coordinate disposal with RSA personnel (including obtaining appropriate RSA signatures on waste manifests or bills of lading) and the subcontracted transportation and disposal vendor.
- Participate in final field inspection and note deficiencies that require corrective action.
- Coordinate implementation of corrective actions and arrange for reinspection.
- Submit final approved inspection report to RSA and CEHNC.
- Oversee demobilization activities.

H3.3 Additional Considerations

The information contained in this chapter only represents an overview of the proposed work activities and is intended to serve as a guide to the complete details of work as included in the contract CMI work plan and other supporting documents. As noted previously, the remaining chapters of this CQAP contain discussions of the additional components included in the overall CQA/CQC program which are implemented to ensure the generation of defensible evidence of compliance with contract and regulatory requirements.

H4.0 Document Control

The CQAP is a controlled document, and measures are included to maintain the currency and the use of the plan so that the CQC functions defined within are in accordance with the latest specified requirements. Distribution of the plan is controlled so that all revisions to the plan are issued to the plan holders and the superseded requirements revised accordingly in the existing plans.

Issuance and distribution of the plan will be controlled by the PM or his/her designee, the document controller. The plan will be transmitted to each plan holder on the distribution list. The transmittal document will reference the assigned document control number, which will appear in the top right corner of the transmittal letter included within each document. The assigned number will be kept on a log and maintained by the PM's designee in the home office. Copies will be maintained at specific locations and available to the individuals performing the work.

Revisions to the plan will be made by sections or by the addition of supplements or amendments and will be noted with change pages or with a new final or revised document. All accepted revisions to the plan will be transmitted to the plan holders according to the distribution list. Individuals or organizations designated as plan holders will be responsible for updating their copies of the plan.

H4.1 Documentation

The PM will provide a document control system to provide measures for the control of issuance, distribution, storage, and maintenance of documents relating to quality, including those from the contractor and its subcontractors and other vendors or suppliers.

Preparation, review, issuance, and revisions to documents affecting construction quality will be controlled so that the specified contract, regulatory, and permitting requirements are clearly defined and made available to the personnel performing the work. Such documents may include but not be limited to the following:

- Correspondence
- Drawings
- Procedures
- Plans
- Reports
- CMI work plan.

The PM or his/her designee will review the documents to verify inclusion of the appropriate QA requirements.

H4.2 Daily Construction Log

CQC reporting will be addressed in the daily construction log, and the contractor will document all project activities as required by the contract. The log will cover conforming and nonconforming work and will include but not be limited to the following:

- Weather conditions
- Site instructions
- Nonconforming conditions
- Results of inspections and tests
- Types of defects or causes for rejection
- Corrective actions - proposed and taken
- On-site personnel and major equipment log
- Delays and causes
- Verbal instructions.

A copy of a typical daily CQC report is included as Table H4-1. RSA and CEHNC will be provided a copy of the daily QC reports throughout the duration of the project.

H4.3 Records

H4.3.1 Evidence of Contract Compliance

Records will be prepared to furnish documented evidence that design, construction, and operation activities, including laboratory analysis, are in compliance with the quality requirements of the contract. The records will be consistent with the applicable sections of the project technical CMI work plan and may include one or more of the following:

- Daily CQC report
- Technical reviews
- Inspection and test reports
- Audit reports
- Monitoring and surveillance activities
- Personnel qualifications
- As-built drawings
- Nonconformance reports and corrective actions
- Design documents
- Laboratory analyses reports
- Other specified documents.

H4.3.2 Storage of Field Records

Copies of field records will be maintained and stored at the project site until turnover as specified by CEHNC. On-site records will be readily retrievable for review and audit purposes by ADEM, RSA, and CEHNC. The records will be controlled so that the possibility of loss, damage, or other detrimental conditions of the records is avoided. The original project documents will be stored at the contractor's home office.

H4.4 Project Submittals

Project submittals include documents generated or revised in the home office or in the field site office at RSA. Project submittals will have tracking numbers issued with each new or revised document. In addition, project submittals specified in the contract documents and CMI work plan will be prepared by the contractor and submitted to the QCSM. The PM is responsible for the preparation and maintenance of the specified submittals for the project.

A master set of as built-drawings, kept on site at the contractor's field office, will be updated periodically with variances from the contract documents, as well as other changes documented on the redline drawings. Two sets of redline drawings will be maintained at the site. Each deviation will be identified with the appropriate modifying documentation. These redline drawings will include buried or concealed structures and utility features revealed during the course of the site work. The redline drawings will be used to produce the final as-built drawings. A copy of the redline drawings and a set of final as-built drawings will be submitted.

H4.4.1 Document Submittal Register

The project submittal register will be maintained by the contractor. Submittals returned unapproved or with comments requiring revisions will be so noted on the submittal register and re-entered as a revision. The Project Engineer or his/her designee will monitor the submittal register to verify submittals are being controlled, scheduled, and tracked, and the status kept in an effective manner. The project submittal register will be updated continuously, as applicable, and reviewed by the Project Engineer or his/her designee to determine the status of the submittals and compliance to the project schedule requirements.

H4.4.2 Submittal Preparation and Transmittal

Submittals will be prepared by the PM or his/her designee. Submittals from subcontractors or vendors will be reviewed by the QCSM prior to transmitting the submittals to the PM and Project Engineer or designees. All appropriate information will be completed prior to transmittal of the submittals. Submittals will be scheduled to coincide with the needed dates and adequate time allowed for review and approval in accordance with the contract requirements. The submittals will be reviewed for conformance to specified requirements, completeness, and accuracy.

Submittals requiring modifications or changes will be returned to the PM or his/her designee for corrective actions and resubmitted for review.

H4.4.3 Resubmittals

Submittals that are not approved by the QCSM or returned with comments that require resubmittal for approval will be processed in the same manner as the original submittals. The submittal number used for the original submittal will be used for each resubmittal followed by a numerical notation indicating the revision. The resubmittals will be re-entered on the project submittal register with the new revision numbers.

H5.0 Nonconformances And Corrective Actions

This chapter addresses the procedure for reporting nonconformances and corrective actions for variance from the contract documents.

H5.1 Nonconformance Report

Work, field testing, laboratory testing, or materials not conforming to the CMI work plan or contract requirements, including noncompliances and deficiencies identified by RSA and CEHNC, will be documented on a nonconformance report (NCR). A sample NCR is shown in Table H5-1. At a minimum, the NCR will detail the nonconforming conditions, recommended corrective action(s), and disposition of the corrective action(s). Noncompliances or deficiencies identified by the QCSM will be immediately corrected. A master log of all NCRs will be kept by the QCSM for review by the PM. All NCRs will remain open until the nonconforming condition has been satisfactorily resolved and verified as acceptable by the contractor's Quality Management Director.

H5.2 Identification of Nonconforming Items

Items identified as nonconforming will be documented on the NCR, which, as applicable, will include the following:

- Description of nonconforming item or activity
- Detailed description of nonconformance
- Cause of nonconformance
- Referenced criteria
- Recommended disposition
- Disposition and verification of corrective action
- Responsible organization.

H5.3 Nonconformance Tracking Register

Each identified nonconformance will be documented on the sample NCR tracking register (Table H5-2) which, at a minimum, will include the following information:

- NCR tracking number
- Description of nonconformance
- Issue date
- Distribution parties
- Individual or organization assigned responsibility
- NCR closed-out date and initial of party responsible for closure.

The QCSM is responsible for maintaining the NCR tracking register and for the verification that the corrective actions were implemented and verified prior to closing the NCR. RSA and

CEHNC will be notified in advance of verification of the corrective actions to permit their participation in the inspections and acceptance of the results prior to closing the NCR.

H5.4 Control and Segregation

Nonconforming materials or items will be controlled to prevent inadvertent use or further processing which would cause the nonconforming condition to be inaccessible for correction. All items identified as nonconforming will be clearly identified and segregated from acceptable items except where size, installation status, and other conditions would make it impractical to segregate from conforming items. When nonconforming items are not segregated, they will be identified and clearly marked so that they may be easily recognized as nonconforming to prevent further activities prior to the implementation of the corrective action(s).

H5.5 Disposition

The disposition of NCRs will include the necessary actions required to bring the nonconforming condition to an acceptable condition and may include reworking, replacing, retesting, or re-inspecting. Implementation of the disposition will be in accordance with the original procedural requirements, a specific procedure, or other acceptable written instructions the contractor's Quality Management Director.

H5.6 Documentation

Notifications of noncompliance and the proposed corrective actions will be documented on an NCR and processed in accordance with the provision described in this section. Corrective actions will be implemented upon receipt of the notification. The NCR will remain open until the noncompliance is resolved.

H5.7 Corrective Actions

In addition to resolving identified nonconforming conditions, corrective actions will address the cause of adverse conditions contributing to the nonconformance and establish methods and controls to preclude the recurrence of the same or similar types of nonconformances.

The QCSM will track corrective actions to identify trends in the causes of the nonconforming conditions and initiate necessary actions to prevent recurrence. Additionally, the QCSM will monitor the corrective actions to verify that corrective actions were properly implemented and accepted and the NCR was closed.

H5.8 Stop Work Notice

Nonconforming conditions that affect the quality of the project, threaten safety, or cause an environmental threat will be stopped through the use of a stop work notice (Table H5-3). Stop work notices may also be issued in the event of insufficient corrective actions resulting in

recurring nonconforming work. The issuance and tracking of stop work notices will be documented on a stop work notice log (Table H5-4) to be maintained by the PM (or his/her designee).

H5.9 Conflict Resolution

Conflicts arising from nonconformance and corrective actions that cannot be resolved at the project management and QC levels will be directed to successive levels of management as necessary to obtain resolution. The levels of management will include the QCSM, contractor Quality Management Director, and PM. All conflicts will be resolved within the specified requirements of the contract and the governing regulatory documents.

H6.0 Procurement Control

This chapter addresses the procedure for ensuring that procured items and services meet established requirements and perform as specified within procurement standard operating procedures.

H6.1 Overview

Prospective suppliers will be evaluated and selected on the basis of the specified criteria. The contractor will ensure that approved suppliers can provide acceptable items and services as required by the contract. The Project Engineer will review and approve all materials and supplies that may affect quality of the project. Upon approval of purchase requisitions, the QCSM will receive a copy of the approved purchase requisition. When materials and supplies arrive at the project site, the QCSM will be responsible to ensure the items and services meet the requirements listed in the purchase requisition and that no items are installed prior to approval of applicable submittals.

The procurement details include provisions for the following, as applicable to the scope of work or services:

- **Scope of Work.** A statement of the scope of work to be performed by the subcontractor will be in the procurement documents.
- **Technical Requirements.** Technical requirements will be specified. Where necessary, these requirements will be specified by reference to CMI work plan, codes, regulations, procedures, QA program documents, and statement of work requirements that describe the services to be furnished. The procurement documents will provide for identification of inspection, verification, and acceptance requirements for monitoring and evaluating the supplier's performance.
- **QA Program Requirements.** Procurement documents will require that subcontractors have a documented quality system that implements portions or all of the requirements of this plan, as applicable. The extent of the suppliers' quality system will depend on the type and use of the service being procured.
- **Right of Access.** At each tier of procurement, the procurement documents will provide for access to supplier's facilities and records for inspection or audit by the contractor or its authorized representative.
- **Documentation Requirements.** Procurement documents at each tier of procurement will identify the documentation required to be submitted to the contractor for information, review, or approval and the time of submittal. The retention times and the disposition requirements for specific quality records will be prescribed.

- **Questionable or Unusable Data.** The procurement documents will include requirements for reporting and approving disposition of questionable or unusable data.

H6.1.1 Review of Procurement Documents

The QCSM will ensure that site-initiated procurement documents and changes transmitted to the prospective supplier include adequate requirements, performance standards, and quality criteria. The purchase requisition will then go through the proper approval process including the PM, the Project Engineer, and the Procurement Leader.

The review of changes and their effects will be completed prior to transmittal to the prospective supplier. This review will include the considerations that the appropriate requirements are specified, additional or modified performance criteria determined, and analysis of exceptions or changes requested or specified by the supplier.

H6.1.2 Source Evaluation and Selection

The selection of suppliers and subcontractors will be based on an evaluation of their capability to provide items and/or services in accordance with the specified requirements. Measures for evaluating and selecting procurement sources will be documented and may include one or more of the following:

- Evaluation of the supplier's history of providing an identical or similar service, which reflects the current capability
- Supplier's current QA records supported by documented qualitative and quantitative information that can be objectively evaluated
- Supplier's technical and quality capability as determined by a direct evaluation of their facilities and personnel, an evaluation of the effectiveness of their implementation of their quality system, and, in the case of subcontracted analytical data acquisition services, the successful analysis of a set of performance evaluation samples
- Submittals pertaining to the items or services to be provided must be approved prior to use or initiation of the work on the project site.

H6.1.3 Acceptance of Services

The procurement control will include flow-down provisions of the contract and site-specified task order. The acceptance methods used (e.g., source verification, receipt inspection, and technical verification of data produced) will be verified. Confirmation of specific characteristics will be performed at intervals and to a depth consistent with the service's complexity, quantity and frequency of procurement, and statement of work requirements.

H6.1.4 Receipt Inspection and Verification

The QCSM or designee will develop and implement procedures for receipt inspection and verification of purchased items. These controls will provide for the following, as applicable:

- Verification that the items received is in accordance with purchase order requirements
- Inspection for evidence of breakage, damage, or otherwise being unfit for use
- Verification that required documentation is received and acceptable
- Verification that the items conform to the supplier's published requirements that were provided submitted and approved.

H6.1.5 Handling, Storage, Packaging, and Shipping

The handling, storage, cleaning, preservation, packaging, and shipping of items will be controlled to prevent damage or deterioration that would jeopardize the specified performance of the items.

Procurement documents will include the following:

- Requirements for sellers to establish special procedures, when necessary, to ensure cleanliness, identification, and proper handling
- Requirements for the preparation of items for shipment, as necessary, to prevent damage or deterioration of the supplied items
- Requirements for material and equipment storage instructions, when specified, to be available at the site well in advance of the arrival of material or equipment.

H6.2 Subcontractor Quality Control

All subcontractors performing work for a project are responsible for compliance to the requirements of their respective subcontracts. Subcontractors include organizations supplying quality-related items or services to the project. The overall responsibility for conformance to the quality requirements for the subcontracted items and services is retained by the contractor.

The requirements for personnel qualifications, technical performance levels, QC procedures, acceptability levels, and documentation will be included as part of the subcontract documents. The PM or designee will review the subcontract procurement documents to verify that QC requirements are passed on to the subcontractor.

The QCSM is responsible for the implementation of inspections, surveillance, document review, audits, and other QC activities for monitoring the subcontractor to verify compliance with the

contract and subcontract requirements. These activities will be documented on inspection reports, audit reports, field logs, or other forms appropriate to the function performed.

For field operations, the field QA/QC personnel will provide QC checks before, during, and at the completion of the subcontractor's activities to determine that the subcontractor is in compliance with the QC measures set forth by the contract, the applicable subcontract documents, and the subcontractor's approved QC plan, including the following:

- Meeting quality requirements
- Generating, controlling, and maintaining required documentation
- Performing and documenting required inspections and tests
- Identifying, reporting, and correcting nonconforming conditions
- Turnover to the contractor.

H6.3 Analytical Laboratory Services

Analytical testing to ensure that the cleanup objectives are achieved will be performed using analytical laboratories off the project site as specified by the contract documents. The analytical testing requirements and related activities are described in Section 4.0 of the CMI work plan.

H6.3.1 Other Subcontractors

Subcontractors performing work other than laboratory-related activities will be monitored by the QCSCM or field QA/QC personnel to verify conformance to the contract and subcontract quality requirements. The monitoring activities will include audits, surveillances, witnessing of inspections and tests, document reviews, and interfacing with the subcontractor's QC or project management. All monitoring activities will be documented on the appropriate form or included in the daily construction log.

H6.3.2 Subcontractor Noncompliance

Work performed by subcontractors that does not comply with the specified requirements will be identified, reported, controlled, tracked, and corrected.

H7.0 Audits

Audits may be performed to verify compliance with aspects of the project documents. Audits will be performed with checklists and include a review of documents and records to determine if the CQAP and supporting procedures are being implemented. A site-specific assessment checklist for RSA-122 and RSA-183 is provided as Attachment H-1 of this CQAP. The individual elements of the checklist are based on the site-specific requirements presented in Section 4.0 of the CMI work plan.

An audit will note findings and observations. A finding will be a documented statement of fact concerning a noncompliance or deviation from established requirements. An observation will be a statement of fact regarding the potential for a noncompliance.

Audits will be performed by qualified personnel and include individuals that are technically knowledgeable in the areas to be assessed. Audit results will be documented and sent to the appropriate management.

H7.1 Scheduling and Planning

Audits typically will be performed early in the life of the activity as practical and continue until completion of the activity. The Auditor will provide written notification to the organization to be audited informing them of the scheduled audit date.

Audit schedules may be prioritized based on the importance of the activity, previously identified deficiencies of the activity, and the size or complexity of the activity. The QCSM will develop a schedule for the performance of audits. The audit schedule will be posted and distributed to project staff and managers. Unscheduled audits may be used to supplement scheduled audits when conditions warrant.

H7.2 Internal Performance Audits

Performance audits are conducted on site by an auditor who directly observes specific project activities to determine if these activities are being conducted in accordance with the contract requirements. The Auditor will be technically competent in the activities to be audited and independent of the subject work. The audit of project deliverables will be for the purpose of determining compliance with the procedures set forth in this plan (i.e., technical reviews, documentation of reviews, document control, and other procedures). Checklist items to be examined may include the following:

- Availability and implementation of approved work instructions
- Field documentation and checking
- Subcontractor performance
- Review of personnel training and qualification records
- Review of process controls and associated records to determine compliance with CMI work plan or plans
- Review of work areas for evidence of implementation of procedures and instructions
- Review of documentation indicating compliance with plan, document and design preparation, review, and approval procedures
- Change and nonconformance documentation and disposition.

H7.3 Execution of Audits

Audits will normally be conducted as described below.

H7.3.1 Pre-Audit Meeting

The Auditor will conduct a brief pre-audit meeting with management or supervisory personnel of the organization to be audited to confirm the audit scope, discuss the audit sequence, establish a tentative time for the post-audit meeting, and establish channels of communication.

H7.3.2 Audit

The Auditor will follow checklists, developed prior to the audit, to evaluate existing project records provided by designated project staff and may observe work in progress. If noncompliances are observed or uncovered during the audit, the Auditor will discuss these potential findings with the individuals being audited so that findings are accurate and understood. In addition to identifying noncompliances, the audit results may include observations of notable areas of strength.

H7.3.3 Exit Meeting

Upon completion of the audit, the Auditor will discuss observations and findings with the group or organizations audited and, whenever possible, agree on corrective actions. Minor administrative findings that can be resolved to the satisfaction of the audit team during the audit are not required to be documented as items requiring corrective actions. All findings that are not resolved during the course of the audit and findings affecting quality will be noted on the audit checklists.

H7.3.4 Audit Report

The Auditor will prepare and issue an audit report, which provides the following information at a minimum:

- Unique audit number
- Description of the audit scope
- Audited organization and location
- Persons contacted during the audit activities
- Audit dates
- Summary of audit results, including a statement on the effectiveness of the quality management elements that were audited
- Suggested opportunities for improvement in the form of observations and comments
- Description of each reported audit finding in sufficient detail to enable corrective action to be performed
- Due date for completion of corrective actions and/or audit response (typically 30 days).

Audit results will include findings and observations. Findings are items that require corrective action. Findings will be documented on an audit finding report or equivalent. Observations are nonmandatory recommendations to improve project quality. The Auditor may make recommendations for corrective actions; however, the ultimate responsibility for taking corrective action lies with the auditee. The report will be signed by the Auditor. Checklists do not need to be included with the audit report but should be maintained as records in the project files.

The Auditor will prepare an audit report cover letter or memorandum for signature and issuance by the PM. The audit report will be issued to the management of the audited organization.

H7.4 Response

The response prepared by the auditee will clearly state for each finding the corrective action taken or planned, the cause of the deficiency, and the action to prevent recurrence. For each observation, the response will indicate actions taken or planned for quality improvement. The response will, at a minimum, be sent to the PM and the Auditor.

H7.5 Follow-Up

The QCSM or designee will track all audit findings to assure that all findings are appropriately addressed and to trend audit findings for significant conditions adverse to quality. The QCSM or designee will maintain the status of audit findings for active audits and prepare correspondence relating to overdue audit responses. When responses are overdue, the QCSM or designee notifies the responsible organization by telephone that responses are overdue and prepares a memorandum or letter indicating a new response due date. If a request for extension of response is received, an evaluation will be made and a formal response submitted to the requesting organization.

The PM or designee, upon receipt of responses to audit findings, will coordinate with the Auditor for the evaluation of responses. The responsible evaluator will document the results of the evaluation. Unacceptable responses will be noted together with the specific reason for rejection. The PM or designee will prepare transmittal correspondence to the responsible organization to inform them of a new response due date.

Follow-up actions, possibly including re-audit of deficient areas, will be taken to verify whether corrective action is accomplished as scheduled. The QCSM or designee will assure that verifications of corrective action implementation are accomplished and document the results of verification.

Following acceptance and verification of all corrective actions, an audit closure document will be issued by the Auditor to the same distribution as the audit report. The closure document will indicate that corrective actions have been satisfactorily completed and will contain a statement that the audit is closed.

H7.6 Documentation

The following documents generated before, during, and after the audit process will be maintained in the record file system in accordance with Chapter H4.0 of this plan:

- Audit report
- Audit responses
- Audit closure letter
- Correspondence related to the audit.

H8.0 Construction Inspections

The primary function of inspections is to establish the measures required to verify the quality of work performed and compliance to the specified requirements, including the inspection of materials and workmanship before, during, and after each work element.

H8.1 Preparatory Inspections and Meetings

Along with representatives of RSA and CEHNC, the PM, the QCSM, and the Site Supervisor will conduct preparatory inspections/meetings at RSA-122 and RSA-183. Preparatory inspections/meetings will be performed prior to starting definable features of work. Typical definable tasks and related inspection requirements can be modified based on project requirements. When more than one work element is included in one work activity, one preparatory meeting may cover several work elements for the site. Likewise, a number of work activities, where feasible, can be combined into individual preparatory meetings. The preparatory inspection/meeting will be attended by the Army, applicable contractor personnel and subcontractors involved with the feature of work, and responsible field QA/QC personnel. The QCSM will be notified in advance to coordinate participation in the inspection. The preparatory meeting may include but not be limited to the following:

- Review the basic elements of the work.
- Review documentation and reporting requirements.
- Review pertinent contract requirements.
- Review materials and equipment documentation for required tests, submittals, and approvals.
- Review required QC inspections and test requirements.
- Establish that the preliminary work required to begin the feature of work is complete and conforms to approved drawings and submittal data.
- Establish that the required materials and equipment for commencement of the work are on hand or available for use on the feature of work and that all equipment is properly calibrated and in proper working condition.
- Ensure the securing of utility clearances (“dig permits”).
- Address basic site health and safety considerations.
- Establish hours of operation.

Preparatory inspections will be reported on the daily QC reports. The detailed results of the preparatory inspection will be documented.

Personnel performing work activities affected by a preparatory inspection will be directed in the acceptable level of the workmanship involved for the feature of work covered by the inspection.

H8.2 Initial Inspections

The initial inspection may be conducted at the beginning of the work element. The inspection will be performed when it is determined that a sufficient portion of the work element has been accomplished to evaluate the following criteria:

- Compliance with the CMI work plan, drawings, submittals, and other contract requirements
- Acceptable levels of workmanship
- Quality of materials
- Resolution of differences (when applicable).

Initial inspections will include participation of the responsible personnel, including appropriate subcontractors and the field QA/QC personnel involved with the work element. The Army will be notified in advance of each initial inspection to coordinate participation in the inspection. The initial inspections will be reported on the daily QC reports.

H8.3 Follow-Up Inspections

Follow-up inspections will be performed throughout the course of work. The frequency of the follow-up inspections will be dependent upon the extent of work being performed on each particular work element. Follow-up inspections will be performed on all ongoing work. Follow-up inspections will also be performed on completed work phase prior to starting subsequent phases. Deficiencies identified will be corrected in a timely manner or identified on a punch list that will be used as a tracking method until the work is completed and verified and the punch list item signed off. Deficiencies that would be made inaccessible for correction by subsequent work activities will be corrected and accepted prior to starting the new work.

The follow-up inspections will be reported on the daily QC reports and copies of the inspection forms as applicable.

H8.4 Pre-Final Inspection

Near the completion of the work or increment thereof as established (e.g., completion of the erosion control structures such as silt fencing and construction entrance), the QCSM will conduct

an inspection of the work and develop a punch list of items that do not conform to the approved CMI plan. The list of deficiencies will become a part of the CQC documentation which will include the estimated date by which the deficiencies will be corrected. The QCSM will then make a second inspection to ensure that all deficiencies have been corrected. Once this is completed, the contractor will notify the QCSM that the site is ready for pre-final inspection.

The Army will perform the pre-final inspection to verify that the site work has been satisfactorily completed. A pre-final “punch list” may be developed by the QCSM as a result of this inspection. The QCSM will then make sure that all items on this list have been corrected and so notify the PM so that a final inspection with RSA and CEHNC can be scheduled. Items noted in the pre-final inspection will be completed in a timely manner. These inspections and deficiency corrections will be accomplished within the time frame slated for completion of the project.

H8.5 Final Inspection

The PM, the QCSM, the RSA Site Manager, and the CEHNC Technical Manager will be in attendance for this inspection. The RSA Site Manager or CEHNC Technical Manager will formally schedule the Final Inspection based upon completion of the results of the pre-final inspection. Notice will be given to the Army at least 14 days prior to the final inspection and must include the contractor’s assurance that all the specific items previously identified as being unacceptable will be completed by the date scheduled for the final inspection.

The contractor will prepare the punch list. The punch list will identify all nonconforming or incomplete work. Upon completion of the punch list items, a second inspection will be conducted by RSA, CEHNC, and the contractor to verify all items conform to the requirements. The contractor’s Quality Management Director will be the final authority to accept all of the punch list items as having been corrected.

H8.6 Inspection Documentation

The QCSM is responsible for the maintenance of the inspection records. Inspection records will be legible and clearly provide all information necessary to verify the items or activities inspected conform to the specified requirements or, in the case of nonconforming conditions, provide evidence that the conditions were brought into conformance or otherwise accepted by the Army.

H9.0 Analytical Testing

The installation-wide quality assurance program plan (HydroGeoLogic, Inc., 2019) establishes the measures for management and control of analytical testing activities affecting the quality of remedial actions. Primary responsibility for control of construction (through performance of analytical QC testing) resides with the contractor (including its subcontractors), and testing will be done in accordance with the CMI work plan, including the site-specific QAPP (Appendix D to the CMI work plan).

Task-specific programs of field controls, consisting of inspections and verification tests, will be utilized to verify that the CMI work plan, including the site-specific QAPP, is adhered to during implementation of the corrective measures at RSA-122 and RSA-183, where applicable. However, the installation-wide quality assurance program plan (HydroGeoLogic, Inc., 2019) presents the overall general principles that are employed in any chemical analyses performed as part of the construction.

H10.0 References

Alabama Department of Environmental Management (ADEM), 2021, *Redstone Arsenal's Alabama Hazardous Wastes Management and Minimization Act Hazardous Waste Storage Facility, Thermal Treatment, Solid Waste Management Unit Corrective Action Permit*, July.

Alabama Department of Environmental Management (ADEM), 2008, *Draft RCRA Facility Assessment, Redstone Arsenal, Huntsville, Alabama*, September.

Alabama Soil and Water Conservation Committee (ASWCC), 2018, *Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management of Construction Sites and Urban Areas*, July.

Aptim Federal Services, LLC (APTIM), 2019, *Quality Assurance Surveillance Plan for Corrective Measures Implementation at Multiple Sites, U.S. Army Garrison-Redstone, Madison County, Alabama*, Prepared for U.S. Army Engineering & Support Center, Huntsville, Alabama, November.

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A.T. Kearney, Inc., 1989, *Interim RCRA Facility Assessment Report of the Redstone Arsenal, Huntsville, Alabama*, September.

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CH2M Hill, 2009, *Final Operable Unit 2 Remedial Investigation Report, National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Alabama, EPA ID# AL 1800013863*, March.

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Shaw Environmental, Inc. (Shaw), 2009a, *Final Feasibility Study, RSA-122, Dismantled Lewisite Manufacturing Plant Sites; RSA-056, Closed Arsenic Waste Ponds; and RSA-139, Former Arsenic Trichloride Manufacturing Disposal Area, Operable Unit 6, Redstone Arsenal, Madison County, Alabama*, July.

Shaw Environmental, Inc. (Shaw), 2007a, *Final Record of Decision for Surface Media at RSA-049 Capped Arsenic Waste Ponds – West Operable Unit 5, Redstone Arsenal, Madison County, Alabama, Revision 0*, prepared for U.S. Army Corps of Engineers, Savannah District, August.

Shaw Environmental, Inc. (Shaw), 2007b, *Final Remedial Investigation Report, Baseline Human Health Risk Assessment and Screening-Level Ecological Risk Assessment, RSA-122 Dismantled Lewisite Manufacturing Plant, Operable Unit 6, Redstone Arsenal, Madison County, Alabama, Revision 1*, September.

Shaw Environmental, Inc. (Shaw), 2007c, *Final Record of Decision, Interim Remedial Action for Installation-Wide Groundwater, Redstone Arsenal, Madison County, Alabama, Revision 0, prepared for U.S. Army Corps of Engineers, Savannah District*, September.

Shaw Environmental, Inc. (Shaw), 2005a, *Draft RCRA Facility Investigation Report for RSA-127, Redstone Arsenal, Madison County, Alabama*, September.

Shaw Environmental, Inc. (Shaw), 2005b, *Draft RCRA Facility Investigation Report for RSA-127, Redstone Arsenal, Alabama*, prepared for U.S. Army Corps of Engineers, Mobile District, September.

Shaw Environmental, Inc. (Shaw), 2004a, *Final RCRA Closure Report for RSA-033, Redstone Arsenal, Alabama*, prepared for U.S. Army Corps of Engineers, Mobile District, August.

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Shaw Environmental, Inc. (Shaw), 2003, *Final Time-Critical Removal Action Close Out Report, Fencing and Trench Marker Installation, Select Sites in Operable Units 4 through 8, 12, 15, and 17, Redstone Arsenal, Madison County, Alabama*, May.

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TABLES

Table H.4-1

**Typical Daily Construction Log
Redstone Arsenal, Madison County, Alabama**

Date: _____					
Contractor: _____			Project No.: _____		
Contract Title: _____				Report No.: _____	
Area: _____	Unit: _____	Work: Contract (✓) _____	WO # _____		
Shift: _____	Hrs. _____	Wkd: From _____	To _____	Weather _____	
				Temp. _____	L H
Manpower	No.	Total Hrs.	Major Equipment	No.	Total Hrs.
Description of Work Performed Today:					
Remarks by Contractor: (Delays, interruptions, deviations, extra work activities, unusual occurrences, etc., relevant to today's work.)					
For Contractor:		Title:		Date:	
USACE Comments and/or Exceptions:					
For USACE:		Title:		Date:	

Table H.5-1

**Nonconformance Report
Redstone Arsenal, Madison County, Alabama**

Linked w/Variance No: Page __ of __

Project Name:	Project Number:
Date of Issue:	Report Number:
-- Nonconformance Report --	
I. Description of the Nonconformance, include requirement violated: (by the person identifying the nonconformance)	
Identified by:	Date:
Root Cause of nonconformance:	
II. Recommended Corrective Action: (by the person identifying the nonconformance and the review committee)	
To Be Performed by:	Date:
To Be Verified by:	Date:
III. Corrective Action Implementation: (by those implementing the corrective action)	
Was Performed by:	Date:
Was Verified by:	Date:
How was the Corrective Action Verified?	
IV. Nonconformance Resolution, include action taken to preclude recurrence: (by the review committee)	
Affected Organization:	-- Signatures --
<u>Distribution List:</u>	Requested by: _____ Date: _____ (printed name and date) Signature:
	QC Approved by: _____ Date: _____ (printed name and date) Signature:
	Proj. Mgr. Approval: _____ Date: _____ (printed name and date) Signature:
	Client QA Approval: _____ Date: _____ (printed name and date) Signature:

Table H.5-2

Nonconformance Report Tracking Register
Redstone Arsenal, Madison County, Alabama

PROJECT NO.
CONTRACT NO.
NONCONFORMANCE REPORT TRACKING REGISTER

NCR NO.	DESCRIPTION OF NONCONFORMANCE	DATE ISSUED	DATE CLOSED	COMMENTS

Table H.5-3

**Stop Work Notice
Redstone Arsenal, Madison County, Alabama**

Project Name/Location: _____ Project No. _____ D.O. No. _____

S.W.O. No. _____ Date: _____ Page 1 of

1. Written Notice Issued to: Name: _____ Title: _____ Org.: _____	2. P.O. # or Activity: _____ 3. Location: _____ 4. Issued by (name): _____ Issued by (title): _____
5. Verbal Notice Issued to: Name: _____ Title: _____	Date: _____ Time: _____
6. Associated NCR No.: _____	7. Associated CAR No.: _____
8. Stop Work Order Condition Description:	Attachment _____
9. Remedial Action Required: By Whom: _____ Required Remedial Action Determined by: Project Manager: _____ CQA Director/Field CQA Coordinator: _____	By When: _____ Date: _____ Date: _____
10. Follow-up of Remedial Action Taken: Verbal Notice to Resume Operations Given to: Name: _____ Title: _____ Stop Work Order Cancellation Authorized by: CQA Director/Field CQA Coordinator: _____	Attachment _____ Date: _____ Time: _____ Date: _____

Table H.5-4

**Stop Work Notice Log
Redstone Arsenal, Madison County, Alabama**

SWO No.	Action Party/Organization	Subject	Date Issued	Date Closed

ATTACHMENT H-1
FIELD INSPECTION CHECKLIST

	Contract No: W912DY-17-D-0003	Controlling Document: Corrective Measures Implementation (CMI) Plan	
	EPA ID No. AL7 210 020 742		
Location: Redstone Arsenal, Madison County, Alabama			
Inspection Type: Field Inspection Checklist Subject: RSA-122/RSA-183 CMI Work Plan		Inspection Date:	
Descriptor / Requirements		Comments	Results

5.0 Corrective Measures Implementation			
<p>This section provides an overview of the planned activities to complete corrective measures at RSA-122/RSA-183. Work presented in this section will be completed in accordance with the procedures described in the Corrective Measures Implementation (CMI) Work Plan and other approved documentation as appropriate.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>			
5.1 General Scope			
<p>The general scope of work includes the following:</p> <ul style="list-style-type: none"> • Obtain a permit under the General National Pollutant Discharge Elimination System (NPDES) for stormwater discharges • Mobilization/demobilization • Utility clearance and marking • Installation of surface water and erosion controls • Vegetation clearance • Pre-operational survey • Surveying and marking the proposed excavation areas • Protection of existing monitoring wells located in the vicinity of the excavation areas • Excavation of contaminated soil • Excavation and removal of relict chemical agent (CA) structures • Confirmation sampling and analysis of the excavated areas • Waste characterization sampling • Soil stabilization, if necessary • Soil gas sampling at RSA-183 to perform a vapor intrusion evaluation • Transport and disposal of waste at a licensed disposal facility • Post-signage requiring Army approval for intrusive activities below 2 feet • Site restoration, including application of backfill and topsoil, and revegetation with approved grass mixtures • Establish land-use control (LUC) boundary • Outline land-use restrictions for RSA-122 and RSA-183 in the RSA Property Master Plan 			

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
<ul style="list-style-type: none"> • Comply with requirements in AAC r. 335-5-1-.02(3)(a) • Conduct annual routine LUC inspections, sign repairs, and reporting. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
<p>The schedule for implementation of the CMI activities at RSA-122/RSA-183 is dependent upon document review time. If needed, weekend and/or night work will be considered based on access during the corrective measures. Tree clearing was conducted outside of the active roosting season (April 1 through October 15) for the Indiana and the northern long-eared bats.</p> RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.1.1 Procurement and Subcontracting		
<p>Subcontracted services and imported materials required for the completion of the project may include the following:</p> <ul style="list-style-type: none"> • Planning and field staff augmentation • Vegetation clearance • Emergency Medical Technician and ambulance services • Closure/Protection of existing monitoring wells within or adjacent to excavation area • Storm water erosion and sediment controls • Surveying • Electrical support • Excavation and removal of soil • Excavation and removal of relict CA structures • Soil gas sampling • Purchase/transportation of common fill and topsoil • Laboratory services • Waste Transportation and disposal • Aggregate (crusher-run, riprap, and drainage stone) • Erosion controls • Asphalt repair • Fence repair • Sign fabrication and installation • Seed, fertilizer, and mulch • Heavy-duty plastic sheeting. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
<p>The following equipment may be utilized to complete field remediation activities:</p> <ul style="list-style-type: none"> • Excavator/backhoe to excavate contaminated soil • Front-end loader to consolidate soil and move fill material • Compactor to compact fill material • Large capacity water truck (or equivalent) for site dust control and hydration of imported material for compaction • Portable fuel tank (mounted on pickup truck) • Miscellaneous support equipment (e.g., portable storage, radios, relief station, eyewash, etc.) <p>Support equipment and materials will be procured through equipment vendors and scientific supply vendors and shipped directly to the site. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.1.2 Field Personnel		
<p>Field personnel required to complete the field activities may include the following:</p> <ul style="list-style-type: none"> • Site supervisor • Site safety officer • Field construction quality control site manager • Equipment operators • Laborers • UXO technicians <p>The number and schedule of personnel will be adjusted during the project as required. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.1.3 Quality Control Inspections for Field Activities		
<p>Inspections were performed and verified through visual observation, measurement of materials or equipment, examination of documentation/certification, evaluation of performance, or testing. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
<p>Inspections will be performed using a three-phase inspection method: 1) Preparatory inspection(s) were performed prior to start-up and will examine training, procedures, equipment and materials, work plans and documents, and overall readiness to perform work; 2) Initial inspection(s) were performed when work began on a particular feature of work and included an examination of the quality of workmanship and a review of control testing for compliance with work plan requirements. Follow-up inspection(s) were performed to verify compliance with procedures; and 3) Follow-up inspections will ensure a continuation of quality and safety standards established during preparatory and initial inspections until completion of the definable work feature. Final follow-up inspection(s) were conducted at the completion of the activity. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.1.4 Daily Reports		
<p>Daily reports (including daily construction logs, etc.) are provided to the APTIM Project Manager or their designee during CMI activities. These reports were submitted weekly to CEHNC and RSA. The reports included a running inventory of excavated material. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.1.5 Health and Safety Requirements		
<p>All personnel involved in the corrective measures followed the CMI work plan and the installation-wide accident prevention plan (APP) (CEHNC, 2019). Personnel abided by the health and safety requirements presented in the site-specific safety and health plan (SSHP). RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results

5.2 Preliminary Activities		
<p>Preliminary activities include National Pollutant Discharge Elimination System construction permit issued by the ADEM, mobilization, fulfilling requirements for base access, surveying, utility marking and obtaining dig permits, establishing site control as needed, installation of storm water erosion and sediment controls, vegetation clearing, protection of existing monitoring wells, closure of wells within excavation area, and establishment of soil stockpiles. Corrective measures will be subjected to the RSA Job Order Request (JOR) and Record of Environmental Review (RER) process for review and approval of construction practices that may affect environmental resources on the installation. All field personnel will follow the CMI work plan including the site-specific quality assurance project plan (QAPP) (Appendix D), SSHP (Appendix E) and the APP (CEHNC, 2019) including updates to these attached plans prepared by APTIM as required.</p> <p>All field activities were conducted using on-call unexploded ordnance (UXO) construction support personnel for site access and intrusive activities in areas with elevated chemical warfare materiel (CWM) probabilities. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.2.1 Permitting		
<p>Since the excavation at RSA-122/RSA-183 will be more than 1 acre in size, a NPDES construction permit issued by the ADEM was obtained. A construction best management practices (BMP) plan prepared for the construction effort is included as Appendix G of the CMI work plan. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.2.2 Mobilization		
<p>Mobilization will include deployment of personnel, equipment, subcontractors, and materials necessary to commence CMI activities. RSA JOR and RER approvals were obtained prior to site work. Mobilization will include safety arc notifications, establish a command post (CP), training and briefing, communications, and work zone preparation. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>Conducted pre-operational survey and exercises consisting of: (1) Huntsville Survey (2) the Table-Top Exercise, and (3) Major Command (MACOM) Pre-Operational Exercise. Non-stockpile Chemical Medical Training was conducted for the contracted EMTs prior to site activities. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
<p>All APTIM and subcontractor personnel completed the required training and health and safety requirements. This includes:</p> <ul style="list-style-type: none"> • OSHA 40 hour HAZWOPER and 8 hour updates • Reviewed and signed site specific health and safety plan • Any additional site or contract specific training or health and safety requirements <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.2.3 Access to Redstone Arsenal		
<p>New personnel and subcontractor personnel have registered at the Redstone Arsenal Visitors Center at Gate 9 (Rideout Road). Personnel with prior approval from a host RSA organization were issued a personnel badge upon presentation of proper identification. Temporary passes may be required for some vehicles.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>Personnel may access the RSA via any active gate but should note that gate access hours vary. Commercial trucks must pass through the inspection facilities at either Gate 1 or Gate 9 each time they enter RSA.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.2.4 Field Operations Team Composition		
<p>The CP Team is responsible for communications and directed all other field activities and resided outside the exclusion zone (EZ) in the support zone. The Down Range Teams are responsible for work within the EZ. The air monitoring team performed air monitoring for CA during the site characterization and personnel decontamination station (PDS) quadrant monitoring of potentially CA exposed injured personnel and were sufficiently staffed to fulfill the obligations set forth in CARA's air monitoring plan.</p> <p>CARA provided the Rescue Team, which consisted of a minimum of two people and a dedicated vehicle. This team remained on standby during all intrusive activities performed in CWM probability rated areas and positioned themselves near the PDS. CARA provided the PDS Team who operated the PDS and was responsible for decontaminating potentially contaminated personnel and equipment and verified that decontamination was completed.</p> <p>Other workers may be present at the site, including escorted visitors and other subcontractors. These workers were not be permitted to enter the EZ when the Down Range Team is actively performing intrusive operations.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
5.2.5 Safety Arc Notification Procedures		
<p>The RSA-122 and RSA-183 safety arc areas for CA includes adjacent recreational use areas (i.e., walking paths) and tenant organization operations. The following tenant organization and recreational use areas were notified prior to work to coordinate activities:</p> <ul style="list-style-type: none"> • Installation Emergency Operations Center (IEOC) (256-313-1043) • NASA Environmental Office (256-544-7434) • U.S Army Garrison-Redstone, Installation Ammunition Manager (Hunting Area Coordinator) (256-842-9024) • Redstone Test Center’s Mission Operations Control Center (256-876-4578). <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.2.6 Establishment of Site Facilities		
<p>Established an administrative area and operations yard for RSA-122 and RSA-183. Secondary facilities consisting of PDS were established.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter</p>		
5.2.7 Pre-Operational Surveys and Tabletop Exercise		
<p>A tabletop exercise and pre-operational survey was conducted after the initial mobilization of personnel and equipment. Tabletop exercises were conducted by the CEHNC Design Center with the participation of other Army agencies and local responders involved in and supporting the intrusive site work (e.g., CARA, CCDC Chemical Biological Center, Fire Department, medical, and security).</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter</p>		
5.2.8 Location, Marking, and Surveying of Excavation		
<p>A licensed land surveyor was subcontracted to delineate the project work boundary and mark the excavation areas. The surveyor located these areas based on coordinates provided by APTIM and marked items in the field with highly visible wooden stakes, tape, or pin flags. The proposed excavation areas (Figures 5-3 thru 5-19) and coordinates (Tables 5-1 and 5-2) are provided in the CMI Work Plan.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results

5.2.9 Digging Permit and Utility Marking

<p>APTIM has submitted a JOR that describes the proposed activities and has received RSA approval of the JOR. The JOR information was reviewed by various RSA entities to verify that potential impacts to RSA resources (e.g., natural, cultural, etc.) are properly managed. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>APTIM has coordinated with the appropriate RSA personnel within 14 days of intrusive activities requesting a work order for a digging permit to ensure that any underground utilities in the proposed excavation are properly marked and protected. The procedure requires notification by telephone ([256] 876-9881). Water lines are located within the RSA-122/RSA-183 excavation area. Water lines will be capped and removed, as appropriate, and any remaining electrical service will be removed, if present. No other underground utilities are expected to be identified in the RSA-122/RSA-183 excavation area based on previous intrusive activities. The digging permit must be renewed every 30 days. To avoid temporary shutdown, APTIM made a request for permit extension at least 1½ weeks prior to digging permit expiration for the extension to be granted. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

5.2.10 Site Control

<p>APTIM used temporary construction fencing materials, barricades, and warning tape, as necessary, to delineate the site EZ, contamination reduction zone (CRZ), and site support zone in compliance with the site-specific safety and health plan. APTIM subcontracted with Huntsville Emergency Medical Services (HEMSI) in accordance with the Memorandum of Agreement between RSA and HEMSI to provide on-site medical support during the CWM training and Pre-Operational Survey cycle and anytime intrusive activities are being conducted within areas classified with an “Occasional” CWM probability. APTIM coordinated hospital medical service. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
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5.2.11 Storm Water Erosion and Sediment Controls

<p>BMPs were installed to manage site stormwater in accordance with the BMP layout included in the CMI Work Plan in accordance with the Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (Alabama Soil and Water Conservation Committee, 2018). A NPDES construction permit issued by the ADEM was obtained. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
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Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
Documented inspections of erosion control devices occurred at least weekly and also within 72 hours of any qualifying precipitation event. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Maintenance of BMPs was performed in accordance with the specifications included in the CMI Work Plan and its attachments and documented in the daily reports. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.2.12 Vegetation Clearing		
Vegetation clearance was performed in accordance with the CMI Work Plan, and in coordination with RSA forester for removal of any commercial quality trees. The remaining trees and brush were cleared using manual and mechanical means (e.g., chainsaw, line trimmer, or heavy equipment). Tree clearing was performed outside the active roosting system (April 1 through October 15) to protect the Indiana and the northern long-eared bats. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
The cleared materials were mulched and stockpiled for use during site restoration (if deemed practical). Materials not used for site restoration were disposed at the RSA construction and demolition (C&D) landfill. Material in contact with contaminated site soils (e.g., root wads) were disposed at the C&D landfill, if below CGs, or in the same manner as the surrounding soil. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.2.13 Existing Monitoring Well Protection/Well Closure		
Monitoring wells located within or close to the work zones have been closed in accordance with an ADEM approved well closure plan or conspicuously marked for protection during CMI activities. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Monitoring wells that require closure were closed in accordance with the AEIRG and Army approved standard operating procedures (SOP). Six potential well closures are planned at RSA-183. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
If needed, replacement monitoring wells were installed in accordance with the Alabama Environmental Investigation and Remediation Guidance (AEIRG) and Army approved SOPs. No replacement wells are planned. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.2.14 Stockpile Work Area		
Soil stockpile area(s) are properly lined and constructed per the requirements of the CMI Work Plan RSA-122/RSA-183 CMI Work Plan Chapter 5.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
5.2.15 Air Monitoring		
<p>Air monitoring conducted in areas with elevated CWM probability rating in accordance with CARA's air monitoring plan.</p> <p>For soil samples collected from areas with elevated CWM probability ratings, soil sample splits were also submitted for headspace analysis prior to off-site shipment of the sample.</p> <p>Dust monitoring performed in accordance with the CMI work plan. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.3 Excavation of Contaminated Soil and Removal of Relict Structures		
<p>Removal operations in the "Seldom" CWM probability areas were conducted under CWM Contingency Operations and in accordance with the Low Risk Contingency Plan.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>The limits of the soil excavation area along with the proposed stockpile locations are depicted on Figures 5-20 and 5-21 in the CMI work plan. Excavation will be accomplished according to the Safety and Health Regulations for Excavations (Occupational Safety and Health Administration [OSHA] 29 Code of Federal Regulations Part 1926 Subpart P). Perform the excavation of arsenic-contaminated soils. The proposed excavation areas are shown on Figures 5-3 thru 5-19 of the CMI work plan.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>Excavate soils down to the various depths not to exceed 20 feet below ground surface. Excavation areas as shown on Figures 5-3 through 5-19 extend to the proposed depths as presented in the CMI Work Plan.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>Excavations over 4 feet in depth are shored, sloped, or benched in accordance with OSHA regulations for excavations (29 CFR Part 1926 Subpart P) prior to any personnel entering the excavation. Spoils must be placed a minimum of 3 feet from the edge of the excavation. Soil generated by benching/sloping near the perimeter of the excavations will be segregated and sampled to determine if it may be used as backfill.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>Unless preapproved for direct load prior to disposal at a properly licensed landfill, the excavated material is stockpiled or staged prior to waste characterization sampling and off-site disposal. The excavated material was staged on impervious material such plastic sheeting and covered with waterproof material (i.e., tarpaulin or 10-mil plastic sheeting).</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
The soil surrounding former storage tanks 733C and 733D near Building 5436 at RSA-122 were considered listed for arsenic (P012) and segregated from other site soils for waste characterization and off-site disposal as a hazardous waste. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Asphalt pavement or concrete surfaces (e.g. roadways and sidewalks) will be saw cut prior to excavation. The concrete debris will be transported to the RSA C&D landfill or another appropriately permitted facility for disposal. Asphalt will be transported to the RSA recycling program's designated location for recycling or another appropriately permitted facility for disposal. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Recovered non-soil materials (e.g., piping, concrete, etc.) during relict structure removal were segregated from soil. The dimensions, including final depth, of each excavated area were documented. RSA-122/RSA-183 CMI Plan Section 4.0		
Sumps, pits, trenches, and associated piping underwent headspace analysis and wipe sampling to confirm or deny presence of CA and were disposed of in accordance with this CMI work plan Soils excavated during the removal of sumps, pits, and trenches were stockpiled to allow for characterization sampling and final disposition (i.e., off-site disposal or re-use as backfill following ADEM approval). RSA-122/RSA-183 CMI Plan Section 4.0		
Confirmation sampling performed in accordance with Section 5.5. RSA-122/RSA-183 CMI Plan Section 4.0		
Water was used during excavation and hauling activities to control fugitive dust, as necessary in accordance with the SSHP (Appendix E of the CMI work plan). RSA-122/RSA-183 CMI Plan Section 4.0		
Particulate meters are being used to monitor dust/particulate levels per the CMI Work Plan requirements. RSA-122/RSA-183 CMI Plan Section 4.0		
5.4 On-Site CA Headspace Clearance Analysis, Off-Site CA Analysis, and Off-Site HTW Analysis		
All soil samples collected from areas with CWM probability designations of "Seldom" to "Occasional" at RSA-122 and RSA-183 were split three ways. One aliquot was subjected for CA headspace clearance analysis on site by CARA in accordance with the procedures presented in the air monitoring plan. The second aliquot was held on-site for potential CA analysis at the CA-Capable Laboratory. The third aliquot was held on site for potential laboratory analysis of HTW COPCs at the Environmental Laboratory Accreditation Program (ELAP)-certified subcontracted laboratory. RSA-122/RSA-183 CMI Plan Section 4.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results

5.5 Confirmation Sampling		
<p>Confirmation samples are collected from each sidewall at a maximum spacing of 50 feet between samples with a minimum of one sample per 250 square feet of sidewall area. If the sidewall length is greater than 50 linear feet, then one confirmation sample will be collected for every 50 linear feet of sidewall. Sidewall confirmation samples are collected using five-point composites consisting of aliquots collected from the center of the sidewall plus aliquots from the upper and lower left and right quadrants of the sidewall section (Figure 5-22 in the CMI work plan).</p> <p>Because the depth of the excavation will range from 2 to 20 feet, multiple sidewall samples per 50-foot length of sidewall are planned. Each of the samples at RSA-122/RSA-183 consist of composites collected at specified depth intervals with a sample every 5 feet of depth, minimum to the maximum depth of excavation. Figure 5-23 of the CMI work plan presents the proposed sample intervals (i.e., 0 to 2 feet bgs, 2 to 6 feet bgs, 6 to 11 feet bgs, 11 to 16 feet bgs, and 16 to 20 feet bgs). RSA-122/RSA-183 CMI Plan Section 4.0</p>		
<p>Confirmation samples are collected from the floor of any excavation areas that do not extend to the saturated soil zone. Floor samples are collected with a minimum of one sample per 2500 square feet of floor area (maximum floor areas equal to 50- by 50-foot sections). The multipoint sample include a center point of the 50- by 50-foot floor section plus aliquots from the north, south, east, and west quadrants of the floor area. RSA-122/RSA-183 CMI Plan Section 4.0</p>		
<p>Confirmation samples collected from the excavations are sent to an off-site analytical laboratory for analysis of arsenic on a 5-day turnaround basis. Confirmation samples collected from surface soils (0 to 2 feet bgs) will also be tested for select TAL metals (i.e., aluminum, iron, manganese, and vanadium) in the event a site-to-background evaluation is needed. RSA-122/RSA-183 CMI Plan Section 4.0</p>		
<p>Confirmation samples are collected and submitted for laboratory analysis in accordance with the QAPP provided as Appendix D of the CMI Work Plan or as updated by APTIM. RSA-122/RSA-183 CMI Plan Section 4.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
5.6 Waste Characterization		
Stockpile samples represent a maximum of 200 cubic yards of stockpiled soil. RSA-122/RSA-183 CMI Plan Section 4.0		
Stockpile samples are collected and submitted for laboratory analysis in accordance with the QAPP provided as Appendix D of the CMI Work Plan or as updated by APTIM. RSA-122/RSA-183 CMI Plan Section 4.0		
The soil surrounding former storage tanks 733C and 733D near Building 5436 at RSA-122 considered a listed for arsenic (P012). This soil was tested (200 cubic yard stockpiles) for arsenic and mercury to determine land disposal restriction requirements as well as the status of mercury as a characteristic waste. RSA-122/RSA-183 CMI Plan Section 4.0		
Results compared to the regulatory levels to determine disposition. RSA-122/RSA-183 CMI Plan Section 4.0		
5.7 Soil Stabilization (Contingency)		
With the exception of soils from the RSA-122 former tanks area (considered listed waste), in the event that TCLP results exceed regulatory criteria for characteristic waste, soil stabilization may be implemented as a contingency as discussed in Section 5.7 of the CMI work plan. RSA-122/RSA-183 CMI Plan Section 4.0		
If TCLP results from the waste characterization sampling indicate that a soil pile contains metals in excess of the RCRA regulatory criteria (5 mg/L arsenic), the stockpile was stabilized on site and retested. RSA-122/RSA-183 CMI Plan Section 4.0		
Stabilized soil that meets the RCRA criteria for nonhazardous waste was marked for transportation and disposal. If the soil stockpile fails to meet the criteria, the stockpile was re-treated and/or remixed and resampled. RSA-122/RSA-183 CMI Plan Section 4.0		
5.8 Soil Vapor Installation and Sampling		
Two soil gas samples were collected near monitoring well E-RS1367 for VOCs to support a vapor intrusion evaluation. RSA-122/RSA-183 CMI Plan Section 4.0		
The soil vapor monitoring points installed using the installation of temporary piezometers procedures as documented in SOP No. 17.0, Monitoring Well Installation. Soil vapor samples collected in accordance with SOP No. 25, Soil Vapor Sampling at Temporary Monitoring Stations. RSA-122/RSA-183 CMI Plan Section 4.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
5.9 RDW Management		
Remediation-derived waste (RDW) generated during the CMI activities at RSA-122/RSA-183 is expected to include decontamination fluids and solid materials such as disposable personal protective equipment (PPE). RSA-122/RSA-183 CMI Plan Section 4.0		
APTIM personnel are managing waste in accordance with the CMI Work Plan and the site-specific generator knowledge. RSA-122/RSA-183 CMI Plan Section 4.0		
RDW is containerized, labeled, and stored in accordance with AAC 335-14 as applicable and as described in the Alabama Environmental Investigation and Remediation Guidance (ADEM, 2017). RDW PPE will be disposed as normal household trash. Other types of RDW, if generated, will be managed in accordance with Table 2 of Appendix G of ADEM (2017). RSA-122/RSA-183 CMI Plan Section 4.0		
5.10 Waste Transportation and Disposal		
All soil is transported by a licensed transportation subcontractor. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
APTIM is documenting the quantities of waste loaded onto the dump trucks and facilitate the Bill of Lading or shipping paper documentation for the non-hazardous waste shipments. Any hazardous waste sent offsite for disposal is on a hazardous waste manifest and has a Land Disposal Restriction notification. Transportation complies with all U.S. Department of Transportation regulations. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.11. Posting of Signage		
Signs were posted at entrance locations and access points of the LUC area at RSA-122 and RSA-183 to state that notice to Garrison is required prior to digging along with the contact phone number. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.12. Site Restoration and Demobilization		
5.12.1 Backfilling and Site Restoration		
Soil from the former tank areas within the Plants Area at RSA-122 will be considered listed waste and shall not be considered for reuse on-site. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
Soil removed from the RSA-122/RSA-183 excavations (outside the former tank area in the RSA-122 Plants Areas) will undergo characterization sampling to determine if it is suitable for backfill at specified depth intervals where it does not exceed the respective CG. ADEM approval received for excavated material used for backfilling. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
As needed, additional fill material comes from an RSA borrow area or an approved off-site borrow source. Prior to bringing any fill material on-site, APTIM provided analytical data from samples collected from the proposed source to confirm it is acceptable for use as backfill at the sites. This includes at least one 5-point composite samples analyzed for TCL SVOCs, TCL pesticides/PCBs, and TAL metals and one grab sample analyzed for TCL VOCs from each off-site borrow source, with additional samples being submitted based on changes in material. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Fill material is placed and spread in maximum 12-inch loose lifts and compacted prior to placement of the next lift. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Topsoil placed over the affected areas, if needed. Disturbed areas are seeded and mulched to promote revegetation per the BMP handbook from the ASWCC (included as Appendix G of the CMI Work Plan). RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.12.2 Concrete and Asphalt Repair		
Concrete surfaces that are broken or removed by CMI activities repaired or replaced with like in kind. The concrete was a minimum of 4 inches in thickness with a minimum strength of 3,000 pounds per square inch and have 2 inches of base material. The concrete has wire or other Army-approved reinforcement (e.g., fiber). RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Roadbed (base) material compacted to a minimum of 95 percent of the maximum density for Method A, and to 100 percent of maximum density for Methods C and D (AASHTO T 180).The optimum moisture content and maximum density of fill materials will be determined in accordance with AASHTO T 180/ASTM D 1557 (Modified Proctor). RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Sample collected from borrow material used to backfill roadways and tested for: particle size (ASTM D-422), Atterberg limits (ASTM D 4318), moisture content (ASTM D 2216), soil classification (ASTM D 2487), and moisture/density (compaction) (ASTM D 1557). RSA-122/RSA-183 CMI Work Plan Chapter 5.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
The in-place density and moisture content of fill material will be determined per lift for every 10,000 square feet of material placed. When a failing test is encountered, an additional test shall be performed near the same location. If the re-test fails, the nonconforming area of the lift shall be repaired and tested again. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.12.3 Equipment Decontamination		
An area is designated within the boundary of the work areas at RSA-122/RSA-183, adjacent to vehicular ingress and egress areas, for equipment decontamination as shown on Figure 5-20 and 5-21 of the CMI work plan. A decontamination pad is constructed consisting of a soil-bermed area covered with multiple layers of plastic sheeting where gross contamination was removed from equipment. The decontamination pad contains a sump area or low area where wash water from pressure washing was pumped into a portable holding tank. Decontamination fluids are sampled for arsenic. Decontamination fluids are managed as discussed in Section 5.12.3 of the CMI work plan. Settled soil within the sump is disposed of with the excavated materials. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
Nondisposable sampling equipment is decontaminated prior to beginning work at the site and prior to the collection of individual samples to prevent cross contamination and maintain the integrity of the environmental samples collected. All sampling equipment and in situ enhanced bioremediation injection equipment will be decontaminated in accordance with procedures specified in the RSA installation-wide quality assurance program plan (HGL, 2019), which was prepared in accordance with Appendix E of the AEIRG (ADEM, 2017). RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.12.4 Temporary Storm Water, Erosion Control, and Sediment Control Removal		
After vegetation is established, temporary erosion and sediment controls are removed and disposed of off site at the RSA construction debris landfill or with the RDW from the excavation. The silt fence will remain in place until after the vegetation is established. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.12.5 Demobilization		
Personnel, equipment, and subcontractors were demobilized from the project site after completion of remedial activities. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
5.13 On-Site UXO Construction Support		
No on-site UXO construction support was required but CA monitoring performed in areas with an elevated CWM probability rating.		
5.14 Corrective Measure Implementation Reporting		
<p>Upon completion of the approved CMI, a final report will be prepared and submitted to ADEM in accordance with Section VIII.D of the Permit and AEIRG (ADEM, 2017). The CMI report will include the following:</p> <ul style="list-style-type: none"> a) A description of activities completed b) As-built construction drawings presenting the final limits of soil excavations at each site and the locations of confirmation samples c) Waste manifests indicating the handling of the excavated material that has been shipped off site to a certified disposal facility d) Monitoring data (soil, air, dust, and water) collected for any reason during the construction period for the purposes of monitoring potential for human and ecological exposure e) Certification, prepared in accordance with AAC 335-13-8-02 (2)(d) by RSA and a registered professional engineer (State of Alabama), that the corrective measures required by the Permit are complete f) Appendices consisting of site photographs, analytical reports, data validation documentation, records of well closures (if performed), and waste manifests <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
<p>If completion of the CMI requires more than 180 days, the Army will submit quarterly CMI progress reports in accordance with Section VIII.D.1 of the Permit.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.15 Land-Use Controls		
<p>LUCs were implemented in accordance with Alabama AAC r 335-5 (ADEM, 2019) to ensure that future activities conducted at RSA-122 and RSA-183 remain protective of human health.</p> <p>RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
Draft LUCS provided for ADEM review and approval. ADEM notified within 10 days after uses inconsistent with the LUCs are identified. Additionally, notice regarding any observed changes in use, identified proposed changes in use, applications for building permits, or proposals for site work inconsistent with the LUCs are provided to ADEM as part of the annual monitoring report. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.15.1 Implementation of Land-Use Controls		
Signs installed at access points to the site stating that prior to any intrusive activities that the Garrison be contacted for approval. The contact number was provided on each sign. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
The following institutional controls implemented: <ul style="list-style-type: none"> LUCs, in accordance with AAC r. 335-5-1-.02(3) (ADEM, 2019), developed to restrict land use at RSA-122 and RSA-183; and require inspection, maintenance, and repair of signage as well as on-site UXO construction support for access and intrusive site activities dependent upon location and activity. The draft LUCs included in the CMI report for these sites. If the property is ever transferred out of federal control, the LUCs will be contained in an environmental covenant to be recorded on the property at the time of transfer. Incorporation of the LUCs into the RSA Real Property Master Plan as required by AAC r. 335-5-1-.02(3)(a)(1)(iv) (ADEM, 2019). Recording of the LUCs in the land records for the property, as required by AAC 335-5-1-.02(3)(a)(1)(iv) (ADEM, 2019). RSA-122/RSA-183 CMI Work Plan Chapter 5.0		
5.15.2 Survey Plat		
RSA submitted a survey plat indicating the locations and dimensions of the land area included in the LUC boundary at RSA-122 and RSA-183 in accordance with Section VIII.B.5 of the Permit. The survey plat submitted to the Madison County Probate Judge's Office and to ADEM as part of the LUCs provided in the CMI report. This survey plat was prepared and certified by a professional land surveyor registered in the state of Alabama and contains a prominently displayed note stating RSA's obligations to limit property to the specified restricted uses. RSA-122/RSA-183 CMI Work Plan Chapter 5.0		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results
5.16 Ongoing Obligations and Responsibilities		
5.16.1 Inspections and Repairs		
<p>Inspections will be conducted and documented on an annual basis as follows:</p> <ul style="list-style-type: none"> • Inspection of the signage at the site to determine whether signs are still present and legible. • Repairs/replacements to the warning signs shall be completed on an as-needed basis to maintain access control and shall be initiated within 10 days of identifying the need for such repairs. • Ensure that site use remains for industrial use only and requirement for Garrison notification prior to digging is enforced. <p>ADEM will be notified within 10 days after uses inconsistent with the LUCs were identified, if applicable. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.16.2 Reporting		
<p>An annual inspection report will be submitted to ADEM. This report will document the inspections and identify the status of the LUCs and how any deficiencies or inconsistent uses have been addressed. The annual evaluation will address whether the use restrictions and controls referenced previously were communicated in the deed(s), the owners and state and local agencies were notified of the use restrictions and controls affecting the property and use of the property has conformed with such restrictions and controls. The report will include a copy of the inspection forms, any violations noted, and recommendations for any changes to the LUCs. Annual monitoring of signage will be conducted for visibility, maintenance, and repairs, as necessary, to ensure their long-term effectiveness and protection. RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		
5.16.3 Notices		
<p>Notice shall be provided to ADEM in the annual monitoring report regarding any observed changes in use, any identified proposed changes in use, applications for building permits, or proposals for any site work inconsistent with the LUCs. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, in accordance with ADEM Memorandum #304 as cited in RSA's Permit. If the property is transferred to an owner that is not the federal government, an environmental covenant will be executed and filed at that time in accordance with AAC r. 335-5-1-.02(3)(a)1.(i) (ADEM, 2019). RSA-122/RSA-183 CMI Work Plan Chapter 5.0</p>		

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist		
Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results

Results:

- S = Satisfactory**
- I = Incomplete at the time of audit or surveillance. To be verified at a later date**
- O = Observation**
- F = Finding**
- NA = Not Applicable**

Comments: _____

QA Manager: _____

Date: _____

Location: Redstone Arsenal, Madison County, Alabama		
Inspection Type: Field Inspection Checklist Subject: RSA-122/RSA-183 CMI Work Plan		
Descriptor / Requirements	Comments	Results

References:

Alabama Department of Environmental Management (ADEM), 2017a, *Alabama Environmental Investigation and Remediation Guidance, Revision 4.0*, February.

Alabama Soil and Water Conservation Committee (ASWCC), 2018, *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas*, July.

HydroGeoLogic, Inc. (HGL), 2019, *Final Revision 4 Installation-Wide Quality Assurance Program Plan, U.S. Army Garrison – Redstone, Madison County, Alabama*, December.

U.S. Army Corps of Engineers Huntsville Center (CEHNC), 2019, Final Installation-Wide Accident Prevention Plan, Redstone Arsenal, Madison County, Alabama, prepared for U.S. Army Engineering and Support Center-Huntsville, October.

APPENDIX I
LAND-USE CONTROLS

Appendix I

**Draft
Land-Use Controls for
RSA-122, Dismantled Lewisite Manufacturing Plant Sites,
Operable Unit 06 and
RSA-183, Former Lewisite Manufacturing Plants 1 and 2
Sites,
Operable Unit 05
U.S. Army Garrison-Redstone
Madison County, Alabama
EPA ID No. AL7 210 020 742**

Prepared for:

**Mission & Installation Contracting Command
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**Task Order 0003
Contract Number W91ZLK-13-D-0018
Project Number 501021**

May 2022

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11.0 Introduction

The U.S. Army Garrison–Redstone is completing studies of the environmental impact of known or suspected waste sites at Redstone Arsenal (RSA), Madison County, Alabama, under the management of the U.S. Army Environmental Command. This draft Land-Use Controls (LUC) document is prepared for RSA-122, Dismantled Lewisite Manufacturing Plant Sites, Operable Unit (OU) 06 and RSA-183, Former Lewisite Manufacturing Plants 1 and 2 Sites, OU- 05, in accordance with Alabama Administrative Code (AAC) r. 335-5-1. The draft LUCs will be finalized based on comments provided by the Alabama Department of Environmental Management (ADEM). Upon ADEM approval of the corrective measures implementation (CMI) completion report for the corrective measure performed, LUCs will be developed in accordance with Alabama Administrative Code r. 335-5-1-.02(3) (ADEM, 2019) that will restrict land use at RSA-122/RSA-183 and require inspection, maintenance, and repair of signage. The LUCs are described in the CMI completion report for these sites. Further, the LUCs will be implemented through incorporation in the base master plan and, if the property is transferred out of federal control, the LUCs will be contained in an environmental covenant to be recorded on the property at the time of transfer.

The remainder of this document provides descriptions of site background; a description of the corrective measures completed; the need for LUCs; the use restrictions to be applied; and the Army’s ongoing obligations and responsibility for inspections, repairs, monitoring, and notices.

12.0 Site Background

12.1 Site History and Conditions

RSA is located in the southwestern portion of Madison County, which is in the northern portion of Alabama (Figure 1-1 in the CMI work plan). RSA is a U.S. Army facility that encompasses approximately 38,300 acres of land, all of which are either owned or controlled by the Army. Development within RSA has largely centered on the historical production (and later disposal) of conventional and chemical munitions and, more recently, development and testing of missiles and rockets. These processes have produced chemical wastes since operations began in the early 1940s.

RSA-122. RSA-122 is located in the east-central portion of RSA, just west of Patton Road, north of Viper Road, south of Metrology Drive, and east of Jungerman Road on approximately 42 acres (Figure 1-1 in the CMI work plan). The site lies above the RSA-147 groundwater unit.

RSA-122 was subdivided into four subareas (RSA-122S, RSA-E, RSA-N, and RSA-NW) for the purposes of investigation and evaluation of risk and the subareas are summarized as follows:

- **Lewisite Plants 3 and 4 (RSA-122S).** Located within RSA-122S, these two plants operated from May 1943 until October 30, 1943. Lewisite was manufactured by reacting arsenic trichloride with acetylene in the presence of mercuric chloride as a catalyst. Further distillation of the crude lewisite resulted in distilled lewisite, which was then placed into 2,700-pound containers for transport by rail to munitions filling buildings elsewhere on RSA. Following deactivation of lewisite production, former processing buildings within Plants 3 and 4 were demolished or transferred to other uses but underground chemical lines and associated pits and sumps were abandoned in place. Other subsurface features include blowcase pits, collecting pits, scrubber pits, and trenches; lewisite is potentially present within and around these subsurface features. Also included in RSA-122S is the unnamed north-south-trending perennial creek. This creek flows through RSA-122 and ultimately discharges to Huntsville Spring Branch.
- **Lewisite Plants 5 and 6 (RSA-122E).** Located within RSA-122E, these two plants were reportedly never brought online but Plant 5 was believed to have been used to decontaminate 1-ton containers after World War II. Following deactivation of lewisite production, former processing buildings within Plants 5 and 6 were demolished but underground chemical lines were abandoned in place. Other subsurface features include blowcase pits, collecting pits, scrubber pits, and trenches. Although Plants 5 and 6 were reportedly never brought online for production, lewisite is potentially present within and around these subsurface features.
- **SM and AT Manufacturing Areas (RSA-122NW).** Located within RSA-122NW, both SM and AT were materials used in lewisite production.
- **Open Stockpiling Area (RSA-N).** The types of materials stored in RSA-122N are not known but believed to be related to the manufacturing processes on site. Located with RSA-122N and partially within RSA-126 to the north of RSA-122.

Additional areas within the RSA-122 site boundary include:

- **Capped Arsenic Waste Disposal Ponds (RSA-056 and RSA-139).** Located within RSA-122, these two unlined disposal ponds received waste from the lewisite production at Plants 3 and 4; these sites have an ADEM-approved CMIP for cap maintenance and long-term groundwater monitoring (APTIM, 2018).
- **NFA Sites (RSA-033, RSA-043, RSA-044, and RSA-127).** These four sites each have ADEM concurrence for no further action (ADEM, 2021).

Although RSA-057 lies outside of RSA-122 to the east, this arsenic waste disposal pond was built to receive wastes from Plants 5 and 6. Since these two plants were reportedly never brought online, RSA-057 received wastes from Plants 3 and 4 during peak periods.

The current unexploded ordnance (UXO) probability for RSA-122 is “None.” The current chemical warfare materiel (CWM) probability is “Occasional” within 0.1 acre of former Plants 3 and 4, “Seldom” within 1.5 acres of former Plants 3 and 4 and a section of piping at former Plant 6, and “Unlikely” for the remaining 40.4 acres. The Army will reduce or eliminate the risks from potential exposure to chemical agent (CA) through removal of relict structures and land-use controls (LUC).

RSA-183. RSA-183 is located in the central portion of RSA. The site consists of an area formerly occupied by Lewisite Plants 1 and 2 (Plants Area) (35 acres) and a large sinkhole area (Sinkhole Area) (122 acres) south of the former plants. The Plants Area is located west of Toftoy Thruway and north of Digney Road. The Sinkhole Area extends south of the Plants Area along Toftoy Thruway approximately to Refuge Road. Plants 1 and 2 operated from November 1942 until October 1943. Following deactivation of lewisite production, former processing buildings within Plants 3 and 4 were demolished but underground chemical lines were abandoned in place. Other subsurface features include blowcase pits, collecting pits, scrubber pits, and trenches; lewisite is potentially present within and around these subsurface features.

Two SWMUs lie within the Plants Area: RSA-049 (capped arsenic waste ponds) which requires LUC monitoring and MSFC-052e (portion of industrial sewer) which has ADEM concurrence for no further action.

The current UXO probability is “None.” The current CWM probability is “Occasional” for two small tracts of the Plants Area (0.1 acre), “Seldom” within the areas surrounding the “occasional” areas, and “Unlikely” for the remaining 155.7 acres. The Army will reduce or eliminate the risks from potential exposure to CA through removal of relict structures and land-use controls (LUC).

12.2 Summary of Need for Action

The RSA-122 and RSA-183 remedial investigation reports defined the nature and extent of contamination and evaluated potential risks to current and future receptors. Following arsenic-contaminated soil removal from the sites and updated risk evaluations were performed for RSA-122 and RSA-183. The updated risk assessment for RSA-122 concluded that exposure to soil at RSA-122 still poses unacceptable risks to the groundskeeper in the RSA-122 Northwest and South Areas from exposure to arsenic, and to the hypothetical resident receptor in all areas, primarily from arsenic but also from benzo(a)pyrene in RSA-122NW only. Exposure to chemicals present in soil poses no unacceptable chronic risks to construction worker receptors. Arsenic in soil at RSA-183 still potentially poses unacceptable risks to the groundskeeper and to the hypothetical resident receptor. A vapor intrusion evaluation showed the estimated indoor air

concentrations of trichloroethene and carbon tetrachloride exceeded the indoor air target screening levels based on current groundwater concentrations. Therefore, the potential risks to indoor workers or residents from exposure to indoor air contamination from vapor intrusion is still present at RSA-183. Consequently, the collection of soil gas data was recommended for RSA-183 during corrective measures to further evaluate the potential for vapor intrusion.

Approximately 0.1 acre of RSA-122 has a CWM probability designation of “Occasional” and 1.5 acres have a CWM probability designation of “Seldom.” None of the cleanup actions to date have permanently reduced the chemical warfare materiel probabilities. The UXO probability for RSA-122 is “None.”

The Plants Area of RSA-183 currently includes two small tracts, totaling 0.1 acre, that have a CWM probability designation of “Occasional” and areas surrounding the “Occasional” areas that have a CWM probability designation of “Seldom,” which total approximately 1.2 acres. None of the cleanup actions to date have reduced the CWM probabilities. The UXO probability for RSA-183 is “None.”

Since the CWM probability designation “Occasional” an “Seldom” the sites cannot be released for unrestricted use. LUCs will be implemented to prevent direct contact with potential CA. Actions for the excavation, removal and decontamination of CA-rated structures associated with the manufacture and disposal of CA contaminated material (CACM) are recommended, thereby allowing for a recommendation for a permanent reduction in the site CA probability designation. Following removal of the relict structures during the corrective measures the Army may prepare a probability assessment that reduces the CWM probability ratings for RSA-122 and RSA-183 that may result in the elimination of a LUC requiring UXO support during intrusive activities. The revised probability assessment will be included as an appendix to the CMI report, if performed.

12.3 Corrective Measure Activities

The CMI Work Plan for RSA-122 and RSA-183 describes the correct measures necessary to support the removal of arsenic-contaminated soil that poses unacceptable risk to the current and future receptors and land-use controls (LUC) for potential CWM at the site.

12.4 Reason for the Land-Use Controls

The corrective measures planned for arsenic-contaminated soil at RSA-122 and RSA-183 will restore the surface soil (0 to 2 feet deep) to conditions suitable for unrestricted construction activities and thus, allow unrestricted use by all current and future receptors. However, LUCs are needed for the 2 to 6 feet depth to prevent residential site use. LUCs are needed for soil depths

greater than 6 feet deep to protect the groundskeeper and resident receptors. In addition, the potential for CA exposure due to the “Occasional” or “Seldom” CWM probabilities will not allow the sites to meet unrestricted access conditions in accordance with AAC r. 335-5 (ADEM, 2019). Therefore, LUCs will be implemented for the potential presence of CA until the probability designation is reduced to “None.”. Figures 1 and 2 show the proposed LUC boundaries and sign locations around the site boundary for RSA-122 and RSA-183, respectively. The LUCs will require site controls for on-call UXO support during intrusive site activities for potential CA.

A survey plat indicating the dimensions of the LUC areas at RSA-122 and RSA-183 will be prepared and certified by a professional land surveyor registered in the state of Alabama in accordance with AAC r. 335-5. The survey plat will be prepared and certified by a licensed surveyor in the state of Alabama. The survey plat will be submitted to the local authority with jurisdiction over local land use and to ADEM as part of the final LUCs. The survey plat will be maintained until the Army can demonstrate with ADEM’s approval that levels of hazardous constituents within the contaminated media are within appropriate limits for unrestricted use.

13.0 Use Restrictions

The use restrictions for RSA-122 and RSA-183 are as follows:

- Ensure that the sites remain for industrial use only
- On-call or on-site UXO construction support is required for onsite intrusive activities in remaining areas with a CWM Probability Designation of “Seldom” or “Occasional”. This support is not required for UXO concerns based on UXO probabilities of “None” at both sites, but based on UXO personnel training to identify and address potential encounters of CA.
- Signs installed at the boundary of the LUC areas shown on Figures 1 and 2 will be maintained to warn that digging is prohibited without approval of the Chief, Installation Restoration Branch, within the Environmental Management Division.
- The Army shall monitor and report on the presence and effectiveness of LUCs and controls annually.
- The LUCs shall be maintained until the arsenic and benzo(a)pyrene concentrations (RSA-122NW only) at RSA-122 and arsenic concentrations at RSA-183 are within appropriate limits for unrestricted use, and a permit modification, in accordance with Permit Condition I.J, to remove the LUCs is submitted to ADEM for review and approval.

14.0 Ongoing Obligations and Responsibilities

14.1 Inspections and Repairs

Inspections will be conducted and documented on an annual basis, as described below:

- Inspection of the signage around the LUC boundary to determine whether signs are still present and legible.
- Inspections to identify undocumented activities inconsistent with the LUCs are not occurring at the sites.
- Repairs/replacements to the warning signs shall be completed on an as-needed basis to maintain access control and shall be initiated within 10 days of identifying the need for such repair/replacement.
- Ensure that site use remains for industrial use only and requirement for on-site UXO construction support based solely on current CA probability ratings is enforced.

ADEM will be notified within 10 days after uses inconsistent with the LUCs are identified.

14.2 Reporting

An annual monitoring report will be submitted to ADEM, either as a separate report or as part of another report for the site or combined with other site annual monitoring reports submitted to ADEM. This report documents the inspections and maintenance of signage and site conditions and use changes. It also provides a discussion of any maintenance activities conducted, verifies the status of the LUCs, and documents how any deficiencies or inconsistent uses have been addressed. The annual evaluation addresses whether the use restrictions and controls referenced previously were communicated in the deed(s), the owners and state and local agencies were notified of the use restrictions and controls affecting the property and use of the property has conformed with such restrictions and controls. The report includes copies of the inspection forms, any violations noted and procedures followed to address the violations, and recommendations for any changes to the LUCs.

14.3 Notices

Notice regarding any observed changes in use, identified proposed changes in use, applications for building demolition or permit, or proposals for site work inconsistent with the LUCs will be provided to ADEM as part of the annual monitoring report. RSA shall notify ADEM at least 90 days in advance of the proposed closing on any sale or other conveyance of any interest in any or all of the Property, as recommended in ADEM Memorandum #304.

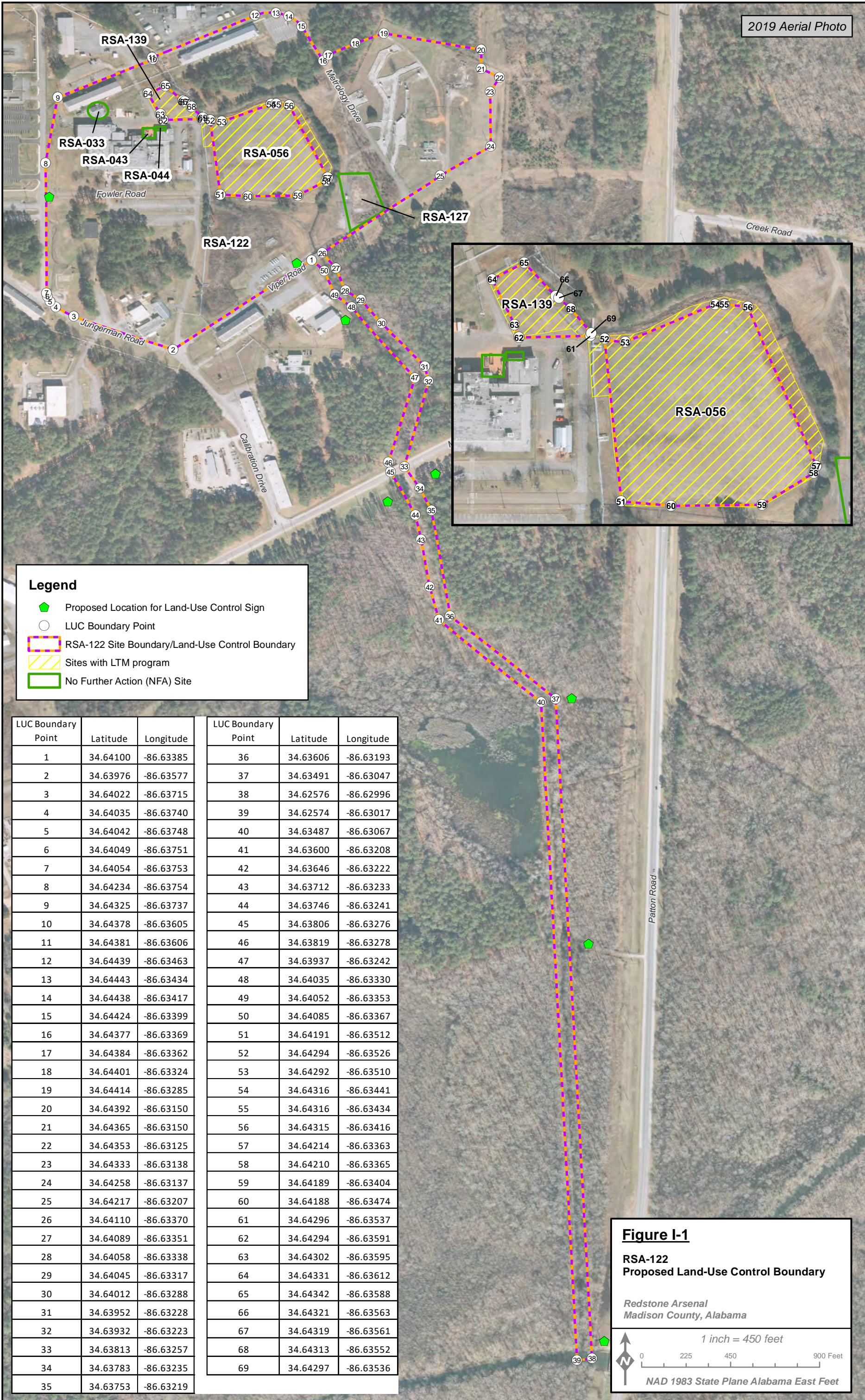
15.0 References

Alabama Department of Environmental Management (ADEM), 2021, *Redstone Arsenal's Alabama Hazardous Wastes Management and Minimization Act Hazardous Waste Storage Facility, Thermal Treatment, Solid Waste Management Unit Corrective Action Permit*, July 19.

Alabama Department of Environmental Management (ADEM), 2019, *Alabama Department of Environmental Management Land Divisions - Uniform Environmental Covenants Program Administrative Code, Chapter 335-5-1*, Amended August 20, 2019, effective October 4, 2019.

Aptim Federal Services, LLC (APTIM), 2018, *Corrective Measures Implementation Work Plan, RSA-056, Closed Arsenic Waste Ponds (South) Area U and RSA-139, Closed Arsenic Waste Pond (North) Area U, Operable Unit 06, Redstone Arsenal, Madison County, Alabama*, June.

FIGURES



Legend

- ◆ Proposed Location for Land-Use Control Sign
- LUC Boundary Point
- RSA-122 Site Boundary/Land-Use Control Boundary
- Sites with LTM program
- No Further Action (NFA) Site

LUC Boundary Point	Latitude	Longitude	LUC Boundary Point	Latitude	Longitude
1	34.64100	-86.63385	36	34.63606	-86.63193
2	34.63976	-86.63577	37	34.63491	-86.63047
3	34.64022	-86.63715	38	34.62576	-86.62996
4	34.64035	-86.63740	39	34.62574	-86.63017
5	34.64042	-86.63748	40	34.63487	-86.63067
6	34.64049	-86.63751	41	34.63600	-86.63208
7	34.64054	-86.63753	42	34.63646	-86.63222
8	34.64234	-86.63754	43	34.63712	-86.63233
9	34.64325	-86.63737	44	34.63746	-86.63241
10	34.64378	-86.63605	45	34.63806	-86.63276
11	34.64381	-86.63606	46	34.63819	-86.63278
12	34.64439	-86.63463	47	34.63937	-86.63242
13	34.64443	-86.63434	48	34.64035	-86.63330
14	34.64438	-86.63417	49	34.64052	-86.63353
15	34.64424	-86.63399	50	34.64085	-86.63367
16	34.64377	-86.63369	51	34.64191	-86.63512
17	34.64384	-86.63362	52	34.64294	-86.63526
18	34.64401	-86.63324	53	34.64292	-86.63510
19	34.64414	-86.63285	54	34.64316	-86.63441
20	34.64392	-86.63150	55	34.64316	-86.63434
21	34.64365	-86.63150	56	34.64315	-86.63416
22	34.64353	-86.63125	57	34.64214	-86.63363
23	34.64333	-86.63138	58	34.64210	-86.63365
24	34.64258	-86.63137	59	34.64189	-86.63404
25	34.64217	-86.63207	60	34.64188	-86.63474
26	34.64110	-86.63370	61	34.64296	-86.63537
27	34.64089	-86.63351	62	34.64294	-86.63591
28	34.64058	-86.63338	63	34.64302	-86.63595
29	34.64045	-86.63317	64	34.64331	-86.63612
30	34.64012	-86.63288	65	34.64342	-86.63588
31	34.63952	-86.63228	66	34.64321	-86.63563
32	34.63932	-86.63223	67	34.64319	-86.63561
33	34.63813	-86.63257	68	34.64313	-86.63552
34	34.63783	-86.63235	69	34.64297	-86.63536
35	34.63753	-86.63219			

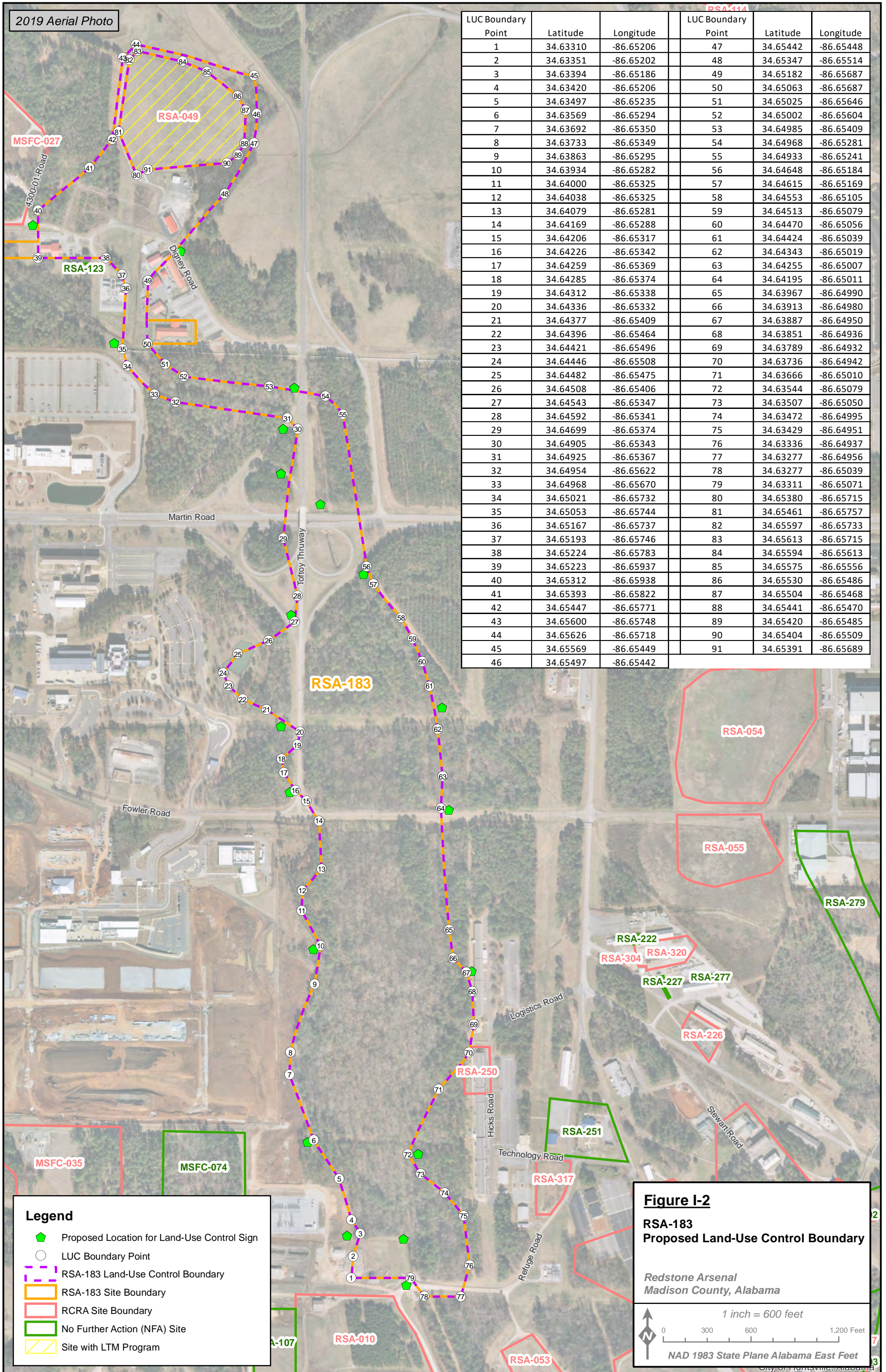
Figure I-1
RSA-122
Proposed Land-Use Control Boundary

Redstone Arsenal
Madison County, Alabama

1 inch = 450 feet

0 225 450 900 Feet

NAD 1983 State Plane Alabama East Feet



LUC Boundary Point	Latitude	Longitude	LUC Boundary Point	Latitude	Longitude
1	34.63310	-86.65206	47	34.65442	-86.65448
2	34.63351	-86.65202	48	34.65347	-86.65514
3	34.63394	-86.65186	49	34.65182	-86.65687
4	34.63420	-86.65206	50	34.65063	-86.65687
5	34.63497	-86.65235	51	34.65025	-86.65646
6	34.63569	-86.65294	52	34.65002	-86.65604
7	34.63692	-86.65350	53	34.64985	-86.65409
8	34.63733	-86.65349	54	34.64968	-86.65281
9	34.63863	-86.65295	55	34.64933	-86.65241
10	34.63934	-86.65282	56	34.64648	-86.65184
11	34.64000	-86.65325	57	34.64615	-86.65169
12	34.64038	-86.65325	58	34.64553	-86.65105
13	34.64079	-86.65281	59	34.64513	-86.65079
14	34.64169	-86.65288	60	34.64470	-86.65056
15	34.64206	-86.65317	61	34.64424	-86.65039
16	34.64226	-86.65342	62	34.64343	-86.65019
17	34.64259	-86.65369	63	34.64255	-86.65007
18	34.64285	-86.65374	64	34.64195	-86.65011
19	34.64312	-86.65338	65	34.63967	-86.64990
20	34.64336	-86.65332	66	34.63913	-86.64980
21	34.64377	-86.65409	67	34.63887	-86.64950
22	34.64396	-86.65464	68	34.63851	-86.64936
23	34.64421	-86.65496	69	34.63789	-86.64932
24	34.64446	-86.65508	70	34.63736	-86.64942
25	34.64482	-86.65475	71	34.63666	-86.65010
26	34.64508	-86.65406	72	34.63544	-86.65079
27	34.64543	-86.65347	73	34.63507	-86.65050
28	34.64592	-86.65341	74	34.63472	-86.64995
29	34.64699	-86.65374	75	34.63429	-86.64951
30	34.64905	-86.65343	76	34.63336	-86.64937
31	34.64925	-86.65367	77	34.63277	-86.64956
32	34.64954	-86.65622	78	34.63277	-86.65039
33	34.64968	-86.65670	79	34.63311	-86.65071
34	34.65021	-86.65732	80	34.65380	-86.65715
35	34.65053	-86.65744	81	34.65461	-86.65757
36	34.65167	-86.65737	82	34.65597	-86.65733
37	34.65193	-86.65746	83	34.65613	-86.65715
38	34.65224	-86.65783	84	34.65594	-86.65613
39	34.65223	-86.65937	85	34.65575	-86.65556
40	34.65312	-86.65938	86	34.65530	-86.65486
41	34.65393	-86.65822	87	34.65504	-86.65468
42	34.65447	-86.65771	88	34.65441	-86.65470
43	34.65600	-86.65748	89	34.65420	-86.65485
44	34.65626	-86.65718	90	34.65404	-86.65509
45	34.65569	-86.65449	91	34.65391	-86.65689
46	34.65497	-86.65442			

Figure I-2
RSA-183
Proposed Land-Use Control Boundary
 Redstone Arsenal
 Madison County, Alabama
 1 inch = 600 feet
 0 300 600 1,200 Feet
 NAD 1983 State Plane Alabama East Feet

Legend

- Proposed Location for Land-Use Control Sign
- LUC Boundary Point
- RSA-183 Land-Use Control Boundary
- RSA-183 Site Boundary
- RCRA Site Boundary
- No Further Action (NFA) Site
- Site with LTM Program

APPENDIX J

RSA-122 UPDATED HUMAN HEALTH RISK ASSESSMENT

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J1.0 Introduction

The Phase II remedial investigation (RI) for RSA-122, Dismantled Lewisite Manufacturing Plant Sites, was completed in 2007 (Shaw Environmental, Inc. [Shaw], 2007a). Following the RI, the final feasibility study report (Shaw, 2009a), the statement of basis/proposed plan (Shaw, 2009b), and the record of decision (ROD) report (Shaw, 2009c) were completed. As summarized in the ROD (Shaw, 2009b), the Army completed separate baseline human health risk assessments (BHHRAs) and screening-level ecological risk assessments (SLERA) for each of five geographical areas at RSA-122 in the RI to evaluate potential current and future effects of exposure to chemicals on the human health and environment (Shaw, 2007a). An indoor air vapor intrusion evaluation was also included as part of the human health risk assessment for RSA-122. The five major geographical areas at RSA-122 include the following:

- 122-Northwest (Former Arsenic Trichloride Manufacturing Plant)
- 122-North (Former Stockpiling Area)
- 122-East (Former Lewisite Plants 5 and 6 Area)
- 122-South (Former Lewisite Plants 3 and 4 Area)
- 122-Creek (North-South Trending Unnamed Creek).

As summarized in the ROD (Shaw, 2009c), these risk assessments supported the need for the Preferred Alternative for RSA-122 soil, which is excavation of arsenic- and mercury-contaminated soil, treatment (if required), backfill with clean soil, off-site disposal, short-term sediment and groundwater monitoring, and institutional controls (Alternative 2). A summary of the aspects of the BHHRAs that supported the determination that this remedial action is necessary to ensure the protection of human health and the environment is presented in Section 2.7.1 of the ROD, followed by a summary of the SLERAs in Section 2.7.2 of the ROD. The complete BHHRAs and SLERAs can be found in Chapter 7.0 and Appendices F (BHHRAs) and G (SLERA) of the RI report for RSA-122 (Shaw, 2007a).

The ROD concluded that arsenic and mercury in soil were identified as chemicals of concern (COC) warranting action based on the results of the BHHRA. Chemicals in groundwater do pose a human health threat, but these chemicals will be addressed during the RSA-147 corrective measures. Risks to an indoor worker in eight existing buildings and a hypothetical future residential receptor from the vapor intrusion pathway do not exceed acceptable levels.

The conclusions of the BHHRA (Section 7.1.7 of the RI report [Shaw, 2007a]), most notably for the northwest area, were that polynuclear aromatic hydrocarbons (PAH) in total soil contribute to

cancer risks exceeding the risk management range for some industrial and residential receptors. It was also concluded that PAHs were also a potential concern for residential receptors in other areas evaluated in the BHHRA.

Since the 2007 RI was completed, a number of assumptions and values for exposure and toxicity factors have been updated by U.S. Environmental Protection Agency (EPA) guidance documents. Most importantly, a reevaluation of the benzo(a)pyrene toxicity by EPA has resulted in a change to the toxicity values recommended for this compound (EPA, 2017). Because the toxicity values for the other PAHs identified in the Resource Conservation and Recovery Act facility investigation are all a function of the toxicity of benzo(a)pyrene, this change potentially affects the conclusions of RSA-122 RI. To determine the potential impacts of PAH risks based on current site concentrations in total soil, updated receptor exposure factors, and the updated PAH toxicity data, PAHs were evaluated in the updated risk assessment.

In 2010, the Army excavated surface and near-surface soils within areas of RSA-122 in accordance with the remedial action work plan (CB&I Federal Services LLC, 2013). This appendix provides an abbreviated, revised Alabama Risk-Based Corrective Action (ARBCA) evaluation using revised, post-corrective measures soil exposure point concentration, the updated toxicity values (EPA, 2019a,b), and exposure assumptions (EPA, 2011; 2014) to support the conclusion that additional corrective measures are needed at some parts of RSA-122 in order to meet the corrective measure objective to eliminate or reduce risks to industrial receptors at this site. Note that the EPA (2014) exposure factors are derived from EPA's updated *Exposure Factors Handbook* (EPA, 2011). These factors are consistent with those used in the development of EPA regional screening levels (RSL) (EPA, 2019a) except as noted in the *Installation-Wide Work Plan* and supplemental appendices (IT Corporation, 2002; Shaw, 2010). In order to present this information, the text of the original ARBCA (summarized in the ROD) is discussed in Chapter J2.0. The general approach and the nature of the tabulated information for the ARBCA were not changed from those used in the 2007 BHHRA. Chapter J3.0 presents revised tables and describes the factors and assumptions that changed from the 2007 RI report. Chapter J4.0 provides revised ARBCA results based on the incorporation of new factors and exposure assumptions, and Chapter J5.0 provides the revised ARBCA conclusions.

J2.0 ARBCA Evaluation from Record of Decision

As summarized in the ROD (Shaw, 2009b), arsenic and mercury in surface media at RSA-122 were both identified as COCs and chemicals of potential ecological concern warranting action based on the results of the conservative exposure scenarios in the BHHRA and SLERA. Chemicals (primarily volatile organic compounds) in groundwater may pose a substantial human health threat if exposure should occur, an activity precluded by Redstone Arsenal's (RSA) installation-wide groundwater interim ROD (Shaw, 2007b). Risks posed by chemicals present in groundwater will be addressed as part of the RSA-147 groundwater unit corrective measures. Contaminants in site soil posing an ongoing threat of sourcing to groundwater at RSA-122 include primarily arsenic and mercury. However, elevated concentrations of mercury commonly coexist with the elevated arsenic, forming a single target for remediation.

Results of the human health risk assessment indicate that arsenic in soil is associated with unacceptable cancer risk and noncancer risk to both industrial and residential receptors. Mercury in soil is associated with unacceptable noncancer risk to a residential receptor. Although the ecological risk assessment indicated potential adverse effects to individual ecological receptors from exposure to arsenic and mercury concentrations found at some locations within RSA-122, the limited habitat and limited distribution of the contamination at the site would limit the number of individuals potentially impacted resulting in negligible impacts to ecological populations.

Soils at RSA-122 have been found to pose unacceptable risks to human health or the environment. Based on these results, it was the Army's judgment that a remedial action was necessary at RSA-122 to ensure protection of public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

J3.0 Revised ARBCA Evaluation

The revised ARBCA evaluation is presented in this chapter. COCs evaluated were limited to arsenic and the carcinogenic PAHs, based on results from the ROD.

Changes Reflected in the Revised ARBCA Tables. Since completion of the ROD in 2009, there have been a number of changes in risk assessment guidance and recommended assumptions that have affected ARBCA evaluations done for RSA. These changes fall into three categories: changes in exposure assumptions, changes in physical property assumptions, and changes in toxicity values. In addition, soil removal actions have been completed at the site.

Exposure Assumptions. Between October 2010 and July 2011, a remedial action was conducted to address soils in areas of RSA-122 with elevated arsenic and collocated mercury contamination for surface and near-surface soils. The soil excavation and disposal activity performed has a direct impact on the representative concentrations (RC) utilized in estimating site risks and hazards because soil from areas with higher concentrations has been removed and confirmation sample results are available for use in determining RCs. RCs were calculated using EPA's ProUCL program, and calculations are presented in an electronic file attachment to this appendix. The revised ARBCA evaluation for RSA-122 includes RCs estimated to reflect current site conditions. Sample lists for surface and subsurface soil based on current site conditions are provided in Table J-1. Revised RCs are presented in Table J-2.

In 2011, EPA issued an updated version of the *Exposure Factors Handbook* (EPA, 2011). As noted in the Alabama Department of Environmental Management (ADEM) 2017 ARBCA guidance, EPA (2011) should be used to develop exposure factors (ADEM, 2017). In 2014, EPA, using the results from EPA (2011), issued a directive updating the standard default exposure factors to be used in the Comprehensive Environmental Response, Compensation and Liability Act RI and feasibility study process (EPA, 2014). In the introduction to this directive, EPA also intends for this guidance to be used by other cleanup programs under federal control or oversight such as Resource Conservation and Recovery Act corrective actions (EPA, 2014). This guidance replaced various previous guidance documents on the topic. The assumptions in this directive have been adopted for use in RSA ARBCA evaluations. The selection of exposure factors is consistent with ADEM and EPA guidance (ADEM, 2017; EPA, 2011). The exposure assumptions used in the revised ARBCA evaluation for RSA-122 are summarized in Table J-3.

Physical Properties. Physical properties used in the ARBCA evaluation were historically taken from various sources. Now, however, the relevant properties are included in EPA's RSL

tables (EPA, 2019a), and these properties are adopted for use in ARBCA evaluations at RSA in order to provide a consistent source of this information. The physical properties used in the revised ARBCA evaluation for RSA-122 are summarized in Table J-4.

Toxicity Values. Toxicity values are continually being updated over time by EPA and others. Since 2013, significant changes have occurred that affect the results of the RSA-122 ARBCA evaluation.

EPA (2017) issued an updated toxicological review of benzo(a)pyrene under the Integrated Risk Information System (IRIS) program in January 2017. This review updates the previous IRIS assessment of benzo(a)pyrene, which has been used since 1987. It is based on studies conducted after 1987 and the 2011 recommendations for the improvement of IRIS toxicity assessments.

Benzo(a)pyrene is now identified as “carcinogenic to humans” rather than the 1987 “probable human carcinogen” weight-of-evidence classification. For purposes of the toxicity assessment, benzo(a)pyrene continues to be used as an index chemical from which the cancer slope factors (SF) and inhalation unit risk factors (URF) are estimated for six other high-priority carcinogenic PAHs. EPA (2019a,b) provides a verified oral cancer SF for benzo(a)pyrene of 1.0E+0 per milligrams per kilogram per day (mg/kg-day) and a verified inhalation URF of 6.0E-4 per microgram per cubic meter ($\mu\text{g}/\text{m}^3$). Note that an inhalation SF derived from the URF, as shown in Table J-5, is used in this evaluation. Oral cancer SFs and inhalation URFs for the remaining six EPA carcinogenic PAHs (benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) have traditionally been derived by applying the EPA (1993) toxicity equivalency factors (TEF) to the verified oral cancer SF and inhalation URF for benzo(a)pyrene. The TEFs from EPA (1993) have not changed.

EPA (2019a) has adopted the verified oral cancer SF of 1.0E+0 per mg/kg-day and the inhalation URF of 6.0E-4 for benzo(a)pyrene and applied the EPA (1993) TEFs to develop oral cancer SFs and inhalation URFs and RSLs for the other six EPA carcinogenic PAHs. The EPA (1993) TEFs and the resulting oral and inhalation potency factors are compiled below.

Compound	EPA (1993) Toxicity Equivalency Factor	Oral Cancer Slope Factor (mg/kg-day) ⁻¹	Inhalation Cancer Unit Risk Factor ($\mu\text{g}/\text{m}^3$) ⁻¹
Benzo(a)anthracene	0.1	1.0E-1	6.0E-5
Benzo(a)pyrene	1	1.0E+0 ^a	6.0E-4 ^a
Benzo(b)fluoranthene	0.1	1.0E-1	6.0E-5
Benzo(k)fluoranthene	0.01	1.0E-2	6.0E-6
Chrysene	0.001	1.0E-3	6.0E-7
Dibenz(a,h)anthracene	1	1.0E+0	6.0E-4
Indeno(1,2,3-cd)pyrene	0.1	1.0E-1	6.0E-5

^a Verified value on IRIS (EPA, 2019b).

These oral and inhalation cancer potency factors are reflected in Table J-5 and have been adopted for use in the revised ARBCA risk assessment for RSA-122.

In addition, IRIS (EPA, 2019b) now includes a reference dose (RfD) ($3.0E-4$ mg/kg-day) and a reference concentration (RfC) ($2.0E-6$ milligrams per cubic meter) for benzo(a)pyrene. Note that an inhalation RfD derived from the RfC, as shown in Table J-5, is used in this evaluation. Previously, there were no noncancer toxicity values available for this compound. Both of these toxicity values are based on developmental effects. It is noted that no RfDs or RfCs are derived for the other six PAHs above because the TEFs do not apply to noncancer effects.

J4.0 Revised ARBCA Results

The conclusions and recommendations of the ROD (Shaw, 2009b) indicated that a cleanup action was necessary for arsenic contamination in soil. This conclusion was based on the results of the BHHRA that was included in the RI report (Shaw, 2007a). The previous sections of this appendix describe changes that were made in the ARBCA to reflect more recent values and assumptions. The RCs used in the revised evaluation were also updated to reflect current site concentrations following the 2010 remedial action.

In addition to arsenic, several PAHs were included in the revised ARBCA evaluation since they were potentially minor contributors to site risks since toxicity data updates have occurred since the RI was completed. The resulting revised risk estimates are provided in Tables J-6 through J-21 and summarized in Tables J-22 and J-23. The risk summary table (Table J-22) presents individual excess lifetime cancer (IELCR) risk results in scientific notation and hazard index (HI) results in general numerical format rounded. The following table presents a summary of the cancer risks and noncancer hazards.

Summary of Cancer Risks and Noncancer Hazards, RSA-122			
Area	Groundskeeper ILCR/HI	Construction Worker ILCR/HI	Resident ILCR/HI
RSA-122 East	4.67E-06/0.0291	3.66E-07/0.0477	2.27E-05/0.439
RSA-122 North	2.54E-06/0.0158	1.99E-07/0.0176	1.22E-05/0.235
RSA-122 Northwest	3.81E-05/0.236	2.96E-06/0.314	1.83E-04/3.51
RSA-122 South	1.89E-05/0.117	1.47E-06/0.137	9.06E-05/1.74

ILCR – Incremental lifetime cancer risk.

Bold text indicates values exceed the respective ILCR or HI limits.

The table shows that soil exposures to the construction worker result in cumulative cancer risks and HIs less than the ADEM limits of 1.0E-5 and 1.0 at all site areas. However, soil exposures to the groundskeeper result in cumulative cancer risks greater than the ADEM limits of 1.0E-5 for the RSA-122 Northwest and South Areas, and the soil exposures to the hypothetical resident result in cumulative cancer risks greater than the ADEM limits of 1.0E-5 for all RSA-122 areas evaluated. In addition, noncancer HI values for the hypothetical resident are greater than the ADEM limits of 1.0 for the RSA-122 Northwest and South Areas. As a result, arsenic is identified as a relevant COC (those COCs that contribute significantly to cumulative risk or hazard) for soil (Table J-23). For residential receptors in the Northwest Area, benzo(a)pyrene represents an additional relevant COC.

Groundwater risks were evaluated in the RI (Shaw, 2007a). The conclusions for groundwater are unchanged from the RI report.

J5.0 Identifying COCs Requiring Action and Estimating Risk-Based Target Levels

The first step in Risk-Based Target Level (RBTL) development is identification of the COCs requiring action. The term is used to distinguish potentially actionable COCs identified by the Risk Management (RM)-2 evaluation from the chemicals identified as COCs by the preliminary screening level (PSL) evaluation. The latter includes all chemicals carried forward from the PSL evaluation tier to the RM-2 tier.

EPA (2018) requires COC identification at the end of a baseline risk assessment. Cancer-based COCs requiring action are those that contribute significantly (i.e., an IELCR greater than $1E-6$) to cumulative risk greater than the ADEM (2017) trigger level of $1E-5$. Non-cancer-based COCs requiring action are those that contribute significantly (i.e., an HI greater than 0.1) to cumulative HI or target organ HI greater than the threshold level of 1.0.

The EPA (2018) protocol can be revised slightly to identify COCs requiring action to comply with ADEM (2017) guidance at the end of the RM-2 evaluation as follows:

- Cancer-based COCs requiring action are those for which the total IELCR summed across exposure pathways for that chemical within a given medium exceeds $1E-6$ and the cumulative IELCR summed across chemicals and relevant source media for that receptor exceeds the ADEM cumulative risk trigger of $1E-5$.
- Non-cancer-based COCs requiring action are limited to those for which the HI for a given target organ exceeds 0.1 and the total HI for that target organ summed across chemicals and relevant source media for that receptor exceeds the threshold level of 1.0.
- Individual chemicals are identified as COCs requiring action if their RCs exceed their applicable or relevant and appropriate requirements.

RBTLs are risk-based concentrations that reflect the exposure and toxicity assumptions applied in the cumulative risk assessment. Consequently, the RBTLs are specific to site, source medium, receptor, and chemical. The exception is groundwater, for which the maximum contaminant levels, when available, are generally adopted as cleanup levels in place of the RBTLs.

RBTLs for cancer-based COCs requiring action for a given receptor, site, and medium are calculated by the following equation:

$$RBTL_{coc} = \frac{RC_{coc} \times TR}{IELCR_{COC}} \quad \text{Eq. B.1}$$

where:

- RBTL_{coc} = risk-based target level for a given COC requiring action, receptor, and source medium (calculated)
- RC_{coc} = representative concentration of the COC requiring action in the given medium
- TR = target risk level (1 x 10⁻⁶ as per ARBCA guidance, but see below)
- IELCR_{coc} = total individual excess lifetime cancer risk for a given COC requiring action, for a given receptor added across all exposure routes for a given source medium.

RBTLs for non-cancer-based COCs requiring action are estimated as follows:

$$RBTL_{coc} = \frac{RC_{coc} \times THI}{HI_{COC}} \quad \text{Eq. B.2}$$

where:

- RBTL_{coc} = risk-based target level for a given COC requiring action, receptor, and source medium (calculated)
- RC_{coc} = source-term concentration of the COC requiring action in the given medium
- THI = target hazard index (but see below)
- HI_{coc} = total hazard index for a given COC requiring action, for a given receptor added across all exposure routes for given source medium.

Concentration units are not provided in Equations B.1 and B.2; the RBTL units are the same as the concentration units of the RC.

No single TR can be selected universally as the basis for the RBTLs for all cancer-based COCs requiring action for a given receptor. The only ADEM (2017) requirement is that cumulative cancer risk does not exceed the trigger level of 1E-5. Therefore, the TR for any given COC may depend upon the number of COCs requiring action, their spatial distribution, the total IELCR estimated for each, and the ease with which individual chemicals may be remediated. The cancer risk of 1E-6 is selected as the TR at the Resource Conservation and Recovery Act facility investigation stage of site management. Refinement of the TR, if possible, is done at the corrective measures development stage of site management.

Similarly, no single THI can be selected universally as the basis for the RBTLs for all non-cancer-based COCs requiring action for a given receptor. ADEM (2017) specifies that the total cumulative HI of the RBTLs should not exceed the threshold level of 1.0. Consistent with the

approved installation-wide work plan, EPA (1989) and ADEM (2017) guidance, the foregoing is interpreted to mean that the cumulative HI of the RBTLs with a common mechanism of toxicity should not exceed 1.0. Consideration of target organs is generally adopted as a surrogate for the mechanism of toxicity. Therefore, when only one noncancer COC requiring action is identified for a given receptor and target organ, the THI can be set at 1. However, when multiple COCs requiring action with a common target organ are identified, the THI may be less than 1, and RBTLs based on multiple THIs are possible. It may be possible to estimate higher RBTLs depending on the number of multiple COCs requiring action, their spatial distribution, the total HI estimated for each, and the ease with which individual chemicals may be remediated. Selection of the final RBTLs under these conditions is done at the corrective measures development stage of site management.

Risk-Based Target Levels for Total Soil

The cumulative IELCR for exposure to total soils alone exceeded $1.00E-05$ for the hypothetical residents in all areas (Tables J-24 through J-27). The cumulative IELCR for exposure to total soils alone exceeded the ADEM trigger level of $1.00E-05$ for the commercial worker in RSA-122NW and RSA-122S, but not in RSA-122E or RSA-122N. Therefore, RBTLs were calculated for arsenic in all areas for residential receptors and in RSA-122NW and RSA-122S for the commercial worker. In addition, for residential receptors, RBTLs were calculated for benzo(a)pyrene in RSA-122NW. The cumulative IELCR for exposure to total soils alone posed no unacceptable risks to construction worker receptors.

The cumulative HI for exposure to soils alone exceeded an HI of 1.0 for residential receptors in RSA-122NW and RSA-122S. For all other receptors and locations, the cumulative HI for exposure to soils alone did not exceed the threshold level of 1 for any receptor (Tables J-24 through J-27).

J6.0 Revised ARBCA Conclusions

Based on the results of the revised ARBCA evaluation, exposure to soil at RSA-122 still poses unacceptable risks to the groundskeeper in the RSA-122 Northwest and South Areas from exposure to arsenic, and to the hypothetical resident receptor in all areas, primarily from arsenic but also from benzo(a)pyrene in RSA-122NW only. Exposure to chemicals present in soil poses no unacceptable chronic risks to construction worker receptors.

J7.0 References

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TABLES

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
EAST						
122HPCSS2-1	PFG6028	3/22/2011	0 - 1	TAL Metals	122E	Shaw
122HPCSSA-1	PFG6032	3/16/2011	0 - 1	TAL Metals	122E	Shaw
122HPCSSY-1	PFG6033	3/21/2011	0 - 1	TAL Metals	122E	Shaw
ESE-SB56-2	SB56-2(S1*109)	5/18/1994	0 - 1	SVOCs	122E	IT Corp
F122CRK-SB02	FG01125	8/12/2004	0 - 1	TAL Metals, Pests	122E	Shaw
F122CRK-SB03	FG01128	8/12/2004	0 - 1	TAL Metals, Pests	122E	Shaw
F122-CS22	PFG0024	6/25/2010	0 - 1	TAL Metals	122E	Shaw
F122E-HP01	FW0001	5/18/2000	0 - 1	TAL Metals	122E	Shaw
F122E-HP02	FW0004	5/18/2000	0 - 1	TAL Metals	122E	IT Corp
F122E-HP03	FW0007	5/18/2000	0 - 1	Cyanide, TAL Metals, Pests, PCBs, SVOCs, VOCs	122E	IT Corp
F122E-HP04	FW0011	5/17/2000	0 - 1	TAL Metals	122E	IT Corp
F122E-HP07	FW0016	5/19/2000	0 - 1	TAL Metals	122E	IT Corp
F122E-HP08	FW0020	5/19/2000	0 - 1	TAL Metals	122E	IT Corp
F122E-PZ40	FG0893	7/16/2004	0 - 1	TAL Metals	122E	Shaw
F122E-PZ41	FG0917	7/21/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-PZ42	FG0929	7/19/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-PZ43	FG0945	7/21/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-PZ44	FG0951	7/19/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-PZ45	FG0956	7/20/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-SB01	FG0860	7/15/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB02	FG0866	7/15/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB03	FG0872	7/15/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB04	FG0877	7/16/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB05	FG0883	7/16/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB06	FG0888	7/16/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB08	FG0900	7/19/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB09	FG0906	7/19/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB10	FG0912	7/19/2004	0 - 1	TAL Metals	122E	Shaw
F122E-SB14	FG0934	7/21/2004	0 - 1	TAL Metals, SVOCs, VOCs	122E	Shaw
F122E-SB15	FG0940	7/21/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-SB19	FG0961	7/20/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-SB20	FG0967	7/20/2004	0 - 1	TAL Metals, VOCs	122E	Shaw
F122E-SB21	FG0972	7/20/2004	0 - 1	TAL Metals, SVOCs, VOCs	122E	Shaw
F122E-SB22	FG0978	7/19/2004	0 - 1	TAL Metals	122E	Shaw
F127-CS21	W01191	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS22	W01192	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS22	W01215	3/16/2005	0 - 1	TAL Metals	122E	Shaw
F127-CS22A	W01216	3/16/2005	0 - 1	TAL Metals	122E	Shaw
F127-CS23	W01193	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS24	W01194	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS25	W01195	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS26	W01197	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS27	W01198	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS28	W01199	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS29	W01200	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS30	W01201	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS31	W01202	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-CS32	W01203	12/3/2004	0 - 0.5	TAL Metals	122E	Shaw
F127-PZ05	W01107	1/6/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-PZ06	W01112	1/6/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-PZ07	W01116	1/6/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-PZ08	W01121	1/6/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB10	W0369	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SB14	W0379	8/21/2001	0 - 2	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SB27	W0950	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB28	W0955	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB29	W0959	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB30	W0964	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB31	W0968	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB32	W0972	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB33	W0976	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB34	W0980	1/8/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB35	W0985	1/9/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB36	W0989	1/13/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB37	W0993	1/13/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB38	W0998	1/7/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB39	W01002	1/12/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB40	W01007	1/7/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB41	W01011	1/7/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB44	W01022	1/12/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB46	W01031	1/14/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB47	W01035	1/14/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB48	W01040	1/14/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB49	W01045	1/13/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB51	W01054	1/13/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB52	W01058	1/13/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB53	W01063	1/9/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB54	W01067	1/9/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB56	W01074	1/9/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F127-SB57	W01078	1/7/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB58	W01082	1/14/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB59	W01087	1/13/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB60	W01091	1/14/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB61	W01092	1/14/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB62	W01093	1/14/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SB65	W01103	1/12/2004	0 - 1	TAL Metals, Hex Chrom, VOCs	122E	Shaw
F127-SS11	W0334	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SS12	W0335	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SS13	W0336	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SS14	W0337	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SS15	W0338	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SS16	W0339	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F127-SS17	W0341	8/22/2001	0 - 1	Cyanide, RCRA Metals, SVOCs, VOCs	122E	IT Corp
F56-RS518	F56-RS518(S1*104)	5/24/1994	0 - 2	RCRA Metals, VOCs	122E	IT Corp
F56-SB05	FF0010	6/26/1999	0 - 1	Metals ^a , PAH, Pest (DDE and DDT)	122E	IT Corp
FHP003	F0015	1/23/1997	0 - 2	Arsenic, PAH	122E	IT Corp
FSS006	F0008	1/21/1997	0 - 0.5	Arsenic, PAH	122E	IT Corp
ESE-SB56-2	SB56-2(S1*110)	5/18/1994	5 - 6	RCRA Metals, VOCs	RSA-122E	IT Corp
F122CRK-SB02	FG01126	8/12/2004	2 - 4	TAL Metals, Pests	RSA-122E	Shaw
F122CRK-SB02	FG01127	8/12/2004	6 - 8	TAL Metals, Pests	RSA-122E	Shaw
F122CRK-SB03	FG01129	8/12/2004	2 - 4	TAL Metals, Pests	RSA-122E	Shaw
F122CRK-SB03	FG01130	8/12/2004	6 - 8	TAL Metals, Pests	RSA-122E	Shaw
F122CRK-SB18	FG01169	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122E	Shaw
F122CRK-SB18	FG01171	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122E	Shaw
F122E-HP01	FW0002	5/18/2000	6 - 8	TAL Metals, VOCs	RSA-122E	IT Corp
F122E-HP02	FW0005	5/18/2000	4 - 6	TAL Metals, VOCs	RSA-122E	IT Corp
F122E-HP03	FW0009	5/18/2000	5 - 6	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122E	IT Corp
F122E-HP04	FW0012	5/17/2000	5 - 6	TAL Metals, VOCs	RSA-122E	IT Corp
F122E-HP06	FW0015	5/22/2000	4 - 6	TAL Metals, VOCs	RSA-122E	IT Corp
F122E-HP07	FW0017	5/19/2000	5 - 6	TAL Metals, VOCs	RSA-122E	IT Corp
F122E-HP08	FW0021	5/19/2000	4 - 6	TAL Metals, VOCs	RSA-122E	IT Corp
F122E-PZ40	FG0895	7/16/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-PZ40	FG0896	7/16/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-PZ41	FG0919	7/21/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ41	FG0920	7/21/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ42	FG0930	7/19/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ42	FG0931	7/19/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ43	FG0947	7/21/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ43	FG0948	7/21/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ44	FG0952	7/19/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ44	FG0953	7/19/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ45	FG0957	7/20/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-PZ45	FG0958	7/20/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB01	FG0861	7/15/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB01	FG0862	7/15/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB02	FG0867	7/15/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB02	FG0868	7/15/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB03	FG0873	7/15/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB03	FG0874	7/15/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB04	FG0878	7/16/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB04	FG0879	7/16/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB05	FG0884	7/16/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB05	FG0885	7/16/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB06	FG0889	7/16/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB06	FG0890	7/16/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB08	FG0901	7/19/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB08	FG0902	7/19/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB09	FG0907	7/19/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB09	FG0908	7/19/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB10	FG0913	7/19/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB10	FG0914	7/19/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122E-SB12	FG0924	7/21/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB12	FG0926	7/21/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB14	FG0935	7/21/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122E	Shaw
F122E-SB14	FG0936	7/21/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122E	Shaw
F122E-SB15	FG0941	7/21/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB15	FG0942	7/21/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB19	FG0962	7/20/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB19	FG0963	7/20/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB20	FG0968	7/20/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB20	FG0969	7/20/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB21	FG0973	7/20/2004	2 - 4	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB21	FG0975	7/20/2004	6 - 8	TAL Metals, VOCs	RSA-122E	Shaw
F122E-SB22	FG0979	7/19/2004	2 - 4	TAL Metals	RSA-122E	Shaw
F122E-SB22	FG0981	7/19/2004	6 - 8	TAL Metals	RSA-122E	Shaw
F122S-HP41	FG0073	5/22/2000	2 - 4	TAL Metals, VOCs	RSA-122E	IT Corp
F122S-HP41	FG0074	5/22/2000	8 - 10	TAL Metals, VOCs	RSA-122E	IT Corp
F127-PL01	W0083	8/28/2000	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp
F127-PL02	W0084	8/28/2000	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F127-PL03	W0085	8/28/2000	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp
F127-PL04	W0086	8/28/2000	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp
F127-PL05	W0087	8/28/2000	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp
F127-PL06	W0088	8/28/2000	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp
F127-SB38	W01000	1/7/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB39	W01003	1/12/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB39	W01004	1/12/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB40	W01008	1/7/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB40	W01009	1/7/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB41	W01012	1/7/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB41	W01013	1/7/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB42	W01015	1/12/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB42	W01016	1/12/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB43	W01019	1/12/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB43	W01020	1/12/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB44	W01023	1/12/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB44	W01024	1/12/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB45	W01026	1/12/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB45	W01027	1/12/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB45	W01029	1/12/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB46	W01032	1/14/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB46	W01033	1/14/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB47	W01036	1/14/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB47	W01037	1/14/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB48	W01042	1/14/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB48	W01043	1/14/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB49	W01046	1/13/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB49	W01047	1/13/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB50	W01049	1/13/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB50	W01050	1/13/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB50	W01052	1/13/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB50	W01053	1/13/2004	8 - 10	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB51	W01055	1/13/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB51	W01056	1/13/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB52	W01059	1/13/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB52	W01060	1/13/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB53	W01064	1/9/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB53	W01065	1/9/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB54	W01068	1/9/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB54	W01069	1/9/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB55	W01071	1/12/2004	8 - 10	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB56	W01075	1/9/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB56	W01076	1/9/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB57	W01079	1/7/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB57	W01080	1/7/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB58	W01083	1/14/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB58	W01085	1/14/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB59	W01088	1/13/2004	2 - 4	TAL Metals, Hex Chrom	RSA-122E	Shaw
F127-SB59	W01089	1/13/2004	4 - 6	TAL Metals, Hex Chrom	RSA-122E	Shaw
F127-SB63	W01095	1/14/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB63	W01096	1/14/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB63	W01097	1/14/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB64	W01099	1/14/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB64	W01100	1/14/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB64	W01101	1/14/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB65	W01104	1/12/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB65	W01105	1/12/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ05	W01108	1/6/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ05	W01109	1/6/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ06	W01113	1/6/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ06	W01114	1/6/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ07	W01118	1/6/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ07	W01119	1/6/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ08	W01122	1/6/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-PZ08	W01123	1/6/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB02	W0342	8/21/2001	4 - 6	RCRA Metals, SVOCs, VOCs	RSA-122E	IT Corp
F127-SB02	W0343	8/21/2001	8 - 10	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB02	W0344	8/21/2001	10 - 12	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB03	W0346	8/21/2001	4 - 6	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB03	W0347	8/21/2001	8 - 10	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB03	W0348	8/21/2001	10 - 12	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB04	W0350	8/22/2001	4 - 6	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB04	W0353	8/22/2001	8 - 10	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB05	W0356	8/22/2001	4 - 6	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB05	W0357	8/22/2001	8 - 10	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB05	W0358	8/22/2001	10 - 12	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB06	W0360	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB06	W0361	8/22/2001	4 - 6	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB07	W0362	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB07	W0363	8/22/2001	4.5 - 6.5	RCRA Metals, SVOCs, VOCs	RSA-122E	

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F127-SB08	W0364	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB08	W0366	8/22/2001	4 - 6	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB09	W0367	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB09	W0368	8/22/2001	4 - 6	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB10	W0370	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB10	W0371	8/22/2001	6 - 8	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB11	W0372	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB11	W0373	8/22/2001	6 - 8	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB12	W0374	8/20/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB13	W0378	8/20/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB15	W0381	8/21/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB16	W0383	8/21/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB17	W0385	8/21/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB18	W0387	8/21/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB19	W0390	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB20	W0392	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB21	W0394	8/22/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB22	W0396	8/21/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB22	W0397	8/21/2001	10 - 11	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB23	W0398	8/21/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB23	W0400	8/21/2001	10 - 11	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB24	W0401	8/21/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB25	W0403	8/20/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-SB26	W0405	8/20/2001	2 - 4	RCRA Metals, SVOCs, VOCs	RSA-122E	
F127-CS01	W0484	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS02	W0485	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS03	W0486	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS04	W0487	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS05	W0488	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS06	W0489	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS07	W0491	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS08	W0492	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS09	W0493	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS10	W0494	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS11	W0495	10/8/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS12	W0496	10/9/2002	3 - 5	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS13	W0497	10/9/2002	2 - 2	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS14	W0498	10/9/2002	2.5 - 2.5	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS15	W0499	10/9/2002	2.5 - 2.5	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS16	W0500	10/9/2002	10 - 10	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS17	W0502	10/9/2002	10 - 10	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS18	W0503	10/9/2002	10 - 10	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS19	W0504	10/9/2002	10 - 10	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-CS20	W0505	10/9/2002	10 - 10	TAL Metals, SVOCs, VOCs	RSA-122E	
F127-SB27	W0951	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB27	W0953	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB28	W0956	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB28	W0957	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB29	W0960	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB29	W0961	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB29	W0963	1/8/2004	6 - 8	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB30	W0965	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB30	W0966	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB31	W0969	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB31	W0970	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB32	W0973	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB32	W0974	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB33	W0977	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB33	W0978	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB34	W0981	1/8/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB34	W0982	1/8/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB35	W0986	1/9/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB35	W0987	1/9/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB36	W0990	1/13/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB36	W0991	1/13/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB37	W0994	1/13/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB37	W0996	1/13/2004	4 - 6	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F127-SB38	W0999	1/7/2004	2 - 4	TAL Metals, Hex Chrom, VOCs	RSA-122E	Shaw
F56-RS517	F56-RS517(S1*103)	5/24/1994	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp
F56-RS518	F56-RS518(S1*249)	5/24/1994	2 - 4	RCRA Metals, VOCs	RSA-122E	IT Corp
F56-RS520	F56-RS520(S1*106)	5/20/1994	4 - 6	RCRA Metals, VOCs	RSA-122E	IT Corp
F56-SB05	FF0011	6/26/1999	2 - 4	Arsenic	RSA-122E	IT Corp
NORTH AREA						
122A3PCS27-1	PFG6002	5/19/2011	0 - 1	TAL Metals	RSA-122N	Shaw
ESE-SB122-1	SB122-1(S1*125)	5/20/1994	0 - 1	RCRA Metals, SVOCs, VOCs	RSA-122N	IT Corp
ESE-SB122-1	SB122-1(S1*126)	5/20/1994	0 - 1	RCRA Metals, VOCs	RSA-122N	IT Corp
ESE-SB122-2	SB122-2(S1*127)	5/19/1994	0 - 1	RCRA Metals, Pests, PCBs, SVOCs, VOCs	RSA-122N	IT Corp
ESE-SB122-2	SB122-2(S1*128)	5/19/1994	0 - 1	RCRA Metals, VOCs	RSA-122N	IT Corp
ESE-SS122-1	SS122-1(S1*141)	5/21/1994	0 - 1	RCRA Metals, SVOCs, VOCs	RSA-122N	IT Corp
ESE-SS122-2	SS122-2(S1*142)	5/21/1994	0 - 1	RCRA Metals, Pests, PCBs, SVOCs, VOCs	RSA-122N	IT Corp

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122N-PZ25	FG01231	8/12/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-PZ26	FG01066	8/9/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-PZ27	FG01082	8/10/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB01	FG0984	8/9/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB02	FG0989	8/9/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB03	FG0995	8/11/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB04	FG01000	8/11/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB05	FG01005	8/10/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB06	FG01011	8/10/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB07	FG01016	8/11/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB09	FG01237	8/11/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB10	FG01242	8/11/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB11	FG01038	8/11/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB12	FG01043	8/10/2004	0 - 1	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB13	FG01048	8/11/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB14	FG01054	8/11/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB15	FG01060	8/10/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB17	FG01071	8/11/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB18	FG01076	8/9/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB20	FG01087	8/9/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB21	FG01093	8/10/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB22	FG01098	8/11/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB23	FG01104	8/10/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB24	FG01110	8/10/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F122N-SB25	FG01115	8/10/2004	0 - 1	TAL Metals	RSA-122N	Shaw
F139-SB01	FH0001	6/10/1999	0 - 1	TAL Metals, VOCs	RSA-122N	IT Corp
GHP001	G0009	1/21/1997	0 - 2	TAL Metals, VOCs	RSA-122N	IT Corp
GHP002	G0012	1/21/1997	0 - 2	TAL Metals, VOCs	RSA-122N	IT Corp
GSS001	G0001	1/15/1997	0 - 0.5	TAL Metals, VOCs	RSA-122N	IT Corp
GSS002	G0002	1/15/1997	0 - 0.5	TAL Metals, VOCs	RSA-122N	IT Corp
HSS003	H0003	1/21/1997	0 - 0.5	VOCs	RSA-122N	IT Corp
F122N-SB04	FG01001	8/11/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB04	FG01002	8/11/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB05	FG01006	8/10/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB05	FG01007	8/10/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB06	FG01012	8/10/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB06	FG01013	8/10/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB07	FG01017	8/11/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB07	FG01018	8/11/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB10	FG01034	8/11/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB11	FG01039	8/11/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB11	FG01040	8/11/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB12	FG01044	8/10/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB12	FG01045	8/10/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB13	FG01049	8/11/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB13	FG01051	8/11/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB14	FG01055	8/11/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB14	FG01057	8/11/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB15	FG01061	8/10/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB15	FG01062	8/10/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-PZ26	FG01067	8/9/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-PZ26	FG01068	8/9/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB17	FG01072	8/11/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB17	FG01073	8/11/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB18	FG01077	8/9/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB18	FG01079	8/9/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-PZ27	FG01083	8/10/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-PZ27	FG01084	8/10/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB20	FG01088	8/9/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB20	FG01089	8/9/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB21	FG01094	8/10/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB21	FG01095	8/10/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB22	FG01099	8/11/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB22	FG01100	8/11/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB23	FG01105	8/10/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB23	FG01106	8/10/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB24	FG01111	8/10/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB24	FG01112	8/10/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB25	FG01116	8/10/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122N-SB25	FG01118	8/10/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122CRK-SB12	FG01156	8/17/2004	1 - 2	TAL Metals, Pests	RSA-122N	Shaw
F122CRK-SB12	FG01157	8/17/2004	4 - 6	TAL Metals, Pests	RSA-122N	Shaw
F122CRK-SB13	FG01159	8/17/2004	1 - 2	TAL Metals, Pests	RSA-122N	Shaw
F122CRK-SB13	FG01160	8/17/2004	4 - 6	TAL Metals, Pests	RSA-122N	Shaw
F122CRK-SB14	FG01161	8/17/2004	1 - 2	TAL Metals, Pests	RSA-122N	Shaw
F122CRK-SB14	FG01162	8/17/2004	4 - 6	TAL Metals, Pests	RSA-122N	Shaw
F122N-PZ25	FG01232	8/12/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-PZ25	FG01234	8/12/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB09	FG01238	8/11/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB09	FG01239	8/11/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122N-SB10	FG01243	8/11/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122NW-PZ14	FG0208	7/7/2004	2 - 4	TAL Metals	RSA-122N	Shaw
F122NW-PZ14	FG0209	7/7/2004	6 - 8	TAL Metals	RSA-122N	Shaw
F122N-SB01	FG0985	8/9/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB01	FG0986	8/9/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB02	FG0990	8/9/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB02	FG0991	8/9/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB03	FG0996	8/11/2004	2 - 4	TAL Metals, VOCs	RSA-122N	Shaw
F122N-SB03	FG0997	8/11/2004	6 - 8	TAL Metals, VOCs	RSA-122N	Shaw
F139-SB01	FH0003	6/10/1999	2 - 4	Arsenic	RSA-122N	IT Corp
GHP001	G0010	1/21/1997	8 - 10	Arsenic, VOCs	RSA-122N	IT Corp
GHP002	G0013	1/21/1997	8 - 10	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122N	IT Corp
NORTHWEST AREA						
122A2PCS28-1	PFG6003	4/9/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122A2PCS29-1	PFG6004	4/9/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122A3PCS25-1	PFG6005	5/19/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122BPCS33-1	PFG6006	5/21/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122BPCS56-1	PFG6007	6/4/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122BPCS59-1	PFG6008	6/4/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122BPCS66-1	PFG6009	6/20/2011	1 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122BPCS79-1	PFG6010	6/20/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122BPCSXX-1	PFG6011	6/18/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122DPCS61-1	PFG6012	6/14/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
122DPCS63-1	PFG6013	6/15/2011	0 - 1	Arsenic, Mercury	RSA-122NW	Shaw
ESE-BG122-S1	BG122-S1(S1*143)	6/27/1994	0 - 1	RCRA Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
ESE-SB139-1	SB139-1(S1*148)	6/7/1994	0 - 1	RCRA Metals, SVOCs, VOCs	RSA-122NW	IT Corp
ESE-SB139-1	SB139-1(S1*149)	6/7/1994	0 - 1	RCRA Metals, VOCs	RSA-122NW	IT Corp
ESE-SB56-3	SB56-3(S1*111)	6/7/1994	3 - 4	RCRA Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F122CRK-SB11	FG01154	8/17/2004	1 - 2	TAL Metals, Pests	RSA-122NW	Shaw
F122CRK-SB11	FG01155	8/17/2004	4 - 6	TAL Metals, Pests	RSA-122NW	Shaw
F122-CS01	PFG0001	6/11/2010	1 - 2	Arsenic	RSA-122NW	Shaw
F122-CS02	PFG0002	6/11/2010	1 - 2	Arsenic	RSA-122NW	Shaw
F122-CS03	PFG0003	6/11/2010	1 - 2	Arsenic	RSA-122NW	Shaw
F122-CS04	PFG0005	6/11/2010	1 - 2	Arsenic	RSA-122NW	Shaw
F122-CS31	PFG0034	6/26/2010	0 - 1	Arsenic	RSA-122NW	Shaw
F122-CS32	PFG0035	6/26/2010	0 - 1	Arsenic	RSA-122NW	Shaw
F122-CS70	PFG0076	9/16/2010	8 - 9	Arsenic	RSA-122NW	Shaw
F122NW-PZ01	FG0099	6/28/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122NW-PZ01	FG0100	6/28/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122NW-PZ02	FG0104	6/28/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122NW-PZ02	FG0105	6/28/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122NW-PZ03	FG0109	6/28/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122NW-PZ03	FG0110	6/28/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122NW-PZ04	FG0131	7/8/2004	2 - 4	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-PZ04	FG0132	7/8/2004	6 - 8	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-PZ04	FG0133	7/8/2004	10 - 12	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-PZ05	FG0136	7/13/2004	0.5 - 1	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-PZ05	FG0137	7/13/2004	2 - 4	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-PZ05	FG0138	7/13/2004	6 - 8	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-PZ05	FG0139	7/13/2004	10 - 12	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-PZ06	FG0158	7/7/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ06	FG0159	7/7/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ06	FG0160	7/7/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ07	FG0163	7/7/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ07	FG0164	7/7/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ07	FG0165	7/7/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ08	FG0169	7/7/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ08	FG0170	7/7/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ08	FG0171	7/7/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ09	FG0174	7/7/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ09	FG0175	7/7/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ09	FG0176	7/7/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ10	FG0179	7/6/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ10	FG0181	7/6/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ10	FG0182	7/6/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ11	FG0186	7/7/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ11	FG0187	7/7/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ12	FG0191	7/6/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ12	FG0192	7/6/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ13	FG0201	7/6/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ13	FG0202	7/6/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ13	FG0203	7/6/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ15	FG0212	7/9/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ15	FG0213	7/9/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ15	FG0214	7/9/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ15	FG0215	7/9/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-PZ16	FG0217	7/12/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ16	FG0218	7/12/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ16	FG0220	7/12/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ17	FG0223	7/12/2004	0 - 1	TAL Metals	RSA-122NW	Shaw

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122NW-PZ17	FG0224	7/12/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ17	FG0225	7/12/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ18	FG0229	7/8/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ18	FG0230	7/8/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ18	FG0231	7/8/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-PZ19	FG0239	7/8/2004	0.5 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ19	FG0240	7/8/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ19	FG0241	7/8/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ19	FG0242	7/8/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-PZ20	FG0245	7/13/2004	0.5 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ20	FG0246	7/13/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ20	FG0248	7/13/2004	8 - 10	TAL Metals	RSA-122NW	Shaw
F122NW-PZ20	FG0249	7/13/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-PZ21	FG0256	7/13/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ21	FG0257	7/13/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ21	FG0258	7/13/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ21	FG0259	7/13/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-PZ22	FG0262	6/29/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ22	FG0263	6/29/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ22	FG0264	6/29/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ23	FG0272	6/29/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ23	FG0273	6/29/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ23	FG0275	6/29/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ24	FG0283	7/13/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-PZ24	FG0284	7/13/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-PZ24	FG0285	7/13/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-PZ24	FG0286	7/13/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-SB47	FG0115	7/12/2004	2 - 4	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB47	FG0116	7/12/2004	6 - 8	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB48	FG0119	7/12/2004	0.5 - 1	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB48	FG0120	7/12/2004	2 - 4	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB48	FG0121	7/12/2004	6 - 7	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB49	FG0124	7/9/2004	0 - 1	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB49	FG0126	7/9/2004	2 - 4	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB49	FG0127	7/9/2004	6 - 8	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB49	FG0128	7/9/2004	10 - 12	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB52	FG0143	6/29/2004	2 - 4	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB52	FG0144	6/29/2004	6 - 8	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB53	FG0148	6/29/2004	2 - 4	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB53	FG0149	6/29/2004	6 - 8	TAL Metals, SVOCs	RSA-122NW	Shaw
F122NW-SB54	FG0153	6/29/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-SB54	FG0155	6/29/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-SB62	FG0196	7/6/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-SB62	FG0197	7/6/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-SB62	FG0198	7/6/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-SB69	FG0235	7/8/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-SB69	FG0236	7/8/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-SB69	FG0237	7/8/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-SB72	FG0251	7/8/2004	0.5 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-SB72	FG0252	7/8/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-SB72	FG0253	7/8/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-SB72	FG0254	7/8/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122NW-SB75	FG0268	6/29/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-SB75	FG0269	6/29/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-SB77	FG0278	6/29/2004	0.5 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-SB77	FG0279	6/29/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-SB77	FG0280	6/29/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-SB79	FG0289	7/13/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122NW-SB79	FG0290	7/13/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122NW-SB79	FG0291	7/13/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122NW-SB79	FG0292	7/13/2004	10 - 12	TAL Metals	RSA-122NW	Shaw
F122S-PZ38	FG0727	7/29/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122S-PZ38	FG0728	7/29/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122S-PZ38	FG0729	7/29/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122S-SB01	FG0294	7/23/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122S-SB01	FG0296	7/23/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122S-SB01	FG0297	7/23/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F122S-SB55	FG0588	7/23/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122S-SB55	FG0589	7/23/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122S-SB55	FG0591	7/23/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F122S-SB56	FG0594	7/23/2004	0 - 1	TAL Metals	RSA-122NW	Shaw
F122S-SB56	FG0595	7/23/2004	2 - 4	TAL Metals	RSA-122NW	Shaw
F122S-SB56	FG0597	7/23/2004	6 - 8	TAL Metals	RSA-122NW	Shaw
F139-RS1027	FH0063	4/4/2000	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS1027	FH0064	4/4/2000	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS1027	FH0065	4/4/2000	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS1027	FH0066	4/4/2000	10 - 12	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS521	F139-RS521(S1*144)	6/4/1994	2 - 4	RCRA Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS912	FH0054	4/4/2000	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS914	FH0058	3/30/2000	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F139-RS914	FH0059	3/30/2000	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS914	FH0061	3/31/2000	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-RS914	FH0062	3/31/2000	10 - 12	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB02	FH0004	6/10/1999	0 - 1	Arsenic, Chloroform, TCE	RSA-122NW	IT Corp
F139-SB02	FH0005	6/10/1999	2 - 4	Arsenic	RSA-122NW	IT Corp
F139-SB03	FH0007	6/10/1999	2 - 4	Arsenic	RSA-122NW	IT Corp
F139-SB05	FH0010	6/9/1999	0 - 1	Arsenic, Chloroform, TCE	RSA-122NW	IT Corp
F139-SB05	FH0011	6/9/1999	2 - 4	Arsenic	RSA-122NW	IT Corp
F139-SB06	FH0013	6/10/1999	2 - 4	Arsenic	RSA-122NW	IT Corp
F139-SB07	FH0014	6/9/1999	0 - 1	Arsenic, Chloroform, TCE	RSA-122NW	IT Corp
F139-SB07	FH0015	6/9/1999	2 - 4	Arsenic	RSA-122NW	IT Corp
F139-SB08	FH0018	3/30/2000	0 - 1	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB08	FH0019	3/30/2000	2 - 4	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB08	FH0020	3/30/2000	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB09	FH0023	3/30/2000	2 - 4	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB09	FH0024	3/30/2000	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB09	FH0025	3/30/2000	10 - 12	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB10	FH0027	3/30/2000	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB12	FH0036	3/27/2000	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB13	FH0040	3/28/2000	2 - 4	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB14	FH0046	3/27/2000	2 - 4	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F139-SB15	FH0050	4/5/2000	2 - 4	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
F44-SB03	WL0001	11/17/2005	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB03	WL0002	11/17/2005	8 - 10	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB04	WL0004	11/17/2005	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB04	WL0005	11/17/2005	8 - 10	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB05	WL0007	11/17/2005	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB05	WL0008	11/17/2005	8 - 10	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB06	WL0010	11/17/2005	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB06	WL0012	11/17/2005	8 - 10	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB07	WL0014	11/17/2005	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
F44-SB07	WL0015	11/17/2005	8 - 10	TAL Metals, SVOCs, VOCs	RSA-122NW	Shaw
FHP004	F0018	1/23/1997	0 - 2	Arsenic, PAH	RSA-122NW	IT Corp
GSS007	G0023	1/16/1997	0 - 1	Arsenic, VOCs	RSA-122NW	IT Corp
GSS008	G0024	1/16/1997	0 - 1	Arsenic, VOCs	RSA-122NW	IT Corp
HHP001	H0009	1/22/1997	0 - 2	Arsenic, VOCs	RSA-122NW	IT Corp
HHP001	H0010	1/22/1997	2 - 4	Arsenic, VOCs	RSA-122NW	IT Corp
HHP001	H0011	1/22/1997	8 - 10	Arsenic, VOCs	RSA-122NW	IT Corp
HHP003	H0015	1/22/1997	0 - 2	VOCs	RSA-122NW	IT Corp
HHP003	H0016	1/22/1997	2 - 4	Arsenic, VOCs	RSA-122NW	IT Corp
HHP003	H0017	1/22/1997	8 - 10	Arsenic, VOCs	RSA-122NW	IT Corp
HSD001	H1000	1/22/1997	0 - 0.5	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
HSS004	H0004	1/21/1997	0 - 0.5	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122NW	IT Corp
W33-SS01	W0075	6/8/2000	0 - 1	RCRA Metals, VOCs	RSA-122NW	IT Corp
SOUTH AREA						
FSD005	F1006	1/20/1997	0 - 0.5	Arsenic, PAH, TPH	RSA-122S	IT Corp
FSD006	F1007	1/20/1997	0 - 0.5	Arsenic, PAH, TPH	RSA-122S	IT Corp
F122-RS509	F122-RS509(S1*118)	5/27/1994	6 - 8	RCRA Metals	RSA-122S	IT Corp
F122-RS510	F122-RS510(S1*119)	5/25/1994	6 - 8	RCRA Metals, VOCs	RSA-122S	IT Corp
F56-RS516	F56-RS516(S1*102)	5/23/1994	2 - 4	RCRA Metals, VOCs	RSA-122S	IT Corp
F56-SB06	FF0012	6/26/1999	0 - 1	Metals ^a , Hex Chrom, PAH, Pests (DDE and DDT)	RSA-122S	IT Corp
F56-SB06	FF0013	6/26/1999	2 - 4	Arsenic	RSA-122S	IT Corp
F56-SB07	FF0016	6/26/1999	0 - 1	Metals ^a , Hex Chrom, PAH, Pests (DDE and DDT)	RSA-122S	IT Corp
F56-SB07	FF0017	6/26/1999	2 - 4	Arsenic	RSA-122S	IT Corp
F122S-HP08	FG0001	4/28/2000	0 - 1	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
F122S-HP08	FG0003	4/28/2000	2 - 6	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
F122S-HP09	FG0006	4/27/2000	2 - 4	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP10	FG0008	5/1/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP10	FG0009	5/1/2000	2 - 6	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP11	FG0012	5/5/2000	0 - 1	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
F122S-HP11	FG0013	5/5/2000	5 - 6	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
F122S-HP12	FG0015	5/2/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP12	FG0016	5/2/2000	2 - 6	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP13	FG0018	5/2/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP13	FG0019	5/2/2000	4 - 8	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP14	FG0023	5/9/2000	5 - 6	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP14	FG0024	5/9/2000	10 - 12	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP15	FG0025	4/25/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP15	FG0026	4/25/2000	6 - 10	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP16	FG0028	4/25/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP16	FG0029	4/25/2000	8 - 10	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP17	FG0032	4/24/2000	0 - 1	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
F122S-HP17	FG0033	4/24/2000	4 - 8	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
F122S-HP18	FG0036	4/26/2000	6 - 10	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
F122S-HP19	FG0038	4/26/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP19	FG0039	4/27/2000	4 - 8	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP20	FG0042	4/25/2000	10 - 12	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP21	FG0045	4/24/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP21	FG0046	4/24/2000	10 - 12	TAL Metals, VOCs	RSA-122S	IT Corp

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122S-HP22	FG0048	4/20/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP22	FG0049	4/20/2000	2 - 6	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP23	FG0051	5/4/2000	0 - 1	TAL Metals	RSA-122S	IT Corp
F122S-HP23	FG0053	5/4/2000	5 - 6	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP23	FG0054	5/4/2000	10 - 12	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP24	FG0056	4/21/2000	4 - 8	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP44	FG0079	5/22/2000	4 - 6	TAL Metals, VOCs	RSA-122S	IT Corp
F122S-HP44	FG0080	5/22/2000	10 - 12	TAL Metals, VOCs	RSA-122S	IT Corp
F122CRK-SB04	FG01132	8/13/2004	2 - 4	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB04	FG01134	8/13/2004	6 - 8	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB06	FG01138	8/17/2004	0 - 1	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB06	FG01139	8/17/2004	2 - 4	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB06	FG01140	8/17/2004	6 - 8	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB07	FG01141	8/17/2004	0 - 1	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB07	FG01142	8/17/2004	2 - 4	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB07	FG01143	8/17/2004	6 - 8	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB08	FG01144	8/18/2004	0 - 1	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB08	FG01145	8/18/2004	2 - 4	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB08	FG01147	8/18/2004	6 - 8	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB09	FG01148	8/18/2004	0 - 1	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB09	FG01149	8/18/2004	2 - 4	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB09	FG01150	8/18/2004	6 - 8	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB15	FG01163	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB15	FG01164	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB16	FG01165	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB16	FG01166	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB17	FG01167	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB17	FG01168	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB19	FG01172	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB19	FG01173	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB20	FG01174	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB20	FG01175	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB21	FG01176	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB21	FG01177	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB22	FG01178	8/16/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB22	FG01179	8/16/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB28	FG01191	8/17/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB28	FG01192	8/17/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB29	FG01193	8/17/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB29	FG01194	8/17/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB30	FG01196	8/17/2004	1 - 2	TAL Metals, Pests	RSA-122S	Shaw
F122CRK-SB30	FG01197	8/17/2004	4 - 6	TAL Metals, Pests	RSA-122S	Shaw
F122S-SB02	FG0300	7/23/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB02	FG0301	7/23/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB02	FG0302	7/23/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB03	FG0305	7/26/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB03	FG0306	7/26/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB03	FG0307	7/26/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB04	FG0311	7/26/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB04	FG0312	7/26/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB04	FG0313	7/26/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB05	FG0316	7/29/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB05	FG0317	7/29/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB05	FG0318	7/29/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-PZ28	FG0321	7/28/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ28	FG0323	7/28/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ28	FG0324	7/28/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB07	FG0327	7/28/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB07	FG0328	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB07	FG0329	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB08	FG0332	7/27/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB08	FG0333	7/27/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB08	FG0334	7/27/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB09	FG0338	7/27/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB09	FG0339	7/27/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB09	FG0340	7/27/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB10	FG0343	7/28/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB10	FG0344	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB10	FG0345	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-PZ29	FG0348	7/28/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-PZ29	FG0349	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-PZ29	FG0351	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB12	FG0354	7/28/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB12	FG0355	7/28/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB12	FG0356	7/28/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ30	FG0359	7/29/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-PZ30	FG0360	7/29/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-PZ30	FG0361	7/29/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB14	FG0365	7/29/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB14	FG0366	7/29/2004	2 - 4	TAL Metals	RSA-122S	Shaw

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122S-SB14	FG0367	7/29/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB15	FG0370	7/29/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB15	FG0371	7/29/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB15	FG0372	7/29/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB16	FG0375	7/27/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB16	FG0376	7/27/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB16	FG0378	7/27/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB17	FG0381	7/27/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB17	FG0382	7/27/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB17	FG0383	7/27/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB18	FG0386	7/27/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB18	FG0387	7/27/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB18	FG0388	7/27/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB19	FG0392	7/26/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB19	FG0393	7/26/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB19	FG0394	7/26/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB20	FG0397	7/22/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB20	FG0398	7/22/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB20	FG0399	7/22/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB21	FG0402	7/22/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB21	FG0404	7/22/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB21	FG0405	7/22/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB22	FG0408	7/26/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB22	FG0409	7/26/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB22	FG0410	7/26/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB23	FG0414	7/30/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB23	FG0415	7/30/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB24	FG0419	7/30/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB24	FG0420	7/30/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB24	FG0421	7/30/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB25	FG0424	7/30/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB25	FG0425	7/30/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB25	FG0426	7/30/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-PZ31	FG0429	7/29/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-PZ31	FG0430	7/29/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-PZ31	FG0432	7/29/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB27	FG0435	7/30/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB27	FG0436	7/30/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB27	FG0437	7/30/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB28	FG0441	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB28	FG0442	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB29	FG0446	7/28/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB29	FG0447	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB29	FG0448	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB30	FG0451	8/6/2004	0.5 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB30	FG0452	8/6/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB30	FG0453	8/6/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB31	FG0456	7/29/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB31	FG0457	7/29/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB31	FG0459	7/29/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB32	FG0462	7/29/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB32	FG0463	7/29/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB32	FG0464	7/29/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB33	FG0467	7/27/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB33	FG0468	7/27/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB33	FG0469	7/27/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB34	FG0473	7/27/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB34	FG0474	7/27/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB34	FG0475	7/27/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB35	FG0478	7/27/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB35	FG0479	7/27/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB35	FG0480	7/27/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB36	FG0483	7/27/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB36	FG0484	7/27/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB36	FG0486	7/27/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB37	FG0489	7/27/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB37	FG0490	7/27/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB37	FG0491	7/27/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB38	FG0495	7/29/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB38	FG0496	7/29/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB38	FG0497	7/29/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ32	FG0501	7/29/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ32	FG0502	7/29/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ32	FG0503	7/29/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB40	FG0506	7/26/2004	0.5 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB40	FG0508	7/26/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB40	FG0509	7/26/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB41	FG0512	7/26/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB41	FG0513	7/26/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB41	FG0515	7/26/2004	6 - 8	TAL Metals	RSA-122S	Shaw

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122S-SB42	FG0518	7/26/2004	0.5 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB42	FG0519	7/26/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB42	FG0520	7/26/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB43	FG0523	8/6/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB43	FG0524	8/6/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB43	FG0525	8/6/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB44	FG0528	7/28/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB44	FG0529	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB44	FG0530	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB45	FG0534	7/28/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB45	FG0535	7/28/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB45	FG0536	7/28/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB46	FG0539	7/28/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB46	FG0540	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB46	FG0542	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB47	FG0545	7/28/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB47	FG0546	7/28/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB47	FG0547	7/28/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB48	FG0550	8/9/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB48	FG0551	8/9/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB48	FG0552	8/9/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB49	FG0555	8/6/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB49	FG0557	8/6/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB49	FG0558	8/6/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB50	FG0561	8/6/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB50	FG0562	8/6/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB50	FG0563	8/6/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB51	FG0566	8/9/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB51	FG0567	8/9/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB51	FG0568	8/9/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB52	FG0572	8/9/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB52	FG0573	8/9/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB52	FG0574	8/9/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB53	FG0578	8/9/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB53	FG0579	8/9/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB54	FG0584	8/9/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB54	FG0585	8/9/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB57	FG0600	7/23/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB57	FG0601	7/23/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB57	FG0602	7/23/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB58	FG0605	8/2/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB58	FG0606	8/2/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB58	FG0607	8/2/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ33	FG0611	8/2/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ33	FG0612	8/2/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ33	FG0613	8/2/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ34	FG0617	8/2/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ34	FG0618	8/2/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ34	FG0619	8/2/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ35	FG0623	8/2/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ35	FG0624	8/2/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ35	FG0626	8/2/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB62	FG0629	7/23/2004	0.5 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB62	FG0630	7/23/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB62	FG0631	7/23/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-PZ51	FG0634	8/2/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ51	FG0635	8/2/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ51	FG0636	8/2/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ52	FG0639	8/2/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ52	FG0640	8/2/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ52	FG0641	8/2/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ53	FG0645	8/2/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ53	FG0646	8/2/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ53	FG0647	8/2/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB66	FG0651	8/2/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB66	FG0652	8/2/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB66	FG0653	8/2/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB67	FG0658	8/3/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB67	FG0659	8/3/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB68	FG0662	7/26/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB68	FG0663	7/26/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB68	FG0664	7/26/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB69	FG0667	7/27/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB69	FG0668	7/27/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB69	FG0670	7/27/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB70	FG0673	8/2/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB70	FG0674	8/2/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB70	FG0675	8/2/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB71	FG0678	8/3/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB71	FG0679	8/3/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122S-SB71	FG0680	8/3/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB72	FG0684	8/3/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB72	FG0685	8/3/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB72	FG0686	8/3/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB73	FG0689	8/3/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB73	FG0690	8/3/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB73	FG0691	8/3/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ36	FG0694	8/3/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-PZ36	FG0695	8/3/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-PZ36	FG0697	8/3/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-PZ37	FG0700	8/3/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-PZ37	FG0701	8/3/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-PZ37	FG0702	8/3/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB76	FG0705	8/3/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB76	FG0706	8/3/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB76	FG0707	8/3/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB77	FG0711	8/3/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB77	FG0712	8/3/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB77	FG0713	8/3/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB78	FG0716	7/30/2004	0 - 1	TAL Metals, PCBs	RSA-122S	Shaw
F122S-SB78	FG0717	7/30/2004	2 - 4	TAL Metals, PCBs	RSA-122S	Shaw
F122S-SB78	FG0718	7/30/2004	6 - 8	TAL Metals, PCBs	RSA-122S	Shaw
F122S-SB79	FG0721	8/10/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB79	FG0722	8/10/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB79	FG0723	8/10/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB81	FG0732	8/5/2004	0.5 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB81	FG0733	8/5/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB81	FG0734	8/5/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB82	FG0738	8/5/2004	0.5 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB82	FG0739	8/5/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB82	FG0740	8/5/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ39	FG0744	8/3/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ39	FG0745	8/3/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ39	FG0746	8/3/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ46	FG0749	8/5/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ46	FG0750	8/5/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ46	FG0752	8/5/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ47	FG0755	8/3/2004	0.5 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ47	FG0756	8/3/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ47	FG0757	8/3/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ48	FG0761	8/5/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ48	FG0762	8/5/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ49	FG0766	8/4/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ49	FG0768	8/4/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-PZ50	FG0772	8/4/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-PZ50	FG0774	8/4/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB89	FG0778	8/4/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB89	FG0780	8/4/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB90	FG0784	8/5/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB90	FG0785	8/5/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB91	FG0789	8/5/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB91	FG0790	8/5/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB92	FG0794	8/4/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB92	FG0795	8/4/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB92	FG0796	8/4/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB93	FG0800	8/4/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB93	FG0801	8/4/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB94	FG0804	8/4/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB94	FG0806	8/4/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB94	FG0807	8/4/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB95	FG0810	8/4/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB95	FG0811	8/4/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB95	FG0812	8/4/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB96	FG0816	8/4/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB96	FG0817	8/4/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB97	FG0821	8/4/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB97	FG0822	8/4/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB97	FG0823	8/4/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB98	FG0827	8/4/2004	0 - 1	TAL Metals	RSA-122S	Shaw
F122S-SB98	FG0828	8/4/2004	2 - 4	TAL Metals	RSA-122S	Shaw
F122S-SB98	FG0829	8/4/2004	6 - 8	TAL Metals	RSA-122S	Shaw
F122S-SB99	FG0833	8/5/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB99	FG0834	8/5/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB99	FG0835	8/5/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB100	FG0838	7/30/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB100	FG0839	7/30/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB100	FG0840	7/30/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB101	FG0843	7/30/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB101	FG0844	7/30/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB101	FG0846	7/30/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw

Table J-1

**Surface and Subsurface Soil Sample Summary
RSA-122
Redstone Arsenal, Madison County, Alabama**

(Page 13 of 13)

Location	Sample No	Date	Depth (ft bgs)	Analyses	Sample Area	Investigation
F122S-SB102	FG0849	8/6/2004	0 - 1	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB102	FG0850	8/6/2004	2 - 4	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB102	FG0851	8/6/2004	6 - 8	TAL Metals, SVOCs, VOCs	RSA-122S	Shaw
F122S-SB103	FG0854	8/6/2004	0 - 1	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB103	FG0856	8/6/2004	2 - 4	TAL Metals, VOCs	RSA-122S	Shaw
F122S-SB103	FG0857	8/6/2004	6 - 8	TAL Metals, VOCs	RSA-122S	Shaw
GSS003	G0003	1/15/1997	0 - 0.5	Arsenic, VOCs	RSA-122S	IT Corp
GSS004	G0004	1/16/1997	0 - 1	TAL Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
GSS005	G0007	1/15/1997	0 - 0.5	Arsenic, VOCs	RSA-122S	IT Corp
GSS006	G0008	1/15/1997	0 - 0.5	Arsenic, VOCs	RSA-122S	IT Corp
GHP003	G0016	1/20/1997	8 - 10	Arsenic, VOCs	RSA-122S	IT Corp
GHP003	G0017	1/20/1997	10 - 12	Arsenic, VOCs	RSA-122S	IT Corp
GHP004	G0018	1/20/1997	0 - 2	Arsenic, VOCs	RSA-122S	IT Corp
GHP004	G0019	1/20/1997	2 - 4	Arsenic, VOCs	RSA-122S	IT Corp
GSD001	G1000	1/17/1997	0 - 0.3	TAL Metals, Pest, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
GSD002	G1001	1/17/1997	0 - 0.3	Arsenic, VOCs	RSA-122S	IT Corp
GSD003	G1004	1/16/1997	0 - 0.5	Arsenic, VOCs	RSA-122S	IT Corp
F122-CS09	PFG0010	6/26/2010	1 - 2	Arsenic	RSA-122S	Shaw
122EPCS16-1	PFG6014	2/23/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122F1PCS40-1	PFG6016	6/23/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122F1PCS41-1	PFG6018	6/23/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122F2PCS30-1	PFG6019	2/24/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122F2PCS34-1	PFG6020	2/28/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122F2PCS35-1	PFG6021	2/24/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122GPCS19-1	PFG6022	3/2/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122GPCS20-1	PFG6023	3/3/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122GPCS21-1	PFG6024	3/3/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122HPCS37-1	PFG6025	3/16/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122HPCS38-1	PFG6026	3/16/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122HPCS39-1	PFG6027	3/16/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122HPCS62-1	PFG6030	3/18/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122HPCS76-1	PFG6031	3/16/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
122HPCSZZ-1	PFG6034	3/18/2011	0 - 1	Arsenic, Mercury	RSA-122S	Shaw
ESE-SB122-3	SB122-3(S1*129)	6/25/1994	0 - 1	RCRA Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
ESE-SB122-3	SB122-3(S1*130)	6/25/1994	0 - 1	RCRA Metals, VOCs	RSA-122S	IT Corp
ESE-SB122-4	SB122-4(S1*131)	6/3/1994	0 - 1	RCRA Metals, SVOCs, VOCs	RSA-122S	IT Corp
ESE-SB122-4	SB122-4(S1*132)	6/3/1994	0 - 1	RCRA Metals, VOCs	RSA-122S	IT Corp
ESE-SB122-5	SB122-5(S1*133)	5/20/1994	0 - 1	RCRA Metals, SVOCs, VOCs	RSA-122S	IT Corp
ESE-SB122-5	SB122-5(S1*134)	5/20/1994	0 - 1	RCRA Metals, VOCs	RSA-122S	IT Corp
ESE-SB122-6	SB122-6(S1*135)	6/25/1994	0 - 1	RCRA Metals, SVOCs, VOCs	RSA-122S	IT Corp
ESE-SB122-6	SB122-6(S1*136)	6/25/1994	0 - 1	RCRA Metals, VOCs	RSA-122S	IT Corp
ESE-SB122-7	SB122-7(S1*137)	6/3/1994	0 - 1	RCRA Metals, Pests, PCBs, SVOCs, VOCs	RSA-122S	IT Corp
ESE-SB122-7	SB122-7(S1*138)	6/3/1994	0 - 1	RCRA Metals, VOCs	RSA-122S	IT Corp
ESE-SB122-8	SB122-8(S1*139)	5/21/1994	0 - 1	RCRA Metals, SVOCs, VOCs	RSA-122S	IT Corp
ESE-SB122-8	SB122-8(S1*140)	5/21/1994	0 - 1	RCRA Metals, VOCs	RSA-122S	IT Corp

^a Metals analyzed: arsenic, chromium, chromium VI, mercury, and vanadium

ft bgs - Feet below ground surface.
PAH - Polynuclear aromatic hydrocarbon.
PCB - Polychlorinated biphenyl.
Pest - Organochlorine pesticide.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCE - Trichloroethene.
TPH - Total petroleum hydrocarbon.
VOC - Volatile organic compound.

Table J-2

Chemicals of Concern and their Representative Concentrations
 RSA-122
 Redstone Arsenal, Madison County, Alabama

(Page 1 of 2)

Chemical of Concern	Detection Frequency	Percent Detection	Maximum Detected Concentration	VQ	Location of MDC	Arithmetic Mean Concentration	Representative Concentration	Method of Estimation ^a	Statistical Distribution ^a	Method of UCL Computation ^a
EAST AREA										
TOTAL SOIL^b (mg/kg)										
Inorganics										
Arsenic	308 / 308	100	4.71E+02		F122E-PZ43	1.41E+01	2.12E+01	95% UCL	Not Discernible	Chebyshev (Mean, Sd)
Semivolatile Organics										
Benzo(a)anthracene	3 / 76	4	1.20E+00		ESE-SB56-2	2.11E-01	1.26E-01	95% UCL	Normal	KM (t)
Benzo(a)pyrene	4 / 78	5	1.40E+00		ESE-SB56-2	2.07E-01	1.18E-01	95% UCL	Normal	KM (t)
Benzo(b)fluoranthene	4 / 78	5	2.10E+00		ESE-SB56-2	2.18E-01	1.28E-01	95% UCL	Normal	KM (t)
Indeno(1,2,3-cd)pyrene	2 / 78	3	1.20E+00		ESE-SB56-2	2.02E-01	1.18E-01	95% UCL	Not Discernible	KM (Chebyshev)
NORTH AREA										
TOTAL SOIL^b (mg/kg)										
Inorganics										
Arsenic	94 / 94	100	2.94E+01		F122N-SB23	1.09E+01	1.17E+01	95% UCL	Gamma	Approximate Gamma
NORTHWEST AREA										
TOTAL SOIL^b (mg/kg)										
Inorganics										
Arsenic	190 / 190	100	2.36E+03		F122-CS70	8.54E+01	1.72E+02	95% UCL	Not Discernible	Chebyshev (Mean, Sd)
Semivolatile Organics										
Benzo(a)anthracene	9 / 68	13	6.00E+00		F122S-PZ38	2.53E-01	5.30E-01	95% UCL	Not Discernible	KM (Chebyshev)
Benzo(a)pyrene	11 / 69	16	1.00E+01		F122S-PZ38	3.07E-01	8.47E-01	95% UCL	Not Discernible	KM (Chebyshev)
Benzo(b)fluoranthene	12 / 69	17	1.00E+01		F122S-PZ38	3.04E-01	8.43E-01	95% UCL	Not Discernible	KM (Chebyshev)
Dibenz(a,h)anthracene	2 / 69	3	3.10E+00		F122S-PZ38	2.25E-01	3.51E-01	95% UCL	Not Discernible	KM (Chebyshev) *
Indeno(1,2,3-cd)pyrene	4 / 69	6	6.50E+00		F122S-PZ38	2.72E-01	5.36E-01	95% UCL	Gamma	KM Approx Gamma
SOUTH AREA										
TOTAL SOIL^b (mg/kg)										
Inorganics										
Arsenic	393 / 393	100	1.92E+03		F122S-SB69	4.50E+01	8.63E+01	95% UCL	Not Discernible	Chebyshev (Mean, Sd)
Semivolatile Organics										
Benzo(a)anthracene	14 / 117	12	1.20E+00		GSS004	1.92E-01	8.34E-02	95% UCL	Gamma	KM Approx Gamma
Benzo(a)pyrene	12 / 119	10	1.40E+00		GSS004	2.05E-01	1.10E-01	95% UCL	Normal	KM (t)
Benzo(b)fluoranthene	13 / 119	11	2.20E+00		GSS004	2.09E-01	1.30E-01	95% UCL	Gamma	KM Approx Gamma
Dibenz(a,h)anthracene	4 / 119	3	3.00E-01	J	F122S-PZ32	1.82E-01	6.52E-02	95% UCL	Normal	KM (t)

Table J-2

**Chemicals of Concern and their Representative Concentrations
RSA-122
Redstone Arsenal, Madison County, Alabama**

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- ^a Nature of distribution and 95 percent UCL determined using ProUCL Version 5.0 (EPA, 2016, ProUCL Version 5.1.002, May, <https://www.epa.gov/land-research/proucl-software>). The recommended UCL was used unless the recommendation was the 97.5 or 99 percent Chebyshev UCL. In those cases, the 95% Chebyshev UCL was used (*). Nondetected surrogate values with reporting limits greater than 2 times the maximum detected concentration were not included in the UCL calculation. NA - Not applicable; a UCL could not be calculated because the reporting limits for nondetects were greater than 2 times the maximum detected concentration, or sample size was inadequate.
- ^b Total soil is the combination of surface and subsurface soil (soil intervals starting at 0 to 10 feet below ground surface).

µg/L - Micrograms per liter.
J - Estimated concentration.
KM - Kaplan-Meier Method.
MDC - Maximum detected concentration.
mg/kg - Milligrams per kilogram.
NA - Not applicable.
UCL - Upper confidence limit.
VQ - Validation qualifier.

Table J-3

**Variables Used to Estimate Potential Chemical Intakes and Contact Rates for Receptors
RSA-122
Redstone Arsenal, Madison County, Alabama**

Pathway Variable	Units	Commercial	Construction	Hypothetical Resident	
		Worker	Worker	Adult	Child
General Parameters Used in All Intake Models					
Exposure frequency - except as noted (EF)	days/year	225	250	350	350
Exposure frequency - homegrown produce consumption (EF _p)	days/year	NA	NA	350	350
Exposure duration (ED)	years	25	1	20	6
Body weight (BW)	kilograms	80	80	80	15
Averaging time - noncancer (AT _n)	days	9,125	365	NA	2,190
Averaging time - cancer (AT _c)	days	25,550	25,550	25,550	25,550
Inhalation of VOCs and Resuspended Dust from Soil					
Inhalation rate (IR _a)	m ³ /hour	2.5	2.5	NA	NA
Exposure time (ET _a)	hours/day	8	8	NA	NA
Fraction exposed to contaminated medium (FI _a)	unitless	1	1	NA	NA
Incidental Ingestion of Soil					
Incidental ingestion rate (IR _s)	mg/day	100	100	100	200
Fraction exposed to contaminated medium (FI _s)	unitless	1	1	1	1
Dermal Contact with Soil					
Body surface area exposed (SA)	cm ²	3,527	3,527	6,032	2,373
Soil-to-skin adherence factor (AF)	mg/cm ²	0.12	0.12	0.07	0.2
Dermal absorption factor (ABS)	unitless	csv	csv	csv	csv
Event frequency (EV)	events/day	1	1	1	1
Fraction exposed to contaminated medium (FI)	unitless	1	1	1	1

cm² - Square centimeter.

csv - Chemical-specific value.

m³/hour - Cubic meters per hour.

mg/cm² - Milligrams per square centimeter.

mg/day - Milligrams per day.

NA - Pathway not applicable for receptor.

Table J-4

**Physical Properties of Chemicals of Concern Identified in Feasibility Study
RSA-122
Redstone Arsenal, Madison County, Alabama**

Chemical	Dermal-from-Soil Absorption Factor (ABS) (unitless)	Time for Dermal Uptake to Reach Steady State (t*) (hours)	Permeability Coefficient (K _p) (cm/hour)	Lag Time for Contaminant to Cross Stratum Corneum (tau) (hours)	Ratio of Permeability Coefficients ^a (B) (dimensionless)	Fraction Absorbed (FA) (dimensionless)	Molecular Weight (g/mole)	Henry's Law Constant (unitless)	Log K _{ow} (unitless)
Inorganics									
Arsenic	0.03	NA	1.00E-03	NA	NA	NA	74.92	NA	NA
Semivolatile Organics									
Benzo(a)anthracene	0.13	8.5	5.52E-01	2.03	3.21	1	228.3	1.20E-05	5.8
Benzo(a)pyrene	0.13	11.7	7.13E-01	2.69	4.36	1	252.32	4.57E-07	6.13
Benzo(b)fluoranthene	0.13	11.3	4.17E-01	2.72	2.55	1	252.32	6.57E-07	5.78
Dibenz(a,h)anthracene	0.13	16.9	9.53E-01	3.81	6.12	0.6	278.36	1.41E-07	6.75
Indeno(1,2,3-cd)pyrene	0.13	16.8	1.24E+00	3.71	7.93	0.6	276.34	3.48E-07	6.7

Note: Unless otherwise noted, values taken from U.S. Environmental Protection Agency (EPA), 2019, *Regional Screening Levels for Chemical Contaminants at Superfund Sites*, November.

^a The ratio of the permeability coefficient (K_p) of a compound through the stratum corneum relative to its K_p across the viable epidermis.

atm-m³/mole - Atmosphere-cubic meter per mole.

cm/hour - Centimeters per hour.

COC - Chemical of concern.

days/kg - Days per kilogram.

g/mole - Gram per mole.

Log K_{ow} - Log of the octanol/water partition coefficient.

NA - Not applicable.

ND - No data.

Table J-5

**Summary of the Cancer and Noncancer Evaluation for the Chemicals of Concern
RSA-122
Redstone Arsenal, Madison County, Alabama**

Chemical	Gastrointestinal Absorption Factors (unitless)	CANCER EVALUATION			NONCANCER EVALUATION				
		Oral Slope Factor (mg/kg-day) ⁻¹	Dermal Slope Factor (mg/kg-day) ⁻¹	Inhalation Slope Factor (mg/kg-day) ⁻¹	Oral Reference Dose (mg/kg-day)	Dermal Reference Dose (mg/kg-day)	Oral / Dermal Target Organ ^a	Inhalation Reference Dose (mg/kg-day)	Inhalation Target Organ ^b
Inorganics									
Arsenic	1	1.50E+00	1.50E+00	1.50E+01	3.00E-04	3.00E-04	S, Vascular	ND	NA
Semivolatile Organics									
Benzo(a)anthracene	1	1.00E-01	1.00E-01	2.10E-01	ND	NA	NA	ND	NA
Benzo(a)pyrene	1	1.00E+00	1.00E+00	2.10E+00	3.00E-04	3.00E-04	Neurobehavior	5.70E-07	DFS
Benzo(b)fluoranthene	1	1.00E-01	1.00E-01	2.10E-01	ND	NA	NA	ND	NA
Dibenz(a,h)anthracene	1	1.00E+00	1.00E+00	2.10E+00	ND	NA	NA	ND	NA
Indeno(1,2,3-cd)pyrene	1	1.00E-01	1.00E-01	2.10E-01	ND	NA	NA	ND	NA

Note: Unless otherwise noted, values taken from U.S. Environmental Protection Agency (EPA), 2019, *Regional Screening Levels for Chemical Contaminants at Superfund Sites*, November.

^a Target organ identified in primary sources.

Target Organs/Critical Effects:

DFS - decreased fetal survival; S - skin.

mg/kg-day - Milligram per kilogram-day.

NA - Not applicable.

ND - No data.

Table J-6

Intake Doses and Risk for Exposure to Total Soil ^a
RSA-122E, Groundskeeper Evaluation^b
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
			Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Inhalation	HQ from Inhalation	Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics																	
Arsenic	2.12E+01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	5.83E-06	1.63E-05	3.50E-06	2.18E-02	7.62E-08	7.40E-07	2.07E-06	1.11E-06	6.91E-03	4.61E-06	2.87E-02
Semivolatile Organics																	
Benzo(a)anthracene	1.26E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	3.47E-08	9.71E-08	3.47E-09	NA	1.97E-09	1.91E-08	5.34E-08	1.91E-09	NA	5.38E-09	NA
Benzo(a)pyrene	1.18E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	3.25E-08	9.09E-08	3.25E-08	3.03E-04	1.84E-09	1.79E-08	5.00E-08	1.79E-08	1.67E-04	5.03E-08	4.70E-04
Benzo(b)fluoranthene	1.28E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	3.52E-08	9.86E-08	3.52E-09	NA	2.00E-09	1.94E-08	5.43E-08	1.94E-09	NA	5.46E-09	NA
Indeno(1,2,3-cd)pyrene	1.18E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	3.25E-08	9.09E-08	3.25E-09	NA	1.84E-09	1.79E-08	5.00E-08	1.79E-09	NA	5.03E-09	NA
Total Pathway ILCR and HI					NA	NA			3.54E-06	2.21E-02				1.13E-06	7.07E-03		
Total ILCR and HI																4.67E-06	2.91E-02

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Fugitive dust pathway is only evaluated for chromium.

COPC - Chemical of potential concern.

HI - Hazard index.

HQ - Hazard quotient.

ILCR - Incremental lifetime cancer risk.

mg/cm² - Milligram per square centimeter.

mg/kg - Milligram per kilogram.

mg/m³ - Milligram per cubic meter.

NA - Not applicable.

Table J-7

Intake Doses and Risk for Exposure to Total Soil^a
RSA-122E, Construction Worker Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
			Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Inhalation	HQ from Inhalation	Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics																	
Arsenic	2.12E+01	4.24E-06	1.04E-08	7.25E-07	1.55E-07	NA	2.59E-07	1.81E-05	1.55E-07	2.42E-02	7.62E-08	3.29E-08	2.30E-06	4.93E-08	7.67E-03	3.60E-07	3.19E-02
Semivolatile Organics																	
Benzo(a)anthracene	1.26E-01	2.52E-08	6.16E-11	4.32E-09	1.29E-11	NA	1.54E-09	1.08E-07	1.54E-10	NA	1.97E-09	8.48E-10	5.94E-08	8.48E-11	NA	2.52E-10	NA
Benzo(a)pyrene	1.18E-01	2.36E-08	5.77E-11	4.04E-09	1.21E-10	7.09E-03	1.44E-09	1.01E-07	1.44E-09	3.37E-04	1.84E-09	7.94E-10	5.56E-08	7.94E-10	1.85E-04	2.36E-09	7.61E-03
Benzo(b)fluoranthene	1.28E-01	2.56E-08	6.26E-11	4.38E-09	1.32E-10	7.69E-03	1.57E-09	1.10E-07	1.57E-09	3.65E-04	2.00E-09	8.61E-10	6.03E-08	8.61E-10	2.01E-04	2.56E-09	8.26E-03
Indeno(1,2,3-cd)pyrene	1.18E-01	2.36E-08	5.77E-11	4.04E-09	1.21E-11	NA	1.44E-09	1.01E-07	1.44E-10	NA	1.84E-09	7.94E-10	5.56E-08	7.94E-11	NA	2.36E-10	NA
Total Pathway ILCR and HI					1.56E-07	1.48E-02			1.59E-07	2.49E-02				5.12E-08	8.06E-03		
Total ILCR and HI																3.66E-07	4.77E-02

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

COPC - Chemical of potential concern.

HI - Hazard index.

HQ - Hazard quotient.

ILCR - Incremental lifetime cancer risk.

mg/cm² - Milligram per square centimeter.

mg/kg - Milligram per kilogram.

mg/m³ - Milligram per cubic meter.

NA - Not applicable.

Table J-8

**Intake Doses and Risk for Exposure to Total Soil^a
 RSA-122E, On-Site Adult Resident^b Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama**

Chemical	Ingestion of COPC			Dose Absorbed	Dermally Absorbed	ILCR from Dermal Contact	Sum Adult ILCR ^b	Sum Child ILCR ^c	Total Lifetime ILCR ^b
	Source-Term Concentration (mg/kg)	in Total Soil Cancer (mg/kg-day)	ILCR from Incidental Ingestion	Per Unit Body Surface Area (mg/cm ² -day)	Dose of COPC Cancer (mg/kg-day)				
Inorganics									
Arsenic	2.12E+01	7.25E-06	4.35E-06	4.45E-08	9.19E-07	1.38E-06	5.73E-06	1.64E-05	2.21E-05
Semivolatile Organics									
Benzo(a)anthracene	1.26E-01	4.32E-08	4.32E-09	1.15E-09	2.37E-08	2.37E-09	6.68E-09	1.81E-08	2.48E-08
Benzo(a)pyrene	1.18E-01	4.04E-08	4.04E-08	1.07E-09	2.22E-08	2.22E-08	6.26E-08	1.69E-07	2.32E-07
Benzo(b)fluoranthene	1.28E-01	4.38E-08	4.38E-08	1.16E-09	2.41E-08	2.41E-08	6.79E-08	1.69E-07	2.37E-07
Indeno(1,2,3-cd)pyrene	1.18E-01	4.04E-08	4.04E-09	1.07E-09	2.22E-08	2.22E-09	6.26E-09	1.69E-08	2.32E-08
Total Pathway ILCR			4.44E-06			1.43E-06			
Total ILCR							5.87E-06	1.68E-05	2.27E-05

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Table presents the intake dose and cancer risk for the adult resident; lifetime ILCR is the sum of the adult and child ILCR.

^c From Table G-9.

COPC - Chemical of potential concern.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 NA - Not applicable.

Table J-9

**Intake Doses and Risk for Exposure to Total Soil ^a
 RSA-122E, On-Site Child Resident Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama**

Chemical	Source-Term Concentration (mg/kg)	Ingestion of COPC in Total Soil		ILCR from Incidental Ingestion	HQ from Incidental Ingestion	Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics												
Arsenic	2.12E+01	2.32E-05	2.71E-04	1.39E-05	3.61E-01	1.27E-07	1.65E-06	1.93E-05	2.48E-06	6.43E-02	1.64E-05	4.25E-01
Semivolatile Organics												
Benzo(a)anthracene	1.26E-01	1.38E-07	1.61E-06	1.38E-08	NA	3.28E-09	4.26E-08	4.97E-07	4.26E-09	NA	1.81E-08	NA
Benzo(a)pyrene	1.18E-01	1.29E-07	1.51E-06	1.29E-07	5.03E-03	3.07E-09	3.99E-08	4.65E-07	3.99E-08	1.55E-03	1.69E-07	6.58E-03
Benzo(b)fluoranthene	1.28E-01	1.40E-07	1.64E-06	1.40E-07	5.46E-03	3.33E-09	4.33E-08	5.05E-07	4.33E-08	1.68E-03	1.84E-07	7.14E-03
Indeno(1,2,3-cd)pyrene	1.18E-01	1.29E-07	1.51E-06	1.29E-08	NA	3.07E-09	3.99E-08	4.65E-07	3.99E-09	NA	1.69E-08	NA
Total Pathway ILCR and HI				1.42E-05	3.72E-01				2.57E-06	6.75E-02		
Total ILCR and HI											1.68E-05	4.39E-01

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.
 COPC - Chemical of potential concern.
 HI - Hazard index.
 HQ - Hazard quotient.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 NA - Not applicable.

Table J-10

Intake Doses and Risk for Exposure to Total Soil^a
RSA-122N, Groundskeeper Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
			Cancer	Noncancer	ILCR from Inhalation	HQ from Inhalation	Cancer	Noncancer	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer	Noncancer				
Inorganics																	
Arsenic	1.17E+01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	3.21E-06	9.00E-06	1.93E-06	1.20E-02	4.20E-08	4.08E-07	1.14E-06	6.12E-07	3.81E-03	2.54E-06	1.58E-02
Total Pathway ILCR and HI					NA	NA			1.93E-06	1.20E-02				6.12E-07	3.81E-03		
Total ILCR and HI																2.54E-06	1.58E-02

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 10 feet below ground surface.

^b Fugitive dust pathway is only evaluated for chromium.

COPC - Chemical of potential concern.
 HI - Hazard index.
 HQ - Hazard quotient.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 mg/m³ - Milligram per cubic meter.
 NA - Not applicable.

Table J-11

Intake Doses and Risk for Exposure to Total Soil^a
RSA-122N, Construction Worker Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI	
			Cancer	Noncancer	ILCR from Inhalation	HQ from Inhalation	Cancer	Noncancer	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer	Noncancer					
Inorganics																		
Arsenic	1.17E+01	2.34E-06	5.71E-09	4.00E-07	8.57E-08	NA	1.43E-07	1.00E-05	8.57E-08	1.33E-02	4.20E-08	1.81E-08	1.27E-06	2.72E-08	4.23E-03	1.99E-07	1.76E-02	
Total Pathway ILCR and HI					8.57E-08	NA			8.57E-08	1.33E-02				2.72E-08	4.23E-03			
Total ILCR and HI																1.99E-07	1.76E-02	

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 10 feet below ground surface.
COPC - Chemical of potential concern.
HI - Hazard index.
HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.
mg/cm² - Milligram per square centimeter.
mg/kg - Milligram per kilogram.
mg/m³ - Milligram per cubic meter.
NA - Not applicable.

Table J-12

**Intake Doses and Risk for Exposure to Total Soil^a
 RSA-122N, Adult Resident^b Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama**

Chemical	Source-Term Concentration (mg/kg)	Ingestion of COPC in Total Soil Cancer (mg/kg-day)	ILCR from Incidental Ingestion	Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC Cancer (mg/kg-day)	ILCR from Dermal Contact	Sum Adult ILCR ^b	Sum Child ILCR ^c	Total Lifetime ILCR ^b
Inorganics									
Arsenic	1.17E+01	4.00E-06	2.40E-06	2.45E-08	5.07E-07	7.60E-07	3.16E-06	9.05E-06	1.22E-05
Total Pathway ILCR			2.40E-06			7.60E-07			
Total ILCR							3.16E-06	9.05E-06	1.22E-05

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 10 feet below ground surface.

^b Table presents the intake dose and cancer risk for the adult resident; lifetime ILCR is the sum of the adult and child ILCR.

^c From Table G-13.

COPC - Chemical of potential concern.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 NA - Not applicable.

Table J-13

Intake Doses and Risk for Exposure to Total Soil^a
RSA-122N, Child Resident Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Ingestion of COPC in Total Soil		ILCR from Incidental Ingestion	HQ from Incidental Ingestion	Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics												
Arsenic	1.17E+01	1.28E-05	1.49E-04	7.68E-06	1.99E-01	7.01E-08	9.11E-07	1.06E-05	1.37E-06	3.54E-02	9.05E-06	2.35E-01
Total Pathway ILCR and HI				7.68E-06	1.99E-01				1.37E-06	3.54E-02		
Total ILCR and HI											9.05E-06	2.35E-01

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 10 feet below ground surface.
COPC - Chemical of potential concern.
HI - Hazard index.
HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.
mg/cm² - Milligram per square centimeter.
mg/kg - Milligram per kilogram.
NA - Not applicable.

Table J-14

Intake Doses and Risk for Exposure to Total Soil^a
RSA-122NW, Groundskeeper Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI	
			Cancer	Noncancer	ILCR from Inhalation	HQ from Inhalation	Cancer	Noncancer	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer	Noncancer					
Inorganics																		
Arsenic	1.72E+02	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	4.74E-05	1.33E-04	2.84E-05	1.77E-01	6.20E-07	6.02E-06	1.68E-05	9.03E-06	5.62E-02	3.75E-05	2.33E-01
Semivolatile Organics																		
Benzo(a)anthracene	5.30E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	1.46E-07	4.08E-07	1.46E-08	NA	8.27E-09	8.03E-08	2.25E-07	8.03E-09	NA	2.26E-08	NA
Benzo(a)pyrene	8.47E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	2.33E-07	6.53E-07	2.33E-07	2.18E-03	1.32E-08	1.28E-07	3.59E-07	1.28E-07	1.20E-03	3.61E-07	3.37E-03
Benzo(b)fluoranthene	8.43E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	2.32E-07	6.50E-07	2.32E-08	NA	1.32E-08	1.28E-07	3.57E-07	1.28E-08	NA	3.60E-08	NA
Dibenz(a,h)anthracene	4.70E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	1.29E-07	3.62E-07	1.29E-07	NA	7.33E-09	7.12E-08	1.99E-07	7.12E-08	NA	2.01E-07	NA
Indeno(1,2,3-cd)pyrene	5.36E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	1.48E-07	4.13E-07	1.48E-08	NA	8.36E-09	8.12E-08	2.27E-07	8.12E-09	NA	2.29E-08	NA
Total Pathway ILCR and HI					NA	NA				2.88E-05	1.79E-01				9.25E-06	5.74E-02		
Total ILCR and HI																	3.81E-05	2.36E-01

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Fugitive dust pathway is only evaluated for chromium.

COPC - Chemical of potential concern.
 HI - Hazard index.
 HQ - Hazard quotient.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 mg/m³ - Milligram per cubic meter.
 NA - Not applicable.

Table J-15

**Intake Doses and Risk for Exposure to Total Soil^a
 RSA-122NW, Construction Worker Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama**

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
			Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Inhalation	HQ from Inhalation	Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics																	
Arsenic	1.72E+02	3.44E-05	8.42E-08	5.90E-06	1.26E-06	NA	2.11E-06	1.47E-04	1.26E-06	1.97E-01	6.20E-07	2.67E-07	1.87E-05	4.01E-07	6.24E-02	2.93E-06	2.59E-01
Semivolatile Organics																	
Benzo(a)anthracene	5.30E-01	1.06E-07	2.59E-10	1.82E-08	5.45E-11	NA	6.48E-09	4.54E-07	6.48E-10	NA	8.27E-09	3.57E-09	2.50E-07	3.57E-10	NA	1.06E-09	NA
Benzo(a)pyrene	8.47E-01	1.69E-07	4.14E-10	2.90E-08	8.70E-10	5.09E-02	1.04E-08	7.25E-07	1.04E-08	2.42E-03	1.32E-08	5.70E-09	3.99E-07	5.70E-09	1.33E-03	1.69E-08	5.46E-02
Benzo(b)fluoranthene	8.43E-01	1.69E-07	4.12E-10	2.89E-08	8.66E-11	NA	1.03E-08	7.22E-07	1.03E-09	NA	1.32E-08	5.67E-09	3.97E-07	5.67E-10	NA	1.68E-09	NA
Dibenz(a,h)anthracene	4.70E-01	9.40E-08	2.30E-10	1.61E-08	4.83E-10	NA	5.75E-09	4.02E-07	5.75E-09	NA	7.33E-09	3.16E-09	2.21E-07	3.16E-09	NA	9.39E-09	NA
Indeno(1,2,3-cd)pyrene	5.36E-01	1.07E-07	2.62E-10	1.84E-08	5.51E-11	NA	6.56E-09	4.59E-07	6.56E-10	NA	8.36E-09	3.61E-09	2.52E-07	3.61E-10	NA	1.07E-09	NA
Total Pathway ILCR and HI					1.27E-06	5.09E-02			1.28E-06	1.99E-01				4.11E-07	6.37E-02		
Total ILCR and HI																2.96E-06	3.14E-01

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.
 COPC - Chemical of potential concern.
 HI - Hazard index.
 HQ - Hazard quotient.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 mg/m³ - Milligram per cubic meter.
 NA - Not applicable.

Table J-16

**Intake Doses and Risk for Exposure to Total Soil^a
 RSA-122NW, Adult Resident^b Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama**

Chemical	Source-Term Concentration (mg/kg)	Ingestion of COPC in Total Soil		Dose Absorbed	Dermally Absorbed	ILCR from Dermal Contact	Sum Adult ILCR ^b	Sum Child ILCR ^c	Total Lifetime ILCR ^b
		Cancer	ILCR from Incidental Ingestion	Per Unit Body Surface Area (mg/cm ² -day)	Dose of COPC Cancer (mg/kg-day)				
Inorganics									
Arsenic	1.72E+02	5.90E-05	3.54E-05	3.62E-07	7.47E-06	1.12E-05	4.66E-05	1.33E-04	1.80E-04
Semivolatile Organics									
Benzo(a)anthracene	5.30E-01	1.82E-07	1.82E-08	4.82E-09	9.96E-08	9.96E-09	2.81E-08	7.60E-08	1.04E-07
Benzo(a)pyrene	8.47E-01	2.90E-07	2.90E-07	7.71E-09	1.59E-07	1.59E-07	4.49E-07	1.21E-06	1.66E-06
Benzo(b)fluoranthene	8.43E-01	2.89E-07	2.89E-08	7.67E-09	1.58E-07	1.58E-08	4.47E-08	1.21E-07	1.66E-07
Dibenz(a,h)anthracene	4.70E-01	1.61E-07	1.61E-07	4.28E-09	8.84E-08	8.84E-08	2.49E-07	6.74E-07	9.23E-07
Indeno(1,2,3-cd)pyrene	5.36E-01	1.84E-07	1.84E-08	4.88E-09	1.01E-07	1.01E-08	2.84E-08	7.69E-08	1.05E-07
Total Pathway ILCR			3.59E-05			1.15E-05			
Total ILCR							4.74E-05	1.36E-04	1.83E-04

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Table presents the intake dose and cancer risk for the adult resident; lifetime ILCR is the sum of the adult and child ILCR.

^d From Table G-17.

COPC - Chemical of potential concern.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 NA - Not applicable.

Table J-17

Intake Doses and Risk for Exposure to Total Soil^a
RSA-122NW, On-Site Child Resident Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Ingestion of COPC in Total Soil		ILCR from Incidental Ingestion	HQ from Incidental Ingestion	Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics												
Arsenic	1.72E+02	1.89E-04	2.20E-03	1.13E-04	2.94E+00	1.03E-06	1.34E-05	1.57E-04	2.02E-05	5.22E-01	1.33E-04	3.46E+00
Semivolatile Organics												
Benzo(a)anthracene	5.30E-01	5.81E-07	6.78E-06	5.81E-08	NA	1.38E-08	1.79E-07	2.09E-06	1.79E-08	NA	7.60E-08	NA
Benzo(a)pyrene	8.47E-01	9.28E-07	1.08E-05	9.28E-07	3.61E-02	2.20E-08	2.86E-07	3.34E-06	2.86E-07	1.11E-02	1.21E-06	4.72E-02
Benzo(b)fluoranthene	8.43E-01	9.24E-07	1.08E-05	9.24E-08	NA	2.19E-08	2.85E-07	3.32E-06	2.85E-08	NA	1.21E-07	NA
Dibenz(a,h)anthracene	4.70E-01	5.15E-07	6.01E-06	5.15E-07	NA	1.22E-08	1.59E-07	1.85E-06	1.59E-07	NA	6.74E-07	NA
Indeno(1,2,3-cd)pyrene	5.36E-01	5.87E-07	6.85E-06	5.87E-08	NA	1.39E-08	1.81E-07	2.11E-06	1.81E-08	NA	7.69E-08	NA
Total Pathway ILCR and HI				1.15E-04	2.97E+00				2.07E-05	5.34E-01		
Total ILCR and HI											1.36E-04	3.51E+00

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.
COPC - Chemical of potential concern.
HI - Hazard index.
HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.
mg/cm² - Milligram per square centimeter.
mg/kg - Milligram per kilogram.
NA - Not applicable.

Table J-18

Intake Doses and Risk for Exposure to Total Soil^a
 RSA-122S, Groundskeeper Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
			Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Inhalation	HQ from Inhalation	Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics																	
Arsenic	8.63E+01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	2.37E-05	6.65E-05	1.42E-05	8.86E-02	3.11E-07	3.01E-06	8.44E-06	4.52E-06	2.81E-02	1.88E-05	1.17E-01
Semivolatile Organics																	
Benzo(a)anthracene	8.34E-02	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	2.30E-08	6.43E-08	2.30E-09	NA	1.30E-09	1.26E-08	3.54E-08	1.26E-09	NA	3.56E-09	NA
Benzo(a)pyrene	1.10E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	3.03E-08	8.48E-08	3.03E-08	2.83E-04	1.72E-09	1.67E-08	4.66E-08	1.67E-08	1.55E-04	4.69E-08	4.38E-04
Benzo(b)fluoranthene	1.30E-01	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	3.58E-08	1.00E-07	3.58E-09	NA	2.03E-09	1.97E-08	5.51E-08	1.97E-09	NA	5.55E-09	NA
Dibenz(a,h)anthracene	6.52E-02	NA ^b	NA ^b	NA ^b	NA ^b	NA ^b	1.79E-08	5.02E-08	1.79E-08	NA	1.02E-09	9.87E-09	2.76E-08	9.87E-09	NA	2.78E-08	NA
Total Pathway ILCR and HI					NA	NA			1.43E-05	8.89E-02				4.55E-06	2.83E-02		
Total ILCR and HI																1.89E-05	1.17E-01

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Fugitive dust pathway is only evaluated for chromium.

COPC - Chemical of potential concern.
 HI - Hazard index.
 HQ - Hazard quotient.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 mg/m³ - Milligram per cubic meter.
 NA - Not applicable.

Table J-19

Intake Doses and Risk for Exposure to Total Soil^a
 RSA-122S, Construction Worker Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COPC in Total Soil				Ingestion of COPC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI	
			Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Inhalation	HQ from Inhalation	Cancer (mg/kg-day)	Noncancer (mg/kg-day)	ILCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer (mg/kg-day)	Noncancer (mg/kg-day)					
Inorganics																		
Arsenic	8.63E+01	1.73E-05	4.22E-08	2.95E-06	6.33E-07	NA	1.06E-06	7.39E-05	6.33E-07	9.85E-02	3.11E-07	1.34E-07	9.38E-06	2.01E-07	3.13E-02	1.47E-06	1.30E-01	
Semivolatile Organics																		
Benzo(a)anthracene	8.34E-02	1.67E-08	4.08E-11	2.86E-09	8.57E-12	NA	1.02E-09	7.14E-08	1.02E-10	NA	1.30E-09	5.61E-10	3.93E-08	5.61E-11	NA	1.67E-10	NA	
Benzo(a)pyrene	1.10E-01	2.20E-08	5.38E-11	3.77E-09	1.13E-10	6.61E-03	1.35E-09	9.42E-08	1.35E-09	3.14E-04	1.72E-09	7.40E-10	5.18E-08	7.40E-10	1.73E-04	2.20E-09	7.10E-03	
Benzo(b)fluoranthene	1.30E-01	2.60E-08	6.36E-11	4.45E-09	1.34E-11	NA	1.59E-09	1.11E-07	1.59E-10	NA	2.03E-09	8.75E-10	6.12E-08	8.75E-11	NA	2.60E-10	NA	
Dibenz(a,h)anthracene	6.52E-02	1.30E-08	3.19E-11	2.23E-09	6.70E-11	NA	7.97E-10	5.58E-08	7.97E-10	NA	1.02E-09	4.39E-10	3.07E-08	4.39E-10	NA	1.30E-09	NA	
Total Pathway ILCR and HI					6.33E-07	6.61E-03			6.36E-07	9.88E-02				2.02E-07	3.14E-02			
Total ILCR and HI																1.47E-06	1.37E-01	

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.
 COPC - Chemical of potential concern.
 HI - Hazard index.
 HQ - Hazard quotient.
 ILCR - Incremental lifetime cancer risk.
 mg/cm² - Milligram per square centimeter.
 mg/kg - Milligram per kilogram.
 mg/m³ - Milligram per cubic meter.
 NA - Not applicable.

Table J-20

**Intake Doses and Risk for Exposure to Total Soil^a
 RSA-122S, Adult Resident^b Evaluation
 RSA-122
 Redstone Arsenal, Madison County, Alabama**

Chemical	Source-Term Concentration (mg/kg)	Ingestion of COPC in Total Soil Cancer (mg/kg-day)	ILCR from Incidental Ingestion	Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC Cancer (mg/kg-day)	ILCR from Dermal Contact	Sum Adult ILCR ^b	Sum Child ILCR ^c	Total Lifetime ILCR ^b
Inorganics									
Arsenic	8.63E+01	2.95E-05	1.77E-05	1.81E-07	3.74E-06	5.61E-06	2.33E-05	6.68E-05	9.02E-05
Semivolatile Organics									
Benzo(a)anthracene	8.34E-02	2.86E-08	2.86E-09	7.59E-10	1.57E-08	1.57E-09	4.42E-09	1.20E-08	1.64E-08
Benzo(a)pyrene	1.10E-01	3.77E-08	3.77E-08	1.00E-09	2.07E-08	2.07E-08	5.83E-08	1.58E-07	2.16E-07
Benzo(b)fluoranthene	1.30E-01	4.45E-08	4.45E-09	1.18E-09	2.44E-08	2.44E-09	6.90E-09	1.86E-08	2.55E-08
Dibenz(a,h)anthracene	6.52E-02	2.23E-08	2.23E-08	5.93E-10	1.23E-08	1.23E-08	3.46E-08	9.35E-08	1.28E-07
Total Pathway ILCR			1.78E-05			5.65E-06			
Total ILCR							2.34E-05	6.71E-05	9.06E-05

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Table presents the intake dose and cancer risk for the adult resident; lifetime ILCR is the sum of the adult and child ILCR.

^c From Table G-21.

COPC - Chemical of potential concern.

ILCR - Incremental lifetime cancer risk.

mg/cm² - Milligram per square centimeter.

mg/kg - Milligram per kilogram.

NA - Not applicable.

Table J-21

Intake Doses and Risk for Exposure to Total Soil^a
RSA-122S, Child Resident Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama

Chemical	Source-Term Concentration (mg/kg)	Ingestion of COPC in Total Soil		ILCR from Incidental Ingestion	HQ from Incidental Ingestion	Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COPC		ILCR from Dermal Contact	HQ from Dermal Contact	Sum ILCR	Sum HI
		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics												
Arsenic	8.63E+01	9.46E-05	1.10E-03	5.67E-05	1.47E+00	5.18E-07	6.73E-06	7.85E-05	1.01E-05	2.62E-01	6.68E-05	1.73E+00
Semivolatile Organics												
Benzo(a)anthracene	8.34E-02	9.14E-08	1.07E-06	9.14E-09	NA	2.17E-09	2.82E-08	3.29E-07	2.82E-09	NA	1.20E-08	NA
Benzo(a)pyrene	1.10E-01	1.21E-07	1.41E-06	1.21E-07	4.69E-03	2.86E-09	3.72E-08	4.34E-07	3.72E-08	1.45E-03	1.58E-07	6.13E-03
Benzo(b)fluoranthene	1.30E-01	1.42E-07	1.66E-06	1.42E-08	NA	3.38E-09	4.39E-08	5.13E-07	4.39E-09	NA	1.86E-08	NA
Dibenz(a,h)anthracene	6.52E-02	7.15E-08	8.34E-07	7.15E-08	NA	1.70E-09	2.20E-08	2.57E-07	2.20E-08	NA	9.35E-08	NA
Total Pathway ILCR and HI				5.69E-05	1.48E+00				1.02E-05	2.63E-01		
Total ILCR and HI											6.71E-05	1.74E+00

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.
COPC - Chemical of potential concern.
HI - Hazard index.
HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.
mg/cm² - Milligram per square centimeter.
mg/kg - Milligram per kilogram.
NA - Not applicable.

Table J-22

**Total Cancer Risks and Noncancer Hazards for Current and Future Site Receptors
RSA-122
Redstone Arsenal, Madison County, Alabama**

(Page 1 of 3)

EAST			
CANCER RISK			
Receptors	Total Soil ILCR	Groundwater ILCR	CUMULATIVE RISK SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	4.67E-06	See RI report	See RI report
Construction Worker	3.66E-07	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	1.68E-05	See RI report	See RI report
Adult Resident ^a	5.87E-06	See RI report	See RI report
Lifetime Resident ^a	2.27E-05	See RI report	See RI report
NONCANCER HAZARD			
Receptors	Total Soil HI	Groundwater HI	CUMULATIVE HAZARD INDEX SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	0.0291	See RI report	See RI report
Construction Worker	0.0477	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	0.439	See RI report	See RI report
NORTH			
CANCER RISK			
Receptors	Total Soil ILCR	Groundwater ILCR	CUMULATIVE RISK SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	2.54E-06	See RI report	See RI report
Construction Worker	1.99E-07	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	9.05E-06	See RI report	See RI report
Adult Resident ^a	3.16E-06	See RI report	See RI report
Lifetime Resident ^a	1.22E-05	See RI report	See RI report
NONCANCER HAZARD			
Receptors	Total Soil HI	Groundwater HI	CUMULATIVE HAZARD INDEX SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	0.0158	See RI report	See RI report
Construction Worker	0.0176	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	0.235	See RI report	See RI report

Table J-22

**Total Cancer Risks and Noncancer Hazards for Current and Future Site Receptors
RSA-122
Redstone Arsenal, Madison County, Alabama**

(Page 2 of 3)

NORTHWEST			
CANCER RISK			
Receptors	Total Soil ILCR	Groundwater ILCR	CUMULATIVE RISK SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	3.81E-05	See RI report	See RI report
Construction Worker	2.96E-06	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	1.36E-04	See RI report	See RI report
Adult Resident ^a	4.74E-05	See RI report	See RI report
Lifetime Resident ^a	1.83E-04	See RI report	See RI report
NONCANCER HAZARD			
Receptors	Total Soil HI	Groundwater HI	CUMULATIVE HAZARD INDEX SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	0.236	See RI report	See RI report
Construction Worker	0.314	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	3.51	See RI report	See RI report
SOUTH			
CANCER RISK			
Receptors	Total Soil ILCR	Groundwater ILCR	CUMULATIVE RISK SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	1.89E-05	See RI report	See RI report
Construction Worker	1.47E-06	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	6.71E-05	See RI report	See RI report
Adult Resident ^a	2.34E-05	See RI report	See RI report
Lifetime Resident ^a	9.06E-05	See RI report	See RI report
NONCANCER HAZARD			
Receptors	Total Soil HI	Groundwater HI	CUMULATIVE HAZARD INDEX SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	0.117	See RI report	See RI report
Construction Worker	0.137	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	1.74	See RI report	See RI report

^a Risk associated with the hypothetical residential receptor; child and adult resident risk are summed to estimate the

Table J-22

**Total Cancer Risks and Noncancer Hazards for Current and Future Site Receptors
RSA-122
Redstone Arsenal, Madison County, Alabama**

(Page 3 of 3)

cancer risk for the lifetime resident. Noncancer hazard estimates are based on the hypothetical child resident only.

HI - Hazard index.

ILCR - Incremental lifetime cancer risk.

NA - Not applicable.

RI - Remedial investigation.

Ref: Shaw Environmental, Inc. (Shaw), 2007, *Final Phase II Remedial Investigation Report, RSA-122, Dismantled Lewisite Manufacturing Plant, Operable Unit 6*, Prepared for U.S. Army Corps of Engineers, Savannah District, Savannah, Georgia, Al

Table J-23

**Conclusions of the Risk Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama**

(Page 1 of 2)

Receptors	Exposure to Soil ^a	Relevant COCs in Soil ^b	Exposure to Soil and Groundwater ^a	COCs for Exposure to Groundwater ^c
East				
Groundskeeper	✓	None	✗	See RI report
Construction Worker	✓	None	✗	See RI report
Hypothetical Resident	✗	Arsenic	✗	See RI report
North				
Groundskeeper	✓	None	✗	See RI report
Construction Worker	✓	None	✗	See RI report
Hypothetical Resident	✗	Arsenic	✗	See RI report
Northwest				
Groundskeeper	✗	Arsenic	✗	See RI report
Construction Worker	✓	None	✗	See RI report
Hypothetical Resident	✗	Arsenic Benzo(a)pyrene	✗	See RI report
South				
Groundskeeper	✗	Arsenic	✗	See RI report

Table J-23

**Conclusions of the Risk Evaluation
RSA-122
Redstone Arsenal, Madison County, Alabama**

(Page 2 of 2)

Receptors	Exposure to Soil ^a	Relevant COCs in Soil ^b	Exposure to Soil and Groundwater ^a	COCs for Exposure to Groundwater ^c
South (Continued)				
Construction Worker	✓	None	✗	See RI report
Hypothetical Resident	✗	Arsenic	✗	See RI report

Notes:

- ✓ Cumulative cancer risk and noncancer hazard were found to be acceptable.
- ✗ Cumulative cancer risk and/or noncancer hazard were found to be unacceptable.
- ^a Risk conclusions exclude inorganics found to be naturally occurring.
- ^b Conclusions regarding risk and identification of relevant COCs in soil exclude consideration of contribution of risk from exposure to groundwater.
COC - Chemical of concern.
RM-2 - Risk Management-2.
RI - Remedial Investigation
- ^c Ref: Shaw Environmental, Inc. (Shaw), 2007, *Final Phase II Remedial Investigation Report, RSA-122, Dismantled Lewisite Manufacturing Plant, Operable Unit 6*, Prepared for U.S. Army Corps of Engineers, Savannah District, Savannah, Georgia, August.

Table J-24

**Risk-Based Target Levels for Exposure to Soil
RSA-122 East Area
Redstone Arsenal, Madison County, Alabama**

Commercial Worker												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	2.12E+01	4.61E-06	1.50E+01	No (a)	---	---	---	2.87E-02	No	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	1.26E-01	5.38E-09	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	1.18E-01	5.03E-08	NA	No	---	---	---	4.70E-04	No	---	---	---
Benzo(b)fluoranthene	1.28E-01	5.46E-09	NA	No	---	---	---	NA	No	---	---	---
Indeno(1,2,3-cd)pyrene	1.18E-01	5.03E-09	NA	No	---	---	---	NA	No	---	---	---
Construction Worker												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	2.12E+01	3.60E-07	1.50E+01	No	---	---	---	3.19E-02	No	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	1.26E-01	2.52E-10	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	1.18E-01	2.36E-09	NA	No	---	---	---	7.61E-03	No	---	---	---
Benzo(b)fluoranthene	1.28E-01	2.56E-09	NA	No	---	---	---	8.26E-03	No	---	---	---
Indeno(1,2,3-cd)pyrene	1.18E-01	2.36E-10	NA	No	---	---	---	NA	No	---	---	---
Hypothetical Resident												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	2.12E+01	2.21E-05	1.50E+01	Yes	9.57E-01	9.57E+00	9.57E+01	4.25E-01	No (b)	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	1.26E-01	2.48E-08	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	1.18E-01	2.32E-07	NA	No	---	---	---	6.58E-03	No	---	---	---
Benzo(b)fluoranthene	1.28E-01	2.37E-07	NA	No	---	---	---	7.14E-03	No	---	---	---
Indeno(1,2,3-cd)pyrene	1.18E-01	2.32E-08	NA	No	---	---	---	NA	No	---	---	---

No (a) - Total IELCR in soil for this receptor does not exceed 1E-5; therefore, this chemical is not selected as a cancer-based COC.

No (b) - Total HI for receptor is not greater than 1; therefore, this chemical is not selected as a noncancer-based relevant COC.

BSV - Background screening value.

"---" - Calculation of RBTL not applicable.

COC - Chemical of concern.

HI - Hazard index.

IELCR - Individual excess lifetime cancer risk.

mg/kg - Milligram per kilogram.

NA - Not applicable.

RBTL - Risk-based target level.

Table J-25

**Risk-Based Target Levels for Exposure to Soil
RSA-122 North Area
Redstone Arsenal, Madison County, Alabama**

Commercial Worker												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	1.17E+01	2.54E-06	1.50E+01	No (a)	---	---	---	1.58E-02	No	---	---	---
Construction Worker												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	1.17E+01	1.99E-07	1.50E+01	No	---	---	---	1.76E-02	No	---	---	---
Hypothetical Resident												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	1.17E+01	1.22E-05	1.50E+01	Yes	9.57E-01	9.57E+00	9.57E+01	2.35E-01	No (b)	---	---	---

No (a) - Total IELCR in soil for this receptor does not exceed 1E-5; therefore, this chemical is not selected as a cancer-based COC.

No (b) - Total HI for receptor is not greater than 1; therefore, this chemical is not selected as a noncancer-based relevant COC.

BSV - Background screening value.

"---" - Calculation of RBTL not applicable.

COC - Chemical of concern.

HI - Hazard index.

IELCR - Individual excess lifetime cancer risk.

mg/kg - Milligram per kilogram.

NA - Not applicable.

RBTL - Risk-based target level.

Table J-26

**Risk-Based Target Levels for Exposure to Soil
RSA-122 Northwest Area
Redstone Arsenal, Madison County, Alabama**

Commercial Worker

Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)	1.00E-06	1.00E-05			1.00E-04	Target Hazard Index (mg/kg)	0.1
Inorganics												
Arsenic	1.72E+02	3.75E-05	1.50E+01	Yes	4.60E+00	4.60E+01	4.60E+02	2.33E-01	No (a)	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	5.30E-01	2.26E-08	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	8.47E-01	3.61E-07	NA	No	---	---	---	3.37E-03	No	---	---	---
Benzo(b)fluoranthene	8.43E-01	3.60E-08	NA	No	---	---	---	NA	No	---	---	---
Dibenz(a,h)anthracene	4.70E-01	2.01E-07	NA	No	---	---	---	NA	No	---	---	---
Indeno(1,2,3-cd)pyrene	5.36E-01	2.29E-08	NA	No	---	---	---	NA	No	---	---	---

Construction Worker

Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)	1.00E-06	1.00E-05			1.00E-04	Target Hazard Index (mg/kg)	0.1
Inorganics												
Arsenic	1.72E+02	2.93E-06	1.50E+01	No (b)	---	---	---	2.59E-01	No (a)	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	5.30E-01	1.06E-09	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	8.47E-01	1.69E-08	NA	No	---	---	---	5.46E-02	No	---	---	---
Benzo(b)fluoranthene	8.43E-01	1.68E-09	NA	No	---	---	---	NA	No	---	---	---
Dibenz(a,h)anthracene	4.70E-01	9.39E-09	NA	No	---	---	---	NA	No	---	---	---
Indeno(1,2,3-cd)pyrene	5.36E-01	1.07E-09	NA	No	---	---	---	NA	No	---	---	---

Hypothetical Resident

Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)	1.00E-06	1.00E-05			1.00E-04	Target Hazard Index (mg/kg)	0.1
Inorganics												
Arsenic	1.72E+02	1.80E-04	1.50E+01	Yes	9.57E-01	9.57E+00	9.57E+01	3.46E+00	Yes	4.98E+00	4.98E+01	1.49E+02
Semivolatile Organics												
Benzo(a)anthracene	5.30E-01	1.04E-07	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	8.47E-01	1.66E-06	NA	Yes	5.09E-01	5.09E+00	5.09E+01	4.72E-02	No	---	---	---
Benzo(b)fluoranthene	8.43E-01	1.66E-07	NA	No	---	---	---	NA	No	---	---	---
Dibenz(a,h)anthracene	4.70E-01	9.23E-07	NA	No	---	---	---	NA	No	---	---	---
Indeno(1,2,3-cd)pyrene	5.36E-01	1.05E-07	NA	No	---	---	---	NA	No	---	---	---

No (a) - Total IELCR in soil for this receptor does not exceed 1E-5; therefore, this chemical is not selected as a cancer-based COC.

No (b) - Total HI for receptor is not greater than 1; therefore, this chemical is not selected as a noncancer-based relevant COC.

BSV - Background screening value.

"---" - Calculation of RBTL not applicable.

COC - Chemical of concern.

HI - Hazard index.

IELCR - Individual excess lifetime cancer risk.

mg/kg - Milligram per kilogram.

NA - Not applicable.

RBTL - Risk-based target level.

Table J-27

**Risk-Based Target Levels for Exposure to Soil
RSA-122 South Area
Redstone Arsenal, Madison County, Alabama**

Commercial Worker												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	8.63E+01	1.88E-05	1.50E+01	Yes	4.60E+00	4.60E+01	4.60E+02	1.17E-01	No (a)	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	8.34E-02	3.56E-09	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	1.10E-01	4.69E-08	NA	No	---	---	---	4.38E-04	No	---	---	---
Benzo(b)fluoranthene	1.30E-01	5.55E-09	NA	No	---	---	---	NA	No	---	---	---
Dibenz(a,h)anthracene	6.52E-02	2.78E-08	NA	No	---	---	---	NA	No	---	---	---
Construction Worker												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	8.63E+01	1.47E-06	1.50E+01	No (b)	---	---	---	1.30E-01	No (a)	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	8.34E-02	1.67E-10	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	1.10E-01	2.20E-09	NA	No	---	---	---	7.10E-03	No	---	---	---
Benzo(b)fluoranthene	1.30E-01	2.60E-10	NA	No	---	---	---	NA	No	---	---	---
Dibenz(a,h)anthracene	6.52E-02	1.30E-09	NA	No	---	---	---	NA	No	---	---	---
Hypothetical Resident												
Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	8.63E+01	9.02E-05	1.50E+01	Yes	9.57E-01	9.57E+00	9.57E+01	1.73E+00	Yes	4.98E+00	4.98E+01	1.49E+02
Semivolatile Organics												
Benzo(a)anthracene	8.34E-02	1.64E-08	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	1.10E-01	2.16E-07	NA	No	---	---	---	6.13E-03	No	---	---	---
Benzo(b)fluoranthene	1.30E-01	2.55E-08	NA	No	---	---	---	NA	No	---	---	---
Dibenz(a,h)anthracene	6.52E-02	1.28E-07	NA	No	---	---	---	NA	No	---	---	---

No (a) - Total IELCR in soil for this receptor does not exceed 1E-5; therefore, this chemical is not selected as a cancer-based COC.

No (b) - Total HI for receptor is not greater than 1; therefore, this chemical is not selected as a noncancer-based relevant COC.

BSV - Background screening value.

"---" - Calculation of RBTL not applicable.

COC - Chemical of concern.

HI - Hazard index.

IELCR - Individual excess lifetime cancer risk.

mg/kg - Milligram per kilogram.

NA - Not applicable.

RBTL - Risk-based target level.

APPENDIX K

RSA-183 UPDATED HUMAN HEALTH RISK ASSESSMENT

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Attachment 1 Johnson and Ettinger Vapor Intrusion Model Runs

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K1.0 Introduction

The remedial investigation (RI) for RSA-183 was completed in 2007 (Shaw Environmental, Inc. [Shaw], 2007a). Following the RI, the feasibility study report (Shaw, 2009a), the statement of basis/proposed plan (Shaw, 2009b), and the Record of Decision (ROD) (Shaw, 2009c) were completed. As summarized in the ROD (Shaw, 2009c), the Army completed a separate baseline human health risk assessment (BHHRAs) and screening-level ecological risk assessment (SLERAs) for each of three geographical areas at RSA-183 in the RI to evaluate potential current and future effects of exposure to chemicals on the human health and environment (Shaw, 2007a). An indoor air vapor intrusion evaluation was also included as part of the human health risk assessment for RSA-183. The following three major geographical areas at RSA-183 were included in the RI report, including the BHHRAs:

- Building 4496
- Plants Area
- Sinkhole Area.

As summarized in the ROD (Shaw, 2009c), these risk assessments supported the need for the Preferred Alternative for RSA-183 soil, which was excavation of arsenic-contaminated soil, treatment (if required), backfill with clean soil, off-site disposal, short-term sediment and groundwater monitoring, and institutional controls. The excavations were limited to the Plants Area soils, as excavation was not needed for the Building 4496 area. Soil excavation was not selected for the Sinkhole Area given the high value of the intact ecological habitat in this area. A summary of the aspects of the BHHRAs that supported the determination that this remedial action is necessary to ensure the protection of human health and the environment is presented in Section 2.7.1 of the ROD, followed by a summary of the SLERAs in Section 2.7.2 of the ROD. The complete BHHRAs and SLERAs are included in Chapter 8.0 and Appendices F (BHHRAs) and G (SLERAs) of the RI report for RSA-183 (Shaw, 2007a).

The ROD concluded that arsenic and mercury in soil were identified as chemicals of concern (COC) warranting action based on the results of the BHHRAs. Chemicals in groundwater posed a human health threat, but these chemicals will be addressed during the RSA-148 groundwater unit corrective measures. Risks from the vapor intrusion pathway to a current indoor worker in eight existing buildings did not exceed acceptable levels. Carbon tetrachloride in groundwater may pose an unacceptable threat to residential receptors should the site be released for residential use. Carbon tetrachloride in groundwater may pose some threat to future occupants of Building 4381. However, no current threat to workers in Building 4381 would be expected owing to the conservative nature of the vapor intrusion evaluation.

The conclusions of the BHHRA (Section 8.1.8.5 of the RI report [Shaw, 2007a]) were that arsenic and mercury are the primary COCs for soil contamination for both industrial and residential receptors. Polynuclear aromatic hydrocarbons (PAH) represented a lesser source of contamination at the Plants Area. As a result of these conclusions and also because of the PAH toxicity updates that occurred after the 2007 RI report, PAHs are included in this evaluation of residual risks posed by surface media at RSA-183.

Since the 2007 RI was completed, a number of assumptions and values for exposure and toxicity factors have been updated by U.S. Environmental Protection Agency (EPA) guidance documents. Most importantly, a reevaluation of the benzo(a)pyrene toxicity by EPA has resulted in a change to the toxicity values recommended for this compound (EPA, 2017). Because the toxicity values for the other PAHs identified in the Resource Conservation and Recovery Act facility investigation are all a function of the toxicity of benzo(a)pyrene, this change potentially affects the conclusions of RSA-183 RI. To determine the potential impacts of PAH risks based on current site concentrations in total soil, updated receptor exposure factors, and the updated PAH toxicity data, PAHs were evaluated in the updated risk assessment.

In 2010, the Army excavated surface and near-surface soils in the Plants Area of RSA-183. A corrective measures implementation/remedial action work plan (CB&I Federal Services LLC, 2015) was prepared for this site but has not received Alabama Department of Environmental Management (ADEM) approval to date. Several appendices in the Corrective Measures Implementation Work Plan present the results of the confirmation soil samples collected as part of the previous soil action. The updated risk assessment presented in this appendix provides a revised Alabama Risk-Based Corrective Action (ARBCA) evaluation for the Plants Area using post-corrective measures soil exposure point concentrations based on confirmation sampling results plus samples left in place after the soil removal, updated toxicity values (EPA, 2019a,b), and exposure assumptions (EPA, 2011; 2014). This updated risk assessment supports the conclusion that additional corrective measures are still needed within the Plants Area of RSA-183 in order to meet the corrective measure objective of eliminating or reducing risks to industrial receptors at this site and managing unacceptable risks to residential receptors. Note that the EPA (2014) exposure factors are derived from EPA's updated *Exposure Factors Handbook* (EPA, 2011). These factors are consistent with those used in the development of EPA regional screening levels (RSL) (EPA, 2019a) except as noted in the *Installation-Wide Work Plan* and supplemental appendices (IT Corporation, 2002; Shaw, 2010). In order to present this information, the text of the original ARBCA (summarized in the ROD) is discussed in Section K2.0. The general approach and the nature of the tabulated information for the ARBCA were not changed from those used in the 2007 BHHRA. Section K3.0 presents revised tables and

describes the factors and assumptions that changed from the 2007 RI report. Section K4.0 provides revised ARBCA results based on the incorporation of new factors and exposure assumptions, and Section K5.0 provided the revised ARBCA conclusions.

K2.0 ARBCA Evaluation from Record of Decision ---

As summarized in the ROD (Shaw, 2009c), arsenic and mercury in surface media at RSA-183 were identified as COCs or chemicals of potential ecological concern warranting action based on the results of the conservative exposure scenarios in the BHHRA and SLERA. Chemicals (primarily volatile organic compounds) in groundwater may pose a substantial human health threat if exposure should occur, an activity precluded by RSA's installation-wide groundwater interim ROD (Shaw, 2007b). Risks posed by chemicals present in groundwater will be addressed as part of the RSA-148 groundwater unit corrective measures. Contaminants in site soil posing an ongoing threat of sourcing to groundwater at RSA-183 include primarily arsenic and mercury. However, elevated concentrations of mercury commonly coexist with the elevated arsenic, forming a single target for remediation. Results of the human health risk assessment indicate that arsenic in soil is associated with unacceptable cancer risk and noncancer risk to both industrial and residential receptors. Mercury in soil is associated with unacceptable noncancer risk to a residential receptor. Although the ecological risk assessment indicated potential adverse effects to individual ecological receptors from exposure to arsenic and mercury concentrations found at some locations within RSA-183, the limited suitable habitat in the Plants Area and remedial actions taken to address human health will also address ecological risk.

Soils at RSA-183 have been found to pose unacceptable risks to human health or the environment. Based on these results, it was the Army's judgment that a remedial action was necessary at RSA-183 to ensure protection of public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

K3.0 Revised ARBCA Evaluation ---

The revised ARBCA evaluation is presented in this section. COCs evaluated were limited to arsenic, copper, mercury, and the carcinogenic PAHs, based on results from the ROD.

Changes Reflected in the Revised ARBCA Tables. Since completion of the ROD in 2009, there have been a number of changes in risk assessment guidance and recommended assumptions that have affected ARBCA evaluations done for RSA. These changes fall into three categories: changes in exposure assumptions, changes in physical property assumptions, and

changes in toxicity values. In addition, soil removal actions were completed within the Plants Area in 2010.

Exposure Assumptions. Between June and November 2010, a remedial action was conducted to address soils in areas of RSA-183 with elevated arsenic and collocated mercury contamination for surface and near-surface soils. The soil excavation and disposal activity performed has a direct impact on the representative concentrations (RC) utilized in estimating site risks and hazards because soil from areas with higher concentrations has been removed and confirmation sample results are available for use in determining RCs. RCs were calculated using EPA's ProUCL program, and calculations are presented in an electronic file attachment to this appendix. The revised ARBCA evaluation for RSA-183 includes RCs estimated to reflect current site conditions. Sample lists for surface and subsurface soil based on current site conditions are provided in Table K-1. Revised RCs are presented in Table K-2.

In 2011, EPA issued an updated version of their *Exposure Factors Handbook* (EPA, 2011). As noted in 2017 ARBCA guidance (ADEM, 2017), EPA (2011) should be used to develop exposure factors. In 2014, EPA, using the results from EPA (2011), issued a directive updating the standard default exposure factors to be used in the Comprehensive Environmental Response, Compensation and Liability Act RI and feasibility study process (EPA, 2014). In the introduction to this directive, EPA also intends for this guidance to be used by other cleanup programs under federal control or oversight such as Resource Conservation and Recovery Act corrective actions (EPA, 2014). This guidance replaced various previous guidance documents on the topic. The assumptions in this directive have been adopted for use in RSA ARBCA evaluations. The selection of exposure factors is consistent with ADEM and EPA guidance (ADEM, 2017; EPA, 2011). The exposure assumptions used in the revised ARBCA evaluation for RSA-183 are summarized in Table K-3.

Physical Properties. Physical properties used in the ARBCA evaluation were historically taken from various sources. Now, however, the relevant properties are included in EPA's RSL tables (EPA, 2019a), and these properties are adopted for use in ARBCA evaluations at RSA in order to provide a consistent source of this information. The physical properties used in the revised ARBCA evaluation for RSA-183 are summarized in Table K-4.

Toxicity Values. Toxicity values are continually being updated over time by EPA and others. Since 2013, significant changes have occurred that affect the results of the RSA-183 ARBCA evaluation.

EPA (2017) issued an updated toxicological review of benzo(a)pyrene under the Integrated Risk Information System (IRIS) program in January 2017. This review updates the previous IRIS assessment of benzo(a)pyrene, which has been used since 1987. It is based on studies conducted after 1987 and the 2011 recommendations for the improvement of IRIS toxicity assessments.

Benzo(a)pyrene is now identified as “carcinogenic to humans” rather than the 1987 “probable human carcinogen” weight-of-evidence classification. For purposes of the toxicity assessment, benzo(a)pyrene continues to be used as an index chemical from which the cancer slope factors (SF) and inhalation unit risk factors (URF) are estimated for six other high priority carcinogenic PAHs. EPA (2019a,b) provides a verified oral cancer SF for benzo(a)pyrene of 1.0E+0 per milligrams per kilogram per day (mg/kg-day) and a verified inhalation URF of 6.0E-4 per microgram per cubic meter ($\mu\text{g}/\text{m}^3$). Note that an inhalation SF derived from the URF, as shown in Table K-5, is used in this evaluation. Oral cancer SFs and inhalation URFs for the remaining six EPA carcinogenic PAHs (benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) have traditionally been derived by applying the EPA (1993) toxicity equivalency factors (TEF) to the verified oral cancer SF and inhalation URF for benzo(a)pyrene. The TEFs from EPA (1993) have not changed.

EPA (2019a) has adopted the verified oral cancer SF of 1.0E+0 per mg/kg-day and the inhalation URF of 6.0E-4 for benzo(a)pyrene and applied the EPA (1993) TEFs to develop oral cancer SFs and inhalation URFs and RSLs for the other six EPA carcinogenic PAHs. The EPA (1993) TEFs and the resulting oral and inhalation potency factors are compiled below.

Compound	EPA (1993) Toxicity Equivalency Factor	Oral Cancer Slope Factor (mg/kg-day)⁻¹	Inhalation Cancer Unit Risk Factor ($\mu\text{g}/\text{m}^3$)⁻¹
Benzo(a)anthracene	0.1	1.0E-1	6.0E-5
Benzo(a)pyrene	1	1.0E+0 ^a	6.0E-4 ^a
Benzo(b)fluoranthene	0.1	1.0E-1	6.0E-5
Benzo(k)fluoranthene	0.01	1.0E-2	6.0E-6
Chrysene	0.001	1.0E-3	6.0E-7
Dibenz(a,h)anthracene	1	1.0E+0	6.0E-4
Indeno(1,2,3-cd)pyrene	0.1	1.0E-1	6.0E-5
^a Verified value on IRIS (EPA, 2019b).			

These oral and inhalation cancer potency factors are reflected in Table K-5 and have been adopted for use in the revised ARBCA risk assessment for RSA-183.

In addition, IRIS (EPA, 2019b) now includes a reference dose (RfD) (3.0E-4 mg/kg-day) and a reference concentration (RfC) (2.0E-6 milligrams per cubic meter) for benzo(a)pyrene. Note that an inhalation RfD derived from the RfC, as shown in Table K-5, is used in this evaluation.

Previously, there were no noncancer toxicity values available for this compound. Both of these toxicity values are based on developmental effects. It is noted that no RfDs or RfCs are derived for the other six PAHs above because the TEFs do not apply to noncancer effects.

K4.0 Revised ARBCA Results

The conclusions and recommendations of the ROD (Shaw, 2009c) indicated that a cleanup action was necessary for arsenic contamination in soil in the Plants Area. This conclusion was based on the results of the BHHRA evaluation that was included in the RI report (Shaw, 2007a). The previous sections of this document describe changes that were made in the ARBCA to reflect more recent values and assumptions. The RCs used in the revised evaluation were also updated to reflect current site concentrations following the 2010 corrective measures.

In addition to arsenic, copper, mercury, and several PAHs were included in the revised ARBCA evaluation since they were potentially minor contributors to site risks or since toxicity data updates have occurred since the RI was completed. The resulting revised risk estimates are provided in Tables K1-6 through K1-9 and are summarized in Tables K1-10 and K1-11. The risk summary table (Table K-10) presents individual excess lifetime cancer risk (IELCR) results in scientific notation and hazard index (HI) results in general numerical format rounded. The following table presents a summary of the cancer risks and noncancer hazards.

Summary of Cancer Risks and Noncancer Hazards, RSA-183			
Area	Groundskeeper IELCR/HI	Construction Worker IELCR/HI	Resident IELCR/HI
Plants Area	2.15E-05 / 0.176	1.68E-06 / 0.200	1.03E-04 / 2.68

Risk results greater than ADEM's risk threshold are in bold text.

The table shows that soil exposures to the construction worker result in a cumulative cancer risk and HI less than the ADEM limits of 1.0E-5 and 1.0. However, soil exposures to the groundskeeper result in cumulative cancer risks greater than the ADEM limits of 1.0E-5, while the noncancer HI is less than 1.0. The soil exposures to the hypothetical resident result in a cumulative cancer risk greater than the ADEM limits of 1.0E-5 and a noncancer HI greater than the ADEM limit of 1.0. As a result, arsenic is identified as a relevant COC (those COCs that contribute significantly to cumulative risk or hazard) for soil (Table K-11).

Groundwater risks were evaluated in the RI (Shaw, 2007a). The conclusions for groundwater are unchanged from the RI report.

K5.0 Identifying COCs Requiring Action and Estimating Risk-Based Target Levels

The first step in risk-based target level (RBTL) development is identification of the COCs requiring action. The term is used to distinguish potentially actionable COCs identified by the Risk Management (RM)-2 evaluation from the chemicals identified as COCs by the preliminary screening level evaluation. The latter includes all chemicals carried forward from the preliminary screening level evaluation tier to the RM-2 tier.

EPA (2018) requires COC identification at the end of a baseline risk assessment. Cancer-based COCs requiring action are those that contribute significantly (i.e., an IELCR greater than $1E-6$) to cumulative risk greater than the ADEM (2017) trigger level of $1E-5$. Non-cancer-based COCs requiring action are those that contribute significantly (i.e., an HI greater than 0.1) to cumulative HI or target organ HI greater than the threshold level of 1.0.

The EPA (2018) protocol can be revised slightly to identify COCs requiring action to comply with ADEM (2017) guidance at the end of the RM-2 evaluation as follows:

- Cancer-based COCs requiring action are those for which the total IELCR summed across exposure pathways for that chemical within a given medium exceeds $1E-6$ and the cumulative IELCR summed across chemicals and relevant source media for that receptor exceeds the ADEM cumulative risk trigger of $1E-5$.
- Non-cancer-based COCs requiring action are limited to those for which the HI for a given target organ exceeds 0.1 and the total HI for that target organ summed across chemicals and relevant source media for that receptor exceeds the threshold level of 1.0.
- Individual chemicals are identified as COCs requiring action if their RCs exceed their applicable or relevant and appropriate requirements.

RBTLs are risk-based concentrations that reflect the exposure and toxicity assumptions applied in the cumulative risk assessment. Consequently, the RBTLs are specific to site, source medium, receptor, and chemical. The exception is groundwater, for which the maximum contaminant levels, when available, are generally adopted as cleanup levels in place of the RBTLs.

RBTLs for cancer-based COCs requiring action for a given receptor, site, and medium are calculated by the following equation:

$$RBTL_{coc} = \frac{RC_{coc} \times TR}{IELCR_{coc}} \quad \text{Eq. D.1}$$

where:

- RBTL_{coc} = risk-based target level for a given COC requiring action, receptor, and source medium (calculated)
- RC_{coc} = representative concentration of the COC requiring action in the given medium
- TR = target risk level (1 x 10⁻⁶ as per ARBCA guidance, but see below)
- IELCR_{coc} = total individual excess lifetime cancer risk for a given COC requiring action, for a given receptor added across all exposure routes for a given source medium.

RBTLs for non-cancer-based COCs requiring action are estimated as follows:

$$RBTL_{coc} = \frac{RC_{coc} \times THI}{HI_{coc}} \quad \text{Eq. D.2}$$

where:

- RBTL_{coc} = risk-based target level for a given COC requiring action, receptor, and source medium (calculated)
- RC_{coc} = source-term concentration of the COC requiring action in the given medium
- THI = target hazard index (but see below)
- HI_{coc} = total hazard index for a given COC requiring action, for a given receptor added across all exposure routes for given source medium.

Concentration units are not provided in Equations D.1 and D.2; the RBTL units are the same as the concentration units of the RC.

No single TR can be selected universally as the basis for the RBTLs for all cancer-based COCs requiring action for a given receptor. The only ADEM (2017) requirement is that cumulative cancer risk does not exceed the trigger level of 1E-5. Therefore, the TR for any given COC may depend upon the number of COCs requiring action, their spatial distribution, the total IELCR estimated for each, and the ease with which individual chemicals may be remediated. The cancer risk of 1E-6 is selected as the TR at the Resource Conservation and Recovery Act facility investigation stage of site management. Refinement of the TR, if possible, is done at the corrective measures implementation work plan stage of site management.

Similarly, no single THI can be selected universally as the basis for the RBTLs for all non-cancer-based COCs requiring action for a given receptor. ADEM (2017) specifies that the total

cumulative HI of the RBTLs should not exceed the threshold level of 1.0. Consistent with the approved installation-wide work plan, EPA (1989) and ADEM (2017) guidance, the foregoing is interpreted to mean that the cumulative HI of the RBTLs with a common mechanism of toxicity should not exceed 1.0. Consideration of target organs is generally adopted as a surrogate for the mechanism of toxicity. Therefore, when only one noncancer COC requiring action is identified for a given receptor and target organ, the THI can be set at 1. However, when multiple COCs requiring action with a common target organ are identified, the THI may be less than 1, and RBTLs based on multiple THIs are possible. It may be possible to estimate higher RBTLs depending on the number of multiple COCs requiring action, their spatial distribution, the total HI estimated for each, and the ease with which individual chemicals may be remediated. Selection of the final RBTLs under these conditions is done at the corrective measures implementation work plan stage of site management.

Risk-Based Target Levels for Total Soil

The cumulative IELCR for exposure to soils alone did not exceed the ADEM trigger level of 1E-5 for the construction worker receptor, but did exceed 1E-5 for the groundskeeper and hypothetical residents (Table K-11). In addition, the cumulative HI for exposure to soils alone did not exceed the threshold level of 1 for the groundskeeper and construction worker but did exceed 1 for a child residential receptor (Table K-11). Therefore, as shown in Table K-12, RBTLs were derived for arsenic in soils.

K6.0 Revised ARBCA Conclusions

In summary, based on the revised ARBCA evaluation, arsenic in soil in the Plants Area still potentially poses unacceptable risks to the groundskeeper and to the hypothetical resident receptor.

K7.0 Revised Indoor Air Vapor Intrusion Evaluation

The RI for RSA-183 was completed in 2007 (Shaw, 2007a). This report included an evaluation to identify whether there was a potentially unacceptable risk from exposure to indoor air vapors originating from VOC contamination in groundwater existing buildings within RSA-183. In addition, the potential for unacceptable concentrations of VOCs in groundwater to reach the indoor air of a hypothetical residential building that might be built on RSA-183 was investigated. The conclusions of this evaluation were that VOCs in groundwater do not pose an indoor air vapor risk at Buildings 4460, 4383, 4496, or 4497. However, future occupants of Building 4381 may be at risk and further action (including engineered improvements) were recommended. In addition, further action was recommended to address vapor intrusion under future residential use.

The collection of soil gas samples was recommended to further evaluate the potential for vapor intrusion. This evaluation was based on groundwater data, toxicity values, and screening levels available at that time. Since that time, additional groundwater data has been collected, toxicity values have changed, and EPA has developed screening levels specifically to evaluate vapor intrusion (EPA, 2021). This new information has been used to reevaluate the potential for vapor intrusion at RSA-183 in the following sections.

The current approach for evaluating vapor intrusion consists of conducting screening of existing soil gas, groundwater, and soil data EPA's (2015) vapor intrusion guidance. As noted above, EPA (2021) has developed screening values (Vapor Intrusion Screening Levels or VISLs) for this purpose for groundwater, soil gas, and indoor air. These values are based on current toxicity values, physical/chemical properties, and assumptions regarding attenuation factors between soil gas concentrations and indoor air. The following steps contribute lines of evidence to inform a conclusion regarding the potential for the vapor intrusion pathway to pose an unacceptable risk to human health:

- Step 1 consists of comparing the MDCs of detected VOCs in groundwater with their default target screening levels from the vapor intrusion screening level calculator (EPA, 2021).
- Step 2 consists of carrying the VOCs in groundwater that have Step 1 exceedances through estimation of potential indoor air concentrations, and comparing those concentrations with default target indoor air screening levels from the vapor intrusion screening level calculator.

The Step 1 evaluation is shown in Table K-13. The MDCs of carbon tetrachloride and trichloroethene in groundwater samples exceed their target screening levels. These VOCs were subjected to the Step 2 indoor air modeling exercise. The other VOCs detected in groundwater did not exceed their target screening levels and are judged not to pose a threat to human health as a result of vapor intrusion.

In the Step 2 evaluation, the EPA (2004) spreadsheet version of the Johnson and Ettinger (1991) vapor intrusion model is used to estimate the potential indoor air concentrations in a hypothetical residential building from VOC concentrations in groundwater that exceed their target screening levels in Step 1. The potential concentration of a chemical in indoor air is expected to attenuate from the concentration in groundwater. This attenuation is associated with the geotechnical characteristics of the soil above the vadose-zone/groundwater interface at the sampling location, and the characteristics of the building of interest, including its foundation, ventilation rate, and size. The soil geotechnical characteristics and default building characteristics that reflect how residential buildings are constructed in the RSA area, agreed by all parties in the supplements to

the installation-wide work plan (Shaw, 2010) are used in the modeling (Table K-14). The depth to groundwater in the well from which the MDC was detected was input to the model. The attenuation factor and potential indoor air concentration from the modeling effort are summarized in Table K-15. The estimated indoor air concentrations are compared with the target screening levels in K-16. The model run worksheets for these VOCs are included in Attachment 1.

As seen in Table K-16, the estimated indoor air concentrations of carbon tetrachloride exceeded the indoor air target screening levels at all risk levels shown in this table. At higher target risk levels (1E-05 and 1E-04) the screening levels are based on a noncancer hazard of 1 rather than cancer risk. These results show that the potential for indoor air risk resulting from vapor intrusion is still present at RSA-183 based on current groundwater data. The collection of soil gas data in the vicinity of the maximum groundwater concentrations is recommended as part of the RSA-183 corrective measures to further evaluate the potential for vapor intrusion.

K8.0 References

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ATTACHMENT 1

JOHNSON AND ETTINGER VAPOR INTRUSION MODEL RUNS

**Attachment 1
Table 1-1
Carbon Tetrachloride
RSA-183
Redstone Arsenal, Madison County, Alabama**

(Page 1 of 2)

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

Reset to
Defaults

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)	Chemical									
56235	11000	Carbon tetrachloride									
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)	
25	15	852.5	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	A	SIC	SIC			

MORE
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ENTER Stratum A SCS soil tvne Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_p^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil tvne Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_p^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil tvne Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_p^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SIC	1.63	0.480	0.29		1.5	0.43			1.5	0.43	

MORE
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ENTER Enclosed space floor pressure thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
8.9	40	1585	1585	243.8	0.1	0.25	

MORE
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ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

MORE
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END

Used to calculate risk-based
groundwater concentration.

Attachment 1
Table 1-1
Carbon Tetrachloride
RSA-183
Redstone Arsenal, Madison County, Alabama

(Page 2 of 2)

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{ie} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	837.5	0.190	ERROR	ERROR	0.485	1.52E-09	0.700	1.06E-09	192.31	0.48	0.056	0.424	6,340

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm^2/s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm^2/s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm^2/s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm^2/s)	Total overall effective diffusion coefficient, D^{eff}_T (cm^2/s)	Diffusion path length, L_d (cm)
4.25E+04	2.61E+06	2.43E-04	15	7,705	3.03E-02	1.24E+00	1.80E-04	1.34E-03	0.00E+00	0.00E+00	2.52E-05	1.03E-04	837.5

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
15	1.36E+07	0.10	1.65E+00	1.34E-03	6.34E+02	3.15E+07	6.33E-06	8.63E+01	1.5E-05	NA

END

**Attachment 1
Table 1-2
Trichloroethene
RSA-183
Redstone Arsenal, Madison County, Alabama**

(Page 1 of 2)

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

Chemical

79016

83

Trichloroethylene

MORE
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ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)								
25	15	852.5	852.5	0	0	A	SIC	SIC		

MORE
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ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
SIC	1.63	0.480	0.29		1.5	0.43			1.5	0.43	

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
8.9	40	1585	1585	243.8	0.1	0.25	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
groundwater concentration.

**Attachment 1
Table 1-2
Trichloroethene
RSA-183**

Redstone Arsenal, Madison County, Alabama

(Page 2 of 2)

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm^3/cm^3)	Stratum B soil air-filled porosity, θ_a^B (cm^3/cm^3)	Stratum C soil air-filled porosity, θ_a^C (cm^3/cm^3)	Stratum A effective total fluid saturation, S_{ie} (cm^3/cm^3)	Stratum A soil intrinsic permeability, k_i (cm^2)	Stratum A soil relative air permeability, k_{rg} (cm^2)	Stratum A soil effective vapor permeability, k_v (cm^2)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm^3/cm^3)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm^3/cm^3)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm^3/cm^3)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	837.5	0.190	NA	NA	0.485	1.52E-09	0.700	1.06E-09	192.31	0.48	0.056	0.424	6,340

Bldg. ventilation rate, $Q_{building}$ (cm^3/s)	Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} ($\text{atm}\cdot\text{m}^3/\text{mol}$)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm^2/s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm^2/s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm^2/s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm^2/s)	Total overall effective diffusion coefficient, D_T^{eff} (cm^2/s)	Diffusion path length, L_d (cm)
4.25E+04	2.61E+06	2.43E-04	15	8,369	1.03E-02	4.20E-01	1.80E-04	1.36E-03	0.00E+00	0.00E+00	2.91E-05	1.18E-04	837.5

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m^3)
15	3.49E+04	0.10	1.65E+00	1.36E-03	6.34E+02	2.50E+07	7.09E-06	2.47E-01	1.1E-04	4.0E-02

END

TABLES

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
RSA-183
Redstone Arsenal, Madison County, Alabama**

(Page 1 of 12)

Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
SURFACE SOIL					
GM92-FS-12	92-FS-12	11-Apr-92	0 - 0.5	Arsenic, Cadmium, Mercury, PAHs	GMiller
GM92-FS-14	92-FS-14	11-Apr-92	0 - 0.5	Arsenic, Cadmium, Mercury, PAHs	GMiller
GM92-FS-20	92-FS-20	11-Apr-92	0 - 0.5	Arsenic, Cadmium, Mercury, PAHs	GMiller
GM92-FS-21	92-FS-21	11-Apr-92	0 - 0.5	Arsenic, Cadmium, Mercury, PAHs	GMiller
DSS001	D0001	28-Jan-97	0 - 0.5	Arsenic, PAH	IT Corp
DSS002	D0002	28-Jan-97	0 - 0.5	Arsenic, PAH	IT Corp
DSS005	D0005	28-Jan-97	0 - 0.5	Arsenic, PAH	IT Corp
DSS006	D0006	28-Jan-97	0 - 0.5	Arsenic, PAH	IT Corp
DSS007	D0007	28-Jan-97	0 - 0.5	Arsenic, PAH	IT Corp
DSS009	D0009	28-Jan-97	0 - 0.5	Arsenic, PAH	IT Corp
DSS010	D0010	28-Jan-97	0 - 0.5	Arsenic, PAH	IT Corp
DSS001	D0013	28-Jan-97	0.75 - 1	Arsenic, PAH	IT Corp
DSS002	D0014	28-Jan-97	0.75 - 1	Arsenic, PAH	IT Corp
DSS005	D0017	28-Jan-97	0.75 - 1	Arsenic, PAH	IT Corp
DSS006	D0018	28-Jan-97	0.75 - 1	Cyanide, TAL Metals, Pests, PCBs, SVOCs, VOCs	IT Corp
DSS007	D0019	28-Jan-97	0.75 - 1	Arsenic, PAH	IT Corp
DSS009	D0021	28-Jan-97	0.75 - 1	Arsenic, PAH	IT Corp
DSS010	D0022	28-Jan-97	0.75 - 1	Arsenic, PAH	IT Corp
DSD006	D1005	4-Feb-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD007	D1006	4-Feb-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD008	D1007	4-Feb-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD006	D1019	3-Jun-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD007	D1020	3-Jun-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD008	D1021	3-Jun-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD006	D1030	17-Sep-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD007	D1031	17-Sep-97	0 - 0.5	Cyanide, TAL Metals, Pests, PCBs, SVOCs, VOCs	IT Corp
DSD008	D1032	17-Sep-97	0 - 0.5	Arsenic, PAH	IT Corp
DSD006	D1056	13-Jan-98	0 - 0.5	Arsenic, PAH	IT Corp
DSD007	D1057	13-Jan-98	0 - 0.5	Arsenic, PAH	IT Corp
DSD008	D1058	13-Jan-98	0 - 0.5	Arsenic, PAH	IT Corp
E-SS13	E0060	7-Jun-00	0 - 0.6	TAL Metals, VOCs	IT Corp
E-SS14	E0061	7-Jun-00	0 - 0.6	TAL Metals, VOCs	IT Corp
E183-SB47	EF0163	15-Jul-03	0 - 1	TAL Metals	Shaw
E183-SB48	EF0167	23-Jun-03	0 - 1	TAL Metals, SVOCs	Shaw
E183-SB50	EF0176	16-Jun-03	0 - 1	TAL Metals	Shaw
E183-SB64	EF0238	29-Jul-03	0 - 1	TAL Metals	Shaw
E183-SB65	EF0242	13-Aug-03	0.2 - 1.2	TAL Metals	Shaw
E183-SB69	EF0260	10-Aug-03	0 - 1	TAL Metals	Shaw
E183-SB70	EF0264	27-Jun-03	0 - 1	TAL Metals, SVOCs	Shaw
E183-SB73	EF0277	8-Aug-03	0 - 1	TAL Metals	Shaw
E183-SB75	EF0286	7-Aug-03	0 - 1	TAL Metals	Shaw
E183-SB76	EF0291	9-Aug-03	0 - 1	TAL Metals	Shaw
E183-SB82	EF0317	30-Jul-03	0 - 1	TAL Metals	Shaw
E183-SB83	EF0322	24-Jun-03	0 - 1	TAL Metals, SVOCs	Shaw
E183-SB84	EF0326	30-Jun-03	0 - 1	TAL Metals, SVOCs	Shaw
E183-SB86	EF0335	27-Jun-03	0 - 1	TAL Metals	Shaw
E183-SB89	EF0348	4-Aug-03	0 - 1	TAL Metals, SVOCs	Shaw
E183-SB94	EF0370	5-Aug-03	0 - 1	TAL Metals, SVOCs	Shaw
E183-SB104	EF0414	23-Jun-03	0 - 1	TAL Metals	Shaw
E183-SB106	EF0423	15-Jul-03	0 - 1	TAL Metals	Shaw
E183-SB136	EF0555	14-Jul-03	0 - 1	TAL Metals	Shaw
E183-SB137	EF0559	10-Jul-03	0 - 1	TAL Metals	Shaw
E183-SB149	EF0603	24-Aug-04	0 - 1	TAL Metals	Shaw
E183-SB150	EF0608	24-Aug-04	0 - 1	TAL Metals	Shaw
E183-SB151	EF0612	24-Aug-04	0 - 1	TAL Metals	Shaw
E183-SB172	EF0731	28-Apr-06	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB174	EF0738	1-May-06	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB176	EF0746	1-May-06	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB196	EF0824	2-May-06	0 - 1	TAL Metals	Shaw
E183-SB197	EF0829	2-May-06	0 - 1	TAL Metals	Shaw
E183-SB198	EF0834	2-May-06	0 - 1	TAL Metals	Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
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(Page 2 of 12)

Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-SB199	EF0838	2-May-06	0 - 1	TAL Metals	Shaw
E183-SB200	EF0842	3-May-06	0 - 1	TAL Metals	Shaw
E183-SB201	EF0846	3-May-06	0 - 1	TAL Metals	Shaw
E183-SB202	EF0850	3-May-06	0 - 1	TAL Metals	Shaw
E183-SB183	EF0864	3-May-06	0 - 1	TAL Metals	Shaw
E183-SB171	EF0869	28-Apr-06	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB177	EF0871	1-May-06	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB178	EF0872	1-May-06	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB179	EF0873	1-May-06	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB180	EF0874	3-May-06	0 - 1	TAL Metals	Shaw
E183-SD19	EF1001	13-Jul-03	0 - 0.5	TAL Metals, SVOCs	Shaw
E183-SD25	EF1008	13-Jul-03	0 - 0.5	TAL Metals, SVOCs	Shaw
E183-SD34	EF1029	13-Jul-03	0 - 0.5	TAL Metals, SVOCs	Shaw
E183-CS10	PEF0011	7-Jun-10	0 - 1	Arsenic	Shaw
E183-CS100	PEF0110	2-Jun-10	0 - 1	Arsenic	Shaw
E183-CS101	PEF0111	2-Jun-10	0 - 1	Arsenic	Shaw
E183-CS102	PEF0112	21-Jun-10	0 - 1	Arsenic	Shaw
E183-CS103	PEF0113	22-Jun-10	0 - 1	Arsenic	Shaw
E183-CS104	PEF0114	21-Jun-10	0 - 1	Arsenic	Shaw
E183-CS105	PEF0115	21-Jun-10	0 - 1	Arsenic	Shaw
E183-CS111	PEF0122	23-Jun-10	0 - 1	Arsenic	Shaw
E183-CS118	PEF0129	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS119	PEF0130	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS121	PEF0132	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS122	PEF0133	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS123	PEF0134	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS124	PEF0135	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS125	PEF0136	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS126	PEF0137	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS127	PEF0138	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS128	PEF0139	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS129	PEF0141	7-Jul-10	0 - 1	Arsenic	Shaw
E183-CS130	PEF0142	9-Jul-10	0 - 1	Arsenic	Shaw
E183-CS131	PEF0143	9-Jul-10	0 - 1	Arsenic	Shaw
E183-CS132	PEF0144	9-Jul-10	0 - 1	Arsenic	Shaw
E183-CS133	PEF0145	9-Jul-10	0 - 1	Arsenic	Shaw
E183-CS134	PEF0146	9-Jul-10	0 - 1	Arsenic	Shaw
E183-CS135	PEF0147	9-Jul-10	0 - 1	Arsenic	Shaw
E183-CS136	PEF0148	9-Jul-10	0 - 1	Arsenic	Shaw
E183-CS141	PEF0154	10-Jun-10	0 - 1	Arsenic	Shaw
E183-CS142	PEF0155	10-Jun-10	0 - 1	Arsenic	Shaw
E183-CS143	PEF0156	21-Jun-10	0 - 1	Arsenic	Shaw
E183-CS144	PEF0157	21-Jun-10	0 - 1	Arsenic	Shaw
E183-CS15	PEF0017	2-Jun-10	0 - 1	Arsenic	Shaw
E183-CS157	PEF0171	30-Jul-10	0 - 1	Arsenic	Shaw
E183-CS158	PEF0172	30-Jul-10	0 - 1	Arsenic	Shaw
E183-CS16	PEF0018	2-Jun-10	0 - 1	Arsenic	Shaw
E183-CS17	PEF0019	3-Jun-10	0 - 1	Arsenic	Shaw
E183-CS27	PEF0030	7-Jun-10	0 - 1	Arsenic	Shaw
E183-CS28	PEF0031	10-Jun-10	0 - 1	Arsenic	Shaw
E183-CS29	PEF0032	10-Jun-10	0 - 1	Arsenic	Shaw
E183-CS30	PEF0033	10-Jun-10	0 - 1	Arsenic	Shaw
E183-CS31	PEF0034	10-Jun-10	0 - 1	Arsenic	Shaw
E183-CS33	PEF0036	10-Jun-10	0 - 1	Arsenic	Shaw
E183-CS34	PEF0038	10-Jun-10	0 - 1	Arsenic	Shaw
GM-FS-7	FS-7	27-Jul-90	0 - 2	RCRA Metals, SVOCs, VOCs	GMiller
14801H-HP03	PSD0090	12-Dec-04	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP04	PSD0093	8-Dec-04	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP05	PSD0096	8-Dec-04	0 - 1	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP06	PSD0123	12-Dec-04	0 1		Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
Excluded Samples^b					
USACE-ARF-100	ARF100-0	1-Jan-94	0 - 2	Arsenic	EBASCO
USACE-ARF-113	ARF113-0	1-Jan-94	0 - 2	Arsenic	EBASCO
E183-SB143	EF0581	17-Jul-03	0 - 1	TAL Metals, SVOCs, VOCs	Shaw
E183-SB145	EF0588	18-Jul-03	0 - 1	TAL Metals, SVOCs, VOCs	Shaw
EBASCO-SB26	F-SB260-2	11-May-94	0 - 2	Arsenic	EBASCO
EBASCO-SB33	F-SB330-2	9-May-94	0 - 2	Arsenic	EBASCO
EBASCO-SB34	F-SB340-2	11-May-94	0 - 2	Arsenic	EBASCO
EBASCO-SB45	F-SB450-2	6-May-94	0 - 2	Arsenic	EBASCO
SUBSURFACE SOIL^c					
Shallow Subsurface Soil					
14801H-HP01	PSD0084	8-Dec-04	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP01	PSD0085	8-Dec-04	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP02	PSD0087	8-Dec-04	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP02	PSD0089	8-Dec-04	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP03	PSD0091	12-Dec-04	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP03	PSD0092	12-Dec-04	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP04	PSD0094	8-Dec-04	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP04	PSD0095	8-Dec-04	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP05	PSD0097	8-Dec-04	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP05	PSD0098	8-Dec-04	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
14801H-HP06	PSD0124	12-Dec-04	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-CS01	PEF0001	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS02	PEF0002	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS03	PEF0003	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS04	PEF0005	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS05	PEF0006	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS06	PEF0007	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS07	PEF0008	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS08	PEF0009	3-Jun-10	1 - 2	Arsenic	Shaw
E183-CS09	PEF0010	4-Jun-10	1 - 2	Arsenic	Shaw
E183-CS11	PEF0012	7-Jun-10	1 - 2	Arsenic	Shaw
E183-CS112	PEF0123	8-Jul-10	1 - 2	Arsenic	Shaw
E183-CS113	PEF0124	8-Jul-10	1 - 2	Arsenic	Shaw
E183-CS114	PEF0125	7-Jul-10	1 - 2	Arsenic	Shaw
E183-CS115	PEF0126	7-Jul-10	1 - 2	Arsenic	Shaw
E183-CS116	PEF0127	7-Jul-10	1 - 2	Arsenic	Shaw
E183-CS117	PEF0128	7-Jul-10	1 - 2	Arsenic	Shaw
E183-CS12	PEF0013	7-Jun-10	1 - 2	Arsenic	Shaw
E183-CS13	PEF0014	4-Jun-10	1 - 2	Arsenic	Shaw
E183-CS137	PEF0149	14-Jul-10	1 - 2	Arsenic	Shaw
E183-CS139	PEF0152	14-Jul-10	1 - 2	Arsenic	Shaw
E183-CS14	PEF0016	7-Jun-10	1 - 2	Arsenic	Shaw
E183-CS140	PEF0153	14-Jul-10	1 - 2	Arsenic	Shaw
E183-CS145	PEF0158	14-Jul-10	1 - 2	Arsenic	Shaw
E183-CS146	PEF0159	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS147	PEF0160	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS148	PEF0161	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS149	PEF0162	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS151	PEF0164	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS152	PEF0165	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS153	PEF0166	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS154	PEF0167	15-Jul-10	1 - 2	Arsenic	Shaw
E183-CS155	PEF0168	14-Jul-10	1 - 2	Arsenic	Shaw
E183-CS156	PEF0170	16-Jul-10	1 - 2	Arsenic	Shaw
E183-CS159	PEF0173	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS160	PEF0174	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS161	PEF0176	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS162	PEF0177	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS163	PEF0178	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS164	PEF0179	17-Aug-10	1 - 2	Arsenic	Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-CS165	PEF0180	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS166	PEF0181	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS167	PEF0182	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS168	PEF0183	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS169	PEF0184	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS170	PEF0185	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS171	PEF0187	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS172	PEF0188	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS173	PEF0189	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS174	PEF0190	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS175	PEF0191	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS176	PEF0192	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS177	PEF0193	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS178	PEF0194	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS179	PEF0195	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS180	PEF0196	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS181	PEF0198	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS182	PEF0199	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS183	PEF0200	17-Aug-10	1 - 2	Arsenic	Shaw
E183-CS19	PEF0021	8-Jun-10	1 - 2	Arsenic	Shaw
E183-CS20	PEF0022	10-Jun-10	1 - 2	Arsenic	Shaw
E183-CS21	PEF0023	10-Jun-10	1 - 2	Arsenic	Shaw
E183-CS22	PEF0024	10-Jun-10	1 - 2	Arsenic	Shaw
E183-CS23	PEF0025	8-Jun-10	1 - 2	Arsenic	Shaw
E183-CS24	PEF0027	10-Jun-10	1 - 2	Arsenic	Shaw
E183-CS25	PEF0028	10-Jun-10	1 - 2	Arsenic	Shaw
E183-CS26	PEF0029	10-Jun-10	1 - 2	Arsenic	Shaw
E183-CS35	PEF0039	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS36	PEF0040	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS37	PEF0041	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS38	PEF0042	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS39	PEF0043	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS40	PEF0044	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS41	PEF0045	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS42	PEF0046	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS43	PEF0047	17-Jun-10	1 - 2	Arsenic	Shaw
E183-CS44	PEF0049	17-Jun-10	1 - 2	Arsenic	Shaw
E183-CS45	PEF0050	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS46	PEF0051	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS47	PEF0052	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS48	PEF0053	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS49	PEF0054	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS50	PEF0055	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS51	PEF0056	17-Jun-10	1 - 2	Arsenic	Shaw
E183-CS52	PEF0057	17-Jun-10	1 - 2	Arsenic	Shaw
E183-CS53	PEF0058	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS54	PEF0060	15-Jun-10	1 - 2	Arsenic	Shaw
E183-CS55	PEF0061	16-Jun-10	1 - 2	Arsenic	Shaw
E183-CS56	PEF0062	15-Jun-10	1 - 2	Arsenic	Shaw
E183-CS57	PEF0063	15-Jun-10	1 - 2	Arsenic	Shaw
E183-CS58	PEF0064	15-Jun-10	1 - 2	Arsenic	Shaw
E183-CS59	PEF0065	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS60	PEF0066	14-Jun-10	1 - 2	Arsenic	Shaw
E183-CS66	PEF0073	17-Jun-10	1 - 2	Arsenic	Shaw
E183-CS67	PEF0074	17-Jun-10	1 - 2	Arsenic	Shaw
E183-CS69	PEF0076	18-Jun-10	1 - 2	Arsenic	Shaw
E183-CS70	PEF0077	18-Jun-10	1 - 2	Arsenic	Shaw
E183-CS71	PEF0078	18-Jun-10	1 - 2	Arsenic	Shaw
E183-CS72	PEF0079	18-Jun-10	1 - 2	Arsenic	Shaw
E183-CS73	PEF0080	18-Jun-10	1 - 2	Arsenic	Shaw
E183-CS74	PEF0082	21-Jun-10	1 - 2	Arsenic	Shaw
E183-CS75	PEF0083	22-Jun-10	1 - 2	Arsenic	Shaw
E183-CS76	PEF0084	22-Jun-10	1 - 2	Arsenic	Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-CS77	PEF0085	22-Jun-10	1 - 2	Arsenic	Shaw
E183-CS78	PEF0086	22-Jun-10	1 - 2	Arsenic	Shaw
E183-CS79	PEF0087	22-Jun-10	1 - 2	Arsenic	Shaw
E183-CS80	PEF0088	22-Jun-10	1 - 2	Arsenic	Shaw
E183-CS81	PEF0089	23-Jun-10	1 - 2	Arsenic	Shaw
E183-CS82	PEF0090	23-Jun-10	1 - 2	Arsenic	Shaw
E183-CS83	PEF0091	23-Jun-10	1 - 2	Arsenic	Shaw
E183-CS84	PEF0093	23-Jun-10	1 - 2	Arsenic	Shaw
E183-CS85	PEF0094	22-Jun-10	1 - 2	Arsenic	Shaw
E183-CS86	PEF0095	22-Jun-10	1 - 2	Arsenic	Shaw
E183-CS87	PEF0096	4-Jun-10	1 - 2	Arsenic	Shaw
E183-CS88	PEF0097	4-Jun-10	1 - 2	Arsenic	Shaw
E183-HP01	EF0001	9-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-HP02	EF0003	21-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-HP03	EF0005	21-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-HP04	EF0007	21-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-HP05	EF0009	23-Jul-03	11 - 13	TAL Metals, VOCs	Shaw
E183-HP06	EF0011	23-Jul-03	11 - 13	TAL Metals, VOCs	Shaw
E183-HP08	EF0015	23-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-HP08	EF0016	23-Jul-03	11 - 13	TAL Metals, VOCs	Shaw
E183-HP09	EF0017	26-Jul-03	11 - 13	TAL Metals, VOCs	Shaw
E183-SB100	EF0396	27-Jul-03	1 - 3	TAL Metals	Shaw
E183-SB100	EF0397	27-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB101	EF0401	27-Jul-03	4 - 5	TAL Metals	Shaw
E183-SB101	EF0402	27-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB102	EF0405	11-Aug-03	0.7 - 1.7	TAL Metals, PCBs	Shaw
E183-SB102	EF0406	11-Aug-03	5 - 6	TAL Metals, PCBs	Shaw
E183-SB102	EF0407	11-Aug-03	8 - 10	TAL Metals, PCBs	Shaw
E183-SB103	EF0409	10-Aug-03	0.5 - 1.5	TAL Metals, PCBs	Shaw
E183-SB103	EF0410	10-Aug-03	5 - 6	TAL Metals, PCBs	Shaw
E183-SB103	EF0412	10-Aug-03	11 - 12	TAL Metals, PCBs	Shaw
E183-SB104	EF0415	23-Jun-03	5 - 6	TAL Metals	Shaw
E183-SB105	EF0418	10-Jul-03	1.5 - 2.5	TAL Metals, SVOCs, VOCs	Shaw
E183-SB105	EF0419	10-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB105	EF0420	10-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB106	EF0424	15-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB106	EF0425	15-Jul-03	4 - 5	TAL Metals	Shaw
E183-SB106	EF0426	15-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB107	EF0427	29-Jul-03	1 - 2	TAL Metals	Shaw
E183-SB107	EF0428	29-Jul-03	4 - 5	TAL Metals	Shaw
E183-SB107	EF0429	29-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB108	EF0431	29-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB108	EF0432	29-Jul-03	7 - 9	TAL Metals	Shaw
E183-SB108	EF0433	29-Jul-03	10 - 12	TAL Metals	Shaw
E183-SB109	EF0436	13-Aug-03	0.5 - 1.5	TAL Metals	Shaw
E183-SB109	EF0437	13-Aug-03	6 - 7	TAL Metals	Shaw
E183-SB136	EF0556	14-Jul-03	4 - 5	TAL Metals	Shaw
E183-SB136	EF0557	14-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB137	EF0560	10-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB138	EF0565	9-Jul-03	5 - 7	TAL Metals	Shaw
E183-SB146	EF0596	23-Aug-04	2 - 4	TAL Metals	Shaw
E183-SB146	EF0598	23-Aug-04	10 - 12	TAL Metals	Shaw
E183-SB147	EF0599	23-Aug-04	2 - 4	TAL Metals	Shaw
E183-SB147	EF0600	23-Aug-04	10 - 12	TAL Metals	Shaw
E183-SB148	EF0601	23-Aug-04	2 - 4	TAL Metals	Shaw
E183-SB148	EF0602	23-Aug-04	10 - 12	TAL Metals	Shaw
E183-SB149	EF0604	24-Aug-04	2 - 3	TAL Metals	Shaw
E183-SB149	EF0606	24-Aug-04	5 - 6	TAL Metals	Shaw
E183-SB149	EF0607	24-Aug-04	8 - 10	TAL Metals	Shaw
E183-SB15	EF0024	7-Aug-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB15	EF0025	7-Aug-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB15	EF0026	7-Aug-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB150	EF0609	24-Aug-04	2 - 3	TAL Metals	Shaw

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**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-SB150	EF0610	24-Aug-04	5 - 6	TAL Metals	Shaw
E183-SB150	EF0611	24-Aug-04	8 - 10	TAL Metals	Shaw
E183-SB151	EF0613	24-Aug-04	2 - 3	TAL Metals	Shaw
E183-SB151	EF0614	24-Aug-04	5 - 6	TAL Metals	Shaw
E183-SB151	EF0615	24-Aug-04	8 - 10	TAL Metals	Shaw
E183-SB152	EF0616	24-Aug-04	4 - 6	TAL Metals	Shaw
E183-SB152	EF0618	24-Aug-04	10 - 12	TAL Metals	Shaw
E183-SB153	EF0620	23-Aug-04	4 - 6	TAL Metals	Shaw
E183-SB153	EF0621	23-Aug-04	10 - 12	TAL Metals	Shaw
E183-SB157	EF0694	30-Aug-04	11 - 15	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB16	EF0028	7-Aug-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB16	EF0029	7-Aug-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB160	EF0674	24-Aug-04	4 - 6	TAL Metals	Shaw
E183-SB161	EF0678	24-Aug-04	4 - 6	TAL Metals	Shaw
E183-SB168	EF0713	26-Apr-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB168	EF0714	26-Apr-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB168	EF0716	26-Apr-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB17	EF0032	9-Jul-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB17	EF0034	9-Jul-03	4 - 5	TAL Metals, VOCs	Shaw
E183-SB170	EF0723	27-Apr-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB170	EF0724	27-Apr-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB170	EF0725	27-Apr-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB171	EF0727	28-Apr-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB171	EF0728	28-Apr-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB171	EF0729	28-Apr-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB172	EF0732	28-Apr-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB172	EF0733	28-Apr-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB172	EF0734	28-Apr-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB173	EF0735	28-Apr-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB173	EF0736	28-Apr-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB173	EF0737	28-Apr-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB174	EF0740	1-May-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB174	EF0741	1-May-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB174	EF0742	1-May-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB175	EF0743	27-Apr-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB175	EF0744	27-Apr-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB175	EF0745	27-Apr-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB176	EF0747	1-May-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB176	EF0748	1-May-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB176	EF0749	1-May-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB177	EF0750	1-May-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB177	EF0751	1-May-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB177	EF0752	1-May-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB178	EF0754	1-May-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB178	EF0755	1-May-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB178	EF0756	1-May-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB179	EF0759	1-May-06	1 - 3	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB179	EF0760	1-May-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB179	EF0761	1-May-06	8 - 10	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB18	EF0037	7-Jul-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB18	EF0038	7-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB180	EF0763	3-May-06	4 - 6	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB180	EF0764	3-May-06	8 - 10	TAL Metals	Shaw
E183-SB181	EF0768	2-May-06	10 - 12	TAL Metals	Shaw
E183-SB183	EF0865	3-May-06	4 - 6	TAL Metals	Shaw
E183-SB183	EF0866	3-May-06	8 - 10	TAL Metals	Shaw
E183-SB19	EF0041	8-Aug-03	5 - 6	TAL Metals, VOCs	Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-SB196	EF0825	2-May-06	4 - 6	TAL Metals	Shaw
E183-SB196	EF0827	2-May-06	8 - 10	TAL Metals	Shaw
E183-SB197	EF0831	2-May-06	4 - 6	TAL Metals	Shaw
E183-SB197	EF0832	2-May-06	8 - 10	TAL Metals	Shaw
E183-SB198	EF0835	2-May-06	4 - 6	TAL Metals	Shaw
E183-SB198	EF0836	2-May-06	8 - 10	TAL Metals	Shaw
E183-SB199	EF0839	2-May-06	4 - 6	TAL Metals	Shaw
E183-SB199	EF0840	2-May-06	8 - 10	TAL Metals	Shaw
E183-SB200	EF0843	3-May-06	4 - 6	TAL Metals	Shaw
E183-SB200	EF0844	3-May-06	8 - 10	TAL Metals	Shaw
E183-SB201	EF0847	3-May-06	4 - 6	TAL Metals	Shaw
E183-SB201	EF0848	3-May-06	8 - 10	TAL Metals	Shaw
E183-SB202	EF0851	3-May-06	4 - 6	TAL Metals	Shaw
E183-SB202	EF0852	3-May-06	8 - 10	TAL Metals	Shaw
E183-SB21	EF0050	7-Jul-03	4 - 5	TAL Metals, VOCs	Shaw
E183-SB22	EF0054	8-Jul-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB23	EF0059	9-Jul-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB23	EF0060	9-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB24	EF0063	6-Aug-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB24	EF0064	6-Aug-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB25	EF0067	6-Aug-03	4 - 5	TAL Metals, SVOCs, VOCs	Shaw
E183-SB25	EF0068	6-Aug-03	8 - 10	TAL Metals, SVOCs, VOCs	Shaw
E183-SB26	EF0072	7-Jul-03	5 - 6	TAL Metals, SVOCs, VOCs	Shaw
E183-SB27	EF0076	8-Jul-03	5 - 6	TAL Metals, SVOCs, VOCs	Shaw
E183-SB27	EF0077	8-Jul-03	8 - 10	TAL Metals, SVOCs, VOCs	Shaw
E183-SB28	EF0080	7-Jul-03	5 - 7	TAL Metals, VOCs	Shaw
E183-SB28	EF0082	7-Jul-03	11 - 13	TAL Metals, VOCs	Shaw
E183-SB29	EF0085	2-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB30	EF0089	2-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB30	EF0090	2-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB31	EF0093	6-Aug-03	1 - 2	TAL Metals	Shaw
E183-SB31	EF0094	6-Aug-03	3 - 4	TAL Metals	Shaw
E183-SB31	EF0095	6-Aug-03	8 - 10	TAL Metals	Shaw
E183-SB32	EF0098	10-Jul-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB32	EF0099	10-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB33	EF0103	10-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB34	EF0107	24-Jun-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB34	EF0108	24-Jun-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB34	EF0109	24-Jun-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB35	EF0111	18-Jun-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB35	EF0112	19-Jun-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB36	EF0117	18-Jun-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB36	EF0118	18-Jun-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB37	EF0120	17-Jun-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB37	EF0122	17-Jun-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB39	EF0129	27-Jun-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB39	EF0130	27-Jun-03	4 - 6	TAL Metals, VOCs	Shaw
E183-SB40	EF0132	14-Jul-03	1.5 - 2.5	TAL Metals, VOCs	Shaw
E183-SB40	EF0133	14-Jul-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB40	EF0134	14-Jul-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB41	EF0138	25-Jun-03	2 - 3	TAL Metals, SVOCs, VOCs	Shaw
E183-SB41	EF0139	25-Jun-03	6 - 8	TAL Metals, SVOCs, VOCs	Shaw
E183-SB42	EF0142	26-Jun-03	2 - 3	TAL Metals, SVOCs, VOCs	Shaw
E183-SB42	EF0143	26-Jun-03	8 - 10	TAL Metals, SVOCs, VOCs	Shaw
E183-SB43	EF0146	25-Jun-03	2 - 3	TAL Metals, SVOCs, VOCs	Shaw
E183-SB44	EF0151	26-Jun-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB44	EF0152	26-Jun-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB45	EF0155	20-Jun-03	2 - 3	TAL Metals	Shaw
E183-SB45	EF0156	20-Jun-03	8 - 10	TAL Metals	Shaw
E183-SB46	EF0160	20-Jun-03	2 - 3	TAL Metals	Shaw
E183-SB46	EF0161	20-Jun-03	8 - 10	TAL Metals	Shaw
E183-SB47	EF0164	15-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB47	EF0165	15-Jul-03	8 - 10	TAL Metals	Shaw

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**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-SB48	EF0168	23-Jun-03	5 - 6	TAL Metals	Shaw
E183-SB49	EF0173	11-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB50	EF0177	16-Jun-03	5 - 6	TAL Metals	Shaw
E183-SB51	EF0181	23-Jun-03	5 - 6	TAL Metals	Shaw
E183-SB51	EF0183	23-Jun-03	8 - 10	TAL Metals	Shaw
E183-SB52	EF0186	25-Jun-03	2 - 3	TAL Metals	Shaw
E183-SB52	EF0187	25-Jun-03	4 - 5	TAL Metals	Shaw
E183-SB52	EF0188	25-Jun-03	8 - 10	TAL Metals	Shaw
E183-SB53	EF0190	27-Jun-03	2 - 3	TAL Metals	Shaw
E183-SB53	EF0191	27-Jun-03	8 - 10	TAL Metals	Shaw
E183-SB54	EF0195	20-Jun-03	4 - 5	TAL Metals	Shaw
E183-SB54	EF0196	20-Jun-03	8 - 10	TAL Metals	Shaw
E183-SB55	EF0199	28-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB55	EF0200	28-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB56	EF0202	14-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB56	EF0203	14-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB56	EF0205	14-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB57	EF0208	14-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB57	EF0209	14-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB58	EF0211	15-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB58	EF0212	15-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB59	EF0217	16-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB59	EF0218	16-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB60	EF0220	14-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB60	EF0221	14-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB61	EF0224	15-Jul-03	4 - 5	TAL Metals	Shaw
E183-SB61	EF0226	15-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB62	EF0229	16-Jul-03	1 - 2	TAL Metals	Shaw
E183-SB62	EF0230	16-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB62	EF0231	16-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB63	EF0233	15-Jul-03	4 - 5	TAL Metals	Shaw
E183-SB63	EF0234	15-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB64	EF0239	29-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB64	EF0240	29-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB64	EF0241	29-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB65	EF0243	13-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB65	EF0244	13-Aug-03	11 - 13	TAL Metals	Shaw
E183-SB66	EF0248	11-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB66	EF0249	11-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB66	EF0250	11-Aug-03	8 - 10	TAL Metals	Shaw
E183-SB67	EF0251	10-Aug-03	0.5 - 1.5	TAL Metals	Shaw
E183-SB67	EF0252	10-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB68	EF0256	5-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB69	EF0261	10-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB70	EF0265	27-Jun-03	2 - 3	TAL Metals	Shaw
E183-SB70	EF0266	27-Jun-03	4 - 6	TAL Metals	Shaw
E183-SB71	EF0270	30-Jun-03	2 - 3	TAL Metals	Shaw
E183-SB71	EF0271	30-Jun-03	5 - 6	TAL Metals	Shaw
E183-SB72	EF0274	8-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB72	EF0275	8-Jul-03	4 - 5	TAL Metals	Shaw
E183-SB73	EF0278	8-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB74	EF0283	2-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB74	EF0284	2-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB75	EF0287	7-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB75	EF0288	7-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB76	EF0292	9-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB76	EF0293	9-Aug-03	8 - 10	TAL Metals	Shaw
E183-SB77	EF0295	13-Aug-03	1 - 2	TAL Metals	Shaw
E183-SB77	EF0296	13-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB78	EF0299	12-Aug-03	1.5 - 3	TAL Metals	Shaw
E183-SB78	EF0300	12-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB79	EF0304	12-Aug-03	1 - 2	TAL Metals	Shaw
E183-SB79	EF0305	12-Aug-03	5 - 7	TAL Metals	Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
RSA-183
Redstone Arsenal, Madison County, Alabama**

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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-SB79	EF0306	12-Aug-03	10 - 12	TAL Metals	Shaw
E183-SB80	EF0309	12-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB81	EF0313	18-Aug-03	0.5 - 1.5	TAL Metals	Shaw
E183-SB81	EF0314	18-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB81	EF0315	18-Aug-03	8 - 10	TAL Metals	Shaw
E183-SB82	EF0318	30-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB82	EF0319	30-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB83	EF0323	24-Jun-03	6 - 8	TAL Metals	Shaw
E183-SB84	EF0327	30-Jun-03	8 - 10	TAL Metals	Shaw
E183-SB85	EF0332	30-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB85	EF0333	30-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB86	EF0336	27-Jun-03	4 - 6	TAL Metals	Shaw
E183-SB87	EF0340	30-Jun-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB87	EF0341	30-Jun-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB87	EF0343	30-Jun-03	11 - 13	TAL Metals, VOCs	Shaw
E183-SB88	EF0345	7-Aug-03	2 - 3	TAL Metals, VOCs	Shaw
E183-SB88	EF0346	7-Aug-03	5 - 6	TAL Metals, VOCs	Shaw
E183-SB88	EF0347	7-Aug-03	8 - 10	TAL Metals, VOCs	Shaw
E183-SB89	EF0349	4-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB89	EF0350	4-Aug-03	8 - 10	TAL Metals	Shaw
E183-SB90	EF0354	28-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB90	EF0355	28-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB91	EF0358	29-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB91	EF0359	29-Jul-03	8 - 10	TAL Metals	Shaw
E183-SB92	EF0362	5-Aug-03	5 - 6	TAL Metals	Shaw
E183-SB93	EF0366	5-Aug-03	0.8 - 1.8	TAL Metals	Shaw
E183-SB93	EF0367	5-Aug-03	3 - 4	TAL Metals	Shaw
E183-SB93	EF0368	5-Aug-03	10 - 12	TAL Metals	Shaw
E183-SB94	EF0371	5-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB94	EF0372	5-Aug-03	8 - 10	TAL Metals	Shaw
E183-SB95	EF0376	16-Jul-03	2 - 3	TAL Metals	Shaw
E183-SB96	EF0380	8-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB96	EF0381	8-Aug-03	8 - 9	TAL Metals	Shaw
E183-SB97	EF0384	8-Aug-03	2 - 3	TAL Metals	Shaw
E183-SB97	EF0385	8-Aug-03	8 - 10	TAL Metals	Shaw
E183-SB98	EF0388	28-Jul-03	2 - 4	TAL Metals	Shaw
E183-SB98	EF0389	28-Jul-03	5 - 6	TAL Metals	Shaw
E183-SB99	EF0392	27-Jul-03	1 - 3	TAL Metals	Shaw
E183-SB99	EF0393	27-Jul-03	5 - 6	TAL Metals	Shaw
E-SB01	E0013	12-Apr-00	4 - 6	TAL Metals, VOCs	IT Corp
E-SB01	E0014	12-Apr-00	8 - 10	TAL Metals, VOCs	IT Corp
E-SB02	E0017	2-May-00	4 - 6	TAL Metals, VOCs	IT Corp
E-SB02	E0018	2-May-00	8 - 10	TAL Metals, VOCs	IT Corp
E-SB03	E0020	3-May-00	4 - 6	Cyanide, TAL Metals, Pests, PCBs, SVOCs, VOCs	IT Corp
E-SB03	E0021	3-May-00	8 - 10	Cyanide, TAL Metals, Pests, PCBs, SVOCs, VOCs	IT Corp
E-SB03	E0021	3-May-00	8 - 10	TAL Metals, Pests, PCBs, SVOCs, VOCs	IT Corp
E-SB04	E0023	9-May-00	4 - 6	TAL Metals, VOCs	IT Corp
E-SB04	E0024	9-May-00	8 - 10	TAL Metals, VOCs	IT Corp
E-SB05	E0026	8-May-00	4 - 6	TAL Metals, VOCs	IT Corp
E-SB05	E0027	8-May-00	8 - 10	TAL Metals, VOCs	IT Corp
E-SB06	E0029	4-May-00	4 - 6	TAL Metals, VOCs	IT Corp
E-SB06	E0030	4-May-00	8 - 10	TAL Metals, VOCs	IT Corp
E-SB07	E0032	5-May-00	4 - 6	Cyanide, TAL Metals, Pests, PCBs, SVOCs, VOCs	IT Corp
E-SB07	E0034	5-May-00	8 - 10	Cyanide, TAL Metals, Pests, PCBs, SVOCs, VOCs	IT Corp
E-SB08	E0036	5-May-00	4 - 6	TAL Metals, VOCs	IT Corp
E-SB08	E0037	5-May-00	8 - 10	TAL Metals, VOCs	IT Corp
MC-SB02-267	CGA438	19-Sep-96	11 - 12.5	Cyanide, PP Metals, SVOCs, VOCs	NASA

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
RSA-183
Redstone Arsenal, Madison County, Alabama**

(Page 10 of 12)

Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
Excluded Samples ^c					
E183-HP01	EF0002	9-Jul-03	20 - 22	TAL Metals, VOCs	Shaw
E183-HP02	EF0004	21-Jul-03	16 - 18	TAL Metals, VOCs	Shaw
E183-HP02	EF0594	21-Jul-03	20 - 22	TAL Metals, VOCs	Shaw
E183-HP03	EF0006	21-Jul-03	12 - 14	TAL Metals, VOCs	Shaw
E183-HP04	EF0008	21-Jul-03	12 - 14	TAL Metals, VOCs	Shaw
E183-HP05	EF0010	23-Jul-03	16 - 18	TAL Metals, VOCs	Shaw
E183-HP06	EF0012	23-Jul-03	16 - 18	TAL Metals, VOCs	Shaw
E183-HP06	EF0593	23-Jul-03	21 - 23	TAL Metals, VOCs	Shaw
E183-HP07	EF0013	26-Jul-03	12 - 14	TAL Metals, VOCs	Shaw
E183-HP07	EF0014	26-Jul-03	17 - 19	TAL Metals, VOCs	Shaw
E183-HP08	EF0592	23-Jul-03	15 - 16	TAL Metals, VOCs	Shaw
E183-HP09	EF0018	26-Jul-03	15 - 17	TAL Metals, VOCs	Shaw
E183-SB100	EF0399	27-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB101	EF0403	27-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB101	EF0404	27-Jul-03	24 - 25	TAL Metals	Shaw
E183-SB104	EF0416	23-Jun-03	23 - 25	TAL Metals	Shaw
E183-SB104	EF0417	23-Jun-03	26 - 28	TAL Metals	Shaw
E183-SB105	EF0421	10-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB109	EF0438	13-Aug-03	12 - 14	TAL Metals	Shaw
E183-SB136	EF0558	14-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB137	EF0561	10-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB137	EF0562	14-Jul-03	15 - 17	TAL Metals	Shaw
E183-SB138	EF0566	9-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB138	EF0567	9-Jul-03	32 - 34	TAL Metals	Shaw
E183-SB152	EF0619	24-Aug-04	18 - 20	TAL Metals	Shaw
E183-SB153	EF0622	23-Aug-04	18 - 20	TAL Metals	Shaw
E183-SB16	EF0030	7-Aug-03	17 - 19	TAL Metals, VOCs	Shaw
E183-SB160	EF0676	24-Aug-04	14 - 16	TAL Metals	Shaw
E183-SB160	EF0677	24-Aug-04	22 - 24	TAL Metals	Shaw
E183-SB161	EF0679	24-Aug-04	14 - 16	TAL Metals	Shaw
E183-SB161	EF0680	24-Aug-04	22 - 24	TAL Metals	Shaw
E183-SB168	EF0717	26-Apr-06	12 - 14	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB168	EF0881	3-May-06	16 - 18	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB17	EF0035	9-Jul-03	26 - 28	TAL Metals, VOCs	Shaw
E183-SB170	EF0726	27-Apr-06	12 - 14	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB170	EF0883	4-May-06	16 - 18	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB174	EF0884	4-May-06	12 - 14	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB175	EF0870	27-Apr-06	12 - 14	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB175	EF0885	4-May-06	16 - 18	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB176	EF0887	4-May-06	14 - 16	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB177	EF0753	1-May-06	12 - 14	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB178	EF0757	1-May-06	12 - 14	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB179	EF0888	4-May-06	14 - 16	TAL Metals, SVOCs, TPH ^a , VOCs	Shaw
E183-SB18	EF0039	7-Jul-03	12 - 14	TAL Metals, VOCs	Shaw
E183-SB180	EF0765	3-May-06	14 - 16	TAL Metals	Shaw
E183-SB181	EF0770	2-May-06	14 - 16	TAL Metals	Shaw
E183-SB183	EF0868	3-May-06	14 - 16	TAL Metals	Shaw
E183-SB19	EF0042	8-Aug-03	13 - 14	TAL Metals, VOCs	Shaw
E183-SB196	EF0828	2-May-06	14 - 16	TAL Metals	Shaw
E183-SB197	EF0833	2-May-06	14 - 16	TAL Metals	Shaw
E183-SB198	EF0837	2-May-06	14 - 16	TAL Metals	Shaw
E183-SB199	EF0841	2-May-06	14 - 16	TAL Metals	Shaw
E183-SB20	EF0046	8-Jul-03	12 - 14	TAL Metals, VOCs	Shaw
E183-SB20	EF0047	8-Jul-03	15 - 17	TAL Metals, VOCs	Shaw
E183-SB20	EF0048	8-Jul-03	23 - 25	TAL Metals, VOCs	Shaw
E183-SB200	EF0845	3-May-06	14 - 16	TAL Metals	Shaw
E183-SB201	EF0849	3-May-06	14 - 16	TAL Metals	Shaw
E183-SB202	EF0854	3-May-06	14 - 16	TAL Metals	Shaw
E183-SB21	EF0051	7-Jul-03	12 - 14	TAL Metals, VOCs	Shaw
E183-SB21	EF0052	7-Jul-03	16 - 18	TAL Metals, VOCs	Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
RSA-183
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-SB22	EF0055	8-Jul-03	12 - 13	TAL Metals, VOCs	Shaw
E183-SB22	EF0056	8-Jul-03	20 - 22	TAL Metals, VOCs	Shaw
E183-SB22	EF0591	8-Jul-03	25 - 27	TAL Metals	Shaw
E183-SB23	EF0061	9-Jul-03	28 - 30	TAL Metals, VOCs	Shaw
E183-SB24	EF0065	6-Aug-03	12 - 14	TAL Metals, VOCs	Shaw
E183-SB25	EF0070	6-Aug-03	22 - 24	TAL Metals, SVOCs, VOCs	Shaw
E183-SB26	EF0073	7-Jul-03	12 - 14	TAL Metals, SVOCs, VOCs	Shaw
E183-SB26	EF0074	7-Jul-03	16 - 18	TAL Metals, SVOCs, VOCs	Shaw
E183-SB27	EF0078	8-Jul-03	12 - 14	TAL Metals, SVOCs, VOCs	Shaw
E183-SB28	EF0083	7-Jul-03	16.5 - 18.5	TAL Metals, VOCs	Shaw
E183-SB29	EF0086	2-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB29	EF0087	2-Jul-03	20 - 22	TAL Metals	Shaw
E183-SB30	EF0091	2-Jul-03	25 - 27	TAL Metals	Shaw
E183-SB32	EF0100	10-Jul-03	21 - 23	TAL Metals, VOCs	Shaw
E183-SB33	EF0104	14-Jul-03	21.5 - 23.5	TAL Metals, VOCs	Shaw
E183-SB33	EF0105	14-Jul-03	25 - 26	TAL Metals, VOCs	Shaw
E183-SB37	EF0121	17-Jun-03	16 - 18	TAL Metals, VOCs	Shaw
E183-SB38	EF0125	26-Jun-03	12 - 14	TAL Metals, VOCs	Shaw
E183-SB38	EF0126	26-Jun-03	16 - 18	TAL Metals, VOCs	Shaw
E183-SB39	EF0131	27-Jun-03	12 - 14	TAL Metals, VOCs	Shaw
E183-SB41	EF0140	25-Jun-03	18 - 20	TAL Metals, SVOCs, VOCs	Shaw
E183-SB41	EF0568	25-Jun-03	22 - 24	TAL Metals, SVOCs, VOCs	Shaw
E183-SB42	EF0144	26-Jun-03	12 - 14	TAL Metals, SVOCs, VOCs	Shaw
E183-SB47	EF0166	15-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB48	EF0170	23-Jun-03	12 - 14	TAL Metals	Shaw
E183-SB48	EF0171	23-Jun-03	24 - 25	TAL Metals	Shaw
E183-SB49	EF0174	11-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB49	EF0175	11-Jul-03	24 - 25	TAL Metals	Shaw
E183-SB50	EF0178	16-Jun-03	12 - 14	TAL Metals	Shaw
E183-SB50	EF0179	17-Jun-03	28 - 30	TAL Metals	Shaw
E183-SB51	EF0184	23-Jun-03	21 - 23	TAL Metals	Shaw
E183-SB53	EF0192	27-Jun-03	12 - 14	TAL Metals	Shaw
E183-SB54	EF0197	20-Jun-03	12 - 14	TAL Metals	Shaw
E183-SB55	EF0201	28-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB57	EF0210	14-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB58	EF0213	15-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB59	EF0219	16-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB60	EF0222	14-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB60	EF0223	14-Jul-03	20 - 22	TAL Metals	Shaw
E183-SB61	EF0227	15-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB62	EF0232	16-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB63	EF0236	15-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB67	EF0253	10-Aug-03	12 - 14	TAL Metals	Shaw
E183-SB68	EF0258	5-Aug-03	12 - 14	TAL Metals	Shaw
E183-SB68	EF0259	5-Aug-03	16 - 18	TAL Metals	Shaw
E183-SB69	EF0262	10-Aug-03	12 - 14	TAL Metals	Shaw
E183-SB69	EF0263	10-Aug-03	16 - 18	TAL Metals	Shaw
E183-SB70	EF0267	30-Jun-03	16 - 18	TAL Metals	Shaw
E183-SB71	EF0272	30-Jun-03	12 - 14	TAL Metals	Shaw
E183-SB71	EF0569	30-Jun-03	16 - 18	TAL Metals	Shaw
E183-SB72	EF0276	8-Jul-03	18 - 20	TAL Metals	Shaw
E183-SB73	EF0280	8-Aug-03	13 - 15	TAL Metals	Shaw
E183-SB73	EF0281	8-Aug-03	17 - 19	TAL Metals	Shaw
E183-SB74	EF0285	2-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB77	EF0297	13-Aug-03	12 - 14	TAL Metals	Shaw
E183-SB78	EF0301	12-Aug-03	12 - 14	TAL Metals	Shaw
E183-SB80	EF0310	12-Aug-03	12 - 14	TAL Metals	Shaw
E183-SB81	EF0316	18-Aug-03	13 - 15	TAL Metals	Shaw
E183-SB83	EF0324	24-Jun-03	15 - 16	TAL Metals	Shaw
E183-SB83	EF0325	24-Jun-03	26 - 28	TAL Metals	Shaw
E183-SB84	EF0328	30-Jun-03	22 - 24	TAL Metals	Shaw
E183-SB84	EF0329	30-Jun-03	26 - 27	TAL Metals	Shaw
E183-SB85	EF0334	30-Jul-03	16 - 18	TAL Metals	Shaw

Table K-1

**Surface and Subsurface Soil Sample Summary for Human Health Risk Evaluation
RSA-183
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Location	Sample No.	Date	Depth (ft bgs)	Analyses	Investigator
E183-SB86	EF0337	27-Jun-03	12 - 14	TAL Metals	Shaw
E183-SB86	EF0338	27-Jun-03	20 - 22	TAL Metals	Shaw
E183-SB89	EF0351	4-Aug-03	25 - 27	TAL Metals	Shaw
E183-SB92	EF0364	5-Aug-03	16 - 18	TAL Metals	Shaw
E183-SB92	EF0365	5-Aug-03	22 - 24	TAL Metals	Shaw
E183-SB95	EF0377	16-Jul-03	20 - 22	TAL Metals	Shaw
E183-SB95	EF0378	16-Jul-03	23.5 - 24.5	TAL Metals	Shaw
E183-SB98	EF0390	28-Jul-03	12 - 14	TAL Metals	Shaw
E183-SB99	EF0394	27-Jul-03	16 - 18	TAL Metals	Shaw
E183-SB99	EF0395	27-Jul-03	20 - 22	TAL Metals	Shaw
MC-SB02-266	CGA437	19-Sep-96	12 - 14	Cyanide, PP Metals, SVOCs, VOCs	NASA
Excluded Samples^b					
E183-SB143	EF0582	17-Jul-03	1 - 5	TAL Metals, SVOCs, VOCs	Shaw
E183-SB143	EF0583	17-Jul-03	6 - 10	TAL Metals, SVOCs, VOCs	Shaw
E183-SB145	EF0589	18-Jul-03	1 - 5	TAL Metals, SVOCs, VOCs	Shaw
E183-SB145	EF0590	18-Jul-03	6 - 10	TAL Metals, SVOCs, VOCs	Shaw
E183-SB157	EF0655A	26-Aug-04	2 - 3	TAL Metals	Shaw
E183-SB157	EF0657A	26-Aug-04	8 - 10	TAL Metals	Shaw
E183-SB162	EF0682A	24-Aug-04	1 - 4	Arsenic, Mercury	Shaw
E183-SB162	EF0683A	24-Aug-04	5 - 6	Arsenic, Mercury	Shaw
E183-SB162	EF0684A	24-Aug-04	12 - 13	Arsenic, Mercury	Shaw
E183-SB162	EF0685A	24-Aug-04	20 - 22	Arsenic, Mercury	Shaw
EBASCO-SB26	F-SB262-4	11-May-94	2 - 4	Arsenic	EBASCO
EBASCO-SB26	F-SB264-6	11-May-94	4 - 6	Arsenic	EBASCO
EBASCO-SB33	F-SB332-4	9-May-94	2 - 4	Arsenic	EBASCO
EBASCO-SB33	F-SB334-6	9-May-94	4 - 6	Arsenic	EBASCO
EBASCO-SB34	F-SB342-4	11-May-94	2 - 4	Arsenic	EBASCO
EBASCO-SB34	F-SB344-6	11-May-94	4 - 6	Arsenic	EBASCO
EBASCO-SB45	F-SB452-4	6-May-94	2 - 4	Arsenic	EBASCO
EBASCO-SB45	F-SB454-6	6-May-94	4 - 6	Arsenic	EBASCO
USACE-ARF-100	ARF100-2	1-Jan-94	2 - 4	Arsenic	EBASCO
USACE-ARF-100	ARF100-3	1-Jan-94	4 - 6	Arsenic	EBASCO
USACE-ARF-113	ARF113-2	1-Jan-94	2 - 4	Arsenic	EBASCO
USACE-ARF-113	ARF113-4	1-Jan-94	4 - 6	Arsenic	EBASCO

^a Data are screening level and are not used in this evaluation.

^b Data for these analyses are excluded because they were not validated. Only validated, definitive data are included in the risk assessment.

^c Subsurface soil is defined as follows:

- 1) Shallow subsurface soil - samples collected from an interval of 0.5 to 12 ft bgs.
- 2) Deeper subsurface soil - samples collected from greater than 12 ft bgs to refusal or water table; these data are excluded.

ft bgs - Feet below ground surface.

PP Metals - Priority pollutants (13 metals).

PAH - Polynuclear aromatic hydrocarbons.

PCB - Polychlorinated biphenyl.

Pest - Organochlorine pesticides.

RCRA - Metals analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver only.

SVOC - Semivolatile organic compounds.

TAL - Target analyte list.

TPH - Total Petroleum Hydrocarbons.

VOC - Volatile organic compounds.

Table K-2

**Chemicals of Concern and their Representative Concentrations:
Total Soil
RSA-183
Redstone Arsenal, Madison County, Alabama**

Chemical of Concern	Detection Frequency	Percent Detection	Maximum Detected Concentration	VQ	Location of MDC	Arithmetic Mean Concentration	Representative Concentration	Method of Estimation ^a	Statistical Distribution ^a	Method of UCL Computation ^a
TOTAL SOIL^b (mg/kg)										
Inorganics										
Arsenic	550 / 550	100	3.12E+03		E183-SB157	5.94E+01	9.86E+01	95% UCL	Not Discernible	Chebyshev (Mean, Sd)
Copper	351 / 351	100	3.44E+03		14801H-HP06	2.08E+01	3.69E+01	95% UCL	Not Discernible	Student's-t
Mercury	343 / 353	97	9.21E+02	J	E183-SB43	4.46E+00	1.61E+01	95% UCL	Not Discernible	KM (Chebyshev)
Semivolatile Organics										
Benzo(a)anthracene	9 / 88	10	1.20E+00		14801H-HP05	2.68E-01	9.41E-02	95% UCL	Lognormal	KM H-UCL
Benzo(a)pyrene	13 / 112	12	1.40E+00		E183-SB172	2.25E-01	7.21E-02	95% UCL	Lognormal	KM H-UCL
Benzo(b)fluoranthene	14 / 112	13	1.70E+00		E183-SB172	2.21E-01	6.95E-02	95% UCL	Lognormal	KM H-UCL

^a Nature of distribution and 95% UCL determined using ProUCL Version 5.0 (EPA, 2016, ProUCL Version 5.1.002, May, <https://www.epa.gov/land-research/proucl-software>).

The recommended UCL was used unless the recommendation was the 97.5% or 99% Chebyshev UCL. In those cases, the 95% Chebyshev UCL was used (*). Nondetected surrogate values with reporting limits greater than 2 times the maximum detected concentration were not included in the UCL calculation. NA - Not applicable; a UCL could not be calculated because the reporting limits for nondetects were greater than 2 times the maximum detected concentration, or sample size was inadequate.

^b Total soil is the combination of surface and subsurface soil (0 to 12 feet below ground surface).

J - Estimated concentration.

KM - Kaplan-Meier Method.

MDC - Maximum detected concentration.

mg/kg - Milligrams per kilogram.

NA - Not applicable.

UCL - Upper confidence limit.

VQ - Validation qualifier.

Table K-3
Variables Used to Estimate Potential Chemical Intakes and Contact Rates for Receptors
RSA-183
Redstone Arsenal, Madison County, Alabama

Pathway Variable	Units	Commercial	Construction	Hypothetical Resident	
		Worker	Worker	Adult	Child
General Parameters Used in All Intake Models					
Exposure frequency - except as noted (EF)	days/year	225	250	350	350
Exposure frequency - homegrown produce consumption (EF _p)	days/year	NA	NA	350	350
Exposure duration (ED)	years	25	1	20	6
Body weight (BW)	kilograms	80	80	80	15
Averaging time - noncancer (AT _n)	days	9,125	365	NA	2,190
Averaging time - cancer (AT _c)	days	25,550	25,550	25,550	25,550
Inhalation of VOCs and Resuspended Dust from Soil					
Inhalation rate (IR _a)	m ³ /hour	2.5	2.5	NA	NA
Exposure time (ET _a)	hours/day	8	8	NA	NA
Fraction exposed to contaminated medium (FI _a)	unitless	1	1	NA	NA
Incidental Ingestion of Soil					
Incidental ingestion rate (IR _s)	mg/day	100	100	100	200
Fraction exposed to contaminated medium (FI _s)	unitless	1	1	1	1
Dermal Contact with Soil					
Body surface area exposed (SA)	cm ²	3,527	3,527	6,032	2,373
Soil-to-skin adherence factor (AF)	mg/cm ²	0.12	0.12	0.07	0.2
Dermal absorption factor (ABS)	unitless	csv	csv	csv	csv
Event frequency (EV)	events/day	1	1	1	1
Fraction exposed to contaminated medium (FI)	unitless	1	1	1	1

cm² - Square centimeter.
 csv - Chemical-specific value.
 L/day - Liters per day.
 m³/hour - Cubic meters per hour.
 mg/cm² - Milligrams per square centimeter.
 mg/day - Milligrams per day.
 NA - Pathway not applicable for receptor.

Table K-4

Physical Properties of Chemicals of Concern and Other Specified Chemicals ^a
RSA-183
Redstone Arsenal, Madison County, Alabama

Chemical	Dermal-from-Soil Absorption Factor (ABS) (unitless)	Time for Dermal Uptake to Reach Steady State (t*) (hours)	Permeability Coefficient (K _p) (cm/hour)	Lag Time for Contaminant to Cross Stratum Corneum (tau) (hours)	Ratio of Permeability Coefficients ^b (B) (dimensionless)	Fraction Absorbed (FA) (dimensionless)	Molecular Weight (g/mole)	Henry's Law Constant (atm·m ³ /mole)	Log K _{ow} (unitless)
Inorganics									
Arsenic	0.03	NA	1.00E-03	NA	NA	NA	74.922	NA	NA
Copper	NA	NA	1.00E-03	NA	NA	NA	63.546	NA	NA
Mercury	NA	NA	1.00E-03	NA	NA	NA	200.59	NA	NA
Semivolatile Organics									
Benzo(a)anthracene	0.13	8.5	5.52E-01	2.03	3.21	1	228.3	4.92E-04	5.8
Benzo(a)pyrene	0.13	11.7	7.13E-01	2.69	4.36	1	252.32	1.87E-05	6.13
Benzo(b)fluoranthene	0.13	11.3	4.17E-01	2.72	2.55	1	252.32	2.69E-05	5.78

^a Unless otherwise noted, values taken from U.S. Environmental Protection Agency (EPA), 2019, *Regional Screening Levels for Chemical Contaminants at Superfund Sites*, November.

^b The ratio of the permeability coefficient (K_p) of a compound through the stratum corneum relative to its K_p across the viable epidermis.

atm·m³/mole - Atmosphere-cubic meter per mole.

cm/hour - Centimeters per hour.

COC - Chemical of concern.

days/kg - Days per kilogram.

g/mole - Gram per mole.

Log K_{ow} - Log of the octanol/water partition coefficient.

NA - Not applicable.

ND - No data.

Table K-5

**Summary of the Cancer and Noncancer Evaluation for the Chemicals of Concern ^a
 RSA-183
 Redstone Arsenal, Madison County, Alabama**

Chemical	Gastrointestinal Absorption Factors (unitless)	CANCER EVALUATION			NONCANCER EVALUATION				
		Oral Slope Factor (mg/kg-day) ⁻¹	Dermal Slope Factor (mg/kg-day) ⁻¹	Inhalation Slope Factor (mg/kg-day) ⁻¹	Oral Reference Dose (mg/kg-day)	Dermal Reference Dose (mg/kg-day)	Oral / Dermal Target Organ ^b	Inhalation Reference Dose (mg/kg-day)	Inhalation Target Organ ^b
Inorganics									
Arsenic	1	1.50E+00	1.50E+00	1.50E+01	3.00E-04	3.00E-04	S, Vascular	ND	NA
Copper	1	ND	ND	ND	4.00E-02	4.00E-02	GI	ND	NA
Mercury	0.07	ND	ND	ND	3.00E-04	2.10E-05	IS	ND	NA
Semivolatile Organics									
Benzo(a)anthracene	1	1.00E-01	1.00E-01	2.10E-01	ND	NA	NA	ND	NA
Benzo(a)pyrene	1	1.00E+00	1.00E+00	2.10E+00	3.00E-04	3.00E-04	Neurobehavior	5.70E-07	DFS
Benzo(b)fluoranthene	1	1.00E-01	1.00E-01	2.10E-01	ND	NA	NA	ND	NA

^a Unless otherwise noted, values taken from U.S. Environmental Protection Agency (EPA), 2019, *Regional Screening Levels for Chemical Contaminants at Superfund Sites*, November.

^b Target organ identified in primary sources.

Target Organs/Critical Effects:

DFS - decreased fetal survival; GI - gastrointestinal; IS - immune system; S - skin.

mg/kg-day - Milligram per kilogram-day.

NA - Not applicable.

ND - No data.

Table K-6

**Intake Doses and Risk for Exposure to Total Soil ^a
Groundskeeper
RSA-183
Redstone Arsenal, Madison County, Alabama**

Chemical of Concern	Representative Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COC in Total Soil				Ingestion of COC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COC		IELCR from Dermal Contact	HQ from Dermal Contact	Sum IELCR	Sum HI
			Cancer	Noncancer	IELCR from Inhalation	HQ from Inhalation	Cancer	Noncancer	IELCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer	Noncancer				
Inorganics																	
Arsenic	9.86E+01	6.21E-08	NA ^b	NA ^b	NA ^b	NA ^b	2.71E-05	7.60E-05	1.63E-05	1.01E-01	3.55E-07	3.45E-06	9.65E-06	5.17E-06	3.22E-02	2.15E-05	1.33E-01
Copper	3.69E+01	2.33E-08	NA ^b	NA ^b	NA ^b	NA ^b	1.02E-05	2.85E-05	NA	7.12E-04	NA	NA	NA	NA	NA	NA	7.12E-04
Mercury	1.61E+01	1.01E-08	NA ^b	NA ^b	NA ^b	NA ^b	4.42E-06	1.24E-05	NA	4.13E-02	NA	NA	NA	NA	NA	NA	4.13E-02
Semivolatile Organics																	
Benzo(a)anthracene	9.41E-02	5.93E-11	NA ^b	NA ^b	NA ^b	NA ^b	2.59E-08	7.25E-08	2.59E-09	NA	1.47E-09	1.42E-08	3.99E-08	1.42E-09	NA	4.01E-09	NA
Benzo(a)pyrene	7.21E-02	4.54E-11	NA ^b	NA ^b	NA ^b	NA ^b	1.98E-08	5.56E-08	1.98E-08	1.85E-04	1.12E-09	1.09E-08	3.06E-08	1.09E-08	1.02E-04	3.08E-08	2.87E-04
Benzo(b)fluoranthene	6.95E-02	4.38E-11	NA ^b	NA ^b	NA ^b	NA ^b	1.91E-08	5.36E-08	1.91E-09	NA	1.08E-09	1.05E-08	2.95E-08	1.05E-09	NA	2.96E-09	NA
Total Pathway IELCR and HI					NA	NA			1.63E-05	1.43E-01				5.18E-06	3.23E-02		
Total IELCR and HI																2.15E-05	1.76E-01

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Fugitive dust pathway is only evaluated for chromium.

COC - Chemical of concern.

HI - Hazard index.

HQ - Hazard quotient.

IELCR - Individual excess lifetime cancer risk.

mg/cm² - Milligram per square centimeter.

mg/kg - Milligram per kilogram.

mg/m³ - Milligram per cubic meter.

NA - Not applicable.

Table K-7

**Intake Doses and Risk for Exposure to Total Soil ^a
Construction Worker
RSA-183
Redstone Arsenal, Madison County, Alabama**

Chemical of Concern	Representative Concentration Concentration (mg/kg)	Concentration in Air (mg/m ³)	Inhalation of COC in Total Soil				Ingestion of COC in Total Soil				Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COC		IELCR from Dermal Contact	HQ from Dermal Contact	Sum IELCR	Sum HI
			Cancer	Noncancer	IELCR from Inhalation	HQ from Inhalation	Cancer	Noncancer	IELCR from Incidental Ingestion	HQ from Incidental Ingestion		Cancer	Noncancer				
Inorganics																	
Arsenic	9.86E+01	1.97E-05	4.82E-08	3.38E-06	7.24E-07	NA	1.21E-06	8.44E-05	7.24E-07	1.13E-01	3.55E-07	1.53E-07	1.07E-05	2.30E-07	3.57E-02	1.68E-06	1.48E-01
Copper	3.69E+01	7.39E-06	1.81E-08	1.27E-06	NA	NA	4.52E-07	3.16E-05	NA	7.91E-04	NA	NA	NA	NA	NA	NA	7.91E-04
Mercury	1.61E+01	3.21E-06	7.86E-09	5.50E-07	NA	NA	1.96E-07	1.38E-05	NA	4.58E-02	NA	NA	NA	NA	NA	NA	4.58E-02
Semivolatile Organics																	
Benzo(a)anthracene	9.41E-02	1.88E-08	4.60E-11	3.22E-09	9.67E-12	NA	1.15E-09	8.06E-08	1.15E-10	NA	1.47E-09	6.33E-10	4.43E-08	6.33E-11	NA	1.88E-10	NA
Benzo(a)pyrene	7.21E-02	1.44E-08	3.53E-11	2.47E-09	7.41E-11	4.33E-03	8.82E-10	6.17E-08	8.82E-10	2.06E-04	1.12E-09	4.85E-10	3.40E-08	4.85E-10	1.13E-04	1.44E-09	4.65E-03
Benzo(b)fluoranthene	6.95E-02	1.39E-08	3.40E-11	2.38E-09	7.14E-12	NA	8.50E-10	5.95E-08	8.50E-11	NA	1.08E-09	4.68E-10	3.27E-08	4.68E-11	NA	1.39E-10	NA
Total Pathway IELCR and HI					7.24E-07	4.33E-03			7.25E-07	1.59E-01				2.30E-07	3.58E-02		
Total IELCR and HI																1.68E-06	2.00E-01

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.
cm²/second - Square centimeters per second.
COC - Chemical of concern.
HI - Hazard index.
HQ - Hazard quotient.
IELCR - Individual excess lifetime cancer risk.
m³/kg - Cubic meters per kilogram.
mg/cm² - Milligram per square centimeter.
mg/kg - Milligram per kilogram.

Table K-8

**Intake Doses and Risk for Exposure to Total Soil ^a
Hypothetical Lifetime Resident ^b
RSA-183
Redstone Arsenal, Madison County, Alabama**

Chemical of Concern	Representative Concentration (mg/kg)	Ingestion of COC		Dose Absorbed	Dermally Absorbed		Sum Adult IELCR ^b	Sum Child IELCR ^c	Total Lifetime IELCR ^b
		in Total Soil Cancer (mg/kg-day)	IELCR from Incidental Ingestion	Per Unit Body Surface Area (mg/cm ² -day)	Dose of COC Cancer (mg/kg-day)	IELCR from Dermal Contact			
Inorganics									
Arsenic	9.86E+01	3.38E-05	2.03E-05	2.07E-07	4.28E-06	6.42E-06	2.67E-05	7.64E-05	1.03E-04
Copper	3.69E+01	1.27E-05	NA	NA	NA	NA	NA	NA	NA
Mercury	1.61E+01	5.50E-06	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organics									
Benzo(a)anthracene	9.41E-02	3.22E-08	3.22E-09	8.56E-10	1.77E-08	1.77E-09	4.99E-09	1.35E-08	1.85E-08
Benzo(a)pyrene	7.21E-02	2.47E-08	2.47E-08	6.56E-10	1.36E-08	1.36E-08	3.82E-08	1.03E-07	1.42E-07
Benzo(b)fluoranthene	6.95E-02	2.38E-08	2.38E-09	6.32E-10	1.31E-08	1.31E-09	3.69E-09	9.97E-09	1.37E-08
Total Pathway IELCR			2.03E-05			6.43E-06			
Total IELCR							2.67E-05	7.65E-05	1.03E-04

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

^b Table presents the intake dose and cancer risk for the adult resident; lifetime IELCR is the sum of the adult and child IELCR.

^c See Table B-9.

COC - Chemical of concern.

IELCR - Individual excess lifetime cancer risk.

mg/cm² - Milligrams per square centimeter.

mg/kg - Milligrams per kilogram.

NA - Not applicable.

Table K-9

**Intake Doses and Hazard for Exposure to Total Soil ^a
Hypothetical Child Resident
RSA-183
Redstone Arsenal, Madison County, Alabama**

Chemical of Concern	Representative Concentration (mg/kg)	Ingestion of COC in Total Soil		IELCR from Incidental Ingestion	HQ from Incidental Ingestion	Dose Absorbed Per Unit Body Surface Area (mg/cm ² -day)	Dermally Absorbed Dose of COC		IELCR from Dermal Contact	HQ from Dermal Contact	Sum IELCR	Sum HI
		Cancer (mg/kg-day)	Noncancer (mg/kg-day)				Cancer (mg/kg-day)	Noncancer (mg/kg-day)				
Inorganics												
Arsenic	9.86E+01	1.08E-04	1.26E-03	6.48E-05	1.68E+00	5.92E-07	7.69E-06	8.98E-05	1.15E-05	2.99E-01	7.64E-05	1.98E+00
Copper	3.69E+01	4.05E-05	4.72E-04	NA	1.18E-02	NA	NA	NA	NA	NA	NA	1.18E-02
Mercury	1.61E+01	1.76E-05	2.05E-04	NA	6.84E-01	NA	NA	NA	NA	NA	NA	6.84E-01
Semivolatile Organics												
Benzo(a)anthracene	9.41E-02	1.03E-07	1.20E-06	1.03E-08	NA	2.45E-09	3.18E-08	3.71E-07	3.18E-09	NA	1.35E-08	NA
Benzo(a)pyrene	7.21E-02	7.90E-08	9.22E-07	7.90E-08	3.07E-03	1.87E-09	2.44E-08	2.84E-07	2.44E-08	9.48E-04	1.03E-07	4.02E-03
Benzo(b)fluoranthene	6.95E-02	7.62E-08	8.89E-07	7.62E-09	NA	1.81E-09	2.35E-08	2.74E-07	2.35E-09	NA	9.97E-09	NA
Total Pathway IELCR and HI				6.49E-05	2.38E+00				1.16E-05	3.00E-01		
Total IELCR and HI											7.65E-05	2.68E+00

^a Total soil is the combination of surface and subsurface soil from a depth of 0 to 12 feet below ground surface.

COC - Chemical of concern.

HI - Hazard index.

HQ - Hazard quotient.

IELCR - Individual excess lifetime cancer risk.

mg/cm² - Milligram per square centimeter.

mg/kg - Milligram per kilogram.

NA - Not applicable.

Table K-10

**Summary of Receptor Cancer Risk and Noncancer Hazard for Chemicals of Concern
Reasonable Maximum Exposure
RSA-183
Redstone Arsenal, Madison County, Alabama**

CANCER RISK			
Receptors	Total Soil IELCR	Groundwater IELCR	CUMULATIVE RISK SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	2.15E-05	See RI report	See RI report
Construction Worker	1.68E-06	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	7.65E-05	See RI report	See RI report
Adult Resident ^a	2.67E-05	See RI report	See RI report
Lifetime Resident ^a	1.03E-04	See RI report	See RI report
NONCANCER HAZARD			
Receptors	Total Soil HI	Groundwater HI	CUMULATIVE HI SOIL AND GROUNDWATER
Industrial Receptors:			
Groundskeeper	0.176	See RI report	See RI report
Construction Worker	0.200	See RI report	See RI report
Hypothetical Residential Receptors:			
Child Resident ^a	2.68	See RI report	See RI report

^a Risk associated with the hypothetical residential receptor; child and adult resident risk are summed to estimate the cancer risk for the lifetime resident. Noncancer hazard estimates are based on the hypothetical child resident only.

HI - Hazard index.

IELCR - Individual excess lifetime cancer risk.

RI - Remedial Investigation.

Ref: Shaw Environmental & Infrastructure, Inc. (Shaw), 2007, **Final Remedial Investigation (RI) Report, Baseline Human Health Risk Assessment and Screening-Level Ecological Risk Assessment, RSA-183 (Formerly Part of RSA-49), Former Lewiste Plants 1 and 2**, Operable Unit 5, Redstone Arsenal Madison County, Alabama, September.

Table K-11

**Conclusions of the Revised ARBCA Evaluation
RSA-183
Redstone Arsenal, Madison County, Alabama**

Receptors	Exposure to Soil ^a	Relevant COCs in Soil ^b	Exposure to Soil and Groundwater ^a	COCs for Exposure to Groundwater ^c
Groundskeeper	X	Arsenic	X	See RI report
Construction Worker	√	None	X	See RI report
Hypothetical Resident	X	Arsenic	X	See RI report

Notes:

√ Cumulative cancer risk and noncancer hazard were found to be acceptable.

X Cumulative cancer risk and/or noncancer hazard were found to be unacceptable.

^a Risk conclusions exclude inorganics found to be naturally occurring.

^b Conclusions regarding risk and identification of relevant COCs in soil exclude consideration of contribution of risk from exposure to groundwater.

COC - Chemical of concern.

RM-2 - Risk Management-2.

RI - Remedial Investigation.

Ref: Shaw Environmental & Infrastructure, Inc. (Shaw), 2007, ***Final Remedial Investigation (RI) Report, Baseline Human Health Risk Assessment and Screening-Level Ecological Risk Assessment, RSA-183 (Formerly Part of RSA-49), Former Lewiste Plants 1 and 2***, Operable Unit 5, Redstone Arsenal Madison County, Alabama, September.

Table K-12

**Risk-Based Target Levels for Exposure to Soil
RSA-183
Redstone Arsenal, Madison County, Alabama**

Commercial Worker

Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	9.86E+01	2.15E-05	1.50E+01	Yes	4.60E+00	4.60E+01	4.60E+02	1.33E-01	No (a)	---	---	---
Copper	3.69E+01	NA	2.10E+01	No	---	---	---	7.12E-04	No	---	---	---
Mercury	1.61E+01	NA	1.40E-01	No	---	---	---	4.13E-02	No	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	9.41E-02	4.01E-09	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	7.21E-02	3.08E-08	NA	No	---	---	---	2.87E-04	No	---	---	---
Benzo(b)fluoranthene	6.95E-02	2.96E-09	NA	No	---	---	---	NA	No	---	---	---

Construction Worker

Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	9.86E+01	1.68E-06	1.50E+01	No (b)	---	---	---	1.48E-01	No (a)	---	---	---
Copper	3.69E+01	NA	2.10E+01	No	---	---	---	7.91E-04	No	---	---	---
Mercury	1.61E+01	NA	1.40E-01	No	---	---	---	4.58E-02	No	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	9.41E-02	1.88E-10	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	7.21E-02	1.44E-09	NA	No	---	---	---	4.65E-03	No	---	---	---
Benzo(b)fluoranthene	6.95E-02	1.39E-10	NA	No	---	---	---	NA	No	---	---	---

Hypothetical Resident

Chemical of Concern	Representative Concentration (mg/kg)	Sum of IELCR	BSV (mg/kg)	COC Requiring Action?	Cancer-Based RBTLs			Sum of HI	COC Requiring Action?	Noncancer-Based RBTLs		
					Target Risk Level (mg/kg)					Target Hazard Index (mg/kg)		
					1.00E-06	1.00E-05	1.00E-04			0.1	1	3
Inorganics												
Arsenic	9.86E+01	1.03E-04	1.50E+01	Yes	9.57E-01	9.57E+00	9.57E+01	1.98E+00	Yes	4.98E+00	4.98E+01	1.49E+02
Copper	3.69E+01	NA	2.10E+01	No	---	---	---	1.18E-02	No	---	---	---
Mercury	1.61E+01	NA	1.40E-01	No	---	---	---	6.84E-01	No (c)	---	---	---
Semivolatile Organics												
Benzo(a)anthracene	9.41E-02	1.85E-08	NA	No	---	---	---	NA	No	---	---	---
Benzo(a)pyrene	7.21E-02	1.42E-07	NA	No	---	---	---	4.02E-03	No	---	---	---
Benzo(b)fluoranthene	6.95E-02	1.37E-08	NA	No	---	---	---	NA	No	---	---	---

No (a) - Total HI for receptor is not greater than 1; therefore, this chemical is not selected as a noncancer-based relevant COC.
 No (b) - Total IELCR in soil for this receptor does not exceed 1E-5; therefore, this chemical is not selected as a cancer-based COC.
 No (c) - Total target organ HI for this chemical is not greater than 1; therefore, this chemical is not selected as a noncancer-based relevant COC.
 BSV - Background screening value.
 "----" - Calculation of RBTL not applicable.
 COC - Chemical of concern.
 HI - Hazard index.
 IELCR - Individual excess lifetime cancer risk.
 NA - Not applicable.
 mg/kg - Milligram per kilogram.
 RBTL - Risk-based target level.

Table K-13

**Step 1 Screening of Detected Volatile Organic Compounds in Groundwater Samples
 RSA-183 RCRA Facility Investigation
 Redstone Arsenal, Madison County, Alabama**

Chemical	Depth to Groundwater		MDC in Groundwater (µg/L)	Sample Location of MDC	Step 1 Screening Evaluation ^b		
	(ft bgs) ^a	(cm bgs)			Groundwater Screening Concentration (µg/L)	Basis	Screening Level Exceeded?
Carbon tetrachloride	27.97	852.5	1.10E+04	E-RS1367	4.2E-01	C	Yes
Chloroform	27.97	852.5	6.60E+02	E-RS1367	6.8E+02	NC	No
Trichloroethene	27.97	852.5	8.30E+01	E-RS1367	1.2E+00	C	Yes

^a Average depth to groundwater of the monitoring well from which the MDC was found (see Table 1-2 of the main report).

^b From the VISL Calculator (EPA, 2021).

µg/L - Micrograms per liter.

C - Potential carcinogen.

cm bgs - Centimeters below ground surface.

ft bgs - Feet below ground surface.

MDC - Maximum detected concentration.

NA - Not applicable.

NC - Noncancer effect.

NSV - No screening value.

Table K-14

**Summary of Site-Related Parameters Used in Johnson and Ettinger Vapor Intrusion Model
RSA-183 RCRA Facility Investigation
Redstone Arsenal, Madison County, Alabama**

(Page 1 of 2)

Parameter Number	Parameter Title	General Recommendations	Area-Specific Values for RSA-183
1	Calculate Incremental Risk from actual concentration or calculate risk based concentration	Select calculated incremental risk from actual concentration	NA
2	Chemical CAS No	Enter CAS number for OHM	NA
3	Initial Groundwater Concentration	Enter the EPC in µg/L	See Table K.1-13
4	Average soil/groundwater temperature	Use site-specific data, if available	25 degrees C
5	Depth below grade to bottom of enclosed space floor	Use 15 cm assuming building is on slab to avoid modeling error when soil gas sampling depth is less than this parameter.	Used recommended value of 15 cm.
6	Depth below grade to top of contamination	Soil models only	NA
7	Average depth to groundwater	Enter average depth to groundwater across the site	See RFI (Shaw, 2007)
8	Depth below grade to bottom of contamination	Soil models only	NA
9	Thickness of soil stratum A	Enter depth of up to three soil strata between bottom of building and soil gas point or top of water table.	There is only one soil stratum. The thickness of stratum A must equal Parameter 5 by model requirements.
10	Soil Stratum A SCS Soil Type	Use site-specific data, if available	Silty clay (SIC) as agreed during Tier 1 scoping meeting 24 August 2005.
11	User Defined Stratum A Soil Vapor Permeability	If a site-specific soil permeability has been determined, this value may be used	Used value as specified in the model for Stratum A soil type
12	Vadose Zone SCS Soil Type	NA - Screening Models only	NA
13	User Defined Vadose Zone Soil Vapor Permeability	NA - Screening Models only	NA
14	Soil Stratum Directly Above the Water Table	Enter either A, B, or C as the soil stratum directly above the water table	A
15	SCS Soil Type Directly above water table	NA - Screening Models only	NA
16	Stratum A soil Dry Bulk Density	As in Table 5, use a value of 1.5 g/cm unless a site specific value is known	Used area specific value of 1.63 as developed with USEPA during scoping
17	Stratum A Soil Total Porosity	As in Table 7 (USEPA 2004), use a value of 0.43 unless a site specific value for soil dry bulk density is known. If it is known, then calculate a site specific value from equation on page 41 of guidance.	Used area specific value of 0.48 as developed with USEPA during scoping
18	Stratum A Soil Water-Filled Porosity	Values may range from 0.02 cm ³ /cm ³ to 0.43.	Used area specific value of 0.29 as developed with USEPA during scoping
19	Stratum A Soil Organic Carbon Fraction	For soils models, as in Table 7 (USEPA 2004), use value of .002 unless soil is known to be organic.	NA
20	Vadose Zone Soil Dry bulk density	NA - Screening Models only	NA
21	Vadose Zone Soil Total Porosity	NA - Screening Models only	NA
22	Vadose Zone Soil Water-Filled Porosity	NA - Screening Models only	NA
23	Vadose Zone Soil Organic Carbon Fraction	NA - Screening Models only	NA
24	Enclosed Space Floor Thickness	For hypothetical future residential building, site-specific value was agreed to at the August 2005 Tier I meeting.	8.9 cm
25	Soil-Building Pressure Differential	Use default of 4 Pa (40 g/cm-s ²), which is very conservative, unless building specific value is known.	Used default
26	Enclosed Space Floor Length	Use actual value of existing site buildings. Assumed building dimensions for hypothetical residential building includes a building area of 2,750 square feet and building volume of 22,000 cubic feet as per site-specific agreements at the August 2005 Tier I meeting.	1585 cm

Table K-14

**Summary of Site-Related Parameters Used in Johnson and Ettinger Vapor Intrusion Model
RSA-183 RCRA Facility Investigation
Redstone Arsenal, Madison County, Alabama**

(Page 2 of 2)

Parameter Number	Parameter Title	General Recommendations	Area-Specific Values for RSA-183
27	Enclosed Space Floor Width	Use actual value of existing site buildings. Assumed building dimensions for hypothetical residential building includes a building area of 2,750 square feet and building volume of 22,000 cubic feet as per site-specific agreements at the August 2005 Tier I meeting.	1585 cm
28	Enclosed Space Floor Height	Use actual value of existing site buildings. For hypothetical future residential building, site-specific value was agreed to at the August 2005 Tier I meeting.	243.8 cm
29	Floor-wall Seam Crack Width	Use default in Table 7 (USEPA 2004) of 0.1cm unless a site inspection has noted a larger gap.	Used default
30	Indoor Air Exchange Rate	Use default of 0.25/hr which is a value derived from residential dwellings, unless existing site building is old (at least 45 years old). If the building is older see the USEPA Exposure Factors Handbook (1997), Section 17.3.2 to determine exchange rate. If building is commercial, other values may apply.	Used default
31	Averaging Time for Carcinogens	Use standard default of 70 years	NA - Only using model to obtain indoor air concentrations
32	Averaging Time for Noncarcinogens	Use the exposure duration converted to days.	NA - Only using model to obtain indoor air concentrations
33	Exposure Duration	This is a receptor specific value. Typically, use 24 years for adult resident, 6 years for child resident and 25 years for adult commercial worker	Used EPA default values for residents. However, only using model to obtain indoor air concentrations.
34	Exposure Frequency	This is a receptor specific value. Typically, use 350 days per years for adult and child residents, and 250 days per years for adult commercial worker	Used EPA default values for residents. However, only using model to obtain indoor air concentrations.
35	Target Risk for Carcinogens	NA - Using site specific risk calculations	NA - Only using model to obtain indoor air concentrations
36	Target Hazard Quotient for Noncarcinogens	NA - Using site specific risk calculations	NA - Only using model to obtain indoor air concentrations

cm - Centimeters.

EPA - U.S. Environmental Protection Agency.

NA - Not applicable.

ppmv - Parts per million volume.

References:

EPA, 2004, *User's Guide for the Johnson and Ettinger 1991 Model For Subsurface Vapor Intrusion Into Buildings (Revised)*, Office of Emergency and Remedial Response, November, on-line.

EPA, 1997, *Exposure Factors Handbook*, Office of Research and Development, National Center for Environmental Assessment, Washington, DC., EPA 600/P-95/002Fa, August.

Table K-15

**Derived Potential Indoor Air Concentrations - Groundwater Samples
 RSA-183 RCRA Facility Investigation
 Redstone Arsenal, Madison County, Alabama**

Volatile Organic Compound	Groundwater Concentration ($\mu\text{g/L}$)	Equilibrium Soil Vapor Concentration ^a ($\mu\text{g/m}^3$)	Attenuation Factor ^a (unitless)	Derived Potential Indoor Air Concentration ^a ($\mu\text{g/m}^3$)
Carbon tetrachloride	1.10E+04	1.36E+07	6.33E-06	8.63E+01
Trichloroethene	8.30E+01	3.49E+04	7.09E-06	2.47E-01

^a Calculated using GW-Adv Ver 3.1 of EPA (2004) Johnson and Ettinger Model, Feb 04 (see Attachment 1 for worksheet calculations).
 $\mu\text{g/L}$ - Micrograms per liter.
 $\mu\text{g/m}^3$ - Micrograms per cubic meter.

Reference:

U.S. Environmental Protection Agency (EPA), 2004, *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings*, Office of Emergency and Remedial Response, Washington, DC, Revised February 22.

Table K-16

**Step 2 Screening of Derived Potential Indoor Air Concentrations to Target Indoor Air Screening Concentrations
 RSA-183 RCRA Facility Investigation
 Redstone Arsenal, Madison County, Alabama**

Volatile Organic Compounds	Derived Potential Indoor Air Concentration (µg/m ³)	Modeled Indoor Air Results Compared to Target Indoor Air Concentrations								
		Target Indoor Air Concentrations: ^a								
		At 1 x 10 ⁻⁶ or HQ = 1 (µg/m ³)	Basis of Target Concentration	Exceeds Value (Yes / No)	At 1 x 10 ⁻⁵ or HQ = 1 (µg/m ³)	Basis of Target Concentration	Exceeds Value (Yes / No)	At 1 x 10 ⁻⁴ or HQ = 1 (µg/m ³)	Basis of Target Concentration	Exceeds Value (Yes / No)
Carbon tetrachloride	8.63E+01	4.7E-01	C	Yes	4.7E+00	C	Yes	4.7E+01	C	Yes
Trichloroethene	2.47E-01	4.8E-01	C	No	2.1E+00	NC	No	2.1E+00	NC	No

^a From the VISL Calculator (EPA, 2021).

APPENDIX L
CHEMICAL SAFETY SUBMISSION

STAFF ACTION PROCESSING FORM

CLASSIFICATION - UNCLASSIFIED

External Suspense:	Internal Suspense:	
TO COL Glenn Mellor	THRU DGC Myers <i>for 9/8</i>	THRU CSM Jimenez <i>(4)</i>
THRU Laura Howell <i>D</i>	THRU Joey Skinner <i>for JP 8/5/21</i>	THRU Emily Church <i>ES</i>

SUBJECT: Request Approval for the Chemical Safety Submission, Corrective Measures Implementation RSA-122 Dismantled Lewisite Manufacturing Plant, Area U, RSA-183 Former Lewisite Manufacturing Lines 1 and 2, Redstone Arsenal, Madison County, Alabama and submit Memorandum for signature

EXECUTIVE SUMMARY:

Reference:

- Purpose:** Approve Chemical Safety Submission (CSS) in support Corrective Measures Implementation activities at RSA-122 and RSA-183
- Discussion/Key Points:** The CSS is the supporting safety document requiring USATCES and DDESB approval prior to the start of corrective measure activities
- Recommendation:** Review and submit Memorandum to AMCOM for signature

ACTION OFFICER:
Bob Gorman/ IMRE-PWE-R

Robert Gorman

Date Prepared
5 August 2021

INTERNAL COORDINATION TRACKING

CONC	NON-CONC	OFFICE SYMBOL	SIGNATURE	DATE	COMMENTS
<i>for</i>		IMRE-PWE-R <i>for</i> Clint Howard	<i>Frank Burr</i>		
<i>X</i>		IMRE-PWE-R Keith Cook	<i>ame</i>	<i>8/5/21</i>	
<i>X</i>		IMRE-PW-MP Dave Clark	<i>DA Clark</i>	<i>8/5/21</i>	

ISME-RED Form 41, 1 Jun 2009



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, REDSTONE
4488 MARTIN ROAD
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

AMIM-REP-ER

09 AUG 2021

MEMORANDUM THRU US Army Aviation and Missile Command (AMSAM-CG), 5300
Martin Road, Redstone Arsenal, AL 35898-5000

FOR Commander, US Army Defense Ammunition Center (JMCAC-AV), 1 C Tree Road,
Building 35, McAlester, OK 74501

SUBJECT: Request Approval for the Chemical Safety Submission Corrective Measures
Implementation RSA-122 Dismantled Lewisite Manufacturing Plant, Area U, RSA-183
Former Lewisite Manufacturing Lines 1 and 2, Redstone Arsenal, Madison County,
Alabama

1. References:

a. Department of the Army Pamphlet (DA Pam) 385-65, Explosives and Chemical
Site Plan Development and Submission, 1 February 2008.

b. Department of Defense (DOD) 6055.9-M, Ammunition and Explosives Safety
Standards, 29 February 2008. Administratively Re-Issued 4 August 2010.

c. DA Pam 385-64, US Army Ammunition and Explosives Safety Standards, 24 May
2011 with Rapid Action Revision (RAR) Issue Date: 10 October 2013.

d. Army Regulation (AR) 385-10, The Army Safety Program, 27 November 2013.

2. The Garrison Directorate of Public Works has reviewed and concurs with Chemical
Safety Submission Corrective Measures Implementation RSA-122 Dismantled Lewisite
Manufacturing Plant, Area U, RSA-183 Former Lewisite Manufacturing Lines 1 and 2,
Redstone Arsenal, Madison County, Alabama. This action has been reconciled with the
Redstone Arsenal Master Plan.

3. We ask that the US Army Aviation and Missile Command Safety Office review and
concur with submitting the enclosed site plan for Army and DOD approval.

AMIM-REP-ER

SUBJECT: Request Approval for the Chemical Safety Submission Corrective Measures Implementation RSA-122 Dismantled Lewsite Manufacturing Plant, Area U, RSA-183 Former Lewsite Manufacturing Lines 1 and 2, Redstone Arsenal, Madison County, Alabama

4. My point of contact is Mr. Bob Gorman, Installation Restoration Branch, 256-876-3814, or email robert.p.gorman10.civ@mail.mil.

Encl



GLENN O. MELLOR
COL, SC
Commanding



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, HUNTSVILLE ENGINEERING AND SUPPORT CENTER
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

CEHNC-OEC

4 AUGUST 2021

MEMORANDUM FOR Commander, US Army Garrison – Redstone (IMSE-RED-PWE/Mr. Robert Gorman), 4488 Martin Road, Huntsville, AL 35898

SUBJECT: Final, Chemical Safety Submission (CSS) – RSA-122, Dismantled Lewisite Manufacturing Plan, Area U; RSA-183, Former Lewisite Manufacturing Lines 1 and 2, Redstone Arsenal, Alabama, dated February 2021.

1. This CSS was prepared for the Corrective Measures Implementation to be performed at RSA-122 and RSA-183.
2. The Project Delivery Team has completed their review of the subject deliverable. The enclosed concurrence memorandums from the following agencies indicate concurrence with those portions of the CSS that relate to their specific mission areas:
 - a. Department of the Army, US Army Corps of Engineers, Engineering and Support Center, Huntsville, Environmental and Munitions Center of Expertise, dated 25 February 2021.
 - b. Department of the Army, CBRNE Analytical and Remediation Activity, dated 27 July 2021.
4. The point of contact for this action is Ms. Ashley Roeske at 256-895-1429 or email at Ashley.E.Roeske@usace.army.mil.

Sincerely,

ROESKE.ASHLEY.ELIZABETH.1277832069
ABETH.1277832069

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ROESKE.ASHLEY.ELIZABETH.1277832
069
Date: 2021.08.04 14:49:03 -05'00'

Ms. Ashley Roeske
Project Manager

Enclosures

Electronic copy furnished:

CEHNC-EDC-E (ATTN: Dr. Heather McDonald)
US Army Garrison – Redstone, IMRE-PWE-R (ATTN: Ms. Yolanda Negroni)
US Army Environmental Command, ESSD-SE (ATTN: Mr. Quang Nguyen)
APTIM Federal Services LLC (ATTN: Mr. Don Burton & Mr. Dennis Seymore)
HydroGeoLogic, Inc. (ATTN: Mr. Tim Hiles & Ms. Katherine Kaye)



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ENGINEERING AND SUPPORT CENTER, HUNTSVILLE
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

CEHNC-EMM

25 February 2021

MEMORANDUM FOR Commander, United States Army Engineering and Support Center, Huntsville (CEHNC-OEC/Ms. Ashley Roeske), 5021 Bradford Drive East Huntsville, AL 35805

SUBJECT: Chemical Safety Submission (CSS), Resource Conservation and Recovery Act, Facility Investigation, RSA-122 and RSA 183, Redstone Arsenal, Madison County, Alabama, February 2021.

1. References:

a. ER 385-1-95, Safety and Health Concerns for Munitions and Explosives of Concern (MEC) Projects, December 2014.

b. Defense Explosives Safety Regulations (DESR) 6055.09, Edition 1, January 2019.

2. This CSS has been reviewed for technical adequacy and to ensure compliance with US Army Corps of Engineers (USACE), Department of the Army and Department of Defense requirements. USACE participation is approved.

3. Attach this memo to your Service Command level (MACOM/DRU) approval memo along with the final CSP and forward thru appropriate channels to the Department of Defense Explosives Safety Board (DDESB) for final approval

4. If you have any questions, please contact Mr. Walt Zange at (256) 895-1586.

JORDAN.BRIAN Digitally signed by
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.D.1141739820 Date: 2021.02.25 15:28:15
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Encl

JOHN D. NEBELSICK
Director, Environmental and Munitions
Center Of Expertise

CF: (electronically w/o encls)



DEPARTMENT OF THE ARMY
CBRNE ANALYTICAL AND REMEDIATION ACTIVITY
8440 BRIGADE STREET, BLDG. E4223
ABERDEEN PROVING GROUND, MARYLAND 21010

AFCB-CAR-DR

27 July 2021

MEMORANDUM FOR Chemical Warfare Design Center, ATTN: Ashley Roeske,
Huntsville Center, Corps of Engineers, Huntsville, Alabama 35807

SUBJECT: Concurrence of the Chemical Safety Submission, Resource Conservation and
Recovery Act, RSA-122, Dismantled Lewisite Manufacturing Plant, Area U, RSA-183,
Former Lewisite Manufacturing Lines 1 and 2, Redstone Arsenal, Madison County,
Alabama

1. The CBRNE Analytical and Remediation Activity (CARA), concurs with the proposed
Chemical Safety Submission, RSA-122 and RSA-183, dated February 2021.
2. Point of contact for this action is H. Daniel Lindsay, Operations Planner at 410-436-0037,
or herbert.d.lindsay.civ@mail.mil.

AMANN.FRAN Digitally signed by
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Z.JAKOB.1060 060479735
479735 Date: 2021.07.27
14:36:17 -04'00'

FRANZ J. AMANN
Director

CHEMICAL SAFETY SUBMISSION

CORRECTIVE MEASURES IMPLEMENTATION

RSA-122, DISMANTLED LEWISITE MANUFACTURING

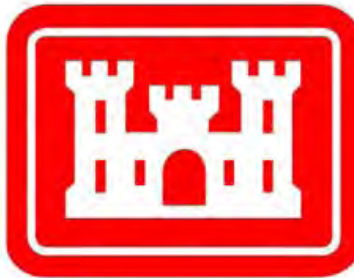
PLANT, AREA U

RSA-183, FORMER LEWISITE MANUFACTURING

LINES 1 AND 2

Redstone Arsenal
Madison County, Alabama

Prepared for:



U.S. Army Corps of Engineers
U.S. Army Engineering and Support Center, Huntsville

Contract No. W912DY-17-D-0003
Delivery Order No. W912DY19F1116

February 2021

Prepared by:

HydroGeoLogic, Inc.
4825 University Square, Suite 6
Huntsville, Alabama 35816
For

Aptim Federal Services, LLC
11400 Parkside Drive, Suite 400
Knoxville, Tennessee 37934

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1.0 PURPOSE

This Chemical Safety Submission (CSS) is being submitted for the Corrective Measures Implementation Construction (CMIC) at RSA-122, Dismantled Lewisite Manufacturing Plant, Area U; and RSA-183, Former Lewisite Manufacturing Lines 1 & 2 of Redstone Arsenal (RSA), Alabama. This CSS defines the chemical safety precautions that will be followed during this CMIC.

Corrective measures will be performed at these sites in accordance with Table VI.6 of the Alabama Hazardous Wastes Management and Minimization Act Hazardous Storage Facility/Thermal Treatment/Solid Waste Management Unit Corrective Action Permit, originally issued September 30, 2010 (current version).

The United States (U.S.) Army is completing these activities under the purview of the Army Environmental Command. The agencies involved include the U.S. Army Engineering and Support Center, Huntsville (CEHNC); U.S. Army Garrison-Redstone; Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Analytical and Remediation Activity (CARA); Combat Capabilities Development Command (CCDC) Chemical Biological Center (CBC); and contractor unexploded ordnance and chemical agent (CA) qualified and trained personnel, as well as other government and non-government agencies with specified expertise for implementation of the field operations.

The work performed under this CSS will be conducted in accordance with Deputy Assistant Secretary of Army – Environment, Safety, and Occupational Health (DASA-ESOH) Interim Guidance for Chemical Warfare Materiel Responses (Department of the Army [DA], 2009), Engineer Manual 385-1-1 (U.S. Army Corps of Engineers [USACE], 2014), Engineer Pamphlet 75-1-3 (USACE, 2004), and any other applicable guidance or regulation.

This CSS is planned to complete the removal of site media from portions of the sites that have CA Probability Ratings of “Seldom” and “Occasional” (or higher).

Based upon the previous characterization recommendations at both sites, the overall purpose of the CMIC is to excavate and remove the networks of below-ground process chemical lines; waste transfer lines; and associated sumps, collection pits, and spill collection trenches to complete preparation for reutilization. Excavation and removal of site media also includes concrete, pavement, backfill material, soil, and potentially asbestos. The anticipated start date is November 2021.

2.0 SITE BACKGROUND

2.1 SITE LOCATION

RSA is located in Madison County, Alabama. RSA is a garrison for a number of tenants including the U.S. Army Materiel Command, U.S. Army Aviation and Missile Command, the DoD Missile Defense Agency, and National Aeronautics and Space Administration's George C. Marshall Space Flight Center. RSA is approximately 38,100 acres in area.

RSA-122 is located in the eastern-central portion of RSA. The general location is illustrated on Figure 2-1.

RSA-183 is located in the central portion of RSA. The general location is illustrated on Figure 2-2.

2.2 SITE DESCRIPTION

RSA-122 encompasses approximately 42 acres of land in the eastern-central portion of RSA where the Army manufactured lewisite (Figure 2-3). RSA-122 also includes an area formerly used to produce sulfur monochloride (SM), arsenic trichloride (AT), and other components of the lewisite manufacturing process. This area was also historically used for materials stockpiling, waste processing, and waste disposal.

RSA-183 occupies approximately 157 acres of land located in the central portion of RSA and was a former site for lewisite manufacturing operations (Figure 2-4). Much of the RSA-183 site is occupied by a large sinkhole drainage area (approximately 122 acres). Other site features include a drainage ditch system, a former motor pool, a former electrical substation, an abandoned industrial sewer system, and a capped arsenic waste lagoon.

2.2.1 Terrain and Vegetation

RSA-122 and RSA-183 are generally flat, especially in the operational areas. Although the plant areas are largely open with maintained lawn grasses, portions of the sites are partly tree covered and a few structures remain. The plant areas are otherwise vegetated with shrubs and brush.

2.2.2 Soil Conditions

The subsurface geologic setting beneath RSA-122, RSA-183, and adjacent sites includes overburden consisting of low-permeability, residual dark red, red, reddish brown, strong brown, and yellowish red clay. Intervals of chert and chert fragments increase with depth and represent

residual deposits formed by in situ chemical weathering of chert nodules and layers within the limestone bedrock.

The soil conditions do not have any adverse effects on the planned field activities.

2.3 SITE HISTORY

2.3.1 RSA-122 Site History

Lewisite was manufactured at RSA-122 by reacting AT with acetylene in the presence of mercuric chloride as a catalyst. Further distillation of the crude lewisite resulted in distilled lewisite, which was then placed into 2,700-pound containers for transport, possibly by rail, to munitions filling buildings elsewhere at RSA.

The 42-acre RSA-122 site encompasses four former lewisite manufacturing plants (Plants 3 through 6), plants that manufactured SM and AT, an open stockpiling area, two capped arsenic waste disposal ponds (RSA-056 and RSA-139), and an unnamed north-south-trending perennial unnamed creek that ultimately discharges to Huntsville Spring Branch.

RSA-122 contains a network of below-ground process chemical lines, waste transfer lines, sumps, collection pits, and spill collection trenches. It is presumed that common chemical plant decommissioning practices were used during plant closure to include flushing and cleaning of CA from collecting pits, below ground process lines, process piping, sumps and trenches. Subsequently, RSA-122 has been subdivided into four distinct subsections (Figure 2-5). Based on historical land use, the subdivisions are as follows:

- RSA-122NW – The former SM and AT production area and storm water drainage ditches (approximately 6.4 acres)
- RSA-122N – The former stockpiling area and storm water drainage ditches (approximately 5.5 acres)
- RSA-122E – The former Lewisite Plants 5 and 6 and storm water drainage ditches (approximately 12.6 acres)
- RSA-122S – The former Lewisite Plants 3 and 4 and storm water drainage ditches (approximately 17.4 acres).

Lewisite Plants 3 through 6 were dismantled and demolished sometime around 1960. Select plant debris was flashed and salvaged, and the remaining plant debris was bulldozed into the RSA-056 and RSA-139 ponds. The ponds remained partially open after the plant sites were razed but were

filled with soil and asphalt rubble in 1972. A 2.5-foot-thick protective soil cover was placed over the ponds.

2.3.2 RSA-183 Site History

RSA-183 was the site of two (Plants 1 and 2) of six lewisite plants located at RSA. Plants 1 and 2 began producing lewisite in November 1942 and ceased production in October 1943. The current major areas of interest associated with RSA-183 include below-grade features (e.g., collecting pits and process piping) associated with the former Lewisite Plants 1 and 2 (Figure 2-6). It is presumed that common chemical plant decommissioning practices were used during plant closure to include flushing and cleaning of CA from collecting pits, below ground process lines, process piping, sumps and trenches. The processes at this site are identical to those discussed for RSA-122.

Each of the plants consisted of several production buildings as well as support buildings (e.g., cafeteria and warehouses) outside the actual manufacturing plant areas. A network of industrial sewer lines and associated waste transfer lines served the lewisite plants. Chemicals noted in historical documents as related to lewisite production include arsenious oxide, AT, acetylene, carbide, sulfuric acid, carbon tetrachloride (used in decontamination), caustic soda (used in decontamination), slaked lime, and mercuric chloride.

Underground pipes were extensively used for transferring liquid chemicals among buildings and liquid waste to waste collecting points. Historical documents indicate that liquid wastes from the plants (approximately 100,000 gallons per day) were transferred via the underground piping from a series of temporary collection points (trenches, pits, and sumps) to the collecting pit (7 by 7 by 13 feet deep). Waste was pumped from the collecting pit to the RSA-049 disposal pond, although an overflow pipe connected the pit with the industrial sewer as a contingency in case the pumps in the pit failed. Although the composition of some of the underground pipes is not known, some of the pipes are shown in engineering drawings as 2-inch- to 6-inch-diameter cast-iron pipes.

2.4 CURRENT LAND USE

The current land use for RSA-122 and RSA-183 is designated as industrial with the potential for future building projects. The most likely future land use is administrative buildings.

2.5 CHARACTERIZATION DATA

2.5.1 RSA-122 Characterization Data

Of the 42 acres of land in RSA-122, approximately 0.1 acre has a CWM probability designation of “Occasional,” and 1.5 acres have a CWM probability designation of “Seldom”. The remainder of the site has an “Unlikely” probability. These areas are illustrated on Figure 2-7.

Previous corrective measures have been performed at RSA-122, including soil excavations at various depths, soil analysis, and soil sampling. None of the investigative actions or corrective measures performed to date have reduced the CWM probabilities.

2.5.2 RSA-183 Characterization Data

Of the 157 acres of land in RSA-183, approximately 0.1 acre of the former Plant 1 and former Plant 2 has a CWM probability designation of “Occasional,” and 1.2 acres of the former Plant 1 and former Plant 2 have a CWM probability designation of “Seldom”. The remainder of the site has an “Unlikely” probability. These areas are illustrated on Figure 2-8.

Previous corrective measures have been performed at RSA-183, including soil excavations at various depths, soil analysis, soil sampling, and sediment sampling. None of the investigative actions or corrective measures performed to date have reduced the CWM probabilities.

2.6 SUSPECTED MUNITIONS AND EXPLOSIVES OF CONCERN AND CHEMICAL WARFARE MATERIEL

2.6.1 Suspected Munitions and Explosives of Concern

There are no explosive hazards suspected at RSA-122 or RSA-183.

2.6.2 Suspected CWM

Based on manufacturing history at the site, CWM is not expected to be present at RSA-122 or RSA-183. However, the subject sites have the potential for the presence of chemical agent-contaminated media (CACM). In addition, there is a possibility that CA may be encountered. Based on current guidance, these are not considered CWM; however, in certain concentrations and under certain site conditions, these media may pose risks to human health and the environment. If any soil or demolition material is suspected to contain CA or if CA has been detected at the excavation or demolition area through air monitoring, it will be handled as CACM.

3.0 SAFETY CRITERIA

3.1 MUNITION WITH THE GREATEST FRAGMENTATION DISTANCE

There are no explosive hazards suspected at RSA-122 or RSA-183.

3.2 MAXIMUM CREDIBLE EVENT

The maximum credible event (MCE) is the maximum release of a CA that could occur as a result of an unintended, unplanned, or accidental incident. The event must be realistic, with a reasonable probability of occurrence. The resulting exclusion zones (EZ) are for activities that are conducted outside of engineering controls. Based on the historical records, residual CA may be present in soil at the subject sites as a result of leaks and spills from the former transfer lines and sumps at the plants. It is presumed that common chemical plant decommissioning practices were used during plant closure to include flushing and cleaning of CA from collecting pits, below ground process lines, process piping, sumps and trenches.

The worst-case release of a CA from the planned intrusive work is expected to be an excavator bucket of CA-contaminated soil. Based on historical records, the MCE for the intrusive work at both RSA-122 and RSA-183 is the evaporative release of 1 pound of lewisite.

3.2.1 No Significant Effects Distance and 1% Lethality Distance

The No Significant Effects (NOSE) distance and 1% lethality distance are calculated for the MCE and based on worst-case meteorological conditions. Air dispersion modeling was conducted using the D2PC Model to determine the NOSE distance and 1% lethality distance for safety of workers and the public.

The D2PC input parameters are shown in Table 3-1.

**Table 3-1
D2PC Input Parameters**

Question #	Question	Response	Notes
2	Location	NDF	Not Defined
4	Height of Mixing Layer	200	Meters
5	Munition Type	NON	Non-Munition
6	Agent Type	LL	Lewisite
7	Spill Source	LB1	One Pound
8	Release Type	EVP	Evaporative
9	Stability Type	D	Neutral
10	Windspeed	1	One Meter Per Second
12	Surface Temp	35	Equals 95° F

Question #	Question	Response	Notes
16	Atmospheric Pressure	760	Millimeters of Mercury
17	Surface Code	GRA	Gravel
18	Time of Evaporation	60	60 Minutes

The NOSE and 1% lethality distances (calculated from the MCE and D2PC Model) are presented in Table 3-2 and on Figure 2-7 and Figure 2-8. The results from the D2PC modeling are presented in Appendix B.

Table 3-2
Maximum Credible Event
Distance to No Significant Effect and 1% Lethality Distance

Investigation Area	Source	Chemical Agent	Quantity	Release Type	1% Lethality Distance (feet)	NOSE Distance (feet)
RSA-122	CA encountered in excavated soil	L	1.0 pound	Evaporative	14	207
RSA-183	CA encountered in excavated soil	L	1.0 pound	Evaporative	14	207

3.2.2 Public Access Exclusion Distance

The Public Access Exclusion Distance (PAED) is the greater of the inhabited building distance (based on the hazardous fragmentation distance [HFD]) or the 1% lethality distance. The PAED for RSA-122 and RSA-183 is 14 feet based on the 1% lethality distance of the evaporative release of one pound of lewisite. The PAED is presented on Figure 2-7 and Figure 2-8, and in Table 3-3. The general public will be evacuated outside of the PAED.

Table 3-3
Public Access Exclusion Distances

Area	1% Lethality Distance (feet)	HFD (feet)
RSA-122	14	Not Applicable
RSA-183	14	Not Applicable

4.0 METHODS OF DISPOSAL

4.1 CONVENTIONAL MUNITIONS

There are no explosive hazards suspected at RSA-122 or RSA-183.

4.2 CWM

There are no chemical munitions, bulk CA containers, or intact miscellaneous containers suspected at RSA-122 or RSA-183.

4.3 DISPOSAL OPERATIONS

Disposal operations are required if demolition material or soil is suspected to contain CA through visual indicators, if CA has been detected at the excavation or demolition area through air monitoring, or CA is confirmed through sample results received from the CA-Capable laboratory. In either case, the material or soil will be handled as CACM while awaiting confirmation. All potential CACM will be containerized in suitable drums or roll-off boxes. Representative samples will be taken and analyzed to confirm the material is CACM.

Confirmed porous CACM (e.g., soil, concrete, wood) will be saturated with an appropriate decontamination solution on site. After allowing sufficient saturation and reaction time, samples will be collected from the combined media and subjected to the CA screening process to determine the need for additional decontamination. Additional decontamination efforts will continue until the combined media passes the CA screening process. When no additional decontamination is necessary, the combined media will be disposed at an appropriate off-site location.

Nonporous CACM (e.g., metal, glass, plastic) will be scrubbed/washed with an appropriate decontamination solution on site. CA vapor screening methods will then be performed on the nonporous material to determine the need for additional decontamination. Additional decontamination efforts will continue until the nonporous material passes the CA vapor screening process. When no additional decontamination is necessary, the nonporous material will be disposed or recycled at an appropriate off-site location. Samples will then be collected from the decontamination solution and subjected to the CA screening process to determine the need for additional decontamination of the solution itself. Additional decontamination efforts will continue until the solution passes the CA screening process. When no additional decontamination is necessary, the solution will be disposed at an appropriate off-site location.

5.0 AIR MONITORING PLAN SUMMARY

This air monitoring plan describes the procedures for monitoring airborne concentrations of CA during operations at RSA-122 and RSA-183. The Air Monitoring Team will monitor the ambient air for chemical and industrial agents using a variety of instruments, including Miniature Chemical Agent Monitoring System (MINICAMS), Depot-Level Area Air Monitoring System (DAAMS), and multi-gas detectors in accordance with the approved Air Monitoring Plan. The contractor will monitor the ambient air for environmental concerns such as hazardous and toxic waste chemicals and dust levels.

Air monitoring cannot be solely relied upon to determine agent presence at the excavation. Therefore, visual observations (e.g., stained soil, free liquid, and items with unknown filler) will also be used to indicate the potential presence of agent and to determine what actions, if any, are to take place based on the suspected presence of agent.

5.1 INSTRUMENTATION

The Air Monitoring Team will provide the following instrumentation to be used at RSA-122 and RSA-183 for CA:

- MINICAMS - Used for workspace monitoring of CA. Used for personnel quadrant, first entry, and headspace monitoring for CA. Used for confirmation monitoring of CA as determined by the Air Monitoring Team's Site Supervisor.
- Gas Chromatograph/Mass Spectrometry (GC/MS) - Used for perimeter and confirmation monitoring of any positive alarms for CA.
- DAAMS Tubes - Used with the GC/MS for perimeter and confirmation monitoring of CA.
- Heated Sample Lines - Used to collect samples from locations throughout the site's working areas for MINICAMS analysis.

5.2 CA DETECTION

If CA is indicated from the equipment alarm and confirmed (Table 5-1), the current personal protective equipment (PPE) will be evaluated and upgraded, as necessary.

If an equipment alarm occurs that exceeds the current level of PPE protection, the downrange team will don respirators (if not currently worn), intrusive activities within the EZ will cease, and the downrange team will proceed upwind. If two additional cycles indicate the possible presence of CA at levels exceeding the protectiveness of current PPE, intrusive personnel will be

processed through the Personnel Decontamination Station (PDS). If necessary, a second team in the appropriate PPE will re-enter the EZ to mitigate potential sources of contamination and retrieve the DAAMS pumps. Thereafter, downrange personnel will evacuate to an upwind location in the support zone, going through the proper decontamination procedures. More details of the actions taken after a MINICAMS alarm will be described in the Work Plan.

Personnel will wear appropriate PPE based on the air monitoring results as discussed in Chapter 6.0. Table 5-1 presents the action levels and other details for these monitoring instruments.

If the presence of CA is confirmed, a Chemical Event Report will be initiated in accordance with Draft AR 385-XX (DA, 2009) and Appendix B of Engineering Pamphlet 75-1-3 (USACE, 2004).

5.3 ENVIRONMENTAL MONITORING

The environmental air monitoring will be performed in accordance with the Accident Prevention Plan and Site-Specific Safety and Health Plan (SSHP).

**Table 5-1
Summary of Air Monitoring Procedures**

Compound	Classification /Description	Monitored by	Monitoring Method	Confirmation Method	Airborne Exposure Limits				
					STEL/VSL	WPL	OSHA PEL	Action Level	Action Taken
Lewisite	Chemical agent. Blister agent	Air Monitoring Team ¹	MINICAMS	DAAMS or MINICAMS ²	0.003 mg/m ³	0.003 mg/m ³	N/A	0.4 STEL/VSL	See Table 6-1

DAAMS - Depot-Level Area Air Monitoring System.
 mg/m³ - Milligrams per cubic meter.
 MINICAMS - Miniature Chemical Agent Monitoring System.
 N/A - Not available.
 OSHA -Occupational Safety and Health Administration.
 PEL - Permissible exposure limit.
 STEL – Short-term exposure limit.
 VSL - Vapor screening level.
 WPL - Worker population limit.

¹ CARA or CCDC CBC will perform air monitoring in accordance with the approved Air Monitoring Plan and will depend on current project schedule and workload.
² DAAMS tubes or a second MINICAMS will be used for CA confirmation monitoring, at the discretion of the Air Monitoring Team Site Supervisor.

6.0 PPE AND DECONTAMINATION SUMMARY

Personnel performing tasks at RSA-122 and RSA-183 shall use the appropriate level and type of PPE specified in this plan. This CSS makes provisions for using the following levels of PPE in accordance with the hazards and contamination level anticipated for each task: Level D, Modified Level D, Level C, Level B, and Level A.

The Unexploded Ordnance Safety Officer (UXOSO) will make sure that the proper PPE is used, the donning and doffing procedures are known, personnel are trained in the proper PPE, and that the PPE fits properly. The UXOSO will also ensure PPE use complies with applicable regulations of the Occupational Safety and Health Administration, USACE, and the U.S. Army.

The intrusive operations will initially be conducted in Modified Level D PPE in accordance with Table 6-1 in open air with contingencies to upgrade PPE in accordance with the approved SSHP and applicable regulations, guidance, and standard operating procedures.

Site personnel will wear and use the appropriate level and type of PPE for each individual task being performed. Table 6-1 provides a summary of PPE ensemble selection criteria. PPE levels are defined in detail in the SSHP.

During intrusive operations at RSA-122 and RSA-183, an emergency personnel decontamination station (EPDS) will be established in the EZ to reduce or control gross contamination at the source. This EPDS (step pan/water/bleach/brushes) will be set up downrange near the intrusive site. The EPDS is used for gross decontamination but, during a true emergency, may be bypassed if there is an imminent danger to one of the team members due to an accident. The EPDS should be placed upwind from the intrusive site or closest to the upwind side if at all practical.

During intrusive operations, a PDS will also be established in the contaminant reduction zone to facilitate decontamination in the event CA is encountered and to prevent personnel from transferring contamination to the support zone.

Table 6-1
PPE Ensemble Selection Criteria

Level of Protection	Criteria for Use	Upgrade Criteria
Level D	Initial PPE for all work outside of EZs.	If unanticipated chemical hazards are encountered.
Modified Level D ¹	Initial level of protection for all work in EZ with suspected CAs or CA contamination.	Upgrade to Level C if: <ul style="list-style-type: none"> • Air monitoring detects possible CA (Table 5-1) (unconfirmed) at or above action levels. • Worker breathing zone monitoring for total VOCs greater than 5 PPM above background for 5 consecutive minutes (upgrade to Level C respirator only). • Presence of a strange odor. • Discovery of discolored soils.
Level C	Initial level of protection when: <ul style="list-style-type: none"> • Air monitoring detects possible CA (Table 5-1) at or above action levels and below 1 x STEL. • No chemical splash hazards. • Worker breathing zone monitoring for total VOCs greater than 5 PPM above background for 5 consecutive minutes (upgrade to Level C respirator only). 	Upgrade to Level B if: <ul style="list-style-type: none"> • No chemical splash hazard exists. • Air monitoring detects possible CA (Table 5-1) (other than L) at or above 1 x STEL. • Worker breathing zone monitoring for total VOCs greater than 50 PPM above background for 5 consecutive minutes (upgrade to Level B respirator only).
Level B	Initial level of protection when: <ul style="list-style-type: none"> • Air monitoring detects CA (Table 5-1) (other than L) at or above 1 x STEL but less than 10 x STEL. • No chemical splash hazards. • Worker breathing zone monitoring for total VOCs greater than 50 PPM above background for 5 consecutive minutes (upgrade to Level B respirator only). 	Upgrade to Level A if: <ul style="list-style-type: none"> • Chemical splash hazard exists. • Air monitoring detects possible CA (Table 5-1) (other than L) at or above 10 x STEL. • Air monitoring detects L (Table 5-1) at or above 1 x STEL • Worker breathing zone monitoring for total VOCs greater than 500 PPM above background for 5 consecutive minutes.
Level A ²	Initial level of protection when: <ul style="list-style-type: none"> • Chemical splash hazard exists. • Air monitoring detects possible CA (Table 5-1) (other than L) at or above 10 x STEL. • Air monitoring detects L (Table 5-1) at or above 1 x STEL. • Worker breathing zone monitoring for total VOCs greater than 500 PPM above background for 5 consecutive minutes. 	N/A

NOTES:

¹ Modified Level D includes a slung escape respirator, at the minimum, in addition to all other Level D protections. Additional information is contained within the Accident Prevention Plan.

² Level A operations will be performed by CARA only.

EZ – Exclusion zone.

N/A – Not applicable.

PPE – Personal protective equipment.

PPM – Parts per million.

STEL – Short-term exposure limit

VOC – Volatile Organic Chemical

7.0 MEDICAL SUPPORT SUMMARY

Medical support will be provided in accordance with DA PAM 40-173 and Interim Guidance on Occupational Health Practices for the Evaluation and Control of Occupational Exposures to Nerve Agents GA, GB, GD, GF and VX and Mustard Agents H, HD, and HT (January 2013). Injuries that require emergency medical evaluation/treatment, including CWM-related injuries and emergency injuries as well as non-emergency injuries, shall be cared for by Huntsville Hospital ([256] 265-8137). Any suspect CA exposure requires notification to the RSA Fire Department in accordance with the RSA Program and Incident Response Plan for munitions and explosives of concern, CWM, and CA.

During operations at RSA-122 and RSA-183, on-site medical support will be included for all intrusive activities. On-site medical services will be provided for, at a minimum, one full-time Emergency Medical Technician (EMT)-Basic and one full-time EMT-Paramedic that have been trained in CA casualty care. These services will be provided in accordance with the Department of the Army (DASA ESOH) Memorandum, dated 1 April 2009, *Subject: Interim Guidance for Chemical Warfare Material (CWM) Responses*. The EMTs will have a fully equipped Department of Transportation–approved ambulance necessary to treat those personnel who become injured or exposed to the agents of concern during the investigation at the site. The EMTs will assist with emergency medical treatment, assist with treatment of minor injuries, perform heat stress physiological monitoring, and help with clinical signs of potential CWM exposure. Huntsville Hospital, Huntsville, Alabama, will handle all chemical-related injuries as well as severe life-threatening injuries. The medical personnel will be included in the intrusive operation as well as training, surveys, and exercises leading up to the intrusive work.

8.0 PUBLIC PROTECTION PLAN SUMMARY

8.1 PUBLIC NOTIFICATION

The Senior Unexploded Ordnance Supervisor (SUXOS) will verify prior to operations that no occupied buildings or ongoing operations are present inside the 1% lethality distance. Public access during intrusive operations is restricted to outside the PAED.

If any occupied buildings or ongoing operations are within the NOSE distance, a Protective Action Plan (PAP) will be enacted to provide evacuation instructions or shelter-in-place instructions to the effected personnel, should there be a CA release. The PAP is further detailed in the Work Plan.

In the event an emergency condition occurs (e.g., release of CA greater than MCE) RSA will be responsible for coordination of supporting agencies to safely notify endangered public.

8.2 EMERGENCY OPERATIONS

In the event of an emergency condition, the CEHNC Ordnance and Explosives Safety Specialist (OESS), with assistance of the SUXOS, will make initial notifications to the following:

- CEHNC-OEC Project Manager – Ashley Roeske, (256) 424-1925
- AMCOM Safety Office – Brad Champion, (256) 975-5441
- Installation Emergency Operations Center, (256) 313-1043
- RSA Project Manager – Bob Gorman, (256) 348-1812
- APTIM Project Manager – Don Burton, (856) 207-1394.

During emergency operations, the excavation team will institute emergency procedures in an attempt to locate and control the source of the CA release. Emergency procedures include covering the excavation or open containers with plastic, containerizing soil in drums, and securing the lids of any open drums. The suspected CACM will be subjected to headspace analysis (except liquids) and CA/agent breakdown product analysis. If CA is detected during the analysis and the hazardous waste control limits are exceeded, decontamination will occur until the investigation-derived waste is below the hazardous waste control limits.

The CEHNC will initiate a Chemical Event Report and additional notifications will be made by the Installation's Directorate of Operations in accordance with the Draft AR 385-XX (DA, 2009) and RSA regulations and guidance. The media shall be referred to the RSA Public Affairs Office.

8.3 DOWNWIND HAZARD MODELING (D2PC) CALCULATIONS

A meteorological weather station will be set up to monitor the weather conditions that will be input into D2PC to establish downwind hazard distances. This program is an atmospheric dispersion modeling program that assumes steady-state diffusion of potential releases without accounting for terrain, vegetation, or man-made structures. The site will continuously monitor the weather and update the downwind hazard distances.

9.0 INTERIM HOLDING FACILITY SITING PLAN SUMMARY

Recovered chemical warfare materiel (RCWM) is not expected to be encountered at RSA-122 or RSA-183.

10.0 MUNITIONS AND EXPLOSIVES OF CONCERN TRANSPORTATION PLAN SUMMARY

There are no explosive hazards suspected at RSA-122 or RSA-183.

11.0 RCWM TRANSPORTATION PLAN SUMMARY

RCWM is not expected to be encountered at RSA-122 or RSA-183.

12.0 REFERENCES

Deputy Assistant Secretary of Army – Environment, Safety, and Occupational Health (DASA-ESOH), 2009, *Interim Guidance, Chemical Warfare Materiel Responses*, April.

U.S. Army Corps of Engineers (USACE), 2014, *Safety and Health Requirements*, EM 385-1-1, November.

U.S. Army Corps of Engineers (USACE), 2004, *Recovered Chemical Warfare Materiel (RCWM) Response Process*, EP 75-1-3, November.

APPENDIX A
FIGURES

Figure 2-1 RSA-122 Site Location Redstone Arsenal Huntsville, Alabama

Legend

- ★ Site Location
- ▭ MRS Boundary
- ▭ Redstone Arsenal Boundary



Notes:
Coordinates shown in Alabama State Plane East, NAD83, feet.
MRS=Munitions Response Site

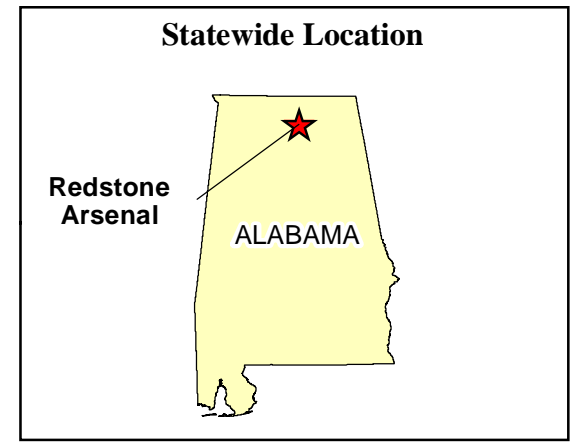
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2/11/2021 RR
Source: HGL, USACE, ArcGIS Online Imagery



Figure 2-2
RSA-183
Site Location

Legend

- ★ Site Location
- ▭ MRS Boundary
- ▭ Redstone Arsenal Boundary



Notes:
Coordinates shown in Alabama State Plane East, NAD83, feet.
MRS=Munitions Response Site

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Source: HGL, USACE, ArcGIS Online Imagery

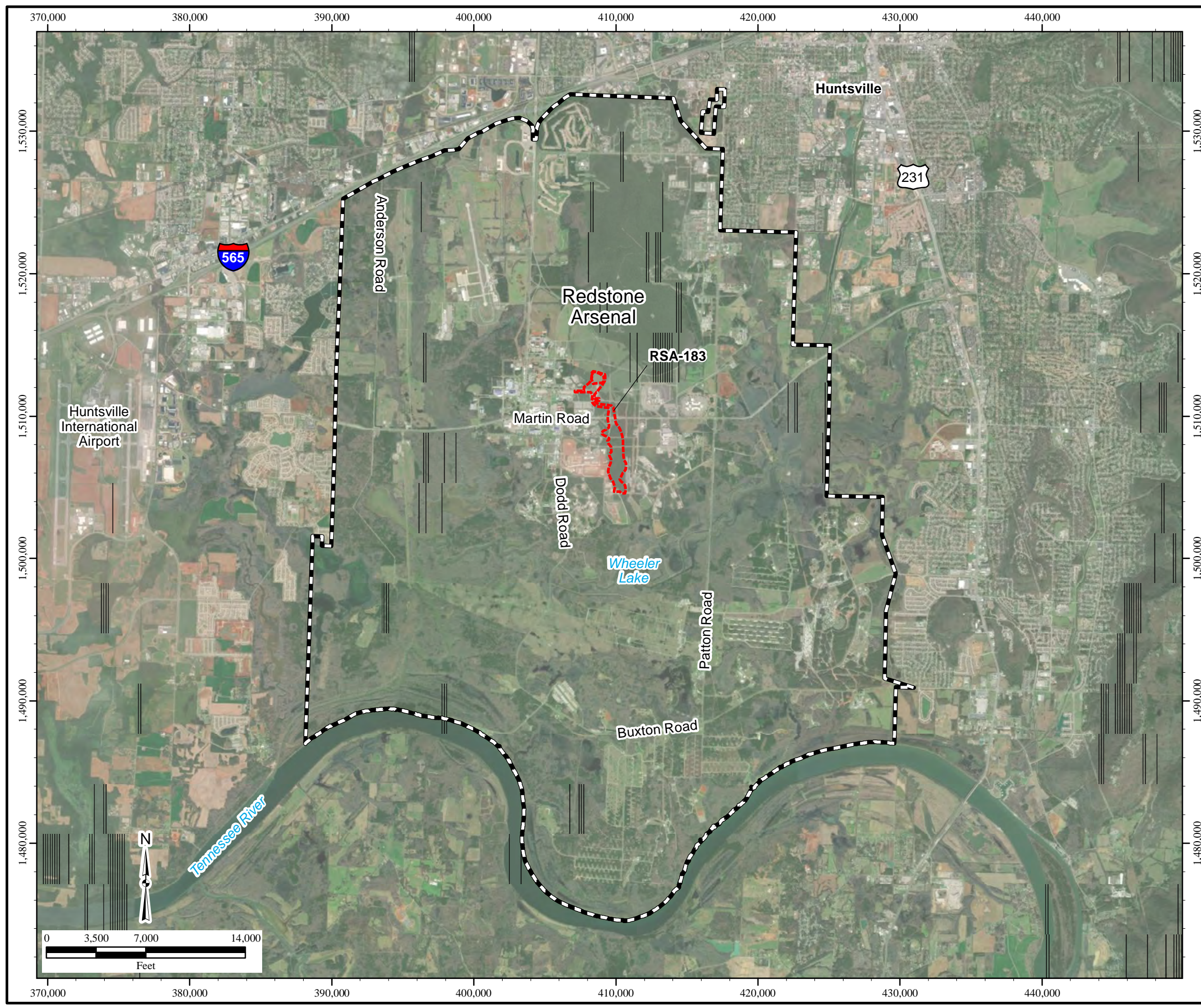


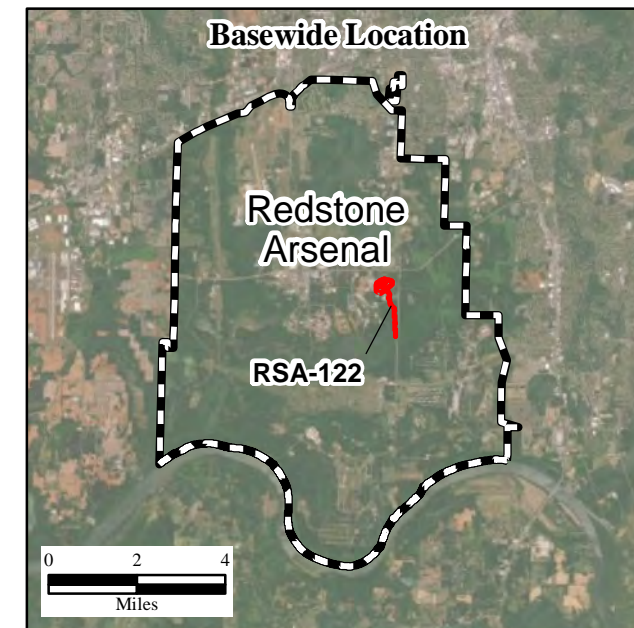


Figure 2-3
RSA-122
Site Map

Legend

-  RSA-122
-  Restone Arsenal



Notes:
Coordinates shown in Alabama State Plane East, NAD83, feet.

MRS=Munitions Response Site

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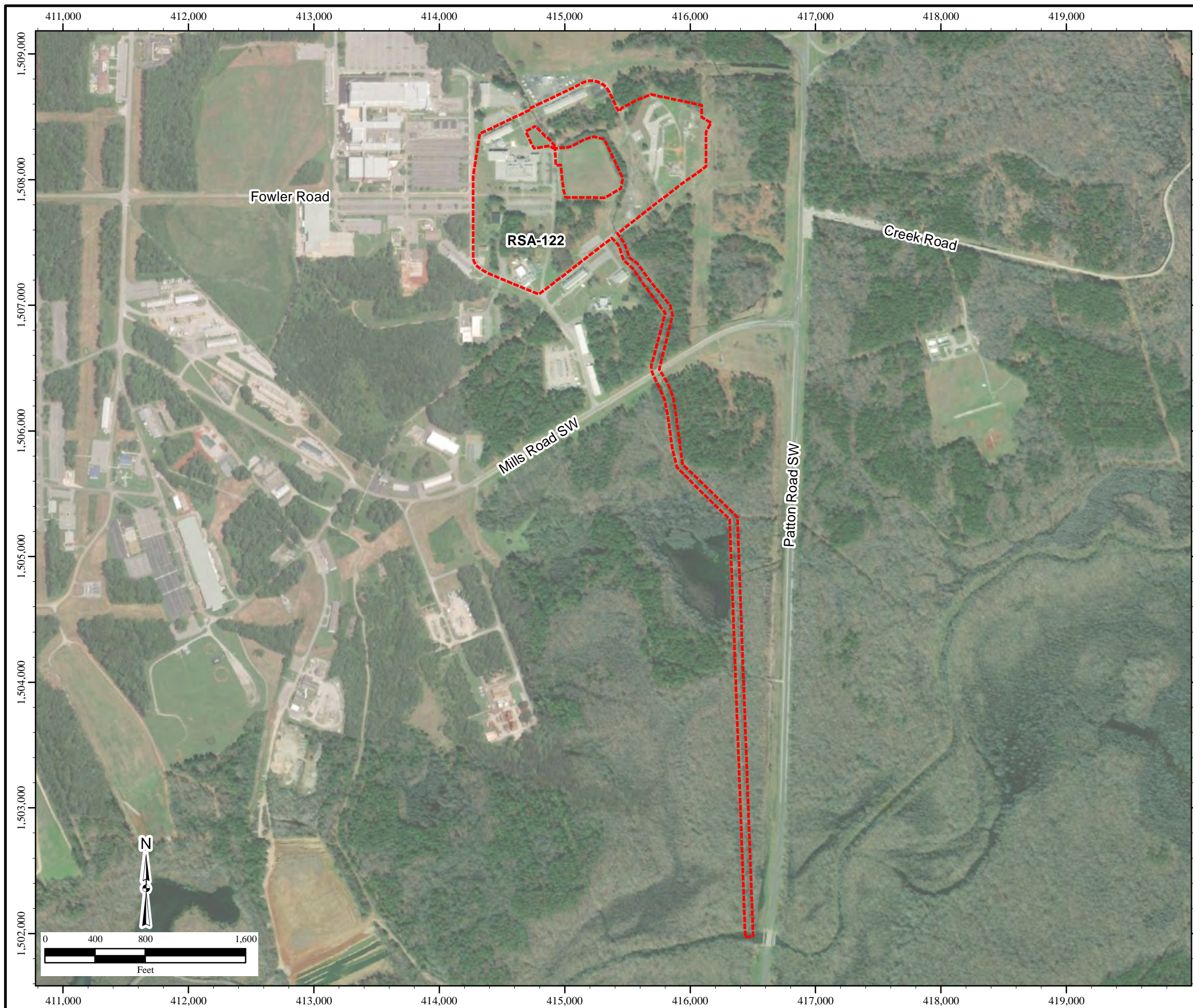


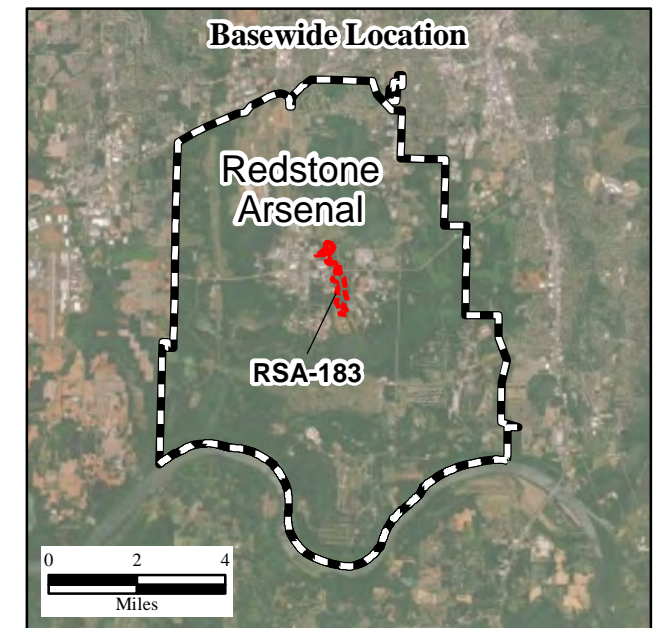


Figure 2-4
RSA-183
Site Map

Legend

-  RSA-183
-  Restone Arsenal



Notes:
Coordinates shown in Alabama State Plane East, NAD83, feet.

MRS=Munitions Response Site

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2/11/2021 RR
Source: HGL, USACE, ArcGIS Online Imagery

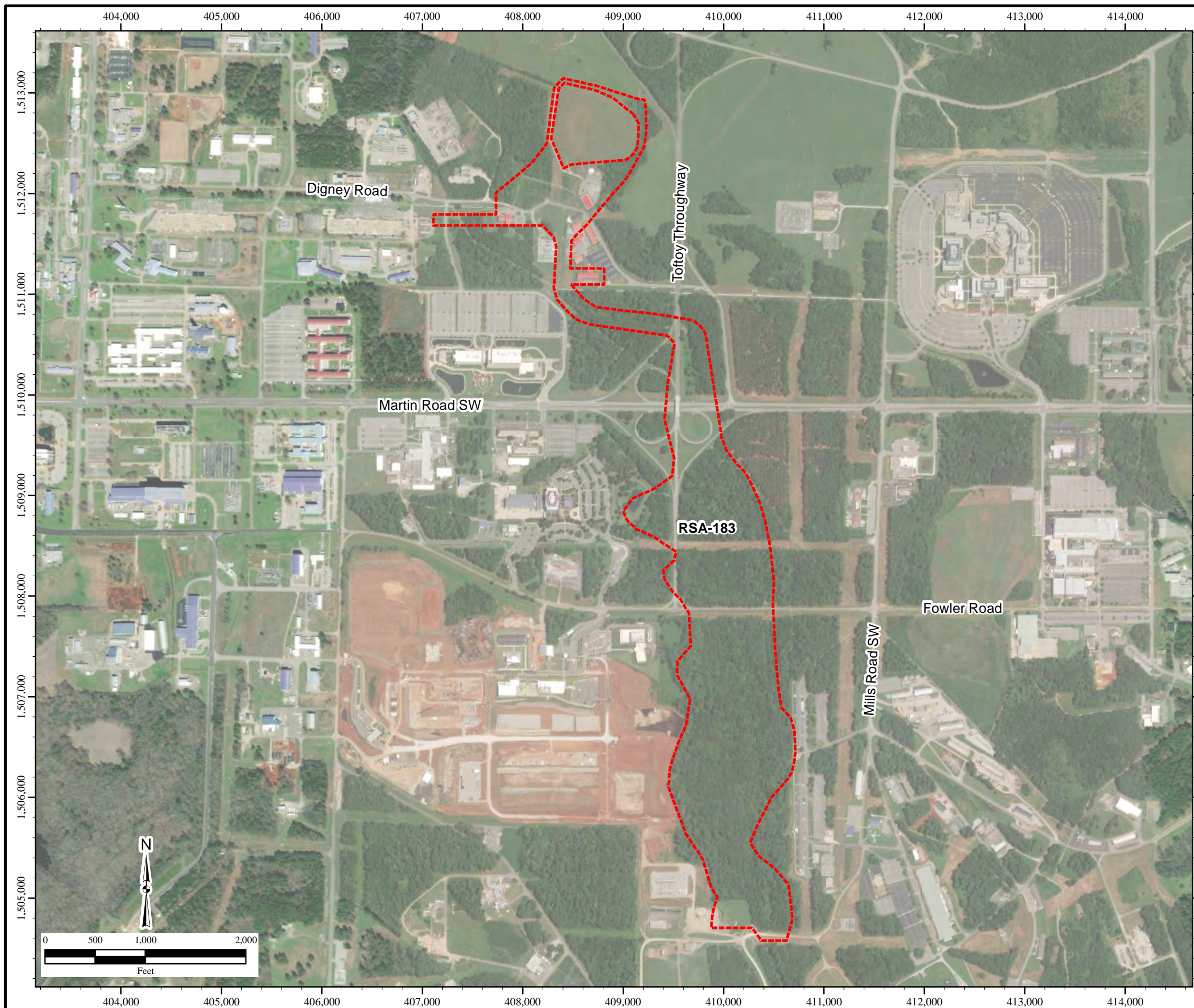
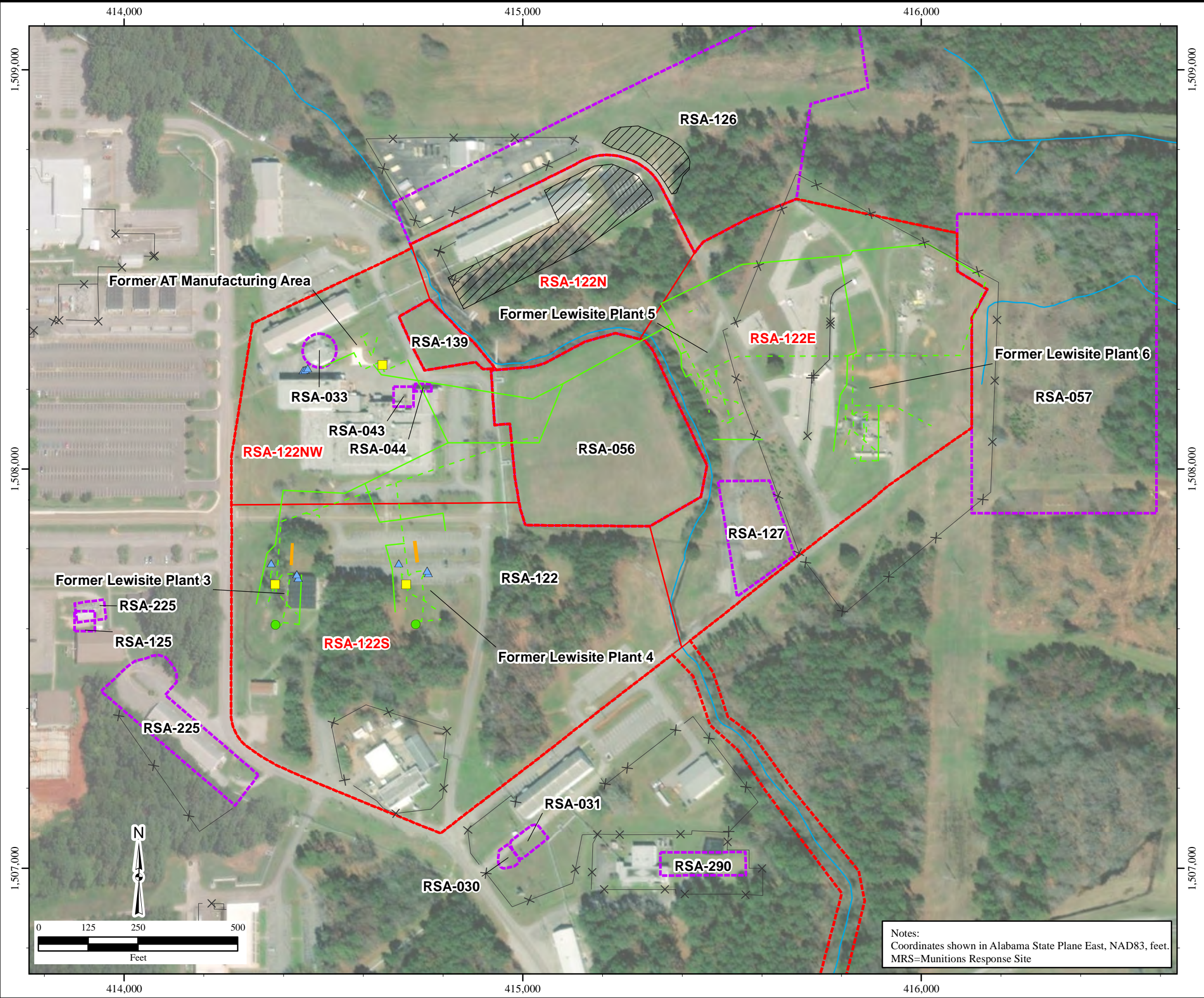
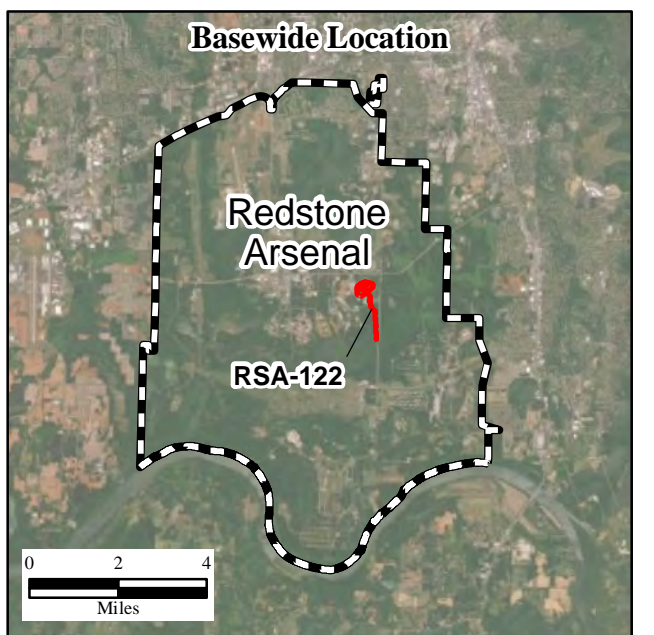


Figure 2-5
RSA-122
Site Details



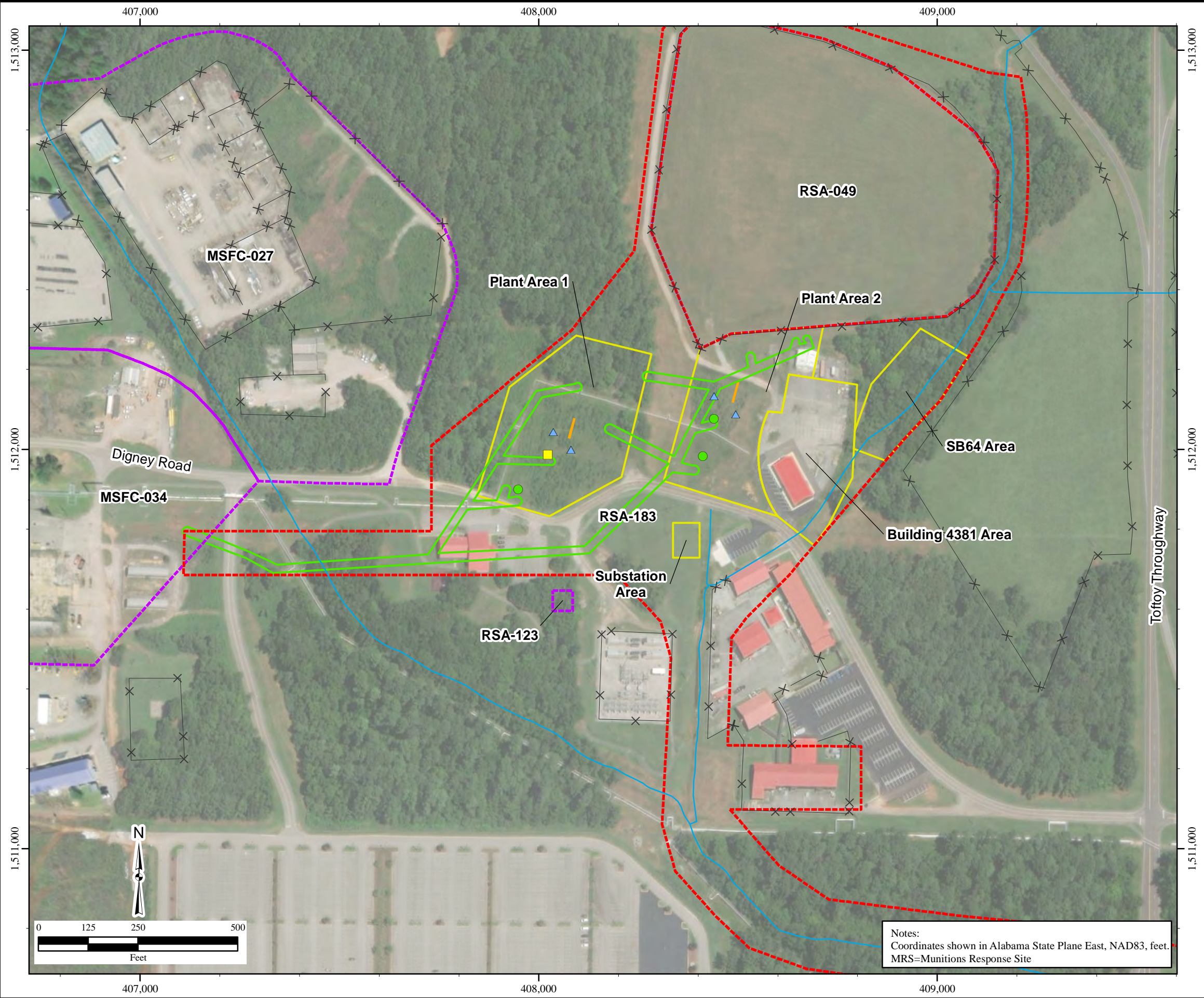
- Legend
- Blowcase Pit
 - Collecting Pit
 - ▲ Sump
 - Abandoned Overhead Chemical Lines (removed)
 - - - Abandoned Underground Chemical Lines (left in place)
 - × Fence
 - Surface Water Course
 - ▨ Former Stockpile Area
 - Trench
 - ▭ RSA-122
 - ▭ RSA-122 Subsection
 - ▭ Nearby MRS



\\srv-gst-01\HGLGIS\Redstone_Arsenal\RSA_122_183\CSS\2-05\RSA_122_Site_Details.mxd
2/11/2021 RR
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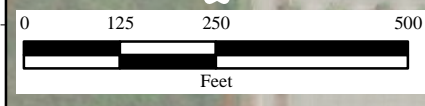
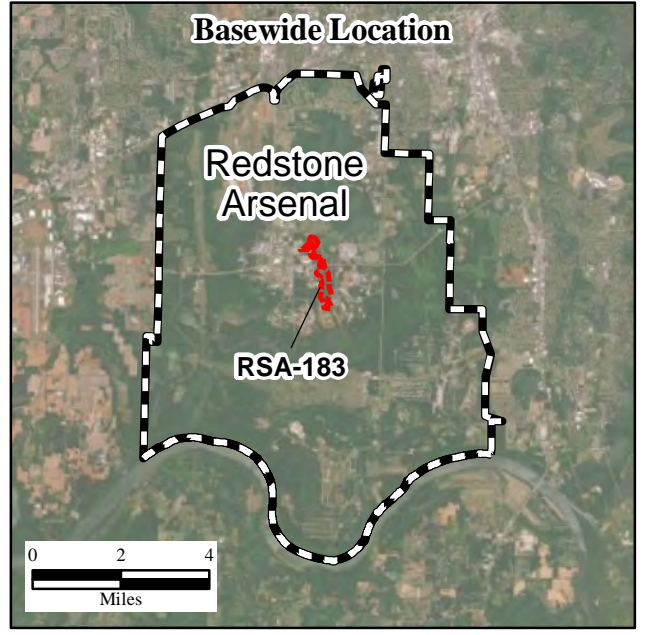


Figure 2-6
RSA-183
Site Details



Legend

- Blowcase Pit
- Collecting Pit
- ▲ Sump
- × Fence
- Surface Water Course
- ▭ Trench
- ▭ MSFC-052e (Industrial Sewer)
- ▭ Boundary of Identified Area
- ▭ RSA-183
- ▭ Nearby MRS
- ▭ Restone Arsenal

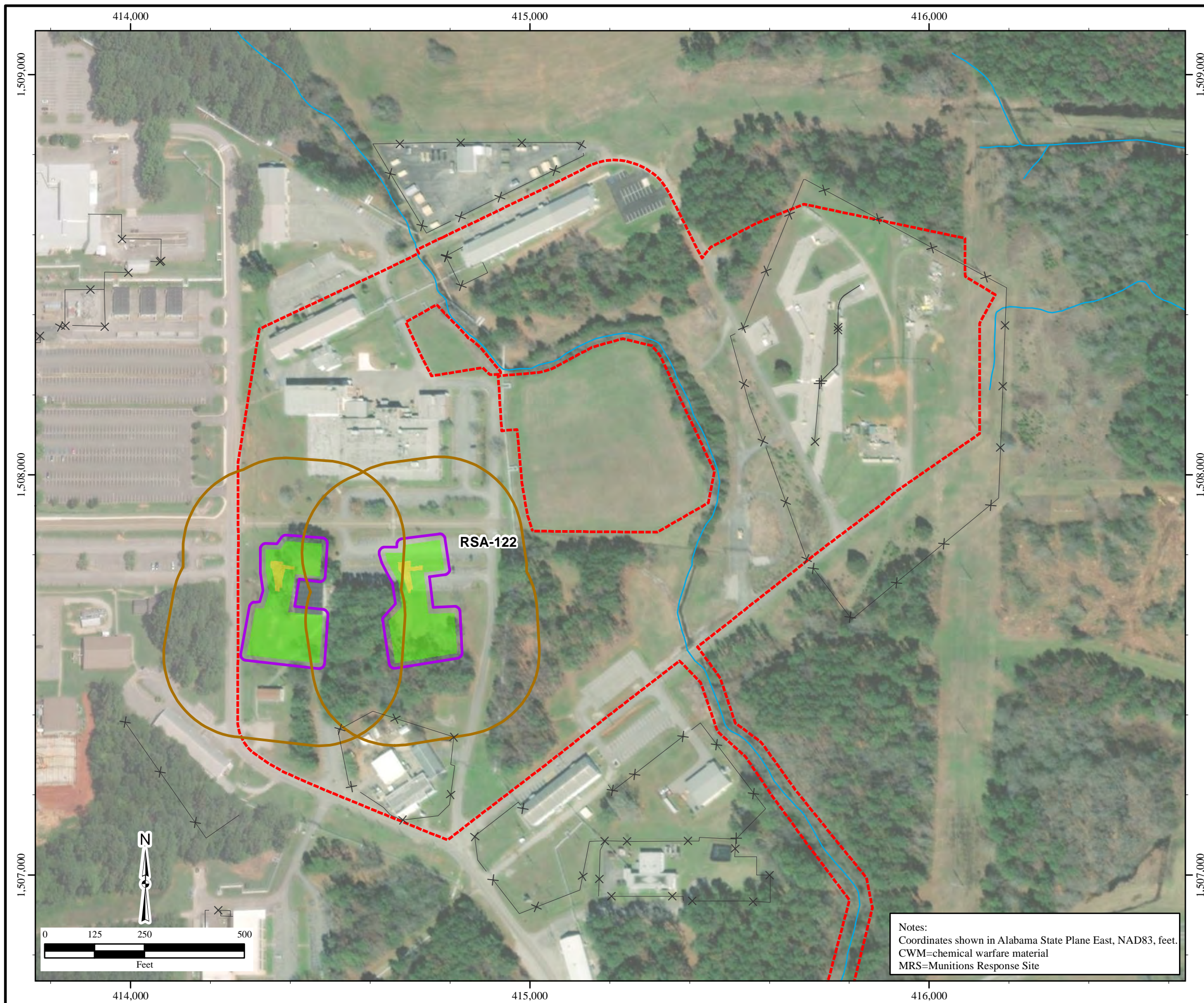


Notes:
Coordinates shown in Alabama State Plane East, NAD83, feet.
MRS=Munitions Response Site

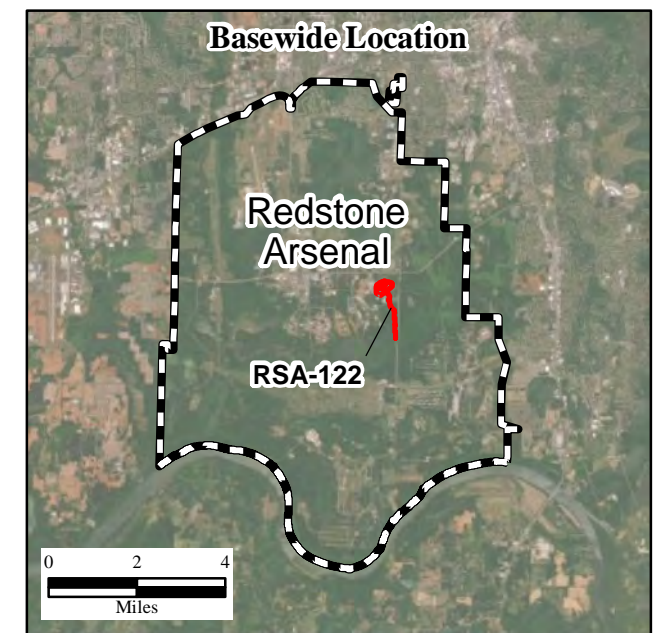
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2/11/2021 RR
Source: HGL, USACE, ArcGIS Online Imagery



Figure 2-7
RSA-122
Exclusion Zones



- × Fence
- Surface Water Course
- CWM Probability:**
 - Occasional
 - Seldom
- No Significant Effects (NOSE) Distance 207 ft
- 1% Lethality Distance/Public Access Exclusion Distance (PAED) - 14 ft
- RSA-122
- Restone Arsenal

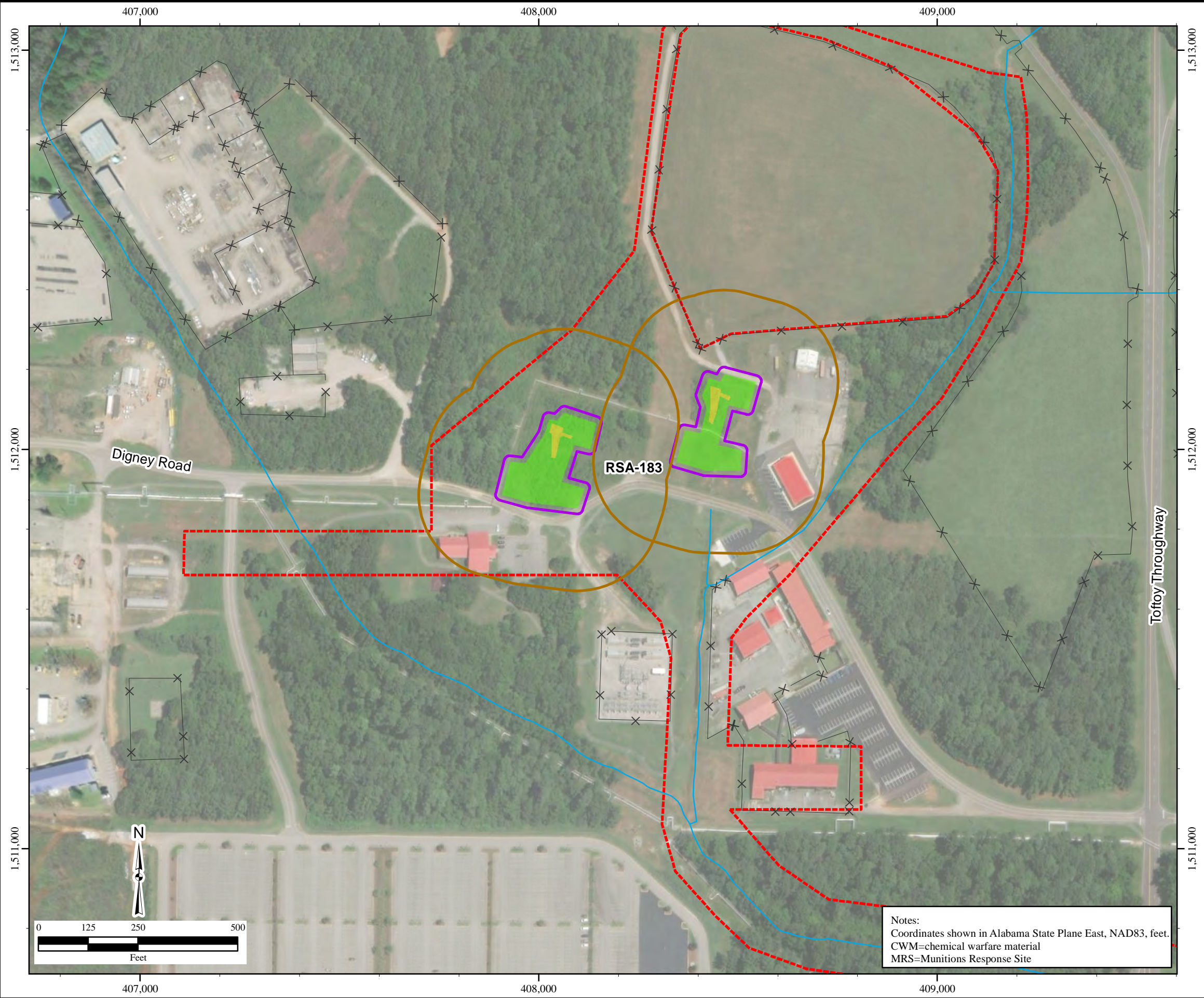


Notes:
Coordinates shown in Alabama State Plane East, NAD83, feet.
CWM=chemical warfare material
MRS=Munitions Response Site

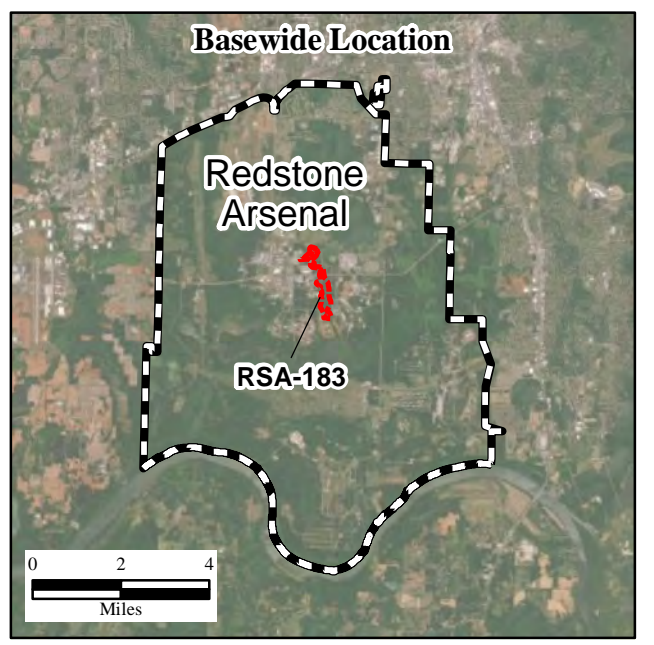
\\srv-gst-01\HGLGIS\Redstone_Arsenal\RSA_122_183\CSS\
(2-07)RSA_122_Exclusion_Zones.mxd
5/4/2021 RR
Source: HGL, USACE, Aptim, ArcGIS Online Imagery



Figure 2-8
RSA-183
Exclusion Zones



- Legend**
- ✕ — Fence
 - Surface Water Course
 - CWM Probability:**
 - Occasional
 - Seldom
 - No Significant Effects (NOSE) Distance 207 ft
 - 1% Lethality Distance/Public Access Exclusion Distance (PAED) - 14 ft
 - RSA-183
 - Restone Arsenal



Notes:
Coordinates shown in Alabama State Plane East, NAD83, feet.
CWM=chemical warfare material
MRS=Munitions Response Site

\\srv-gst-01\HGLGIS\Redstone_Arsenal\RSA_122_183\CSS\2-08\RSA_183_Exclusion_Zones.mxd
5/4/2021 RR
Source: HGL, USACE, ArcGIS Online Imagery



APPENDIX B

D2PC INPUT PARAMETERS AND CALCULATIONS

```

1. YOUR NOVICE LEVEL: 3,2,1 OR 0 NOV
INPUT:0

2. LOCATION LOC
INPUT:NDF

4. HEIGHT OF MIXING LAYER HML
INPUT:200

5. MUNITION TYPE MUN
INPUT:NON

6. AGENT TYPE AGN
INPUT:LL

8. RELEASE TYPE REL
INPUT:EVP

9. STABILITY TYPE STB
INPUT:D

10. WINDSPEED (M/SEC) WND
INPUT:1
BRT=25. DI= 2.0 100.0 150.0

7. SPILL OR AIRBORNE SOURCE (MG) QQQ
INPUT:LB1
LB TO MG 0.454E+06

SURFACE
12. TEMPERATURE (DEG C) TMP
INPUT:35

16. ATMOSPHERIC PRESSURE (MM HG) PMM
INPUT:760

17. SURFACE CODE SUR
INPUT:GRA

18. TIME OF EVAPORATION (MIN) TEV
INPUT:60
GRA EVR=1.489E+03(MG/MIN-SQ M) AREA=6.940E-02(SQ M) VPR=7.938E-01
Q=4.536E+05(MG) Q'=6.202E+03(MG) TEV=6.000E+01(MIN)
ALL OTHER INPUT
ALL

1 MUN:NON AGN:LL REL:EVP WND= 1.0(M/S) TMP=35.0(C) NDF- STB:D

Q(MG) TS(MIN) HTS(M) HML(M) SXS(M) SYS(M) SZS(M)
6.202E+03 6.00E+01 0.00E+00 2.00E+02 8.78E-02 8.78E-02 1.00E-01 D

4. (M) IS DISTANCE TO 1% LETHALITY

5. (M) IS DISTANCE TO NO DEATHS

63. (M) IS DISTANCE TO NO EFFECTS

```




DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
5300 MARTIN ROAD
REDSTONE ARSENAL AL 35898-5000

AMAM-SF (RN 1200B-75)

MEMORANDUM FOR U.S. Army Technical Center for Explosive Safety (ATCL-ACE),
1 C Tree Road Building, McAlester, OK 74501

SUBJECT: Request Approval of the U.S. Army Garrison-Redstone Chemical Safety
Submission for the Redstone Arsenal 122, Dismantled Lewisite Manufacturing and the
Redstone Arsenal 183, Former Lewisite Manufacturing Lines 1 and 2

1. References:

a. Department of the Army Pamphlet 385-65 (Explosives and Chemical Site Plan
Development and Submission), 01 February 2008, Rapid Action Revision (RAR),
20 July 2009

b. U.S. Army Garrison-Redstone (USAG-R), AMIM-REP-ER memorandum
(Request Approval for the Chemical Safety Submission Corrective Measures
Implementation RSA-122 Dismantled Lewisite Manufacturing Plant, Area U, RSA-183
Former Lewisite Manufacturing Lines 1 and 2, Redstone Arsenal, Madison County,
Alabama, 04 August 2021 (Encl)

2. In accordance with reference 1a, the U.S. Army Aviation and Missile Command
(AMCOM) Safety Office submits reference 1b, the Chemical Safety Submission (CSS)
of the Redstone Arsenal (RSA)-122, the Dismantled Lewisite Manufacturing and Plant,
Area U RSA-183, Former Lewisite Manufacturing Lines 1 and 2 for review and approval.
The USAG-R has concurred with the CSS from a Master Planning perspective. The
AMCOM Safety Office has reviewed the subject submission and recommends approval.

3. The point of contact is Mr. Brad T. Champion, Explosives Safety Manager, AMCOM
Safety Office, AMAM-SFO, 256-842-3243, brad.t.champion.civ@mail.mil.

Encl

QUINN.WILLIAM.F.1102052664
Digitally signed by
QUINN.WILLIAM.F.1102052664
Date: 2021.10.20 16:15:46 -05'00'

WILLIAM F. QUINN
Chief, Operational Division
AMCOM Safety Office

APPENDIX M
SUPPORT PLANS

RSA-122 and RSA-183 CORRECTIVE MEASURES FIELD COMMUNICATIONS PLAN REDSTONE ARSENAL, MADISON COUNTY, ALABAMA

Revision: November 29, 2021

Purpose

The purpose of this Field Communication Plan is to identify the methods and processes by which Aptim Federal Services, LLC (APTIM) will conduct operational communications during field activities on sites potentially containing chemical agent (CA) at sites that require a RCRA facility investigation at the Redstone Arsenal (RSA), Madison County, Alabama under Contract Number W912DY-17-D-0003 and Delivery Order W912DY18F1146. Effective field communications will enable clear and timely communication of relevant information to affected stakeholders.

Categories of Communications

This communication plan identifies and defines two major categories of communication:

Essential Communications - Essential communications are identified as communications related to the initial, follow up, and final reporting of serious incidents which may occur during conduct of field operations. All essential communications will be reported immediately to the onsite OESS. These serious incidents can include:

1. Injury or death of a site worker or site visitor
2. Discovery of CA which has been compromised and poses a threat to non-chemical workers on RSA
3. Severe or adverse weather that poses a potential safety risk to site workers
4. Damage to equipment or property
5. Transmission of sensitive or classified information

Nonessential Communications - Non-essential communications are identified as all other communications between operational and command assets to include communication with APTIM management, U.S. Army Engineering Support Center, Huntsville (USAESCH) management, RSA management, coordination with CBRNE Analytical and Remediation Activity (CARA), coordination with RSA Installation Emergency Operations Center (IEOC), and coordination with the Marshall Space Flight Center (MSFC) EOC. Examples of non-essential communications include:

1. Common Operating Picture (COP) reporting
2. Quality Assurance/Quality Control reporting
3. Safety monitoring reporting
4. Field team verbal communication
5. Discovery of CA which has not been compromised and does not pose a threat to non-chemical workers on RSA
6. Requesting non-emergency information from RSA IEOC, MSFC EOC, or other emergency entities.

Communication Methods

To ensure continuity of communication, three separate methods of communication have been identified. These lines of communication are tailored based upon the type of communication as provided in the following table:

Method	Field Team	IEOC and EOC	External
Face to Face	Primary	“Does not apply”	“Does not apply”
Radio	Secondary	Primary 1	“Does not apply”
Email	“Does not apply”	Primary 2	Primary
Cellular Phone	Tertiary	Secondary	Secondary
Satellite Phone	“Does not apply”	Tertiary	Tertiary

Points of Contact

Command Post Radio Call Sign: *Dragon 1* (for communicating with IEOC and EOC)

RSA IEOC Email: usarmy.redstone.usag.mbx.ioc@mail.mil

**Site Access and Visitation Plan
RSA-122 and RSA-183 Corrective Measures
Redstone Arsenal, Madison County, Alabama**

Revision: October 8, 2021

1.0 Site Access and Visitation Policy

In the following text, the term “facility” applies to the entire Redstone Arsenal (RSA) installation, the term “site” applies to locations of environmental concern as identified in ADEM Hazardous Waste Facility Permit #AL7 210020742, and “exclusion zone” (EZ) refers to the safety zone established around a Chemical Agent (CA) related operation work area which is off limits to unauthorized entry because of elevated levels of risk. Access to these locations by site workers, essential personnel, and authorized visitors is governed by EM 385-1-97, the site-specific safety and health plan (SSHP) and accident prevention plan (APP) (**Appendix E**), and other applicable safety and health plans (SHPs).

Site Workers consist of the personnel directly necessary to perform general site work either inside or outside an exclusion zone. Site workers include designated prime contractor site personnel, their designated subcontractors, and any other personnel directly necessary to perform site operations.

Essential Personnel is a term applicable to CA sites. In accordance with EM 385-1-97, essential personnel are defined as U.S. Army Engineering Support Center, Huntsville (USAESCH) and contractor project personnel necessary for the safe and efficient completion of field operations conducted in an EZ (USACE, 2008). This is limited to contractor work team members including the Unexploded Ordnance Safety Officer (UXOSO), UXO Quality Control Supervisor, Senior UXO Supervisor, and USAESCH Ordnance and Explosives Safety Specialist (OESS) (EM 385-1-97).

Authorized Visitors are defined as U.S. Department of Defense (DoD), Department of the Army, USACE, or other personnel conducting project or mission-related functions, such as quality assurance representatives, safety and quality inspectors, and project management personnel authorized by the Army to visit a site (EM 385-1-97). Alabama Department of Environmental Management (ADEM) representatives are included in this category of personnel.

2.0 Facility Site Access Requirements

Site access requirements are summarized in **Attachment 1**. In order to be granted access to RSA, all personnel must have a valid RSA Visitor Badge or be escorted while on RSA.

3.0 General Site Access Requirements

Prior to visiting any site under the control of the Army or its prime contractor, all site workers and authorized visitors must sign in at the designated project office and receive a safety briefing by the Site Safety and Health Officer (SSHO) or the UXOSO on the hazards present and any access requirements or restrictions for sites they plan to visit. Many sites contain potential surface hazards and therefore require a site safety escort. Site workers and authorized visitors are responsible for compliance with the requirements specified in the SSHP and APP (**Appendix E**) and any applicable site-specific plans, including wearing the correct personal protective equipment.

Authorized visitors are required to provide evidence of meeting all training and medical requirements specified in the SSHP and APP (**Appendix E**) and any applicable site-specific plans. This includes but is not limited to Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour training, 8-hour HAZWOPER refresher within the past 12 months if the original 40-hour HAZWOPER course was completed more than one year previously (in accordance with 29 Code of Federal Regulations [CFR] 1910.120), physical examination and participation in a medical surveillance program per 29 CFR 1910.120, and participation in the prime contractor's safety orientation/indoctrination training by the SSHO/UXOSO in accordance with the APP.

4.0 EZ Access Requirements

When within an EZ requiring a respirator, medical clearance (i.e., proof of passing the 29 CFR 1910.134 respirator physical, respirator training, and fit testing, all within the past 12 months) must be documented and verified by the SSHO/UXOSO in accordance with the SSHP and APP (**Appendix E**).

5.0 Additional EZ Access Requirements for CA Sites

Any visitor to the site requesting entry to the EZ during CA operations is required to submit and gain approval to enter the EZ as an authorized visitor. All requests for approval as an authorized visitor will be submitted to the USAESCH Project Manager, for approval at least 2 working days prior to the planned site visit. All visitor authorization requests will be prepared and submitted in

accordance with EM 385-1-97, Section I.2.G.02.04. Visitors will be escorted by a UXO Technician II or higher (as outlined in Department of Defense Explosives Safety Board [2004] TP 18), and/or a USAESCH OESS. All authorized visitors must follow the direction of their escort.

While CA procedures are being conducted, only essential personnel and authorized visitors will be allowed to enter an EZ. When nonessential personnel enter the EZ, all CA operations will cease. Tasks not necessary to the operation will be prohibited within the immediate area of the hazard produced by the CA operation.

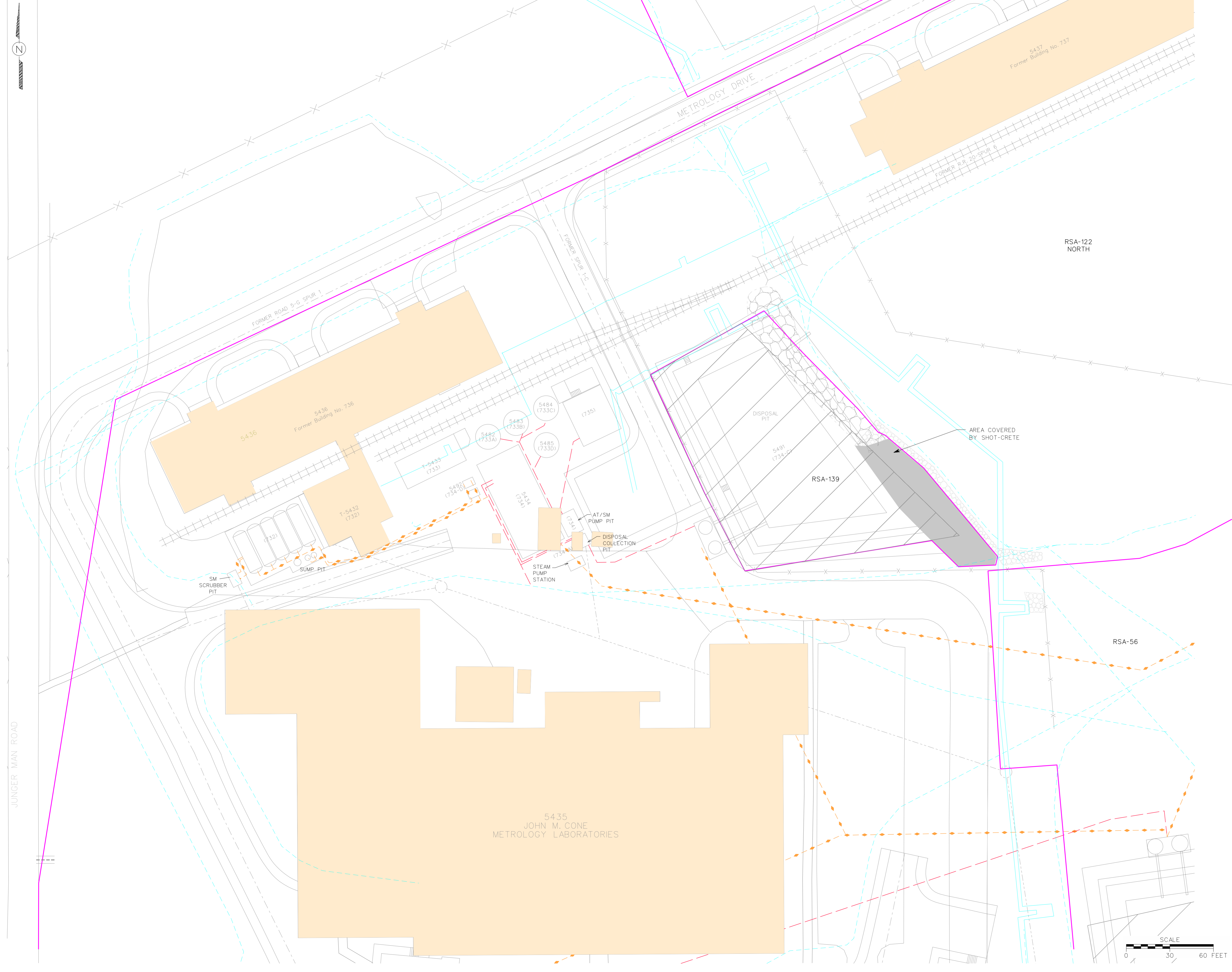
No more than two authorized visitors will be permitted in any CA EZ at any given time (EM 385-1-97, Sec. I.2.G.02).

ATTACHMENT 1
ACCESS REQUIREMENTS

Access Requirements

<i>FACILITY ACCESS REQUIREMENTS</i>
<ul style="list-style-type: none">• US Citizen• Approved Visitor Request/Badge• Acceptable Identification• Driver's Operation Permit (if operating a vehicle)• Vehicle Registration (if operating a vehicle)• Proof of Insurance (if operating a vehicle)• Any other security requirement that may be stipulated by the RSA Provost Marshall
<i>GENERAL SITE ACCESS REQUIREMENTS</i>
<ul style="list-style-type: none">• All of the above• Evidence of 40-Hour HAZWOPER Training in accordance with (IAW) 29 CFR 1910.120• Evidence of current 8-Hour HAZWOPER Refresher Training, IAW 29 CFR 1910.120• Evidence of participation in OSHA Medical Surveillance Program, IAW 29 CFR 1910.120• Documented prior training by APTIM IAW the SSHP and APP (Appendix C)• Site Safety Briefing and Sign Safety Acknowledgement• Site Safety Escort• Any other site-specific safety requirement that may be stipulated in the SSHP and APP, or any applicable site plan
<i>EZ Access Requirements</i>
<ul style="list-style-type: none">• All of the above• Evidence of medical clearance to wear a respirator, IAW 29 CFR 1910.134 (for Level C and higher operations, or operations that require an escape respirator)• Any other site-specific safety requirement that may be stipulated in the SSHP and APP, or any applicable site plan
<i>Additional EZ Access Requirements for CA Sites</i>
<ul style="list-style-type: none">• All of the above• No more than two (2) Authorized Visitors at any given time• Escort by UXO Technician II or higher and/or USAESCH OESS• Any other site-specific safety requirement that may be stipulated in the SSHP and APP, or any applicable site plan

APPENDIX N
FORMER PLANT LAYOUTS



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - FENCE
 - CURRENT DRAINAGE FEATURE
 - FORMER DRAINAGE FEATURE
 - ABANDONED OVERHEAD CHEMICAL LINES
 - ABANDONED UNDERGROUND CHEMICAL LINES
 - ABANDONED INDUSTRIAL SEWER LINES
 - HISTORICAL DEMOLISHED STRUCTURES
 - CAPPED AREA
 - EXISTING BUILDING
 - RSA SITE BOUNDARY
 - STEAM LINE
 - GRAVEL AREA
 - SM SULFUR MONOCHLORIDE
 - AT ARSENIC TRICHLORIDE

RSA-139 HISTORICAL BUILDING INDEX

OLD BLDG. NUMBER	BUILDING DESCRIPTION	NEW BLDG. NUMBER
732	SULFUR MONOCHLORIDE PLANT	T-5432
733	ARSENIC OXIDE UNLOADING PLATFORM	T-5433
734	AT MANUFACTURING (REACTOR) BUILDING AND PUMP PIT	5434
735	AT BULK STORAGE	5436
736	WAREHOUSE	5482
733-A	ARSENIOUS OXIDE STORAGE SILO	5483
733-B	ARSENIOUS OXIDE STORAGE SILO	5484
733-C	ARSENIOUS OXIDE STORAGE SILO	5485
733-D	ARSENIOUS OXIDE STORAGE SILO	5486
734-A	AT COLLECTING PIT	5491
734-B	AT TAL GAS SCRUBBER	5492
734-C	AT DISPOSAL PIT	
734-D	SULFUR REACTOR	

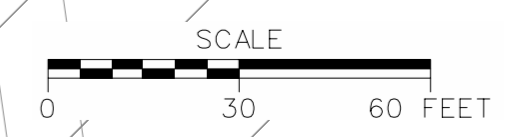
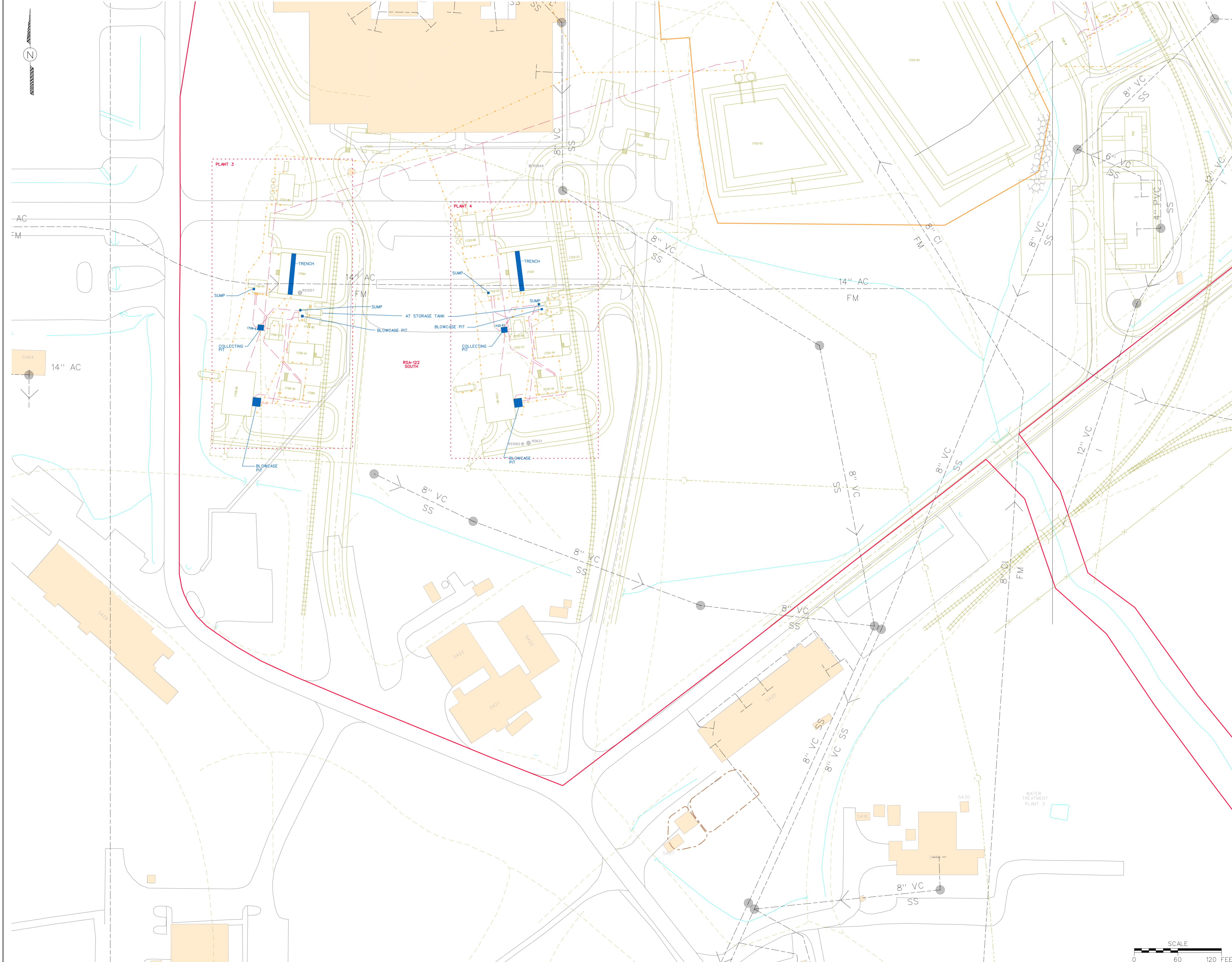


Figure 1-4
Layout of the Former Arsenic Trichloride Plant Area

U. S. Army Corps of Engineers
 Redstone Arsenal
 Madison County, Alabama
 Contract No. DACA21-96-D-0010



- Legend**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - TREES / TREELINE
 - FENCE
 - DRAINAGE FEATURE
 - ABANDONED OVERHEAD CHEMICAL LINES
 - ABANDONED UNDERGROUND CHEMICAL LINES
 - ABANDONED INDUSTRIAL SEWER LINES AND MANHOLE
 - ABANDONED SANITARY SEWER LINES AND MANHOLE
 - FORMER DRAINAGE FEATURE
 - RSA SITE BOUNDARIES
 - EXISTING BUILDING
 - HISTORICAL DEMOLISHED STRUCTURES
 - CAPPED AREA
 - PLANT AREAS
 - RSA-122 SITE BOUNDARY

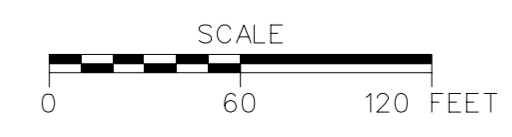
- Notes**
- AC - Asphaltic Concrete
 - FM - Forced Main
 - SS - Sanitary Sewer
 - VC - Vitriified Clay
 - AT - Arsenic Trichloride

RSA-122 SOUTH HISTORICAL BUILDING INDEX	
OLD BLDG. NO.	BUILDING DESCRIPTION
713	CONTROL ANALYTICAL LABORATORY
721	M-1 OFFICE & LOCKER ROOM
730	M-1 CAFETERIA
725	WAREHOUSE
726	M-1 MANUFACTURING BUILDING
727	ACETYLENE GENERATOR BUILDING
729	WAREHOUSE
723	ACETYLENE GENERATOR BUILDING
722	M-1 MANUFACTURING BUILDING
722-A	CAUSTIC AND AT BULK STORAGE
722-B	AT STORAGE
722-C	AIR SCRUBBER
722-D	CRUDE M-1 STORAGE
722-E	COLLECTING PIT
723-A	ACETYLENE COMPRESSOR BUILDING (CANCELLED)
723-B	ACETYLENE SCRUBBER BUILDING
723-C	SULFURIC ACID UNLOADING AND STORAGE
724	M-FILLING BUILDING
724-A	DISTILLED M-1 STORAGE
724-B	DISTILLATION AND MECHANICAL SERVICE BUILDING
726-A	CAUSTIC AND AT BULK STORAGE
726-B	AT STORAGE
726-C	AIR SCRUBBER
726-D	CRUDE M-1 STORAGE
726-E	COLLECTING PIT
727-A	ACETYLENE COMPRESSOR BUILDING (CANCELLED)
727-B	ACETYLENE SCRUBBER BUILDING
728	M-FILLING BUILDING
728-A	DISTILLED M-1 STORAGE
728-B	DISTILLATION AND MECHANICAL SERVICE BUILDING

Figure 1-5
Layout of the former Lewisite
Plants 3 and 4, Area No. 2

U. S. Army Corps of Engineers
 Redstone Arsenal
 Madison County, Alabama
 Contract No. DACA21-96-D-0010

Shaw Environmental, Inc.



24 x 36



- LEGEND**
- UNIMPROVED ROADS AND PARKING
 - PAVED ROADS AND PARKING
 - TREES / TREELINE
 - FENCE
 - DRAINAGE FEATURE
 - ABANDONED OVERHEAD CHEMICAL LINES
 - ABANDONED UNDERGROUND CHEMICAL LINES
 - ABANDONED INDUSTRIAL SEWER LINES AND MANHOLES
 - ABANDONED SANITARY SEWER LINES AND MANHOLES
 - FORMER DRAINAGE FEATURE
 - RSA SITE BOUNDARIES
 - EXISTING BUILDING
 - HISTORICAL DEMOLISHED STRUCTURES
 - CAPPED AREA

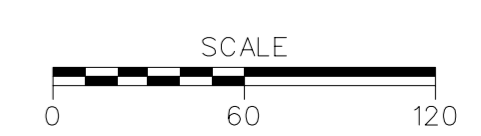
- Notes:**
- AC - Asphaltic Concrete
 - FM - Forced Main
 - SS - Sanitary Sewer
 - VC - Vitritified Clay

RSA-122 SOUTH HISTORICAL BUILDING INDEX	
OLD BLDG. NO	BUILDING DESCRIPTION
713	CONTROL ANALYTICAL LABORATORY
721	M-1 OFFICE & LOCKER ROOM
730	M-1 CAFETERIA
725	WAREHOUSE
726	M-1 MANUFACTURING BUILDING
727	ACETYLENE GENERATOR BUILDING
729	WAREHOUSE
723	ACETYLENE GENERATOR BUILDING
722	M-1 MANUFACTURING BUILDING
722-A	CAUSTIC AND AT BULK STORAGE
722-B	AT STORAGE
722-C	AIR SCRUBBER
722-D	CRUDE M-1 STORAGE
722-E	COLLECTING PIT
723-A	ACETYLENE COMPRESSOR BUILDING (CANCELLED)
723-B	ACETYLENE SCRUBBER BUILDING
723-C	SULFURIC ACID UNLOADING AND STORAGE
724	M-1 FILLING BUILDING
724-A	DISTILLED M-1 STORAGE
724-B	DISTILLATION AND MECHANICAL SERVICE BUILDING
724-C	CAUSTIC AND AT BULK STORAGE
726-B	AT STORAGE
726-C	AIR SCRUBBER
726-D	CRUDE M-1 STORAGE
726-E	COLLECTING PIT
727-A	ACETYLENE COMPRESSOR BUILDING (CANCELLED)
727-B	ACETYLENE SCRUBBER BUILDING
728	M-1 FILLING BUILDING
728-A	DISTILLED M-1 STORAGE
728-B	DISTILLATION AND MECHANICAL SERVICE BUILDING

RSA-122 EAST HISTORICAL BUILDING INDEX	
OLD BLDG. NO	BUILDING DESCRIPTION
701	M-1 OFFICE AND LOCKER ROOM
702	M-1 MANUFACTURING BUILDING
702-A	CAUSTIC AND AT BULK STORAGE
702-B	AT STORAGE
702-C	AIR SCRUBBER
702-D	CRUDE M-1 STORAGE
702-E	COLLECTING PIT
703	ACETYLENE GENERATOR BUILDING (CANCELLED)
703-A	ACETYLENE COMPRESSOR BUILDING (CANCELLED)
703-B	ACETYLENE SCRUBBER BUILDING
703-C	SULFURIC ACID UNLOADING AND STORAGE (CANCELLED)
704	M-1 FILLING BUILDING
704-A	DISTILLED M-1 STORAGE
704-B	DISTILLATION AND MECHANICAL SERVICE BUILDING
705	M-1 CAFETERIA
706	M-1 MANUFACTURING BUILDING
706-A	CAUSTIC AND AT BULK STORAGE
706-B	AT STORAGE
706-C	AIR SCRUBBER
706-D	CRUDE M-1 STORAGE
706-E	COLLECTING PIT
707	ACETYLENE GENERATOR BUILDING (CANCELLED)
707-A	ACETYLENE COMPRESSOR BUILDING (CANCELLED)
707-B	ACETYLENE SCRUBBER BUILDING
707-C	SULFURIC ACID UNLOADING AND STORAGE
708	M-1 FILLING BUILDING
708-A	DISTILLED M-1 STORAGE
708-B	DISTILLATION AND MECHANICAL SERVICE BUILDING

Figure 1-6
Layout of the Former Lewisite
Plants 5 and 6, Area No. 2

U. S. Army Corps of Engineers
Redstone Arsenal
Madison County, Alabama
Contract No. DACA21-96-D-0010





LEGEND

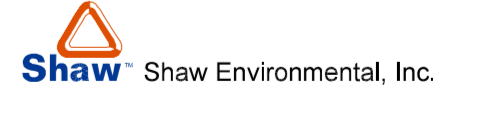
- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- TREES / TREELINE
- FENCE
- DRAINAGE FEATURE
- ABANDONED OVERHEAD CHEMICAL LINES
- ABANDONED UNDERGROUND CHEMICAL LINES
- ABANDONED INDUSTRIAL SEWER LINES
- ABANDONED SANITARY SEWER LINES
- MANHOLE
- FORMER DRAINAGE DITCH
- RSA SITE BOUNDARY
- HISTORICAL DEMOLISHED STRUCTURES (FORMER BUILDING NUMBERS ARE SHOWN IN PARENTHESES)
- CAPPED AREA
- CURRENT BUILDINGS AND STRUCTURES (FORMER BUILDING NUMBERS ARE SHOWN IN PARENTHESES)

NOTE:

- AT- ARSENIC TRICHLORIDE
- SOURCE: DRAWING NUMBER 7120-250 SHEETS 3 AND 5 SHOWING M-1 PLANT GROUPS 1 AND 2. A DETAILED DRAWING OF PLANT 1 WAS NOT AVAILABLE, AND THUS UNDERGROUND AND OVERHEAD CHEMICAL LINES ARE CONCEPTUALLY DRAWN. ADDITIONALLY, ALL DITCHES SHOWN IN THE DRAWINGS REFERENCED ABOVE WERE NOT BUILT AS SHOWN. ACTUAL DITCHES "AS BUILT" ARE SEEN IN 1943 AERIAL PHOTOGRAPH (FIGURE 2-1).

RSA-183 HISTORICAL BLDG. INDEX PLANT 1 AND PLANT 2		
PLANT 1		
OLD BLDG. NO.	BUILDING DESCRIPTION	REVISED 1950'S BUILDING NO.
252	M-1 Manufacturing Building	4382
252-A	Caustic and AT (Arsenic Trichloride) Bulk Storage	4383
252-B	AT Storage	
252-C	Air Scrubber	4384
252-D	Crude M1 Storage	4385
252-E	Collecting Pit	
253	Acetylene Generation Building	
253-A	Acetylene Compressor Building (Cancelled)	
253-B	Acetylene Scrubber Building	
253-C	Sulfuric Acid Unloading and Storage	
253-D	M1 Sludge Disposal Units	4386
254	M1 Filling Building	4387
254-A	Distilled M1 Storage	4388
254-B	Distillation and Mechanical Building	
PLANT 2		
OLD BLDG. NO.	BUILDING DESCRIPTION	NEW BLDG. NO.
262	M-1 Manufacturing Building	4389
262-A	Caustic and AT Bulk Storage	4390
262-B	AT Storage	
262-C	Air Scrubber	4391
262-D	Crude M1 Storage	4392
262-E	Collecting Pit	4393
263	Acetylene Generation Building	
263-A	Acetylene Compressor Building (Cancelled)	
263-B	Acetylene Scrubber Building	
263-C	Sulfuric Acid Unloading and Storage (Cancelled)	
264	M1 Filling Building	4394
264-A	Distilled M1 Storage	4395
264-B	Distillation and Mechanical Service Building	
GENERAL		
OLD BLDG. NO.	BUILDING DESCRIPTION	NEW BLDG. NO.
251	Office and Locker Building	4381
255	Cafeteria, Plants Area 1	
281	Storage Warehouse - Chemical Lab in 1958	4496
282	Storage Warehouse - Test Lab	4497

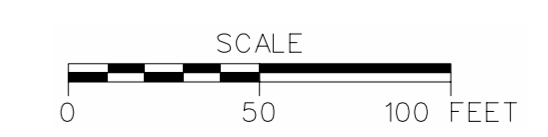
NO.	DATE	REVISION	BY	CHKD	DSGN	ENGR	PROJ	APPR
STARTING DATE	INITIATOR	CHKD	DRAWN	CHKD	PROJECT	MGR	D.BURTON	



THIS DRAWING AND ALL INFORMATION THEREON IS CONFIDENTIAL AND MUST NOT BE MADE PUBLIC OR COPIED UNLESS DULY AUTHORIZED. SHALL NOT BE USED EXCEPT FOR THE PURPOSE FOR WHICH IT WAS SUPPLIED, AND IS SUBJECT TO RETURN ON DEMAND. ALL RIGHTS OF INVENTION OR DESIGN ARE RESERVED.

U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT
REDSTONE ARSENAL
MADISON COUNTY, ALABAMA

FIGURE 1-4
LAYOUT OF FORMER LEWISITE
PLANTS 1 AND 2, RSA-183, OU-5



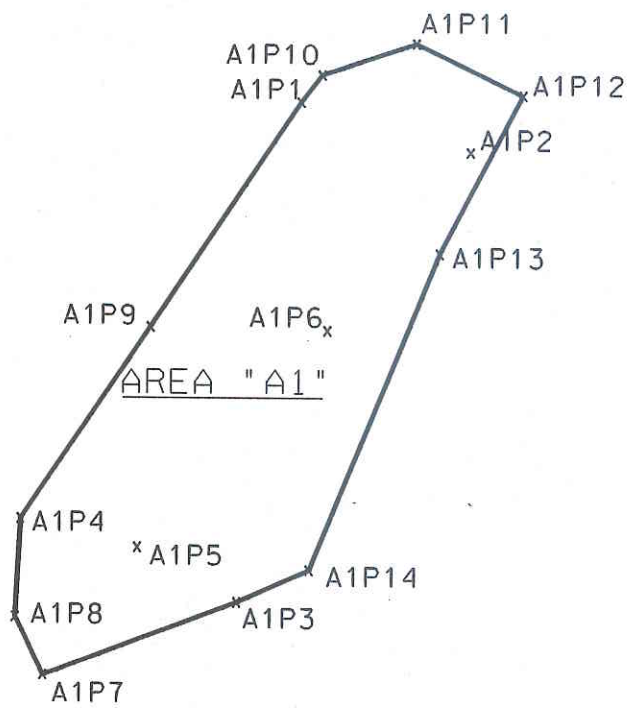
AREA	JOB NO.	DRAWING NO.	REV
RSA-183	802829	802829AA118.DGN	

Contract No. DACA21-96-D-0018

4/12/05 10:43:02 AM dhal FILENAME: B02829a0118.dgn 24 x 36

APPENDIX O

DOCUMENTATION OF 2010-2011 SOIL REMOVAL AT RSA-122



POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
A1P1	1508367.661	414362.836	590.5'	589.1'	590.5'
A1P2	1508365.066	414371.661	590.9'	589.8'	590.9'
A1P3	1508341.338	414359.696	591.7'	590.3'	591.8'
A1P4	1508345.711	414348.446	591.8'	590.0'	591.6'
A1P5	1508344.224	414354.512	591.5'	589.8'	591.7'
A1P6	1508355.678	414364.295	591.0'	589.6'	591.3'
A1P7	1508337.499	414349.654	590.7'	589.2'	590.7'
A1P8	1508340.536	414348.202	592.0'	590.5'	592.0'
A1P9	1508355.841	414355.107	591.2'	589.8'	591.2'
A1P10	1508369.116	414363.919	590.5'	589.1'	590.5'
A1P11	1508370.792	414368.800	590.4'	589.2'	590.4'
A1P12	1508368.068	414374.367	590.7'	589.2'	590.7'
A1P13	1508359.736	414370.090	591.1'	589.8'	591.1'
A1P14	1508343.037	414363.441	591.8'	590.8'	591.8'

NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.

GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION

TYPE OF SURVEY A SPECIAL PURPOSE SURVEY
 OF AREA "A1" AT RSA-122

CLIENT SHAW ENVIRONMENTAL & INFRASTRUCTURE

FIELD WORK COMPLETED 07/22/2011 OFFICE WORK COMPLETED 09/23/2011

WORK ORDER NO. 1366-SR DRAWN BY DWM REVISED

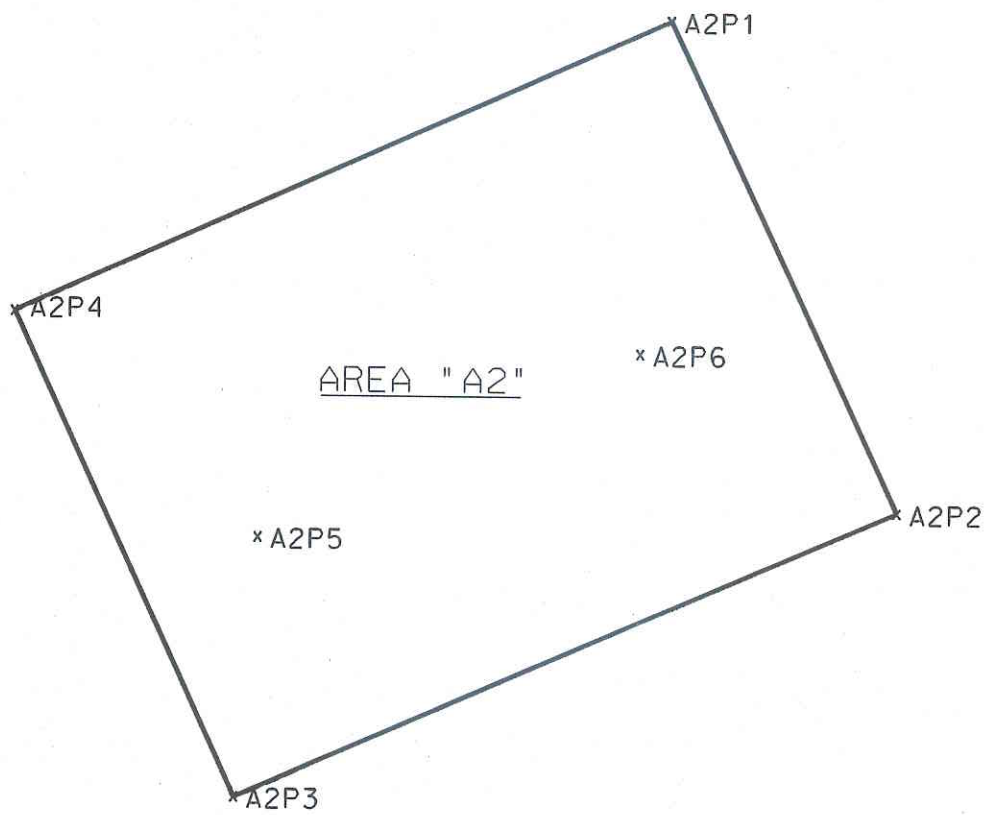
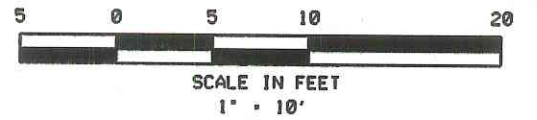
JOHNSON & ASSOCIATES
 ENGINEERING SURVEYING

1218 CHURCH STREET
 HUNTSVILLE, ALABAMA 35801

1-256-533-7331
 FAX 1-256-533-7332

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN
 1: 10,000



POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
A2P1	1508443.085	414489.772	589.7	588.1'	589.6'
A2P2	1508417.270	414501.707	590.8	589.4'	590.7'
A2P3	1508402.098	414467.402	591.1	589.9'	591.1'
A2P4	1508427.507	414455.769	589.7	588.1'	589.5'
A2P5	1508415.772	414468.511	590.3	588.9'	590.6'
A2P6	1508425.488	414488.299	590.0	588.8'	590.4'

NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES, UNLESS OTHERWISE STATED.

GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION

TYPE OF SURVEY A SPECIAL PURPOSE SURVEY
 OF AREA "A2" AT RSA-122

CLIENT SHAW ENVIRONMENTAL & INFRASTRUCTURE

FIELD WORK COMPLETED 04/20/2011 OFFICE WORK COMPLETED 09/23/2011

WORK ORDER NO. 1366-SR DRAWN BY DWM REVISED

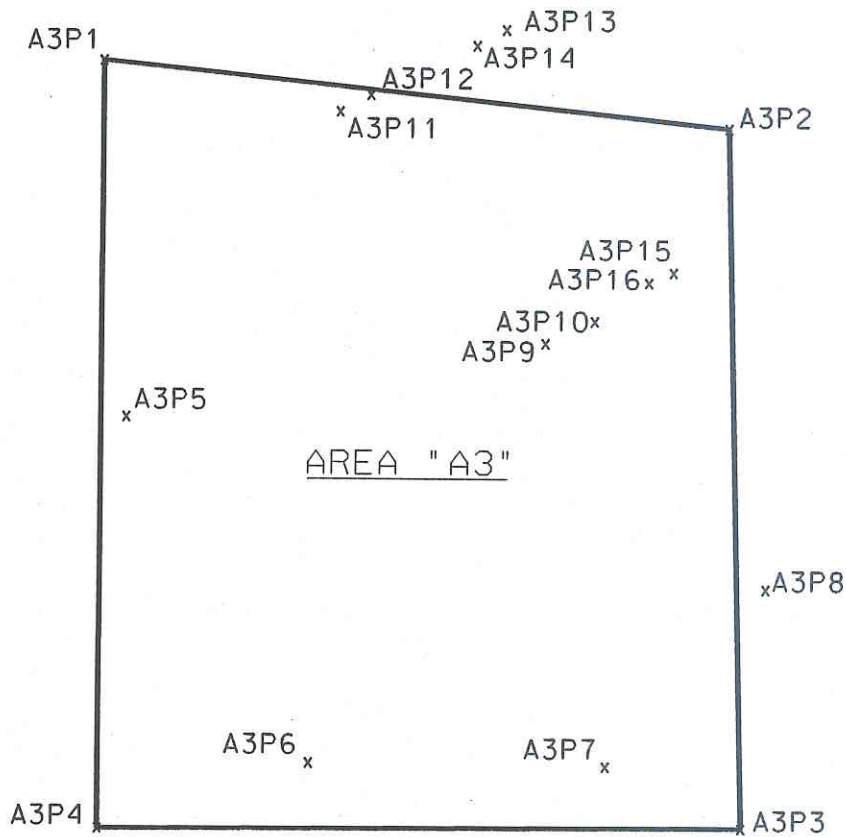
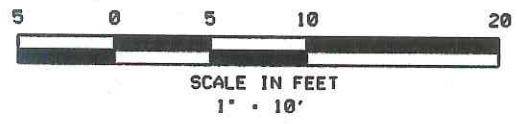
JOHNSON & ASSOCIATES
 ENGINEERING SURVEYING

1218 CHURCH STREET
 HUNTSVILLE, ALABAMA 35801

1-256-533-7331
 FAX 1-256-533-7332

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN
 1: 10.000



POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
A3P1	1508522.264	414718.899	585.2'	584.0'	585.3'
A3P2	1508518.867	414751.409	584.0'	582.8'	584.0'
A3P3	1508482.041	414752.309	583.1'	581.7'	583.4'
A3P4	1508481.905	414718.871	587.2'	586.2'	587.5'
A3P5	1508503.541	414720.207	586.2'	584.8'	586.5'
A3P6	1508485.416	414729.818	586.7'	584.9'	586.3'
A3P7	1508485.273	414745.241	584.5'	583.3'	584.6'
A3P8	1508494.653	414753.498	583.4'	581.3'	582.4'
A3P9	1508507.503	414741.951	583.6'	581.2'	583.1'
A3P10	1508508.678	414744.500	582.4'	580.7'	582.6'
A3P11	1508519.638	414731.190	583.9'	582.3'	583.6'
A3P12	1508520.525	414732.790	582.2'	581.2'	583.1'
A3P13	1508523.998	414739.805	584.2'	580.7'	582.8'
A3P14	1508523.146	414738.284	581.7'	580.5'	582.3'
A3P15	1508511.270	414748.580	583.5'	580.7'	582.4'
A3P16	1508510.727	414747.309	582.2'	580.6'	582.1'

NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.

GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION
 TB TOP OF BANK
 TOE BOTTOM OF CHANNEL

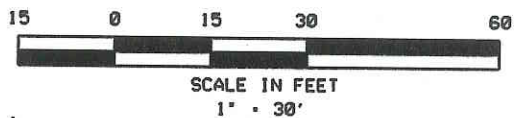
TYPE OF SURVEY	A SPECIAL PURPOSE SURVEY	
	OF AREA "A3" AT RSA-122	
CLIENT	SHAW ENVIRONMENTAL & INFRASTRUCTURE	
FIELD WORK COMPLETED	04/20/2011	OFFICE WORK COMPLETED 09/23/2011
WORK ORDER NO.	1366-SR	DRAWN BY DWM
		REVISED

CERTIFICATE OF ACCURACY
 THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN
 1: 10.000

JOHNSON & ASSOCIATES
 ENGINEERING SURVEYING

1218 CHURCH STREET
 HUNTSVILLE, ALABAMA 35801

1-256-533-7331
 FAX 1-256-533-7332

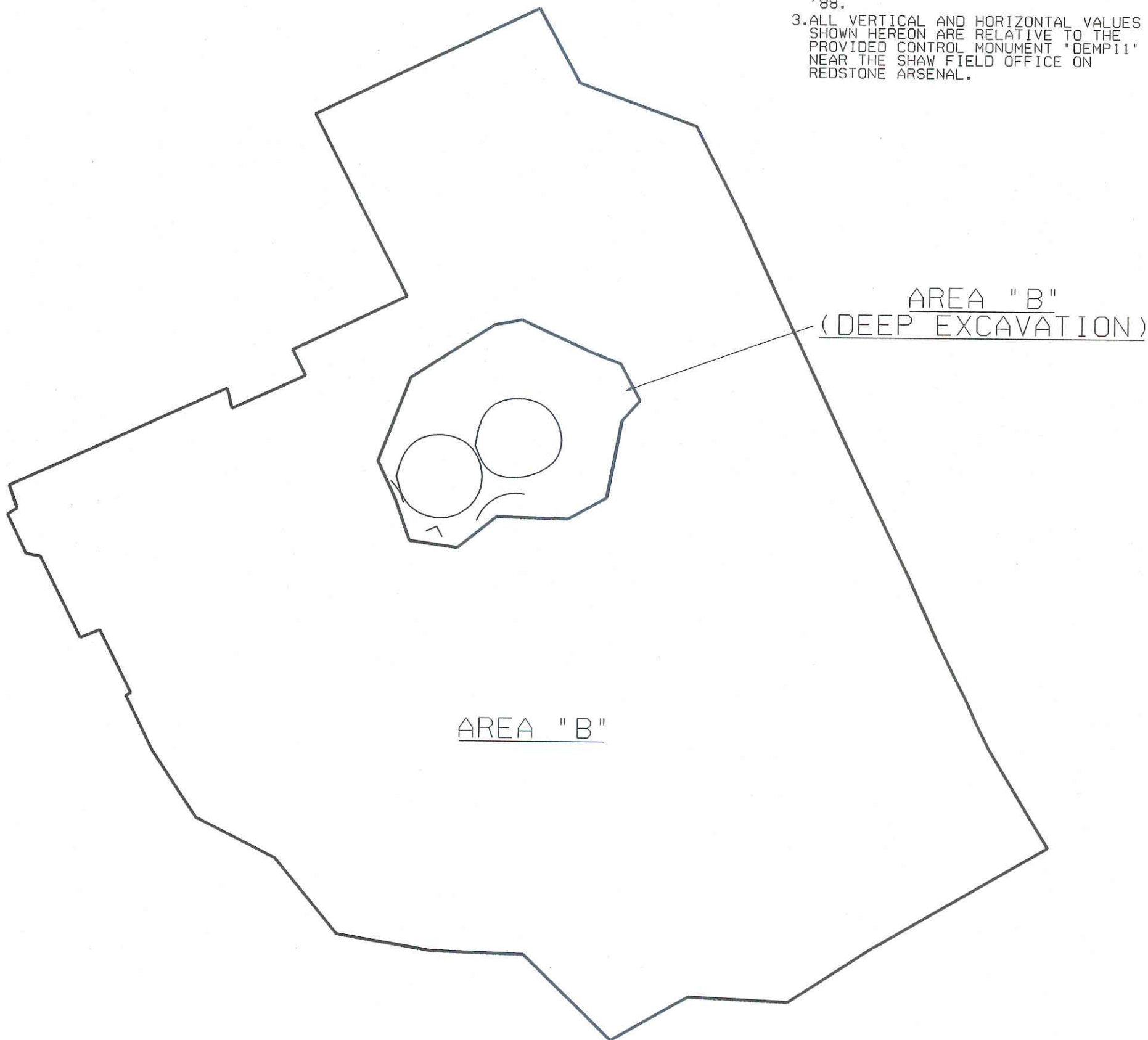


NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.




GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.



NOTE: SEE SHEET 2 OF 2 FOR OBSERVATION LOCATIONS AND VERTICAL VALUES.

<u>GENERAL LEGEND</u>		TYPE OF SURVEY	
ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION		A SPECIAL PURPOSE SURVEY OF AREA "B" AT RSA-122	
ELEV (POST) OBSERVED ELEVATION POST EXCAVATION		CLIENT	
TB TOP OF BANK		SHAW ENVIRONMENTAL & INFRASTRUCTURE	
TOE BOTTOM OF CHANNEL		FIELD WORK COMPLETED	OFFICE WORK COMPLETED
* POINT OUTSIDE EXCAVATION AREA		02/25/2011	03/17/2011
<u>CERTIFICATE OF ACCURACY</u>		WORK ORDER NO.	SHEET
THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN		1366-SR	1 OF 2
1: 10,000			
		1218 CHURCH STREET HUNTSVILLE, ALABAMA 35801	
		1-256-533-7331 FAX 1-256-533-7332	

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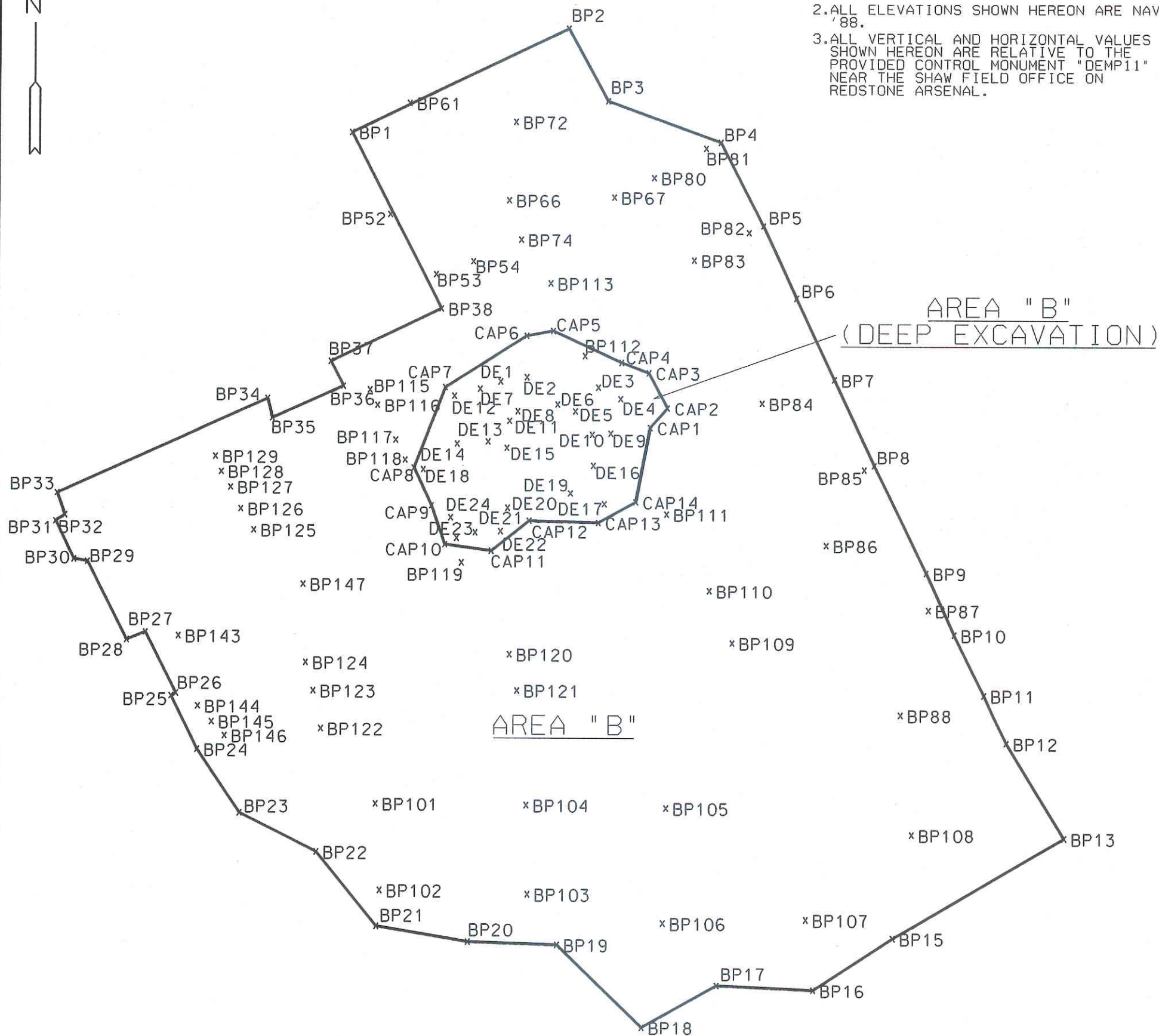
SCALE IN FEET
1" = 30'

NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.



GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.



NOTE: SEE SHEET 2 OF 2 FOR OBSERVATION LOCATIONS AND VERTICAL VALUES.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION
 TB TOP OF BANK
 TOE BOTTOM OF CHANNEL
 * POINT OUTSIDE EXCAVATION AREA

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN
 1: 10,000

TYPE OF SURVEY	A SPECIAL PURPOSE SURVEY OF AREA "B" AT RSA-122		
CLIENT	SHAW ENVIRONMENTAL & INFRASTRUCTURE		
FIELD WORK COMPLETED	02/25/2011	OFFICE WORK COMPLETED	03/17/2011
WORK ORDER NO.	1366-SR	DRAWN BY	DWM
		SHEET	1 OF 2

JOHNSON & ASSOCIATES
 ENGINEERING SURVEYING

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 HUNTSVILLE, ALABAMA 35801

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 FAX 1-256-533-7332

AREA "B"

POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
BP1	1508437.991	414564.915	591.8'	590.6'	591.8'
BP2	1508465.476	414621.431	588.6'	588.5'	589.6'
BP3	1508446.385	414631.758	589.4'	589.3'	590.3'
BP4	1508435.684	414661.244	589.3'	588.3'	590.4'
BP5	1508413.553	414672.479	590.4'	588.7'	590.4'
BP6	1508394.407	414681.227	590.4'	589.2'	590.3'
BP7	1508373.000	414691.217	590.2'	589.1'	590.1'
BP8	1508350.161	414701.699	589.3'	588.1'	590.1'
BP9	1508321.578	414715.409	589.1'	587.7'	589.4'
BP10	1508305.396	414722.749	589.0'	587.9'	589.3'
BP11	1508289.529	414730.527	589.0'	587.9'	589.2'
BP12	1508277.032	414736.449	588.8'	587.9'	588.9'
BP13	1508252.193	414751.585	588.8'	POINT ON CONC. CURB	
BP14	NOT EXCAVATED				
BP15	1508226.347	414706.937	589.8'	587.9'	589.8'
BP16	1508212.782	414686.218	590.5'	588.8'	590.5'
BP17	1508213.899	414661.049	590.8'	589.0'	590.7'
BP18	1508202.817	414641.540	591.2'	589.3'	591.1'
BP19	1508224.433	414619.386	590.9'	589.7'	591.0'
BP20	1508225.200	414596.147	591.4'	589.9'	591.3'
BP21	1508229.220	414572.228	591.6'	590.1'	591.6'
BP22	1508248.206	414556.498	591.4'	590.0'	591.5'
BP23	1508258.382	414536.420	591.5'	590.0'	591.5'
BP24	1508274.899	414525.259	591.2'	590.2'	590.4'
BP25	1508288.956	414518.475	591.2'	BUILDING FOOTER	
BP26	1508289.652	414519.729	591.2'	589.6'	591.1'
BP27	1508305.581	414511.735	590.7'	589.2'	590.6'
BP28	1508303.595	414506.811	590.6'	589.4'	590.6'
BP29	1508324.116	414496.504	590.1'	587.6'	589.8'
BP30	1508324.727	414492.942	589.8'	587.3'	589.4'
BP31	1508334.766	414488.137	590.1'	587.2'	589.7'
BP32	1508336.370	414490.566	590.4'	588.8'	590.2'
BP33	1508342.260	414488.522	590.8'	588.8'	590.8'
BP34	1508367.653	414543.327	590.6'	588.6'	590.8'
BP35	1508362.485	414544.557	590.2'	587.4'	590.1'
BP36	1508371.042	414563.111	590.1'	588.3'	590.1'
BP37	1508377.564	414559.794	590.6'	588.4'	590.5'
BP38	1508391.437	414588.561	590.2'	588.6'	590.3'
BP52	1508416.338	414575.048	592.9'	591.9'	592.9'
BP53	1508400.354	414587.113	592.5'	591.3'	592.7'
BP54	1508403.853	414596.814	591.8'	590.8'	591.8'
BP61	1508445.680	414579.989	590.8'	589.5'	590.8'
BP66	1508420.164	414606.102	591.1'	589.4'	591.0'
BP67	1508421.034	414633.519	588.6'	587.5'	588.6'
BP71	1508459.418	414602.429	589.5'	588.3'	589.3'
BP72	1508440.893	414607.774	590.2'	588.8'	590.1'
BP74	1508409.675	414609.297	590.8'	589.7'	590.8'
BP80	1508426.256	414643.909	590.2'	588.9'	590.2'
BP81	1508434.070	414657.434	590.3'	588.9'	590.3'
BP82	1508411.750	414668.703	590.8'	588.5'	590.4'
BP83	1508404.328	414654.433	590.6'	588.5'	590.4'
BP84	1508366.653	414672.375	590.2'	589.0'	590.2'
BP85	1508348.998	414699.093	589.7'	587.8'	589.9'
BP86	1508328.839	414689.289	589.6'	588.1'	590.0'
BP87	1508311.807	414716.041	589.3'	587.5'	589.4'
BP88	1508284.357	414708.823	589.4'	588.0'	589.3'
BP101	1508260.894	414571.901	591.0'	589.5'	591.0'
BP102	1508238.394	414573.055	591.4'	589.9'	591.4'
BP103	1508237.453	414611.613	590.9'	589.8'	590.8'
BP104	1508260.637	414611.246	590.2'	588.7'	590.2'
BP105	1508259.907	414647.704	589.6'	587.8'	589.6'
BP106	1508230.097	414646.962	590.5'	588.9'	590.4'
BP107	1508231.104	414684.237	589.9'	588.0'	589.8'
BP108	1508253.065	414711.805	588.9'	587.1'	588.7'
BP109	1508303.133	414664.831	589.8'	587.2'	589.3'
BP110	1508316.748	414658.840	588.9'	587.2'	588.9'
BP111	1508336.969	414647.578	589.4'	588.3'	589.6'
BP113	1508398.102	414617.056	589.6'	587.8'	589.6'
BP115	1508370.089	414570.026	589.7'	588.0'	589.8'
BP116	1508365.957	414572.014	589.8'	588.3'	589.7'
BP117	1508356.774	414576.795	589.5'	588.2'	589.5'
BP118	1508351.436	414579.258	589.9'	587.8'	589.9'
BP119	1508324.133	414594.082	590.3'	587.2'	589.8'
BP120	1508300.027	414606.714	589.4'	587.3'	589.2'
BP121	1508290.577	414608.682	590.0'	588.8'	589.8'
BP122	1508280.489	414557.515	591.3'	590.0'	591.1'
BP123	1508290.415	414555.519	589.6'	588.3'	589.8'
BP124	1508297.789	414553.559	590.6'	589.4'	590.7'
BP125	1508332.550	414539.859	590.3'	588.0'	589.8'
BP126	1508338.152	414539.859	590.3'	587.7'	589.7'
BP127	1508343.970	414533.761	589.9'	587.5'	589.2'
BP128	1508348.132	414531.313	589.7'	587.4'	589.2'
BP129	1508352.226	414529.775	589.8'	587.6'	590.1'
BP143	1508304.648	414520.335	590.7'	589.3'	590.6'
BP144	1508286.289	414525.416	591.1'	589.4'	591.3'
BP145	1508282.222	414529.030	589.8'	588.6'	589.9'
BP146	1508278.544	414532.393	590.9'	589.7'	590.9'
BP147	1508318.305	414552.828	590.4'	588.2'	589.7'

AREA "B" BOTTOM OF DEEP EXCAVATION

POINT#	NORTHING	EASTING	ELEV
DE1	1508372.33	414604.13	578.1'
DE2	1508373.46	414611.01	578.2'
DE3	1508370.84	414629.66	578.4'
DE4	1508367.75	414635.45	577.8'
DE5	1508364.41	414623.64	578.2'
DE6	1508366.26	414619.03	577.9'
DE7	1508370.38	414598.79	583.8'
DE8	1508364.42	414608.64	578.4'
DE9	1508358.57	414632.91	577.8'
DE10	1508358.26	414628.08	577.8'
DE11	1508361.83	414606.48	582.4'
DE12	1508368.51	414592.10	584.4'
DE13	1508356.35	414600.88	583.5'
DE14	1508355.79	414592.85	584.8'
DE15	1508354.67	414605.82	583.8'
DE16	1508349.96	414628.40	578.3'
DE17	1508339.65	414631.31	583.8'
DE18	1508348.85	414584.01	584.6'
DE19	1508342.52	414622.46	582.5'
DE20	1508338.62	414606.06	583.8'
DE21	1508332.09	414597.62	584.5'
DE22	1508332.43	414604.25	584.5'
DE23	1508330.61	414592.78	584.6'
DE24	1508336.03	414591.21	584.6'

AREA "B" CAP

POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (FILL)
CAP1	1508360.08	414643.22	589.5'	590.6'
CAP2	1508365.35	414647.69	589.5'	590.6'
CAP3	1508374.66	414642.81	589.5'	590.6'
CAP4	1508377.40	414635.67	589.6'	590.6'
CAP5	1508385.68	414617.79	588.8'	589.8'
CAP6	1508384.40	414610.87	589.4'	590.4'
CAP7	1508370.77	414589.67	589.7'	590.8'
CAP8	1508349.27	414581.58	589.9'	591.0'
CAP9	1508339.15	414586.18	589.4'	590.9'
CAP10	1508328.88	414589.71	590.2'	591.3'
CAP11	1508327.21	414601.84	590.2'	591.5'
CAP12	1508335.15	414611.71	590.1'	591.1'
CAP13	1508334.68	414629.77	589.8'	590.9'
CAP14	1508340.21	414639.52	589.6'	590.8'

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION
 TB TOP OF BANK
 TOE BOTTOM OF CHANNEL
 * POINT OUTSIDE EXCAVATION AREA
 ** EXCAVATED TO SOLID ROCK

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN 1:10,000.

TYPE OF SURVEY A SPECIAL PURPOSE SURVEY OF AREA "B" AT RSA-122

CLIENT SHAW ENVIRONMENTAL & INFRASTRUCTURE

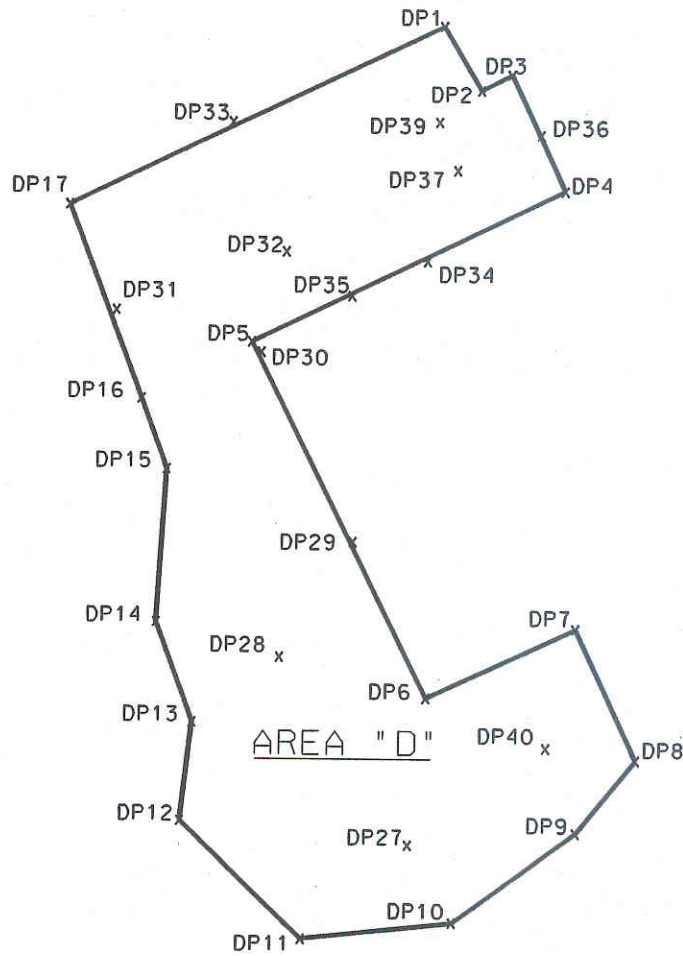
FIELD WORK COMPLETED 02/25/2011 OFFICE WORK COMPLETED 03/17/2011

WORK ORDER NO. 1366-SR DRAWN BY DWM SHEET 2 OF 2

JOHNSON & ASSOCIATES
 ENGINEERING SURVEYING

1218 CHURCH STREET
 HUNTSVILLE, ALABAMA 35801

1-256-533-7331
 FAX 1-256-533-7332



POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
DP1	1508335.735	414470.098	590.1	588.8'	590.0'
DP2	1508328.934	414474.015	590.1	588.6'	589.8'
DP3	1508330.625	414477.153	589.9	588.9'	589.9'
DP4	1508318.375	414482.795	589.7	588.3'	589.7'
DP5	1508302.332	414450.383	591.1	588.7'	590.9'
DP6	1508264.891	414468.837	592.3	590.7'	592.4'
DP7	1508272.288	414484.291	592.5	590.4'	592.7'
DP8	1508258.508	414490.660	592.4	590.9'	592.4'
DP9	1508250.815	414484.510	592.7	592.7'	592.7'
DP10	1508241.213	414471.765	593.4	592.0'	593.4'
DP11	1508239.456	414456.093	593.6	592.2'	593.5'
DP12	1508251.938	414443.408	593.0	590.6'	593.0'
DP13	1508262.299	414444.594	592.6	590.5'	592.6'
DP14	1508272.784	414440.736	592.2	590.3'	592.3'
DP15	1508288.851	414441.693	591.9	590.3'	591.9'
DP16	1508296.263	414438.978	591.4	588.7'	591.2'
DP17	1508316.656	414431.351	589.9	588.4'	589.9'
DP27	1508249.445	414467.097	593.0	590.9'	593.1'
DP28	1508269.191	414453.577	592.3	590.0'	592.5'
DP29	1508281.296	414461.078	592.0	589.9'	592.0'
DP30	1508301.251	414451.411	591.4	590.3'	591.4'
DP31	1508305.585	414436.305	589.8	588.3'	589.8'
DP32	1508311.876	414453.896	589.7	588.6'	589.8'
DP33	1508325.483	414448.235	590.1	589.0'	590.2'
DP34	1508310.904	414468.559	589.8	588.4'	590.3'
DP35	1508307.219	414460.750	589.9	588.8'	590.8'
DP36	1508324.231	414480.250	589.6	588.3'	589.4'
DP37	1508320.465	414471.615	589.6	588.3'	589.4'
DP39	1508325.530	414469.702	590.0	588.9'	589.9'
DP40	1508259.722	414481.336	592.5	591.5'	592.6'

NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.

GENERAL NOTES

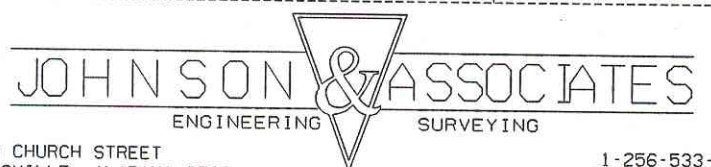
1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION
 TB TOP OF BANK
 TOE BOTTOM OF CHANNEL

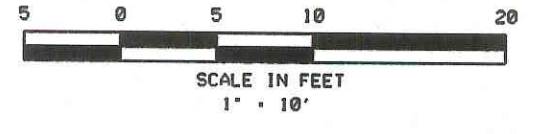
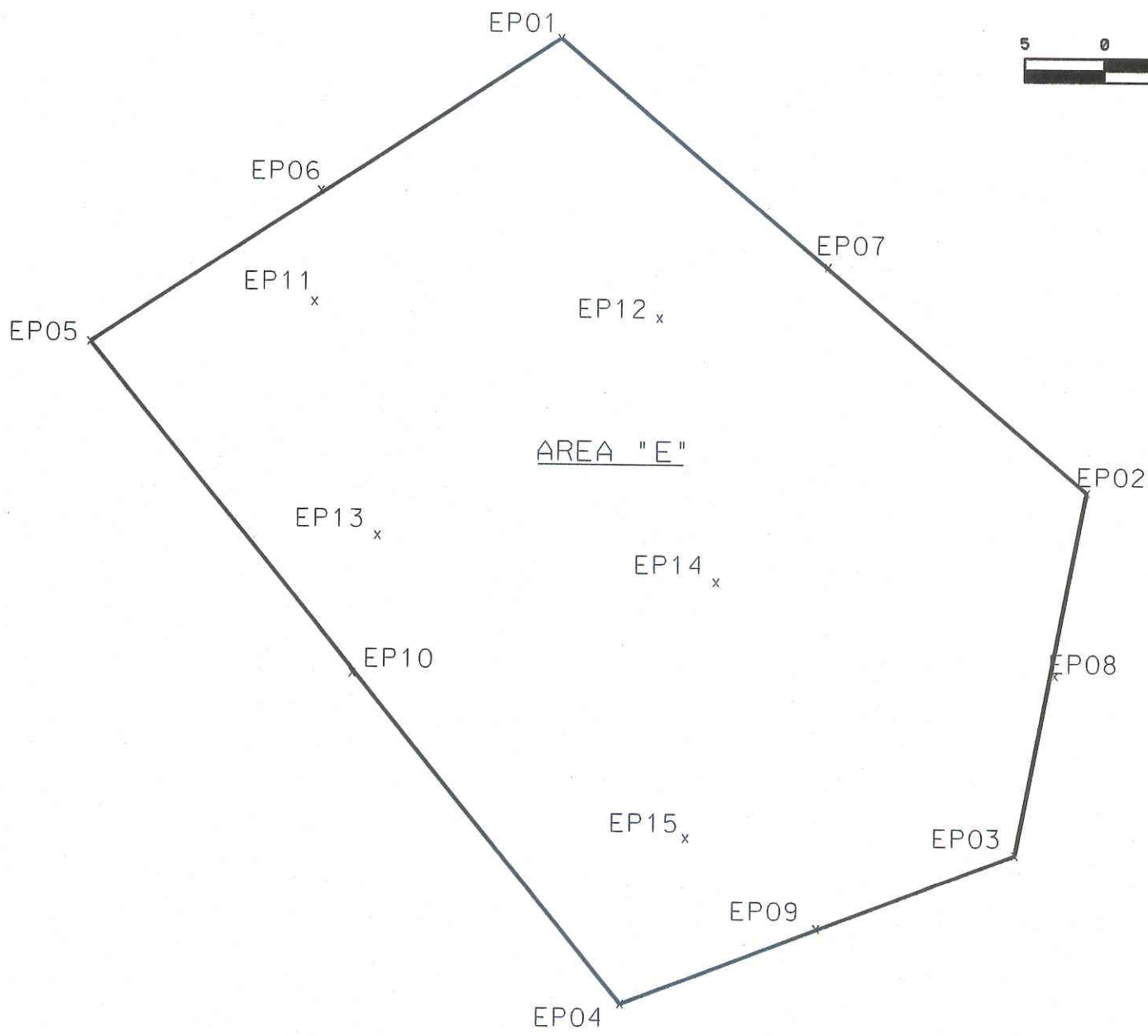
TYPE OF SURVEY	A SPECIAL PURPOSE SURVEY OF AREA "D" AT RSA-122		
CLIENT	SHAW ENVIRONMENTAL & INFRASTRUCTURE		
FIELD WORK COMPLETED	FIELD DATE	OFFICE WORK COMPLETED	10/03/2011
WORK ORDER NO. 1366-SR	DRAWN BY DWM	REVISED	

CERTIFICATE OF ACCURACY
 THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN 1:10,000.



1218 CHURCH STREET
 HUNTSVILLE, ALABAMA 35801

1-256-533-7331
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POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
EP01	1507792.943	414449.055	596.6'	595.4'	596.4'
EP02	1507764.317	414482.308	595.7'	594.5'	595.7'
EP03	1507741.201	414478.027	595.5'	594.3'	595.4'
EP04	1507731.537	414453.364	595.6'	594.6'	595.6'
EP05	1507773.388	414419.671	597.1'	595.9'	597.1'
EP06	1507783.188	414434.068	596.4'	595.3'	596.4'
EP07	1507778.501	414465.952	595.9'	594.8'	595.8'
EP08	1507752.646	414480.417	595.5'	594.2'	595.3'
EP09	1507736.413	414465.604	595.5'	594.4'	595.5'
EP10	1507752.466	414436.318	596.0'	594.7'	596.2'
EP11	1507776.062	414433.727	596.3'	595.1'	596.5'
EP12	1507775.177	414455.389	596.0'	594.8'	595.8'
EP13	1507761.187	414437.814	596.2'	595.0'	596.2'
EP14	1507758.367	414459.096	595.7'	594.7'	595.9'
EP15	1507742.149	414457.355	595.5'	594.5'	595.7'

NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.

GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION

TYPE OF SURVEY A SPECIAL PURPOSE SURVEY
 OF AREA "E" AT RSA-122

CLIENT SHAW ENVIRONMENTAL & INFRASTRUCTURE

FIELD WORK COMPLETED 02/25/2011 OFFICE WORK COMPLETED 03/17/2011

WORK ORDER NO. 1366-SR DRAWN BY DWM REVISED

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN
 1: 10.000

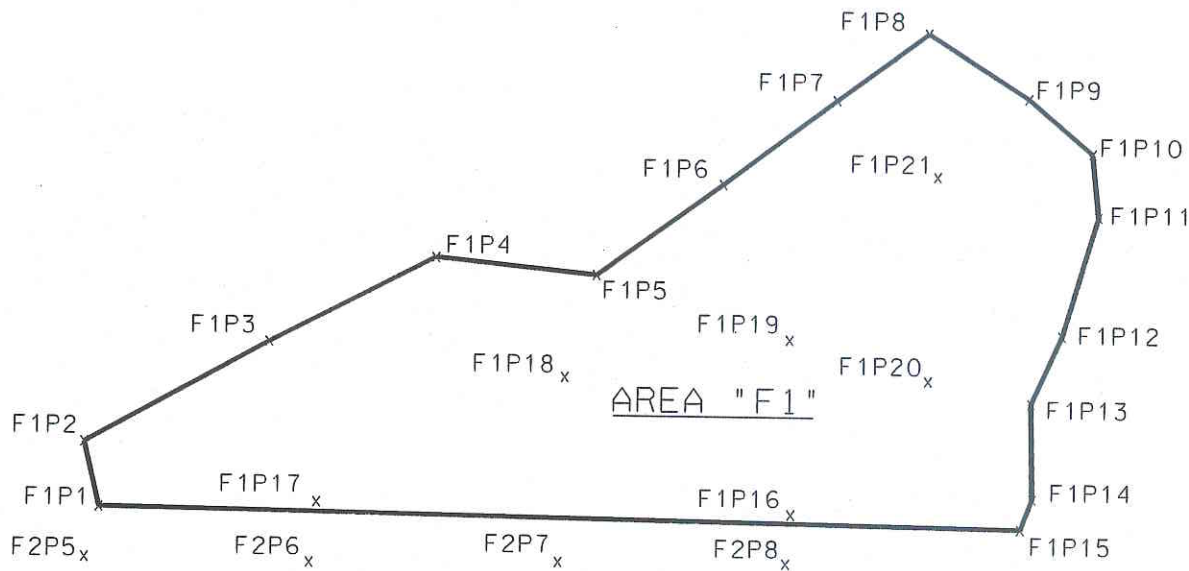


1218 CHURCH STREET
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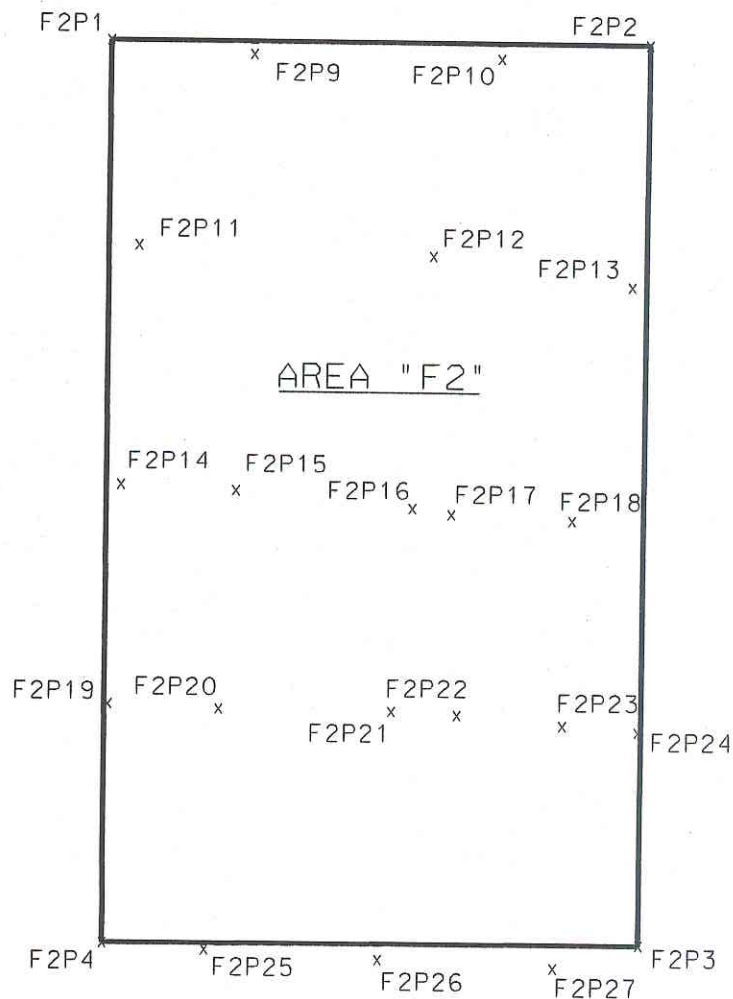
GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.



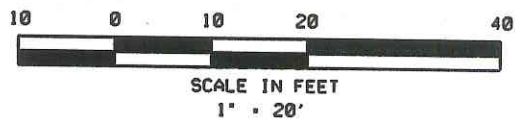
AREA "F1"

POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
F1P1	1507713.739	414699.376	592.2	591.1'	592.2'
F1P2	1507720.555	414697.783	592.4	591.0'	592.3'
F1P3	1507731.319	414716.902	592.3	591.0'	592.3'
F1P4	1507740.411	414734.129	592.2	591.0'	592.2'
F1P5	1507738.716	414750.504	592.0	590.5'	592.0'
F1P6	1507748.399	414763.893	591.9	590.4'	591.9'
F1P7	1507757.392	414775.616	591.8	590.4'	591.8'
F1P8	1507764.522	414785.066	591.8	590.0'	591.8'
F1P9	1507757.739	414795.530	591.6	590.1'	591.5'
F1P10	1507751.955	414802.193	591.4	590.1'	591.4'
F1P11	1507745.285	414802.898	591.3	589.8'	591.3'
F1P12	1507732.730	414799.207	591.2	589.7'	591.1'
F1P13	1507725.595	414796.053	591.1	589.6'	591.1'
F1P14	1507715.564	414796.284	590.9	589.7'	591.0'
F1P15	1507712.297	414795.094	590.9	589.7'	590.9'
F1P16	1507713.638	414771.218	591.2	590.0'	591.4'
F1P17	1507714.493	414721.958	591.9	590.6'	592.0'
F1P18	1507727.937	414747.593	591.8	590.5'	591.9'
F1P19	1507732.013	414770.904	591.5	589.9'	591.6'
F1P20	1507727.850	414785.325	591.2	589.7'	591.3'
F1P21	1507749.388	414786.134	591.6	590.1'	591.6'



AREA "F2"

POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
F2P1	1507701.385	414706.791	593.0'	591.4'	592.4'
F2P2	1507701.370	414762.728	592.5'	591.3'	592.3'
F2P3	1507606.771	414762.658	591.4'	590.3'	591.4'
F2P4	1507606.611	414707.008	593.2'	592.1'	593.3'
F2P5	1507708.378	414697.939	592.4'	NOT EXCAVATED	NOT EXCAVATED
F2P6	1507708.044	414721.280	592.2'	NOT EXCAVATED	NOT EXCAVATED
F2P7	1507708.402	414747.119	592.0'	NOT EXCAVATED	NOT EXCAVATED
F2P8	1507708.408	414770.744	591.7'	NOT EXCAVATED	NOT EXCAVATED
F2P9	1507700.019	414721.643	592.7'	591.4'	592.4'
F2P10	1507699.764	414747.343	592.6'	591.3'	592.4'
F2P11	1507679.878	414709.948	593.0'	591.6'	593.0'
F2P12	1507678.932	414740.519	592.9'	591.3'	592.5'
F2P13	1507675.857	414761.214	592.8'	591.6'	592.7'
F2P14	1507654.553	414708.393	592.9'	591.8'	593.1'
F2P15	1507654.007	414720.319	592.8'	591.7'	592.7'
F2P16	1507652.263	414738.661	592.2'	591.2'	592.6'
F2P17	1507651.649	414742.724	592.0'	590.9'	592.4'
F2P18	1507651.090	414755.252	592.5'	591.5'	592.6'
F2P19	1507631.490	414707.336	592.9'	591.7'	593.1'
F2P20	1507631.061	414718.815	592.8'	591.8'	592.9'
F2P21	1507630.878	414736.731	592.7'	591.7'	592.9'
F2P22	1507630.534	414743.552	592.4'	591.3'	592.6'
F2P23	1507629.521	414754.509	591.4'	590.4'	591.6'
F2P24	1507628.918	414762.353	591.9'	590.8'	591.9'
F2P25	1507605.991	414717.612	593.0'	592.0'	593.2'
F2P26	1507605.090	414735.615	592.9'	591.9'	593.0'
F2P27	1507604.342	414753.797	592.5'	591.5'	592.6'



NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION
 TB TOP OF BANK
 TOE BOTTOM OF CHANNEL

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN 1: 10,000.

TYPE OF SURVEY

A SPECIAL PURPOSE SURVEY OF AREAS "F1 & F2" AT RSA-122

CLIENT

SHAW ENVIRONMENTAL & INFRASTRUCTURE

FIELD WORK COMPLETED

02/25/2011

OFFICE WORK COMPLETED

10/03/2011

WORK ORDER NO.

1366-SR

DRAWN BY

DWM

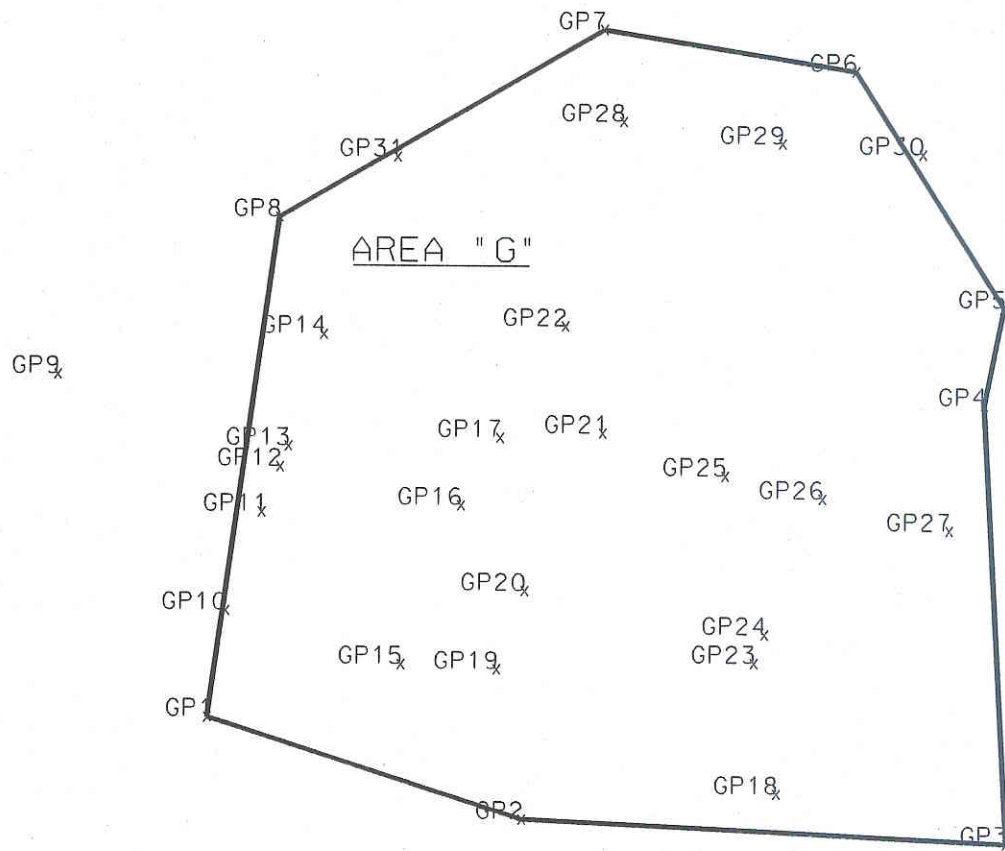
REVISED

JOHNSON & ASSOCIATES

ENGINEERING SURVEYING

1218 CHURCH STREET HUNTSVILLE, ALABAMA 35801

1-256-533-7331 FAX 1-256-533-7332



POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
GP1	1507369.552	414746.511	591.1	590.1	591.1
GP2	1507358.950	414779.261	590.8	589.8	590.8
GP3	1507356.632	414829.615	592.4	591.4	592.4
GP4	1507402.682	414827.005	591.8	590.8	591.8
GP5	1507413.002	414829.003	591.8	590.8	591.8
GP6	1507437.844	414813.503	590.5	589.5	590.7
GP7	1507442.113	414787.326	593.3	592.3	593.3
GP8	1507422.180	414753.692	590.6	589.6	590.6
GP9	1507405.412	414730.757	590.0	*	*
GP10	1507380.750	414748.347	591.3	590.2	591.6
GP11	1507391.108	414752.022	589.9	588.8	590.1
GP12	1507395.877	414753.897	589.9	588.9	590.2
GP13	1507398.039	414754.758	590.6	589.1	590.2
GP14	1507409.823	414758.347	590.2	589.2	590.4
GP15	1507375.193	414766.593	590.2	589.2	590.4
GP16	1507391.901	414772.729	589.8	588.8	589.8
GP17	1507399.007	414776.724	590.2	589.1	590.5
GP18	1507361.752	414805.703	592.0	590.6	592.0
GP19	1507374.698	414776.540	590.6	589.3	590.3
GP20	1507382.965	414779.392	589.4	588.3	589.4
GP21	1507399.527	414787.380	591.2	589.4	590.4
GP22	1507410.775	414783.444	592.9	590.9	592.0
GP23	1507375.469	414803.264	588.4	587.1	589.4
GP24	1507378.464	414804.323	588.3	586.9	588.5
GP25	1507395.119	414800.151	589.6	588.4	589.9
GP26	1507392.783	414810.263	591.3	589.6	591.3
GP27	1507389.497	414823.455	591.8	590.6	591.8
GP28	1507432.443	414789.393	593.1	591.6	592.7
GP29	1507430.164	414805.895	589.7	588.6	589.7
GP30	1507429.128	414820.490	591.5	590.3	591.5
GP31	1507428.599	414765.912	593.0	591.6	593.0

NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.

GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
3. ALL VERTICAL AND HORIZONTAL VALUES SHOWN HEREON ARE RELATIVE TO THE PROVIDED CONTROL MONUMENT "DEMP11" NEAR THE SHAW FIELD OFFICE ON REDSTONE ARSENAL.

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION
 TB TOP OF BANK
 TOE BOTTOM OF CHANNEL
 * POINT OUTSIDE EXCAVATION AREA

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN 1: 10,000.

TYPE OF SURVEY A SPECIAL PURPOSE SURVEY OF AREA "G" AT RSA-122

CLIENT SHAW ENVIRONMENTAL & INFRASTRUCTURE

FIELD WORK COMPLETED 02/25/2011 OFFICE WORK COMPLETED 03/17/2011

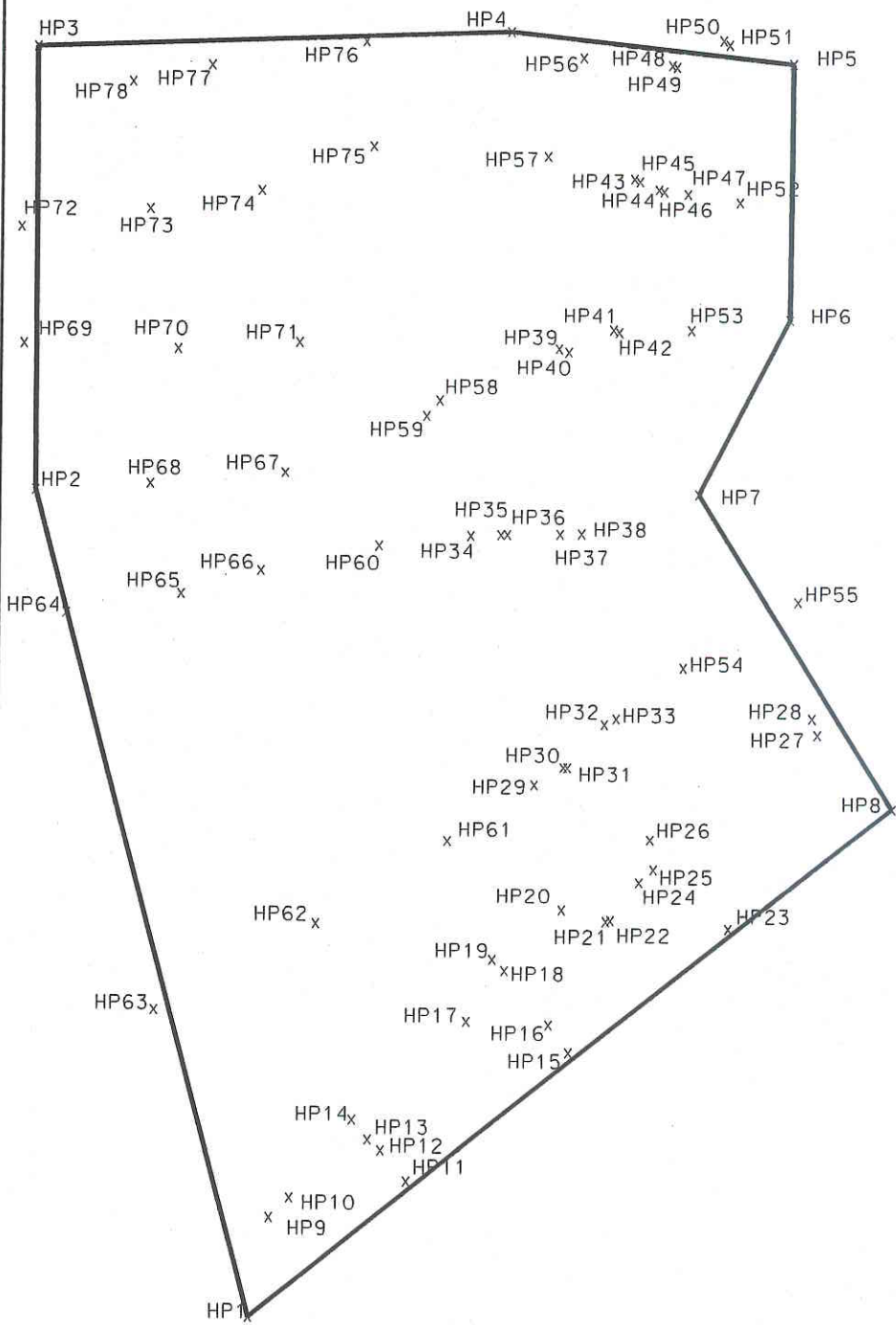
WORK ORDER NO. 1366-SR DRAWN BY DWM REVISED

JOHNSON & ASSOCIATES
 ENGINEERING SURVEYING

1218 CHURCH STREET
 HUNTSVILLE, ALABAMA 35801

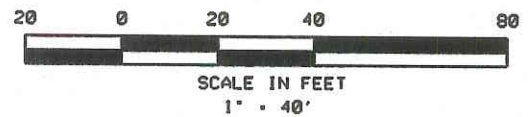
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NOTE: ALL OBSERVED LOCATIONS AS SHOWN HEREON MEET OR EXCEED THE MINIMUM EXCAVATION DEPTH OF 12 INCHES. UNLESS OTHERWISE STATED.



GENERAL NOTES

1. THE NORTH ARROW AND THIS DRAWING ARE BASED ON GRID NORTH AS DEFINED BY THE STATE PLANE COORDINATE SYSTEM, ALABAMA EAST ZONE, NAD '83.
2. ALL ELEVATIONS SHOWN HEREON ARE NAVD '88.
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AREA "H"

POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
HP1	1507490.283	415309.635	583.7	582.5'	583.7'
HP2	1507671.476	415262.144	586.1	584.7'	586.0'
HP3	1507769.166	415261.890	579.7	578.4'	579.4'
HP4	1507772.872	415364.695	581.3	579.7'	580.9'
HP5	1507766.160	415426.042	582.4	581.2'	582.2'
HP6	1507709.508	415425.659	582.3	580.8'	581.9'
HP7	1507671.226	415406.185	581.4	580.4'	581.4'
HP8	1507602.232	415448.685	583.2	581.7'	582.7'
HP9	1507512.017	415313.978	580.9	579.4'	580.4'
HP10	1507516.355	415318.391	578.0	579.3'	580.3'
HP11	1507519.940	415343.754	583.4	581.9'	582.9'
HP12	1507526.619	415338.199	581.4	579.4'	580.4'
HP13	1507528.942	415335.357	578.7	577.7'	578.7'
HP14	1507533.281	415331.901	581.1	578.8'	579.8'
HP15	1507548.175	415378.783	583.0	581.8'	582.8'
HP16	1507554.230	415374.411	581.0	578.9'	579.9'
HP17	1507554.920	415356.582	579.7	577.1'	578.1'
HP18	1507566.173	415364.759	576.2	574.2'	575.2'
HP19	1507568.591	415362.101	579.3	577.6'	578.6'
HP20	1507579.528	415377.063	579.2	577.7'	578.7'
HP21	1507577.101	415386.667	577.8	575.6'	576.6'
HP22	1507577.273	415387.674	576.4	575.2'	576.2'
HP23	1507575.550	415413.285	583.1	581.9'	582.9'
HP24	1507585.721	415393.853	575.7	574.5'	575.5'
HP25	1507588.552	415396.941	577.4	575.8'	576.8'
HP26	1507595.127	415396.168	578.7	576.5'	577.5'
HP27	1507618.538	415432.327	577.7	576.1'	577.1'
HP28	1507622.138	415431.116	579.2	577.9'	578.9'
HP29	1507607.248	415370.927	579.6	*	*
HP30	1507611.126	415377.251	578.0	576.1'	577.1'
HP31	1507611.104	415378.109	576.1	575.1'	576.1'
HP32	1507620.613	415386.062	576.9	575.6'	576.6'
HP33	1507621.894	415388.605	579.5	578.0'	579.0'
HP34	1507661.907	415356.731	579.8	578.1'	579.1'
HP35	1507662.089	415363.255	578.3	577.1'	578.1'
HP36	1507662.195	415364.665	576.8	575.7'	576.7'
HP37	1507662.299	415376.117	576.9	575.5'	576.5'
HP38	1507662.409	415380.788	579.8	577.7'	578.7'
HP39	1507702.912	415375.528	578.4	576.8'	577.8'
HP40	1507702.179	415377.646	576.5	575.5'	576.5'
HP41	1507707.120	415387.302	576.7	575.4'	576.4'
HP42	1507706.591	415388.587	577.9	576.3'	577.3'
HP43	1507740.614	415391.584	578.4	576.2'	577.2'
HP44	1507740.040	415392.794	576.7	575.6'	576.6'
HP45	1507738.261	415396.892	576.6	575.6'	576.6'
HP46	1507737.837	415398.055	578.2	576.5'	577.5'
HP47	1507737.285	415403.241	578.5	577.5'	578.9'
HP48	1507765.748	415399.691	578.8	576.8'	577.8'
HP49	1507765.352	415400.704	576.6	575.6'	576.6'
HP50	1507771.259	415410.866	577.0	**	**
HP51	1507770.311	415412.141	578.8	**	**
HP52	1507735.526	415414.557	582.1	580.5'	581.6'
HP53	1507707.114	415404.225	581.8	579.9'	581.1'
HP54	1507633.027	415403.075	579.9	578.8'	580.0'
HP55	1507647.613	415427.915	581.1	**	**
HP56	1507767.329	415380.436	580.9	579.5'	580.9'
HP57	1507745.524	415372.768	580.6	579.5'	580.5'
HP58	1507691.486	415349.724	577.5	576.5'	577.5'
HP59	1507688.128	415346.904	579.2	577.3'	578.3'
HP60	1507659.612	415336.828	582.1	580.4'	581.4'
HP61	1507594.771	415352.149	580.3	579.2'	580.2'
HP62	1507576.450	415323.720	581.3	580.3'	581.8'
HP63	1507557.343	415288.742	585.8	**	**

* POINT FELL ON CONCRETE WATER LINE CASING
 ** POINT FELL OUTSIDE OF EXCAVATION LIMIT.

AREA "H" CONTINUED

POINT#	NORTHING	EASTING	ELEV (PRE)	ELEV (POST)	ELEV (FILL)
HP64	1507644.533	415269.009	585.6	584.2'	585.4'
HP65	1507648.846	415293.861	584.5	582.7'	583.8'
HP66	1507654.021	415311.188	582.7	580.9'	582.3'
HP67	1507675.604	415316.265	582.7	581.3'	582.3'
HP68	1507673.009	415287.005	584.5	583.1'	584.3'
HP69	1507703.535	415259.306	586.6	**	**
HP70	1507702.475	415292.783	583.6	582.3'	583.3'
HP71	1507704.058	415319.146	581.2	579.4'	580.6'
HP72	1507729.264	415258.574	584.6	**	**
HP73	1507733.455	415286.460	582.5	581.2'	582.3'
HP74	1507737.640	415310.686	579.6	578.1'	579.1'
HP75	1507747.574	415334.951	580.7	579.4'	580.5'
HP76	1507770.554	415333.248	580.4	578.9'	580.4'
HP77	1507765.309	415299.737	580.6	579.2'	580.3'
HP78	1507761.655	415282.575	579.5	578.1'	579.1'

GENERAL LEGEND

ELEV (PRE) OBSERVED ELEVATION PRIOR TO EXCAVATION
 ELEV (POST) OBSERVED ELEVATION POST EXCAVATION
 TB TOP OF BANK
 TOE BOTTOM OF CHANNEL
 EP EDGE OF PAVEMENT

TYPE OF SURVEY A SPECIAL PURPOSE SURVEY OF AREA "H" AT RSA-122
 CLIENT SHAW ENVIRONMENTAL & INFRASTRUCTURE
 FIELD WORK COMPLETED 6/20/2011 OFFICE WORK COMPLETED 09/06/2011
 WORK ORDER NO. 1366-SR DRAWN BY DWM REVISED



1218 CHURCH STREET HUNTSVILLE, ALABAMA 35801 1-256-533-7331 FAX 1-256-533-7332

CERTIFICATE OF ACCURACY

THE ACCURACY OF THE MEASUREMENTS HAS BEEN SUBSTANTIATED BY THE COMPUTATION OF A CLOSED FIELD TRAVERSE, AND THE RELATIVE ERROR OF CLOSURE WAS NOT GREATER THAN 1:10,000.



SANTEK[®] ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal KSA-122

F. Address: Same Metrolgy Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Dumb Est. 13

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: A-55 K.W.

E. Vehicle License No./State: 07488HX TN

F. Driver Name: M. J. Vaughn Sr.

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

M. J. Vaughn Sr. Shipment Date 03 07 2011
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Steve Leggett Receipt Date 03-07-11
Authorized Agent Signature



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6-3

NO 00002

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (CIMSE-RED-PWE A327)
Red Stone Arsenal, AL (Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal / RSA-122
F. Address: Same Metrology Drive

G. Phone: (256) 876.3814
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Traxle Dump Est. 13

Type	Quantity	Units
D- Drum		TN
B- Bag		
X- Box		
O- Other		

TYPE	UNITS
P- Pounds	
TN- Tons	
CY- Cubic Yards	
O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)
Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: 3 / Sterling
E. Vehicle License No./State: 06584HX / TN
F. Driver Name: Terry Coanmore
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Terry Coanmore Shipment Date 3/2/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

_____ Receipt Date _____
Authorized Agent Signature



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№ 00003

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road / IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Drum

Type	Quantity	Units	TYPE	UNITS
D- Drum	<u>13</u>	TN	P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: 611 - DUMP

E. Vehicle License No./State: Ob4 91 TN

F. Driver Name: JASON BOWMAN
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Jason Bowman Shipment Date 3, 7, 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
Ann Lespede Receipt Date 0307-11
Authorized Agent Signature

031294X / 1007



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6-47
NE 00004

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Dump Est. 13

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: 49591117 TN
F. Driver Name: Christopher A. Finnell
(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.
Shipment Date 3/7/2011
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.
G. _____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evensville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
Steve Bedford
Authorized Agent Signature
Receipt Date 03-07-11



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928 -

NO 00005

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL (Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: See Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Traxle
Type Dump
Quantity Est. 13
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: 66451HX/TN
F. Driver Name: Nathaniel Johnson
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Nathaniel Johnson Shipment Date 3 17 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____
(Driver Signature)

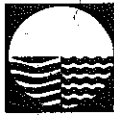
DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1229 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Ann [Signature] Receipt Date 03-07-11
Authorized Agent Signature



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6-36
N9 00006

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metology Drive
G. Phone: (256 876.3814)

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle DUMP
Type Est. 13
Quantity
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: 0197M 06819HX TN
F. Driver Name: RICHARD MCLAY
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Richard Mcclay Shipment Date 03 07 2011
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Dea Ledford Receipt Date 03-07-11
Authorized Agent Signature



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55,100

№ 00007

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL (Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: 4488 Mettology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type

Quantity

Units

Triaxle Dump Est. 13

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman

Generator Authorized Agent (Please Print)

Robert Gorman

Signature

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: OL810HX/TN

F. Driver Name: Justin Kennedy
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Justin Kennedy Shipment Date 3.12.11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353

Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899

Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321

Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734

Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837

Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701

Polk County Landfill
3477 FM 942
West Leggett, TX 77350

Crittenden County Landfill
1229 Kuhn Road West
West Memphis, Arkansas 72301

Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Steve Lufford Receipt Date 03-07-11
Authorized Agent Signature

Shipment Date

03 07 2011



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662
No 00008

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: US Same - Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (2) _____

J. Description of Waste: Contaminated Soil

K. Containers: Tyaxle
Type: Dump
Quantity: Est. 13
Units: TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

54940

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: 76257HZ / TN

F. Driver Name: TAMMY MELTON
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

TAMMY MELTON Shipment Date 3 17 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Tammy Melton Shipment Date 3 17 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sara Felfel Receipt Date 03-07-11
Authorized Agent Signature



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54720

NR 00009

C/U

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (CIMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Triaxle Dump Est. 13 TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: 441

E. Vehicle License No./State: DL6994X TN

F. Driver Name: DONALD R BROWN
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Donald R Brown Shipment Date 3/7/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Ann [Signature] Receipt Date 03-07-11
Authorized Agent Signature



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53

NO 00010

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Dump Est. 13

Type _____

Quantity _____

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 07 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: Kenworth

E. Vehicle License No./State: 07486HX TN

F. Driver Name: Phillip E. ...
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Phillip E. ... Shipment Date 3 7 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Andrew ... Receipt Date 03-07-11
Authorized Agent Signature



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00011

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Dump
Type: Est. 13
Quantity: _____
Units: TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: Kenworth Hoya
E. Vehicle License No./State: OL809HX / TN
F. Driver Name: James F. Murphy
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

James F. Murphy Shipment Date 3 17 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sara Seford Receipt Date 03-07-11
Authorized Agent Signature



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646
No 00012

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road CIMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive
G. Phone: (256) 876, 3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Dump Est. 13
Type _____
Quantity _____
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: Kuh dump truck
E. Vehicle License No./State: 0U701UX TN
F. Driver Name: Tray A. Miller
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 03 07 2011
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date 03-07-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Q 40
NO 00013

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type

Quantity

Units

Triaxle
Dump
Est. 13
TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: Kenworth Dump

E. Vehicle License No./State: 06612HX TN

F. Driver Name: Michael Franklin
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Michael Franklin Shipment Date 3.7.11
(Driver Signature)

6-40

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sam Sedford Receipt Date 03-07-11
Authorized Agent Signature



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Fax (423) 479-1952

NEG 37 00014

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal / RSA-122

F. Address: See Same Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Dump

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box	<u>Est. 13</u>		CY- Cubic Yards	
O- Other			O- Other	

Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: KW Dump

E. Vehicle License No./State: 06611HX TN

F. Driver Name: Larry Moody
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Larry Moody Shipment Date 3 12 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Law Leggett
Authorized Agent Signature

Receipt Date 03-07-11



SANTEK® ENVIRONMENTAL

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52146

30
G
00015

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Triaxle
Dump
Quantity 8413
Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 05 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: KW #30

E. Vehicle License No./State: 01453HX TN

F. Driver Name: Hollis Creel
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Hollis Creel Shipment Date 3 7 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date 05-07-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Fax (423) 479-1952

00017

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (MSE-RED-PVE 0327)
Red Stone Arsenal, AL (Maj Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA-122
F. Address: 77th Military Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Drum
Type Drum
Quantity 12
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: 44 Dur 7411
E. Vehicle License No./State: OL92411
F. Driver Name: [Signature]
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date / /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



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Fax (423) 479-1952

00019

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (TMSD-RIO-FWE 9317)
Red Stone Arsenal, AL 36101
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Drum
Type Drum
Quantity 1
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

08 27 2002

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: 40 Dump #41
E. Vehicle License No./State: 0609904 TN
F. Driver Name: DONALD R FROWN

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date 3 / 8 / 11

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK[®] ENVIRONMENTAL

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Customer # 2002

00020

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (INSE-RED-PWF 0927)
Red Stone Arsenal, AL (aka Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type Truck

Quantity 100

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

02 08 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: KU Dump #27
E. Vehicle License No./State: 06810111 / TN
F. Driver Name: Justin Kennedy

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Justin Kennedy
(Driver Signature)

Shipment Date 2 / 8 / 11

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6655 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Justin Kennedy
Authorized Agent Signature

Receipt Date _____



SANTEK® ENVIRONMENTAL

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Consignment # 00021

00021

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMBE-RIO-RUI-937)
Red Stone Arsenal, AL 36106
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum

Quantity 210

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Brown
Generator Authorized Agent (Please Print)

Robert Brown
Signature

Shipment Date

01 02 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: 3114 #3
E. Vehicle License No./State: OLE 8111X TN
F. Driver Name: Terry Crum
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Terry Crum Shipment Date 1 / 5 / 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

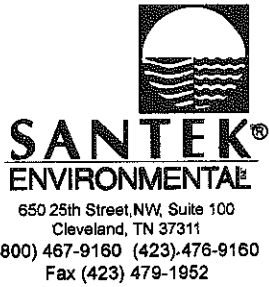
Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Receipt Date

Authorized Agent Signature



00022

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (Inst. RTD - PWR 8332)
Red Stone Arsenal, AL (Ala. - Pub. Grounds)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Red Stone Arsenal, RSA-122
 F. Address: Same
 G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Drum
 Type _____
 Quantity 122
 Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Freeman
 Generator Authorized Agent (Please Print)
Robert Freeman
 Signature

Shipment Date 05 08 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: K61200738
 E. Vehicle License No./State: 0U1S1111 / TN
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 5 / 8 / 11
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
 B. Address: _____
 C. Phone: () _____ D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
 (Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
[Signature] Receipt Date _____
 Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002

00023

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (MTC-RED-RSF 8310)
Red Stone Arsenal, AL 36106 (same)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum

Quantity 10

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Brown
Generator Authorized Agent (Please Print)

Robert Brown
Signature

Shipment Date

03 08 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: KU DUC # 36

E. Vehicle License No./State: 009888 TN

F. Driver Name: RICHARD McLOY
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Richard McLOY
(Driver Signature)

Shipment Date 03/08/11

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK[®] ENVIRONMENTAL

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(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

00024

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE - RID - 018 820)
Red Stone Arsenal, AL (Ala: Hill Country)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal, AL
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type Box
Quantity 10
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Smith
Generator Authorized Agent (Please Print)

Robert Smith
Signature

Shipment Date 02 08 2001

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: 46000 #40
E. Vehicle License No./State: 4959112 TN
F. Driver Name: Robert A. Smith
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Robert A. Smith Shipment Date 2/8/2001
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

_____ Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

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00025

00025

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (1051-BSD) P.O. Box 6327
Red Stone Arsenal, AL 35894 (Garrison)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA122

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Drum

Type _____

Quantity: 13

Units: TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: KW Dumper 53

E. Vehicle License No./State: 0748611X / TN

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] _____ Receipt Date _____
Authorized Agent Signature



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00026

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (1000-RTD-PNE 9027)
Red Stone Arsenal, AL (Attn: Bob [unclear])
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA-122
F. Address: Same

G. Phone: (256) 876-3814
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Drum
Type _____
Quantity 20
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date 01 03 2002

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: Truck #12
E. Vehicle License No./State: 7625712 TN
F. Driver Name: TRACY M. L. [unclear]
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 1/3/02
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423)-476-9160
Fax (423) 479-1952

Customer # 7002
00027

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSB-RED-PLATE 9301)
Red Stone Arsenal, AL (Mtn. Base Camp)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA-122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: _____
Type _____

Quantity: _____

Units: TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

01	02	2011
----	----	------

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: Kuhdum # 11
E. Vehicle License No./State: 0LD29HA / TN
F. Driver Name: Earl Brown

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date 1 / 1 / 2011
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6555 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature _____ Receipt Date _____



SANTEK® ENVIRONMENTAL

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Fax (423) 479-1952

Manifest # 2012

00028

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (11057-8210-018 9317)
Red Stone Arsenal, AL (814-464-2000)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal, AL

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum

Quantity 12

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions:

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert [Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date

02 02 2012

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: 411 [Signature]

E. Vehicle License No./State: 01M2811V TN

F. Driver Name: [Signature]
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature]
(Driver Signature)

Shipment Date 2 / 02 / 2012

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature]
Authorized Agent Signature

Receipt Date _____



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

TRUCK 444

00029

00029

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-800-PWD 8375)
Red Stone Arsenal, AL (Ala. Nat. Arsenal)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: 200
Type Drum
Quantity 200
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

08 08 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: KU 1100 #24

E. Vehicle License No./State: 042941 TN

F. Driver Name: DONALD R BROWN
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature)

Shipment Date 3 / 2 / 11

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

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Fax (423) 479-1952

Customer # 2002

No 00030

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE - RED - PWE A327)
Red Stone Arsenal, AL Attn Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triask Dump

Type	Quantity	Units
D- Drum	<u>Est 13</u>	<u>TN</u>
B- Bag		
X- Box		
O- Other		

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 08 2011

TRANSPORTER 1

A. Transporter Name: GiBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: KW Dump # 39

E. Vehicle License No./State: 06611HX TN

F. Driver Name: Larry Moody
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Larry Moody Shipment Date 3.8.11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bugyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Larry Moody Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

00031

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE - RIG - FWT A327)
Red Stone Arsenal, AL (HHS/Red Arsenal)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA-122
F. Address: Same

G. Phone: (256) 976 3814
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:
Type Drum
Quantity 13
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature]
Shipment Date 03 04 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: Kul Dump 787
E. Vehicle License No./State: OL661117 TN
F. Driver Name: Larry Mack

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 3 / 8 / 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

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Customer # 2002
00032

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (1538-880-407 8927)
Red Stone Arsenal, AL (Altoona Arsenal)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal, ASD-122

F. Address: Same Memphis Drive

G. Phone: (205) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

02 03 2002

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: K1000-21

E. Vehicle License No./State: 0620911 AL

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature)

Shipment Date 3 / 1 / 2002

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

(Driver Signature)

Shipment Date _____ / _____ / _____

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

Customer # 2492

00033

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSC-RED-PUE A927)
Red Stone Arsenal, AL (411) 84 (6000)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal / RSA-122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Drum
Type _____
Quantity 5
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date 01 03 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: KU10-22
E. Vehicle License No./State: OLYD HX / TN
F. Driver Name: David Kennedy
(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date 1 / 5 / 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.
G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6655 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

00034

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (1993-1997-Post 4327)
Red Stone Arsenal, AL (Post Office Box 2)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal / RSA-122
F. Address: Same

G. Phone: (256) 876-3814
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum

Quantity: 113

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

03 08 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: 4111-100 2x
E. Vehicle License No./State: 09151HX / TN
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 03/08/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423)-476-9160
Fax (423) 479-1952

Contract # 2012

00035

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (1193E - RED - PUE #327)
Red Stone Arsenal, AL (1193E - RED - PUE #327)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal / ASA-122

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Truck
Type Truck
Quantity 1
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature] Shipment Date 07 20 11

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: Truck #25

E. Vehicle License No./State: 2355012 / TN

F. Driver Name: Tommy Martin
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 7 / 20 / 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002
98 00036

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (1958-198-198 807)
Red Stone Arsenal, AL (191) Bob Gossard
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA-122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum
Quantity 13
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gossard
Generator Authorized Agent (Please Print)

Robert Gossard
Signature

Shipment Date 03 08 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: KU Drive 57
E. Vehicle License No./State: 0746114 TN
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1229 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

00037

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (11558 - RTD - PUE 832)
Red Stone Arsenal, AL (Alto's W. Co.)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Relative Parcel BSA-122

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum

Quantity 1

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

06 07 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: 240 Dump #11

E. Vehicle License No./State: 0142877 TN 0142877 TN

F. Driver Name: J. P. ...
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature)

Shipment Date 3 / 11 / 11

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

(Driver Signature)

Shipment Date ____ / ____ / ____

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

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6/12/02
00038

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (EMSE-RED-0118 8582)
Red Stone Arsenal, AL 91121 8th General
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA122
F. Address: Same
G. Phone: (205) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Drum
Type Drum
Quantity: 17
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date 06 02 2002

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: KW Dump 47
E. Vehicle License No./State: 41591147 TN
F. Driver Name: Christy A. Finney
(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature) Shipment Date 6/2/02

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.
G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature Receipt Date _____



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00039

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-BID-FUE 020)
Red Stone Arsenal, AL (Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal Bldg 122
F. Address: Same
G. Phone: (205) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Truck
Type Drum
Quantity 1
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

X _____
Generator Authorized Agent (Please Print)

X _____
Signature

X Shipment Date 03 02 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: 701 200 73
E. Vehicle License No./State: 0681747 TN
F. Driver Name: RICHARD McLaughlin
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X Richard McLaughlin Shipment Date 03/02/2011
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X _____ Receipt Date
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

00040

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (1968-7112-P-04-027)
Red Stone Arsenal, AL 36081-6001
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal, AL
F. Address: Same
G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:
Type _____
Quantity _____
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

--	--	--	--	--	--

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

_____ Shipment Date ____ / ____ / ____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date ____ / ____ / ____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

_____ Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

00041

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (1000-400) (P.O. Box 0000)
Red Stone Arsenal, AL (P.O. Box 000000)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSR-109

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum

Quantity 15

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

02 02 2002

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: BI 1W1704

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

Generator # 1002
00042

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RID-POF 9327)
Red Stone Arsenal, AL (44-181 Camp...)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:
Type _____

Quantity _____

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

02 22 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: Plat...
E. Vehicle License No./State: AL 101222
F. Driver Name: ...

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature)

Shipment Date 2 / 22 / 11

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

(Driver Signature)

Shipment Date ____ / ____ / ____

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (1935 - 810 - 4111 4027)
Red Stone Arsenal, AL (RHS - Box 6000)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Red Stone Arsenal / RSA-122
 F. Address: Same
 G. Phone: (205) 976-3811

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers:

Type: Drum
 Quantity: 12
 Units: TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

09 17 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature)

Shipment Date 9 / 17 / 11

TRANSPORTER 2

A. Transporter Name: _____
 B. Address: _____
 C. Phone: () _____ D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

(Driver Signature)

Shipment Date _____ / _____ / _____

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

00044

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (MCSH-RED-RUE 9327)
Red Stone Arsenal, AL (Alto's Park (Gensco))
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type

Quantity

Units

TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature] Shipment Date 02 02 2000

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Scott's
B. Address: 777...
C...
C. Phone: (758) 423-777... D. Truck No./Type: 402
E. Vehicle License No./State: AL 1079133
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 7002

00045

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (Inse-Red Stone Arsenal)
Red Stone Arsenal, AL (Ala. Rd. 6000)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA-122
F. Address: Same
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum
Quantity 12
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

X _____
Generator Authorized Agent (Please Print)

X _____
Signature

X Shipment Date 03 28 11

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: South Fork
B. Address: 770 ...
C. Phone: (256) 784-3000 D. Truck No./Type: ...
E. Vehicle License No./State: ...
F. Driver Name: ALVIN COX
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Alvin Cox Shipment Date 3 / 28 / 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X _____ Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

#03
Black
Dump

Shaw Est
Customer # 2002
No 00046

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: MSame Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Truck Dump

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box	<u>13</u>		CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)
Robert Gorman
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE Trucking
B. Address: PO Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894 6230 D. Truck No./Type: KW-KE3
E. Vehicle License No./State: TN 0730LHX
F. Driver Name: Gary Hogan (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. [Signature] Shipment Date 3 28 2011
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
Shawn Carrett Receipt Date 3-28-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

07
White Customer # 2002
No 00047

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PIE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Mc Same Metrology Drive
G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Triable
Type Dump
Quantity Est 13
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

* Robert Gorman
Generator Authorized Agent (Please Print)
* Robert Gorman
Signature

* Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE Trucking
B. Address: P O Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894 6430 D. Truck No./Type: KL KE-7
E. Vehicle License No./State: TN 07380HV
F. Driver Name: Willie Miller

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Willie Miller Shipment Date 03/28/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* Sharon Canell F
Authorized Agent Signature Receipt Date 3-28-11



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

09
White Dump
Customer # 2002
No 00048

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE - RED - PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: MSame Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Trade Dump

Type _____

Quantity Est 13

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE Trucking

B. Address: PO Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894-6430 D. Truck No./Type: KW KE89

E. Vehicle License No./State: TN 07382HX

F. Driver Name: Scotty Higgins (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Scotty Higgins Shipment Date 3 28 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Cavett Receipt Date 3-28-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9180 (423)-476-9160
Fax (423) 479-1952

#08 White Dump

Customer # 2002

Shaw Est No 00049

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: MSame Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle Dump

Type Dump

Quantity Est 13

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE Trucking

B. Address: P. O. Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894.6430 D. Truck No./Type: KW KES

E. Vehicle License No./State: TN 0735144

F. Driver Name: Houston Gibson

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3, 28, 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Shawn Canett Receipt Date 3-28-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

850 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

#04

Dump

Customer # 2002

No 00050

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Trailer
 Type Dump
 Quantity Est 13
 Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE Trucking
 B. Address: P.O. Box 23966
Chattanooga, TN 37422
 C. Phone: (423) 894-6430 D. Truck No./Type: KW KE 4
 E. Vehicle License No./State: TN 07377HX
 F. Driver Name: Lenny Boggs

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Lenny Boggs Shipment Date 3 28 2011
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Cavett Receipt Date 3-28-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

#05 green
Dump

Customer #2002
Shaw E&I No 00051

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE - RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Ke E Trucking
B. Address: P.O. Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894 6430 D. Truck No./Type: KW KE-5
E. Vehicle License No./State: TN 0737 8HX
F. Driver Name: Steven Brooks

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Steve P Brooks Shipment Date 3/28/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Connett Receipt Date 3-28-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

#10 Black Customer #2002
Dump No 00052

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KLF Trucking
B. Address: P.O. Box 23966
Chattanooga TN 37422
C. Phone: (423) 894 6430 D. Truck No./Type: KL K10
E. Vehicle License No./State: TN 07375HX
F. Driver Name: Bobby Presley (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Bobby Presley Shipment Date 3 28 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Shawn Canett Receipt Date 3-28-11
Authorized Agent Signature



SANTEK ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423) 478-9160
Fax (423) 479-1952

AA-12
green

Customer #2002

No 00053

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Trials

Type	Quantity	Units	TYPE	UNITS
D- Drum	<u>13</u>	<u>TN</u>	P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 3/28/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Ke E Trucking

B. Address: PO Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894 6430 D. Truck No./Type: KW RH12

E. Vehicle License No./State: TN00535HX

F. Driver Name: Derek Johnson

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3.28.2011
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date 3-28-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Shaw Inc
Customer # 7002 NO 00054

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (INSE-RED-PWZ A327)
Red Stone Arsenal, AL (Attn: Bob Coleman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA122
F. Address: Same Military Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum	<u>12</u>	TN	P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)
[Signature]
Signature

Shipment Date 03 27 2001

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.
* [Signature] Shipment Date 3/27/01
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Small Trucking
B. Address: 7771 Canal Rd
Callahan, AL 36820
C. Phone: (256) 799-2002 D. Truck No./Type: Small Truck
E. Vehicle License No./State: AL 100101
F. Driver Name: [Signature] (Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.
G. [Signature] Shipment Date 3/28/01
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37363
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77360
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* _____ Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423)-476-9160
Fax (423) 479-1952

AH-04
Blue

Customer #2002
No 00055

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111-1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum	_____	_____	P- Pounds	_____
B- Bag	_____	_____	TN- Tons	_____
X- Box	_____	_____	CY- Cubic Yards	_____
O- Other	_____	_____	O- Other	_____

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Kel W Trucking

B. Address: P.O. Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894 6430 D. Truck No./Type: KW A1104

E. Vehicle License No./State: TN 04544 HX

F. Driver Name: KEVIN ISAKEL

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X _____ Shipment Date 3-28-11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6566 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Shawn Cavett _____ Receipt Date 3-28-11
Authorized Agent Signature

X Shipment Date 03 28 2011



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

WH-17
Black
Dump

Customer #2002
No 00056

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Trucks
Type _____
Quantity 13
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X (Driver Signature)

Shipment Date 3/28/11

TRANSPORTER 2

A. Transporter Name: KV Trucking
B. Address: PO Box 239LL
Chattanooga, TN 37422
C. Phone: (423) 894 6430 D. Truck No./Type: KW WH17
E. Vehicle License No./State: TN 04291HX
F. Driver Name: Frank Miller

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X (Driver Signature)

Shipment Date 3/28/11

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77360
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Authorized Agent Signature

Receipt Date 3-28-11



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

WH-24

Customer # 2002

Show in EN^o 00057

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: 6^m Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Trials

Type _____

Quantity 13

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

* Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K E Trucking

B. Address: P.O. Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894-6430 D. Truck No./Type: KW WH24

E. Vehicle License No./State: TN 01739HX

F. Driver Name: Terry Plunkett

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Terry Plunkett Shipment Date 3 28 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* Sharon Canell Receipt Date 3-28-11
Authorized Agent Signature

AH-15

Customer #2002

Show Est No 00058



NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Em Sams Metrology Drive
 G. Phone: (256) 876-3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Truck
 Type _____
 Quantity 13
 Units TN

	TYPE	UNITS
D.	Drum	P- Pounds
B.	Bag	TN- Tons
X.	Box	CY- Cubic Yards
O.	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)
Robert Gorman
 Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: KE Trucking
 B. Address: P.O. Box 23966
Chattanooga, TN 37422
 C. Phone: (423) 894-6430 D. Truck No./Type: KW AH15
 E. Vehicle License No./State: TN 00533HX
 F. Driver Name: JASON A. HARPER

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X _____ Shipment Date 3 28 2011
 (Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
X Sharon Cavett Receipt Date 3-28-11
 Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

AH-10

Customer #2002
Shaw E&I No 00059

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111-1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: c/same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle

Type	Quantity	Units
D- Drum	<u>13</u>	<u>TN</u>
B- Bag		
X- Box		
O- Other		

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 28 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E Trucking

B. Address: P.O. Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894, 6430 D. Truck No./Type: KW AH10

E. Vehicle License No./State: TN 0L458HX

F. Driver Name: Kenneth Fortner
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Sharon Amett Shipment Date 3, 28, 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Amett Receipt Date 3-28-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423) 476-9160
Fax (423) 479-1952

Invoice # 1002
00060

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (4488-280-PNE A927)
Red Stone Arsenal, AL (Ala. Gov. Complex)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal Rd 122

F. Address: Same Military Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:
Type Drum
Quantity 23
Units TN

	TYPE	UNITS
D-	Drum	Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature] Shipment Date 07 22 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: South Trucking

B. Address: 2221 County Road
C. O. Brown AL 35067

C. Phone: (256) 924-7772 D. Truck No./Type: 27 1412

E. Vehicle License No./State: AL 100930

F. Driver Name: [Signature]

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 8 / 11 / 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 1002
Shipment # 00061

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (Phase Red) (P.O. Box 1327)
Red Stone Arsenal, AL (Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same Midway Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type 55 Gall

Quantity 13

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date 02 07 2002

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 02/07/02
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Small Trucking

B. Address: 7771 Smoky Hill
Cleveland, TN 37311

C. Phone: (256) 876-3814 D. Truck No./Type: RV Small

E. Vehicle License No./State: AL 1042097

F. Driver Name: Dave P. [Signature]

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 02/07/02
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Contract # 2002
178 00062

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road 17456-RED-PWE 4327
Red Stone Arsenal, AL Attn: Bob Greenway

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type 55

Quantity 20

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

02 04 01

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature)

Shipment Date ____ / ____ / ____

TRANSPORTER 2

A. Transporter Name: Soil Transport

B. Address: 7771 G...
...

C. Phone: (256) 394-9977 D. Truck No./Type: ...

E. Vehicle License No./State: ...

F. Driver Name: ...

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

(Driver Signature)

Shipment Date ____ / ____ / ____

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37363
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423) 476-9160
Fax (423) 479-1952

Manifest # 2007
00063

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMBE-260-AVE A027)
Red Stone Arsenal, AL Attn: Bob Germain

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Technology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type TN

Quantity 12

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

_____ Generator Authorized Agent (Please Print)

_____ Signature

Shipment Date 02 08 2007

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

_____ Shipment Date 02/08/07
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Green South Enterprises

B. Address: 7771 Church Road
Columbia, TN 37807

C. Phone: (256) 737-4472 D. Truck No./Type: SA1200 4401

E. Vehicle License No./State: MO1964 AL

F. Driver Name: John G. ...

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date 02/08/07
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

_____ Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002

00064

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (MUSE-800-RVE 1427)
Red Stone Arsenal, AL (Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same (Attn: Bob Gorman)

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type Drum

Quantity 75

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

0	2	1	2	0	1
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TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date 2/1/2011

(Driver Signature)

TRANSPORTER 2

A. Transporter Name: A. Scott Construction

B. Address: 2721 County Road
Cullman, AL 35057

C. Phone: (256) 924-7072 D. Truck No./Type: 111

E. Vehicle License No./State: AL 100077

F. Driver Name: Chris Jones

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date 2/1/2011

(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Receipt Date

Authorized Agent Signature



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Fax (423) 479-1952

Volume # 1032
00065

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road IMSE-RED PWE A327
Red Stone Arsenal, AL Alfred Bush (operator)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSA122
F. Address: Same Ministry Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity: 72
Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)
[Signature]
Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 1 / 1 / 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Small Trucking
B. Address: 7771 Co. Rd
GA 31027
C. Phone: (706) 734 9772 D. Truck No./Type: RD 200
E. Vehicle License No./State: AL 1497287
F. Driver Name: Daniel R. H.

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 03 / 29 / 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6566 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evensville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Fax (423) 479-1952

Customer # 7002
00066

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road 11MSE-RED-PWE A377
Red Stone Arsenal, AL Attn: Bob German

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same Metology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:
Type 55
Quantity 23
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Bob German
Generator Authorized Agent (Please Print)

Bob German
Signature

Shipment Date 03 17 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 3/17/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Southwest

B. Address: 7700 South Blvd
6300 Al 31000

C. Phone: (256) 721-9500 D. Truck No./Type: 111 1138

E. Vehicle License No./State: AL 1030900

F. Driver Name: Alvin Cox

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Alvin Cox Shipment Date 3, 29, 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

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Cleveland, TN 37311
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Fax (423) 479-1952

Customer #1002
NO 00067

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (Lane - Red-PWE A327)
Red Stone Arsenal, AL (Site: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA 122

F. Address: Same Military Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: 33

Type _____

Quantity _____

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date 02 24 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 3/27/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: S. P. [Signature]

B. Address: 770 [Signature] Blvd
[Signature] AL 35057

C. Phone: (256) 724-9072 D. Truck No./Type: K61 1104

E. Vehicle License No./State: AL 1023292

F. Driver Name: M. [Signature]
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3/27/11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37363
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL[®]

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Fax (423) 479-1952

Cashier #7002
Serial # 00068

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (INSE-RED-PWE 0327)
Red Stone Arsenal, AL (Att: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metcology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:
Type Soil
Quantity 23
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature] Shipment Date 08 27 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 8/27/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: B. B. Brown

B. Address: 354 Co. 1, Vt. 1
2101-112 RD 30974

C. Phone: (903) 222-2222 D. Truck No./Type: 11111111

E. Vehicle License No./State: AL 1013099

F. Driver Name: Chris Hancock
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 8/27/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002

00069

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (INSE-250-PVE 0427)
Red Stone Arsenal, AL (Alvin Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA122

F. Address: Same Mountain Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type 3

Quantity 15

Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date 02 01 02

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 2 / 1 / 02
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: [Signature]

B. Address: 356 [Signature]
76 [Signature]

C. Phone: (800) 222-2215 D. Truck No./Type: [Signature]

E. Vehicle License No./State: OH 1014199

F. Driver Name: [Signature]

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 2 / 21 / 02
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

KE-08
Dump

Customer #2002
No 00070

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: (256) 876-3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Trucks

Type	Quantity	Units	TYPE	UNITS
D- Drum	<u>13</u>	TN	P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date 3/29/11
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE Trucking
 B. Address: P.O. Box 23966
Chattanooga, TN 37422
 C. Phone: (423) 894-6430 D. Truck No./Type: KW KE8
 E. Vehicle License No./State: TN 07381HX
 F. Driver Name: Houston Gibson
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X _____ Shipment Date 3,29,11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37363
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Cavett Receipt Date 3-29-11
 Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

AH-12
green
Dumps

Customer #2002
No 00071

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111-1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: On Same Metology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:
Type Toxic

Quantity 13

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* (Driver Signature)

Shipment Date 1/1/11

TRANSPORTER 2

A. Transporter Name: KCE Touching
B. Address: P.O. Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894 4430 D. Truck No./Type: KW AH12
E. Vehicle License No./State: 00535HX TN
F. Driver Name: Derek Johnson

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

D.J. (Driver Signature)

Shipment Date 3-29-2011

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Shawn Carlett
Authorized Agent Signature

Receipt Date 3-29-11



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

AH-04
Blue Dump

Customer #2002

No 00072

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Em Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Trucks
Type _____
Quantity 13
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date 3/29/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E Trucking
B. Address: P.O. Box 23966
Chattanooga, TN 37412
C. Phone: (423) 894-4430 D. Truck No./Type: KW AH04
E. Vehicle License No./State: TN 04544HX
F. Driver Name: KEVIN BAKER

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X _____ Shipment Date 3/29/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Carrett
Authorized Agent Signature
Receipt Date 3-29-11



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423)-476-9160
Fax (423) 479-1952

WH-17

Customer #2002

No 00073

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A32-7)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: On same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
<u>Truck</u>	<u>13</u>	<u>TN</u>	D- Drum	P- Pounds
			B- Bag	TN- Tons
			X- Box	CY- Cubic Yards
			O- Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 3/29/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K & E Trucking

B. Address: P.O. Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894 6730 D. Truck No./Type: KW WH17

E. Vehicle License No./State: TN 04291HX

F. Driver Name: FRANK MILLER

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3/29/11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
[Signature] Receipt Date 3-29-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

WH-24
Customer # 2002
Show Est No 00074

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: in same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Trucks

Type	QUANTITY	TYPE	UNITS
D- Drum	13	P- Pounds	
B- Bag		TN- Tons	
X- Box		CY- Cubic Yards	
O- Other		O- Other	
TN			

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KLE Trucking

B. Address: P.O. Box 23966
Chattanooga, TN 37422

C. Phone: (~~800~~ ⁴³²) 894 6430 D. Truck No./Type: KW WH24

E. Vehicle License No./State: TN 01739HX

F. Driver Name: Terry Plunkett
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Terry Plunkett Shipment Date 3, 29, 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Cavett Receipt Date 3-29-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

A17-10

Customer #2002
Shaw E&I No 00075

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Em Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type

Quantity

Units

Truck

13

TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date / /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K & E Trucking
B. Address: P.O. Box 23926
Chattanooga, TN 37422
C. Phone: (423) 894-6430 D. Truck No./Type: KW A110
E. Vehicle License No./State: TN 06458HX
F. Driver Name: Kenneth Fortner

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. [Signature] Shipment Date 3/29/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature]
Authorized Agent Signature

Receipt Date 3-29-11



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

AH + 07

Customer #2002

No 00076

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Trials

Type _____

Quantity 13

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K & E Trucking

B. Address: P.O. Box 23966
Chattanooga, TN 37422

C. Phone: (423) 894 6430 D. Truck No./Type: KW PH-7

E. Vehicle License No./State: TN 0187814

F. Driver Name: Robert Shaffer (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Robert Shaffer Shipment Date 3, 29, 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Connett Receipt Date 3-29-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

AH-15

Customer #2002

Shaw E&I No 00077

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Gr Same Metrology Drive
 G. Phone: (256) 876-3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Trucks

Type	QUANTITY	TYPE	UNITS
D- Drum	13	P- Pounds	
B- Bag		TN- Tons	
X- Box		CY- Cubic Yards	
O- Other		O- Other	
TN			

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)
Robert Gorman
 Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date 1 / 1 /
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: K & E Trucking
 B. Address: P.O. Box 23966
Chattanooga, TN 37422
 C. Phone: (423) 894 6430 D. Truck No./Type: KW AH15
 E. Vehicle License No./State: TN 00533HX
 F. Driver Name: Jason Harpel

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Jason Harpel Shipment Date 3 29 2011
 (Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evensville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
X Sharon Connett Receipt Date 3-29-11
 Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
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KE-05

Customer #2002
Shaw E&I No 00078

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: 2nd Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum	<u>13</u>	<u>TN</u>	P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE Trucking
B. Address: P.O. Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894 4430 D. Truck No./Type: KW KE-5
E. Vehicle License No./State: TN 07378HX
F. Driver Name: Steven Brooks
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Steven Brooks Shipment Date 3, 29, 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Cavett Receipt Date 3-29-11
Authorized Agent Signature



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KE-04

Customer #2002
Shaw E&I No 00079

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: on same Metrology Drive
 G. Phone: (256) 876-3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers:

Type	Triade	TYPE	UNITS
Quantity	<u>13</u>	D- Drum	P- Pounds
Units	<u>TN</u>	B- Bag	TN- Tons
		X- Box	CY- Cubic Yards
		O- Other	O- Other

L. Special Handling Instructions:

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date

03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X

(Driver Signature)

Shipment Date _____ / _____ / _____

TRANSPORTER 2

A. Transporter Name: KEE Trucking
 B. Address: P.O. Box 23966
Chattanooga, TN 37422
 C. Phone: (423) 894 6430 D. Truck No./Type: KW KEY
 E. Vehicle License No./State: TN 07377HX
 F. Driver Name: Lodny Goggins
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Lodny Goggins
 (Driver Signature)

Shipment Date 3 29 2011

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evensville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Carrett
 Authorized Agent Signature

Receipt Date 3-29-11



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

KE-03

Customer #2002
Shaw EIT No 00080

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Trucks
Type _____
Quantity 13
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)
Robert Gorman
Signature

* Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KLV Trucking
B. Address: P.O. Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894 4430 D. Truck No./Type: KW KE3
E. Vehicle License No./State: TN 0737LHX
F. Driver Name: Gary Hogan

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Gary Hogan Shipment Date 3 29 2011
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
* Sharon Cavett F
Authorized Agent Signature Receipt Date 3-29-11



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

KE-10

Customer #2002
Shaw EJ No 00081

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Em Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Triable

Type	QUANTITY	TYPE	UNITS
D- Drum	<u>13</u>	P- Pounds	
B- Bag		TN- Tons	
X- Box		CY- Cubic Yards	
O- Other		O- Other	

Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)
Robert Gorman
Signature

Shipment Date 03 29 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KE Trucking
B. Address: P.O. Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894 6430 D. Truck No./Type: Stuly KE10
E. Vehicle License No./State: _____
F. Driver Name: Bobby Presley

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW

Bobby Presley Shipment Date 3 29 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
X Sharon Cavett Receipt Date 3-29-11
Authorized Agent Signature

Customer # 2002

00082



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (INSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob (owner)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:
H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:
Type 2 DT
Quantity 5121
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print) _____

Signature _____

Shipment Date 01 05 2002

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: Walter H. [unclear]
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date 1 / 20 / 02
(Driver Signature) _____

TRANSPORTER 2

A. Transporter Name: Arthur [unclear]
B. Address: 14930 [unclear]
[unclear]
C. Phone: () _____ D. Truck No./Type: 1079
E. Vehicle License No./State: 1014 AL
F. Driver Name: Walter H. [unclear]
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date 1 / 20 / 02
(Driver Signature) _____

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature _____ Receipt Date _____

Customer # 2002

00083



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-DWE A327)
Red Stone Arsenal, AL (Attn: Bob Goodman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type _____

Quantity _____

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature] Shipment Date 08 01 07

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 8 / 1 / 07
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Antonia Environmental

B. Address: 14830 St Hwy 71
27027

C. Phone: (504) 322-1177 D. Truck No./Type: _____

E. Vehicle License No./State: WV 016 12

F. Driver Name: Jay McLean
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 8 / 20 / 07
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK[®]
ENVIRONMENTAL

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Fax (423) 479-1952

KE-08

Customer # 2002
No 00084

**NON-HAZARDOUS
SPECIAL AND ASBESTOS
WASTE MANIFEST**

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Em Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Triaxle

Type	QUANTITY	TYPE	UNITS
D- Drum		P- Pounds	
B- Bag	<u>16</u>	TN- Tons	
X- Box		CY- Cubic Yards	
O- Other		O- Other	
	<u>TN</u>		

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: LEE
B. Address: _____
C. Phone: () _____ D. Truck No./Type: KEB
E. Vehicle License No./State: _____
F. Driver Name: Houston Gibson
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3,30,11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Carnell Receipt Date 3-30-11
Authorized Agent Signature



SANTEK ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

KE-07

Customer #2002
No 00085

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: on same Metrology Drive
 G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Triaxle

Type	QUANTITY	TYPE	UNITS
D- Drum		P- Pounds	
B- Bag	<u>16</u>	TN- Tons	
X- Box		CY- Cubic Yards	
O- Other		O- Other	

Quantity: 16
Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 3/30/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE
 B. Address: P.O. Box 23966
Chattanooga TN
 C. Phone: () _____ D. Truck No./Type: KEE7
 E. Vehicle License No./State: _____
 F. Driver Name: Wilcie Miller

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3/30/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date 3-30-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

KE-03 Customer #2002
No 00087

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE 4327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: On same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box	<u>5316</u>		CY- Cubic Yards	
O- Other			O- Other	

Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE
B. Address: P.O. Box 23966
Chatt, TN 37422
C. Phone: (423) 894-6430 D. Truck No./Type: KE3
E. Vehicle License No./State: TN 07376 NK
F. Driver Name: Gary Hogan

(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Gary Hogan Shipment Date 3 30 2011
(Driver Signature)

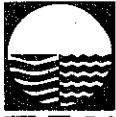
DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Carrell Receipt Date 3-30-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

KE-10

Customer # 2002
No 00088

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: GMSA Metrolgy Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers: Three

Type	Quantity	Units	TYPE	UNITS
D- Drum	<u>0</u>	<u>TN</u>	P- Pounds	
B- Bag	<u>0</u>		TN- Tons	
X- Box	<u>0</u>		CY- Cubic Yards	
O- Other	<u>0</u>		O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE
B. Address: P.O. Box 23966
Chattanooga TN 37422
C. Phone: 423 894 6436 D. Truck No./Type: KE10
E. Vehicle License No./State: _____
F. Driver Name: Bobby Presley
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Bobby Presley Shipment Date 03 30 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworht, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
X Sharon Canett Authorized Agent Signature
Receipt Date 3-30-11



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

KE-04

Customer #2002
No 00089

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: on same Metrology Drive

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Traxler

Type	Quantity	UNITS
D- Drum	<u>16</u>	Pounds
B- Bag		TN- Tons
X- Box		CY- Cubic Yards
O- Other		O- Other

Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KE

B. Address: P.O. Box 23966
Chattanooga, TN 37422

C. Phone: 423, 894, 6435 D. Truck No./Type: KE

E. Vehicle License No./State: 01377 HX TN

F. Driver Name: Lanny Goggin
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Lanny Goggin Shipment Date 3 30 2011
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sharon Carver Receipt Date 3-30-11
Authorized Agent Signature



**SANTEK®
ENVIRONMENTAL**

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

Customer # 2002
KE-5 No 00090

**NON-HAZARDOUS
SPECIAL AND ASBESTOS
WASTE MANIFEST**

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same

G. Phone: (256) 876-3814
If owner of the generating facility differs from the generator, please provide:
H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers

Type	Quantity	Units	TYPE	UNITS
D- Drum		TN	P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)
Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE
B. Address: P.O. Box 23966
Wattanooga TN 37422
C. Phone: 423 894 6430 D. Truck No./Type: KE5
E. Vehicle License No./State: 7378HX TN
F. Driver Name: Steve Brooks (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Steve Brooks Shipment Date 3, 30, 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
Sharon Connett F
Authorized Agent Signature
Receipt Date 3-30-11



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

AH-12 Customer # 2002

No 00091

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (ISME - RED-DPWE 9321)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA 122

F. Address: Same Metroby Drive

G. Phone: (256) 876, 3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle
Type _____
Quantity Est. 16
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date / /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: ICSE

B. Address: P.O. Box 23966
Chattanooga TN 37422

C. Phone: 423 894 6430 D. Truck No./Type: AH12

E. Vehicle License No./State: 00535XH TN

F. Driver Name: Derek Johnson (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3 30 2011
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6566 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Carvett Receipt Date 3-30-11
Authorized Agent Signature



SANTEK ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

WH-17 Customer 2002
No 00092

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: 8256 876. 3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers
 Type Thaxle
 Quantity Est 16
 Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)
Robert Gorman
 Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date / /
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: KSE
 B. Address: P.O. Box 23966
Chattanooga TN 37422
 C. Phone: 423 894 6430 D. Truck No./Type: WH17
612911X TN
 E. Vehicle License No./State: _____
 F. Driver Name: Frank Miller
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. [Signature] Shipment Date 3, 30, 11
 (Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
Sharon Carrett Receipt Date 330-11
 Authorized Agent Signature



SANTEK ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

WH-22

Customer #2002

No 00093

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: (256) 876 3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Trucks
 Type _____
 Quantity 5-16
 Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date 05 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / ____ / ____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
 B. Address: P.O. Box 23966
Chattanooga TN 37422
 C. Phone: 423 874 4437 D. Truck No./Type: WH22
 E. Vehicle License No./State: 04508HX TN
 F. Driver Name: Clarence W Frank

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Clarence Frank Shipment Date 3 / 30 / 11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Cavett Receipt Date 3-30-11
 Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

WH-24
Customer # 2002
No 00094

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWF A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: same Metrology Drive
 G. Phone: (256) 876.3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Trucks
 Type EST16
 Quantity 16
 Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)
Robert Gorman
 Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 3 / 30 / 11
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
 B. Address: P.O. Box 23966
Chattanooga TN 37422
 C. Phone: (423) 8946430 D. Truck No./Type: NH 24
 E. Vehicle License No./State: 01739HX TN
 F. Driver Name: Terry Plunkett

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Terry Plunkett Shipment Date 3 / 30 / 11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Canell Receipt Date 3-30-11
 Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

AH-10

Customer # 2002
No 00095

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (ISME-RED-PWE A327
Red Stone Arsenal, AL AHn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: M/S Sante Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers Trucks

Type	Quantity	Units
D- Drum	<u>Est 16</u>	TN
B- Bag		
X- Box		
O- Other		

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date / /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: VSE

B. Address: P.O. Box 23966
Chattanooga TN 37422

C. Phone: 423 894 6430 D. Truck No./Type: AH10

E. Vehicle License No./State: DL458HX TN

F. Driver Name: Kenneth Fortner (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Shawon Shipment Date 03/30/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Shawon Cavett Receipt Date 3-30-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

AH-07 Customer # 2002
No 00096

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (ISME-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: same Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:
Type Triaxle
Quantity Est 16
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K9 E
B. Address: P.O. Box 23966
Chattanooga TN 37422
C. Phone: 423 894.6430 D. Truck No./Type: AH7
E. Vehicle License No./State: D1878HX TN
F. Driver Name: Robert Shaffer (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Robert Shaffer Shipment Date 3/29/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* Sharon Canett Receipt Date 3-30-11
Authorized Agent Signature



SANTEK ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

AH-15

Custom # 2002

No 00097

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111-1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity Est 16
Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 1 / 1 /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: ICE
 B. Address: P.O. Box 23966
Chattanooga TN 37422
 C. Phone: 423-894 D. Truck No./Type: AH15
 E. Vehicle License No./State: 00533HX TN
 F. Driver Name: JASON HARPER (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. [Signature] Shipment Date 3, 30, 2011
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Connett F
Authorized Agent Signature Receipt Date 3-30-11



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

AH-5

Customs # 2002

No 00098

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: ms Same Metrology Drive
 G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Triaxle
 Type _____
 Quantity Est 16
 Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KGE
 B. Address: P.O. Box 23966
Chattanooga TN 37422
 C. Phone: 423 894.6430 D. Truck No./Type: AH5
 E. Vehicle License No./State: 01984HX TN
 F. Driver Name: Bill Wright

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW

Bill Wright Shipment Date 3, 30, 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Carlett
Authorized Agent Signature

Receipt Date 3-30-11



SANTEK[®] ENVIRONMENTAL

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Fax (423) 479-1952

AH-4

Customer # 2002

No 00099

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME - RED - PIPE #327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal ASA-122
 F. Address: Same Metrology Drive
 G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity: Triaxle
Est 16
Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 30 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
 B. Address: P.O. Box 23966
Chattanooga TN 37422
 C. Phone: (423) 894-6430 D. Truck No./Type: AH4
 E. Vehicle License No./State: 04544HX TN
 F. Driver Name: KEVIN BAKER

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW

Kevin Baker Shipment Date 3 30 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sharon Cavett Receipt Date 3-30-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

00100

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (1300 - Red Stone Arsenal)
Red Stone Arsenal, AL (440 E. L. Howard)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA122

F. Address: Same

G. Phone: (256) 876 3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type

Quantity

Units

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date

05 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Red Stone P.W.

B. Address: 14830 5th Hwy 91
Harroville AL 35077

C. Phone: (256) 352-2354 D. Truck No./Type: 1079

E. Vehicle License No./State: _____

F. Driver Name: 1/16/11

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date 5/31/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature

Receipt Date



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

00101

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (1942 - 872 - RLY 007)
Red Stone Arsenal, AL 36101
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal
F. Address: Same

G. Phone: (256) 876-3814
If owner of the generating facility differs from the generator, please provide:
H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	QUANTITY	TYPE	UNITS
D- Drum	<u>2 DT</u>	P- Pounds	
B- Bag	<u>13</u>	TN- Tons	
X- Box		CY- Cubic Yards	
O- Other		O- Other	

Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

X _____
Generator Authorized Agent (Please Print)

X _____
Signature

X Shipment Date 03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____
B. Address: _____
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X _____ Receipt Date _____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

00102

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RLD-100 4379)
Red Stone Arsenal, AL

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity: 10
Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print) _____
Signature _____

Shipment Date 05 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Scott

B. Address: 777 Country Rd
Callman, AL 35057

C. Phone: (205) 349772 D. Truck No./Type: JFD2

E. Vehicle License No./State: AL 5X95092

F. Driver Name: Joe Johnson (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

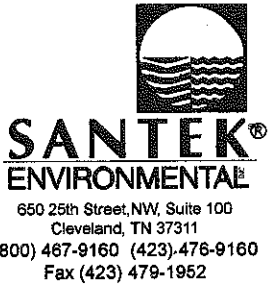
Shipment Date 05 31 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature _____ Receipt Date _____



00103

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (Mesa - RD - Pull 9302)
Red Stone Arsenal, AL Site: Bib G...
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Red Stone Arsenal RSA122
 F. Address: Same
 G. Phone: () _____
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: (256) 376-3814
 J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum	0-00		P- Pounds	
B- Bag	0-00		TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print) _____
 Signature _____
 Shipment Date 03 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date _____ / _____ / _____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: Smith's Excavating
 B. Address: 7771 County Road
Cullman AL 35057
 C. Phone: (256) 734-7775 D. Truck No./Type: 601
 E. Vehicle License No./State: K06752 AL
 F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date 03 31 11
 (Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
 Authorized Agent Signature _____ Receipt Date _____



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

00104

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (Inst - 816-102-417)
Red Stone Arsenal, AL (Attn: Bob G...)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal 914102
F. Address: Same

G. Phone: () _____
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (256) 876-3814

J. Description of Waste: Contaminated Soil

K. Containers: Truck
Type _____
Quantity 1400
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

Shipment Date 02 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Scouts Excavating
B. Address: 7771 County Rd J
Cullman, AL 35117
C. Phone: (256) 734-1111 D. Truck No./Type: 01
E. Vehicle License No./State: APU26527
F. Driver Name: _____

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature _____ Receipt Date _____



SANTEK[®] ENVIRONMENTAL

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Fax (423) 479-1952

00105

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (1M5E-K110-910) R372
Red Stone Arsenal, AL (Alto: B.L. Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal R372
F. Address: Same
G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: (256) 876-3814
J. Description of Waste: Contaminated Soil

K. Containers:
Type Truck
Quantity 22
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature] Shipment Date

--	--	--	--	--	--

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Scott's Excavating
B. Address: 7771 Cummins Rd
Gulfport, AL 35057
C. Phone: (256) 972-372 D. Truck No./Type: 3
E. Vehicle License No./State: 25X95259/AL
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

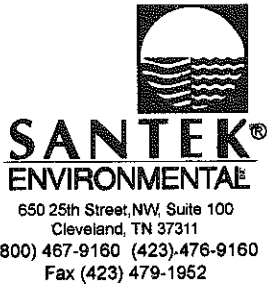
DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



00106

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (MUSE-RIO-440) 837
Red Stone Arsenal, AL 35894
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Red Stone Arsenal, AL
 F. Address: Same
 G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity: 1 Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
 Generator Authorized Agent (Please Print)
[Signature]
 Signature
[Date]
 Shipment Date

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: Stark Fixating
 B. Address: 777 County Rd
Fuller AL 36031
 C. Phone: (256) 734-0700 D. Truck No./Type: 4
 E. Vehicle License No./State: 25X1253
 F. Driver Name: [Signature]

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date _____ / _____ / _____
 (Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
[Signature] Receipt Date _____
 Authorized Agent Signature



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(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

00107

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (423) 476-9160
Red Stone Arsenal, AL (423) 476-9160
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal
F. Address: Same
G. Phone: () _____
If owner of the generating facility differs from the generator, please provide:
H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type ENT

Quantity 22

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

X _____
Generator Authorized Agent (Please Print)
X _____
Signature

X Shipment Date

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: 2045 Excavating
B. Address: 7771 ... Rd
... AL 35157
C. Phone: (256) 477-7175 D. Truck No./Type: 1624
E. Vehicle License No./State: AP1105202
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X _____ Receipt Date _____
Authorized Agent Signature



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Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE - RED - PWE A3217)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (256) 876.3814

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Handwritten: Type Traxle, Quantity Estile, Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E

B. Address: PO Box 23966
Chattanooga, TN 37422

C. Phone: 423 894 6430 D. Truck No./Type: AH12

E. Vehicle License No./State: 00535HX / TN

F. Driver Name: Deek Johnson (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 3 31 2011
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date 03-31-11
Authorized Agent Signature

WH-24
 Customer # 2002
 No 00109



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**NON-HAZARDOUS
 SPECIAL AND ASBESTOS
 WASTE MANIFEST**

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal. AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111-1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: () _____
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: (256) 876-3814
 J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Trucks
 Est. 16
 TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)
Robert Gorman
 Signature

Shipment Date 03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: LGE
 B. Address: PO Box 23966
Chattanooga TN 37422
 C. Phone: 423-894-0430 D. Truck No./Type: WH 24
 E. Vehicle License No./State: 01739HX/TN
 F. Driver Name: Terry Plunkett

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Terry Plunkett Shipment Date 3, 31, 11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Susan Sefford
 Authorized Agent Signature
 Receipt Date 03-31-11



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002

N^o 00110

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: (256) 876.3814
 J. Description of Waste: Contaminated Soil

K. Containers: Trax

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box	<u>5316</u>		CY- Cubic Yards	
O- Other			O- Other	

Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date 3/31/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE
 B. Address: PO Box 23966
Chattanooga TN 37422
 C. Phone: 423 894 6430 D. Truck No./Type: WH17
 E. Vehicle License No./State: 04291HX/TN
 F. Driver Name: FRANK MILLER
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Frank Miller Shipment Date 3 / 31 / 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sam Selfred Receipt Date 03-31-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9180 (423) 476-9160
Fax (423) 479-1952

Customer # 2002
No 00111

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE 9327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: M/Same Metrology Drive
 G. Phone: () _____
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: (256) 876.3814
 J. Description of Waste: Contaminated Soil

K. Containers: Traxle
 Type _____
 Quantity Est. 16
 Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date 03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
 B. Address: PO Box 23966
Chattanooga TN
 C. Phone: 423 894 4370 D. Truck No./Type: WH22
 E. Vehicle License No./State: CA508HX / TN
 F. Driver Name: Clarence Frank
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Clarence Frank Shipment Date 3 31 11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
 282 Landfill Rd
 McDonald, TN 37353
- Murray County Landfill**
 6565 Highway 411 South
 Chatsworth, GA 30705-2899
- Rhea County Landfill**
 207 Sanitary Drive
 Evensville, TN 37321
- Gordon County Landfill**
 1224 Pleasant Hill Road Ext. NE
 Ranger, GA 30734
- Loudon County Landfill**
 21712 Highway 72 North
 Loudon, TN 37774-5837
- Hardin County Landfill**
 1620 Audubon Trail
 Elizabethtown, Kentucky 42701
- Polk County Landfill**
 3477 FM 942
 West Leggett, TX 77350
- Crittenden County Landfill**
 1299 Kuhn Road West
 West Memphis, Arkansas 72301
- Crawford County Landfill**
 5128 Lincoln Hwy East
 Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sau Seiford Receipt Date 03-31-11
 Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002

№ 00112

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE - RED - PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (256) 876-3814

J. Description of Waste: Contaminated Soil

K. Containers: Traxx

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box	<u>Est 16</u>		CY- Cubic Yards	
O- Other			O- Other	

Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date

03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date 3/31/11

(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KSE

B. Address: PO Box 23966
Chattanooga TN 37422

C. Phone: 423 894 6430 D. Truck No./Type: AHD4

E. Vehicle License No./State: 04544HX TN

F. Driver Name: KEVIN BAKER
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date 3/31/11

(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sue Self
Authorized Agent Signature

Receipt Date 03/31/11



SANTEK ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002
No 00113

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE - RED - PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (256) 876.3814

J. Description of Waste: Contaminated Soil

K. Containers:	Type	TYPE		UNITS			
		D-	B-	P-	TN-	CY-	O-
Quantity	<u>Traxle</u>	Drum	Bag	Pounds	Tons	Cubic Yards	Other
Units	<u>Est. 16</u>	<u>TN</u>	Other	Other	Other	Other	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E

B. Address: PO Box 23966
Chattanooga TN 37422

C. Phone: 423.894.6430 D. Truck No./Type: AH10

E. Vehicle License No./State: 06458HX/TN

F. Driver Name: Kenneth Fortner
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X Ken Fortner Shipment Date 3/31/11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
X San Felipe Receipt Date 03-31-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002
No 00114

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A329
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive

G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (256) 876.3814

J. Description of Waste: Contaminated Soil

K. Containers Type	Quantity	Units	TYPE		UNITS	
			D- Drum	P- Pounds	TN- Tons	CY- Cubic Yards
<u>Traxle</u>	<u>5716</u>	<u>TN</u>	X- Box	O- Other		

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 03 31 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KGE
B. Address: PO Box 23966
Chattanooga TN 37422
C. Phone: 423 994 6436 D. Truck No./Type: AH7
E. Vehicle License No./State: 01878HX TN
F. Driver Name: Robert Shaffer
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW

G. Robert Shaffer Shipment Date 3 31 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Sara Chedford
Authorized Agent Signature
Receipt Date 03-31-11



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Continuation # 2012
00115

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (INSE-810-FIVE A217)
Red Stone Arsenal, AL (DHW: 600-60000)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal, AL
F. Address: Same

G. Phone: () _____
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: (256) 876-3911
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity: 1032
Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Date]
Shipment Date

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date 1/1/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: 50415 P. Cavahoy
B. Address: 7711 ... Rd
Lullwater, NC 28657
C. Phone: (828) 734-9711 D. Truck No./Type: 601
E. Vehicle License No./State: 144P152/NL
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date 1/1/11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

00116

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (1456-RED-ROAD 9377)
Red Stone Arsenal, AL (1456-RED-ROAD 9377)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal, RSA-122

F. Address: Same

G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (256) 976-3814

J. Description of Waste: Contaminated Soil

K. Containers:

Type _____

Quantity _____

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

_____ Shipment Date

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

_____ Shipment Date ____/____/____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: _____

B. Address: _____

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

_____ Shipment Date ____/____/____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

_____ Receipt Date ____/____/____
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

Contract # 2011
00117

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMBP - RSC - 028 029)
Red Stone Arsenal, AL (02180 029)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal RSC-029
F. Address: Same

G. Phone: () _____
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: (706) 976-7014

J. Description of Waste: Contaminated Soil

K. Containers:
Type 0-DT
Quantity 1423
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print) _____

Signature _____

Shipment Date 04 11 11

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

(Driver Signature) _____ Shipment Date 4/11/11

TRANSPORTER 2

A. Transporter Name: Action Resources
B. Address: 14030 Manama Hwy #1
Harpsville AL 36077
C. Phone: (205) 255-0000 D. Truck No./Type: 149
E. Vehicle License No./State: 1914 / AL
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

(Driver Signature) _____ Shipment Date 4/11/11

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature _____ Receipt Date _____

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (19152-4488-PAK 9329)
Red Stone Arsenal, AL (4488-PAK 9329)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal, AL

F. Address: Same

G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type 0-37

Quantity 1533

Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

~~_____~~
Generator Authorized Agent (Please Print)

~~_____~~
Signature

~~_____~~
Shipment Date

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

~~_____~~
(Driver Signature) Shipment Date _____ / _____ / _____

TRANSPORTER 2

A. Transporter Name: Arthur Resources

B. Address: 4800 Alabama Hwy #1
Hamoville AL 35077

C. Phone: () _____ D. Truck No./Type: _____

E. Vehicle License No./State: 1014940/AL

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. ~~_____~~
(Driver Signature) Shipment Date _____ / _____ / _____

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

~~_____~~
Authorized Agent Signature Receipt Date _____



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

Cost # 2000
00119

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (Inst - REDSTONE ARSENAL)
Red Stone Arsenal, AL
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal
F. Address: Same

G. Phone: () _____
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () 876-3814

J. Description of Waste: Contaminated Soil

K. Containers:

Type _____
Quantity: _____
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print)

Signature

_____ Shipment Date 04 01 2000

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

_____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Spinks Recovery
B. Address: 7771 South Blvd
Cullman AL 35057
C. Phone: () 256-777-7777 D. Truck No./Type: 1454
E. Vehicle License No./State: 112 1022/AL
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

_____ Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

_____ Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Fax (423) 479-1952

Customer # 1002
00120

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (Mish-RID-PLUG #327)
Red Stone Arsenal, AL (BAG: Bk 60000)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Red Stone Arsenal
F. Address: Same

G. Phone: () _____
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: (351) 976-3814
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Generator Authorized Agent (Please Print) _____

Signature _____

Shipment Date 7/10/02

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: SOLOK Enterprises
B. Address: 7771 ...
...
C. Phone: () _____ D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Authorized Agent Signature _____ Receipt Date _____



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002

No 00121

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE 8327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: () _____
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: (256) 876-3814
 J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum	<u>0-DI</u>		P- Pounds	
B- Bag	<u>Est 22</u>		TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity Est 22
Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: Scotis Excavating
 B. Address: 7771 County Rd 0
Callman AL 35057
 C. Phone: 256 734 9772 D. Truck No./Type: 11639
 E. Vehicle License No./State: 10A0534 / AL
 F. Driver Name: Mark Emmett
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Mark Emmett Shipment Date 4 1 11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

X Sam Lefford Receipt Date 04-01-11
 Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002
KNEg No 00123

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PLW 8327
Red Stone Arsenal, AL Attn: Bob Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metrology Drive

G. Phone: () _____
If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: (256) 876.3814
J. Description of Waste: Contaminated Soil

K. Containers: Traxle

Type	Quantity	Units	TYPE	UNITS
D- Drum		TN	P- Pounds	
B- Bag	<u>Est 16</u>		TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)
Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
B. Address: P.O. Box 23966
Chattanooga TN 37422
C. Phone: (423) 894.6800 D. Truck No./Type: 9
E. Vehicle License No./State: 0738214X TN
F. Driver Name: Scotty Higgins (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Scotty H Shipment Date 4 1 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
X _____ Receipt Date 04-01-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer #2002
No 00124

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (IMSE-RED-PWF A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Ma Same Metrology Drive

G. Phone: () _____

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: (256) 876-3814

J. Description of Waste: Contaminated Soil

K. Containers: Trax
Type _____
Quantity Est 16
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

X _____ Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE

B. Address: PO Box 23966
Chattanooga TN 37422

C. Phone: 423 894 6430 D. Truck No./Type: KEB

E. Vehicle License No./State: 07381HX TN

F. Driver Name: Houston Gibson

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

X _____ Shipment Date 4 1 11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
X Sam Lufford Receipt Date _____
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

AH 12

Customer # 2002
No 00125

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA122
 F. Address: Same Metrology Drive
 G. Phone: () _____
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: (256) 876-3814
 J. Description of Waste: Contaminated Soil

K. Containers:
 Type Triaxle
 Quantity Est. 16
 Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)
Robert Gorman
 Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date _____ / _____ / _____
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
 B. Address: PO BOX 23966
Chattanooga TN 37422
 C. Phone: 423-8946430 D. Truck No./Type: AH12
 E. Vehicle License No./State: 005354X/TN
 F. Driver Name: Derek Johnson
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Eh Shipment Date 4.1.2011
 (Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
* Ann Sedgwick Receipt Date 04-01-11
 Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

Customer # 2002
H+E3 No 00126

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (ISME-RED-PWE)
Red Stone Arsenal, AL A327 Attn: Bob
(Gorman)
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal (RSA-122)
F. Address: Same Metrology Drive

G. Phone: (256) 876-3814
If owner of the generating facility differs from the generator, please provide:
H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity Est. 16
Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)
Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date / /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: LEE
B. Address: P.O. Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894-6430 D. Truck No./Type: VE3
E. Vehicle License No./State: 67376 HX TN
F. Driver Name: Gary Hogan
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. [Signature] Shipment Date 21 / 1 / 2011
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
[Signature] Receipt Date 04-01-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 487-9160 (423) 476-9160
Fax (423) 479-1952

Customer #2002
K784 No 00127

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: the Same Metrology Drive
 G. Phone: (256) 876.3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Triaxle
 Type _____
 Quantity Est 16
 Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1/1/11
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: KEE
 B. Address: P.O. Box 23966
Chattanooga TN 37422
 C. Phone: 423.894.6430 D. Truck No./Type: KE4
 E. Vehicle License No./State: 07377HX TN
 F. Driver Name: LARRY GORDON
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

Larry Gordon Shipment Date 1/6/2011
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* San Sanford Receipt Date 04-01-11
 Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer #2002
No 00128

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWEA327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: we Same Metrology Drive
 G. Phone: (256) 876.3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Trade
 Type _____
 Quantity Est. 16
 Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date

04 01 2001

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1/1/11
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: LGE
 B. Address: PO Box 23966
Chattanooga TN 37422
 C. Phone: (423) 894.6430 D. Truck No./Type: LE 40
 E. Vehicle License No./State: 07375HX/TN
 F. Driver Name: Bobby Presley

(Please Print)
 Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Bobby Presley Shipment Date 4/1/11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* Jane [Signature] Receipt Date 04-01-11
 Authorized Agent Signature



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002
No 00129

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road LISME-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Use Same Metrology Drive
G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:
Type Triaxle
Quantity Est 16
Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1 / 1 /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: LEE
B. Address: PO BOX 23966
CHATTANOOGA TN 37422
C. Phone: 423 8946430 D. Truck No./Type: KE5
E. Vehicle License No./State: 07378HX1 TN
F. Driver Name: Steve Brooks

(Please Print)
Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Steve Brooks Shipment Date 4 / 1 / 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* Steve Brooks Receipt Date 04-01-11
Authorized Agent Signature



SANTEK[®] ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 479-1952

Customer # 2002
AHO4 No 00130

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road (ISME-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA122
 F. Address: Use Same Metrology Drive
 G. Phone: (256) 876.3814
 If owner of the generating facility differs from the generator, please provide:
 H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Triaxle
 Type _____
 Quantity Est. 16
 Units TN

	TYPE	UNITS
D-	Drum	P- Pounds
B-	Bag	TN- Tons
X-	Box	CY- Cubic Yards
O-	Other	O- Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
 Generator Authorized Agent (Please Print)

Robert Gorman
 Signature

Shipment Date

04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1/1/11
 (Driver Signature)

TRANSPORTER 2

A. Transporter Name: LEE
 B. Address: PO Box 23966
Chattanooga TN 37422
 C. Phone: (423) 8946430 D. Truck No./Type: AHO4
 E. Vehicle License No./State: 04514HX TN
 F. Driver Name: Kevin Lopez
 (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. [Signature] Shipment Date 4.1.11
 (Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6566 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature]
 Authorized Agent Signature

Receipt Date 04-01-11



SANTEK® ENVIRONMENTAL

650 25th Street, NW, Suite 100
Cleveland, TN 37311
(800) 467-9160 (423) 476-9160
Fax (423) 476-1952

WH-24
Customer #2002
No 00131

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (ISME-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: 256 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle
Type _____
Quantity Est. 16
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1 / 1 / 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E

B. Address: PO Box 23966
Chattanooga TN 37422

C. Phone: 423 894 6430 D. Truck No./Type: WH24

E. Vehicle License No./State: 01239HX TN

F. Driver Name: Terry Plunkett
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Terry Plunkett Shipment Date 4 / 1 / 11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* Sean [Signature] Receipt Date 04-01-11
Authorized Agent Signature



SANTEK® ENVIRONMENTAL

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Cleveland, TN 37311
(800) 467-9160 (423)-476-9160
Fax (423) 479-1952

Customer # 2002
WH 17 No 00132

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road CISME-RED-PWEA327
Red Stone Arsenal, AL Attn: Bob Gorman

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Redstone Arsenal RSA-122

F. Address: Same Metrology Drive

G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers: Triaxle
Type _____
Quantity Est. 16
Units TN

TYPE		UNITS	
D-	Drum	P-	Pounds
B-	Bag	TN-	Tons
X-	Box	CY-	Cubic Yards
O-	Other	O-	Other

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1/1/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E

B. Address: PO Box 23966
Chattanooga TN 37422

C. Phone: 423.894.6330 D. Truck No./Type: WH17

E. Vehicle License No./State: 04291 HX/TN

F. Driver Name: Frank Miller
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Frank Miller Shipment Date 4/1/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

* Sam Lippel Receipt Date 04-01-11
Authorized Agent Signature



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00133

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road (TSMB-RED-DWE Area)
Red Stone Arsenal, AL Ala. Prob. (Green)

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal RSA-122

F. Address: Same USMC Hq. Bldg

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D-			Drum	Pounds
B-			Bag	Tons
X-			Box	Cubic Yards
O-			Other	Other

Quantity: 1 Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

[Signature]
Shipment Date

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date / /
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: State Excavators

B. Address: 7771 W. Hwy
Lawrenceville, AL 35697

C. Phone: (256) 774-7775 D. Truck No./Type: 601

E. Vehicle License No./State: 6A0792

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE-DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. _____ Shipment Date / /
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date / /
Authorized Agent Signature

Truck AH-10

Customer #2002

No 00134



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NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
 B. Address: 4488 Martin Road CISME-RED-PWE A327
Red Stone Arsenal, AL Attn: Bob Gorman
 C. Phone: (256) 876-3814
 D. Profile Number: B0111 - 1
 E. Generating Location: Redstone Arsenal RSA-122
 F. Address: Same Metrology Drive
 G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
 I. Owner's Phone: () _____
 J. Description of Waste: Contaminated Soil

K. Containers: Triaxle

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity Est. 16
Units TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
 B. Address: 241 Industrial Way
Cleveland, TN 37311
 C. Phone: (423) 476-7905 D. Truck No./Type: _____
 E. Vehicle License No./State: _____
 F. Driver Name: _____ (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1/1/11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
 B. Address: PO Box 23966
Chattanooga TN 37422
 C. Phone: 423 894.6430 D. Truck No./Type: AH10
 E. Vehicle License No./State: 06458 HX TN
 F. Driver Name: Kenneth Fortner (Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

G. Shane O'Boe Shipment Date 4/1/11
(Driver Signature)

DESTINATION

Disposal Site: (Check One)

- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
- Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
- Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
- Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
- Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
- Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
- Polk County Landfill
3477 FM 942
West Leggett, TX 77350
- Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
- Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

Shane O'Boe Receipt Date 04-01-11
Authorized Agent Signature



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Fax (423) 479-1952

Customer #2002
AH 7 No 00135

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122
B. Address: 4488 Martin Road (IMSE-RED-PWE A327)
Red Stone Arsenal, AL Attn: Bob Gorman
C. Phone: (256) 876-3814
D. Profile Number: B0111 - 1
E. Generating Location: Redstone Arsenal RSA-122
F. Address: Same Metallurgy Drive
G. Phone: (256) 876.3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____
I. Owner's Phone: () _____
J. Description of Waste: Contaminated Soil

K. Containers:	Type	TYPE		UNITS	
		D-	P-	TN-	CY-
Quantity	<u>Triaxle</u>	Drum	Pounds	Tons	
Units	<u>Est. 16</u>	Bag			
		Box	Cubic Yards		
		Other	Other		

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

Robert Gorman
Generator Authorized Agent (Please Print)

Robert Gorman
Signature

Shipment Date 04 01 2011

TRANSPORTER 1

A. Transporter Name: GIBCO Construction
B. Address: 241 Industrial Way
Cleveland, TN 37311
C. Phone: (423) 476-7905 D. Truck No./Type: _____
E. Vehicle License No./State: _____
F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

* _____ Shipment Date 1 / 1 / 11
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: K&E
B. Address: P.O. Box 23966
Chattanooga, TN 37422
C. Phone: (423) 894.6430 D. Truck No./Type: AH7
E. Vehicle License No./State: 01878 HX/TN
F. Driver Name: Robert Shaffer
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW

G. Robert Shaffer Shipment Date 2.9.11
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.
* Sam Sedford Receipt Date 04-01-11
Authorized Agent Signature



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Fax (423) 479-1952

00136

NON-HAZARDOUS SPECIAL AND ASBESTOS WASTE MANIFEST

GENERATOR

A. Generator: Red Stone Arsenal Site: RSA122

B. Address: 4488 Martin Road
Red Stone Arsenal, AL

C. Phone: (256) 876-3814

D. Profile Number: B0111 - 1

E. Generating Location: Red Stone Arsenal, AL

F. Address: Same

G. Phone: (256) 876-3814

If owner of the generating facility differs from the generator, please provide:

H. Owner's Name: _____

I. Owner's Phone: () _____

J. Description of Waste: Contaminated Soil

K. Containers:

Type	Quantity	Units	TYPE	UNITS
D- Drum			P- Pounds	
B- Bag			TN- Tons	
X- Box			CY- Cubic Yards	
O- Other			O- Other	

Quantity: _____

Units: TN

L. Special Handling Instructions: _____

M. Generator's Certification: I HEREBY CERTIFY THAT THE ABOVE DESCRIBED MATERIALS ARE NOT HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261 OR ANY APPLICABLE STATE LAW AND ARE NOT SUBJECT TO FEDERAL REGULATIONS FOR REPORTING PROPER DISPOSAL OF HAZARDOUS WASTE HAVE BEEN FULLY, ACCURATELY AND PROPERLY DESCRIBED, CLASSIFIED AND PACKAGED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO APPLICABLE REGULATIONS; AND, IF THE WASTE IS A TREATMENT RESIDUE OF A PREVIOUSLY RESTRICTED HAZARDOUS WASTE SUBJECT TO THE LAND DISPOSAL RESTRICTIONS, I CERTIFY AND WARRANT THAT THE WASTE HAS BEEN TREATED ON ACCORDANCE WITH THE REQUIREMENTS OF 40 CFR PART 268 AND IS NO LONGER A HAZARDOUS WASTE AS DEFINED BY 40 CFR PART 261.

[Signature]
Generator Authorized Agent (Please Print)

[Signature]
Signature

Shipment Date 01 01 2001

TRANSPORTER 1

A. Transporter Name: GIBCO Construction

B. Address: 241 Industrial Way
Cleveland, TN 37311

C. Phone: (423) 476-7905 D. Truck No./Type: _____

E. Vehicle License No./State: _____

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE RECEIPT OF THE ABOVE-DESCRIPTION MATERIALS FOR TRANSPORT FROM THE GENERATOR SITE LISTED IN THE GENERATOR PORTION OF THIS MANIFEST.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

TRANSPORTER 2

A. Transporter Name: Southwest Construction

B. Address: 7771
Shannon Rd, TN 37387

C. Phone: (615) 734-9777 D. Truck No./Type: 747

E. Vehicle License No./State: TN 661-2142

F. Driver Name: _____
(Please Print)

Acknowledgement of Receipt Materials: I HEREBY ACKNOWLEDGE THAT THE ABOVE- DESCRIPTION MATERIALS WERE RECEIVED FROM THE GENERATOR SITE AND WERE TRANSPORTED WITHOUT INCIDENT TO THE DESTINATION LISTED BELOW.

[Signature] Shipment Date _____ / _____ / _____
(Driver Signature)

DESTINATION

- Disposal Site: (Check One)
- Bradley County Landfill**
282 Landfill Rd
McDonald, TN 37353
 - Murray County Landfill**
6565 Highway 411 South
Chatsworth, GA 30705-2899
 - Rhea County Landfill**
207 Sanitary Drive
Evansville, TN 37321
 - Gordon County Landfill**
1224 Pleasant Hill Road Ext. NE
Ranger, GA 30734
 - Loudon County Landfill**
21712 Highway 72 North
Loudon, TN 37774-5837
 - Hardin County Landfill**
1620 Audubon Trail
Elizabethtown, Kentucky 42701
 - Polk County Landfill**
3477 FM 942
West Leggett, TX 77350
 - Crittenden County Landfill**
1299 Kuhn Road West
West Memphis, Arkansas 72301
 - Crawford County Landfill**
5128 Lincoln Hwy East
Bucyrus, Ohio 44820

I hereby acknowledge receipt of the above described materials.

[Signature] Receipt Date _____
Authorized Agent Signature