SITE: Industrial metal
BREAK: 2.11
OTHER: VI

ON SCENE COORDINATOR REPORT
FORMER INDUSTRIAL METAL ALLOY COMPANY SITE
20 EAST ACADIA AVENUE
WINSTON-SALEM, FORSYTH COUNTY, NORTH CAROLINA

Prepared For:

NK HOLDINGS, LLC

By:

HEPACO™

Serious experience for serious times.™

HEPACO, Inc.
2711 Burch Drive
Charlotte, NC 28269

May 19, 2008

James B. Kessler
Project Manager, Hepaco, Inc.

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U.S. EPA REGION IV

SDMS

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1.0 INTRODUCTION/PURPOSE

The Industrial Metal Alloy Company (IMACO) formerly operated manufacturing facilities at 20 East Acadia Avenue, Winston-Salem, North Carolina. These operations resulted in lead releases in the form of particulate matter at the surface originating in an area of dust collection in the East Yard. According to Brown and Caldwell Consultants (Brown & Caldwell) the release of lead presumably occurred as a result of spills and from the atmosphere due to failures of bag houses, and migrated as a result of storm water run-off. This resulted in impacts to several areas of the site and some of the surrounding properties. The lead impacts were investigated during investigations by the North Carolina Department of Environment and Natural Resources (NCDENR) in August and November 2004, the United States Environmental Protection Agency (EPA) in July 2005, and Brown & Caldwell in April 2006. The surface materials contain measurable levels of lead, which are harmful to human health and the environment above certain health-based and risk-based levels.

A Sampling and Analysis Plan (SAP) was generated by Brown & Caldwell in March 2007 for the further investigation of the soils in conjunction with this remediation. This SAP was incorporated into the Project Management Plan (PMP) and Project Work Plan (PWP) generated by HEPACO, the remediation contractor, in September 2007, which was approved by the EPA on October 15, 2007. The work is being performed under a Settlement Agreement and Order on Consent (AOC) for Removal Action between NK Holdings, LLC (Settling Party) and the EPA Region 4 dated September 20, 2006. As part of the AOC, IMACO is required to prepare this On-Scene Coordinator (OSC) Report prepared in accordance with the requirements of 40CFR Section 300.165, which includes discussion on the source removal operations and actions taken at the site to prevent or mitigate threats to human health or the environment from lead contamination at, or from, the site.

Refer to Figure 1 for an illustration of the location of the IMACO Site. The IMACO Site, as illustrated in Figure 2, was formerly an industrial metal alloying facility. The Colter Electric Lot is an adjacent property that was impacted by lead from the IMACO Site. Other residential properties surrounding the IMACO site were potentially impacted and were tested and impacted locations were addressed as part of this remediation. A fence surrounds the site with a gate at the driveway. Because of the active use of

adjacent sites by families, and the planned future use of the site, the intent of this remediation was to remove the potential threat of human contact with impacted materials as proposed in the PMP, and implemented herein. Site conditions and activities conducted in preparing this OSC Report are documented in the photographic log included as Appendix A.

The North Carolina Department of Environment and Natural Resources (NCDENR) residential soil clean-up level for lead is 400 milligrams per kilograms (mg/kg) and was accepted by the EPA as the lead action level for this project. The purpose of this OSC Report is to document the excavation, stabilization, stockpiling and disposal of the soils which exhibited greater than 400 mg/kg lead (Materials) removed from the IMACO site and impacted neighboring locations.

2.0 PREVIOUS SITE ASSESSMENT RESULTS

The lead impacts were previously investigated during investigations by the NCDENR in August and November 2004, the EPA in July 2005, and Brown & Caldwell in April 2006. Analytical data from these events were previously submitted and evaluated to develop the EPA approved SAP and PWP. Materials in the upper 2 feet with lead concentrations equal to or greater than 400 mg/kg were delineated. This depth was determined to be protective to human health and the environment based on reduced exposure at depth greater than 2 feet. Areas not previously delineated were delineated as part of the sampling discussed within this report. The excavation areas based on lead soil concentrations are presented on Figure 3.

3.0 REMEDIAL MEASURES

3.1 Objectives

The objectives of the remedial measures for the IMACO site were as follows:

(1) Site Clearing as needed,

(2) Remove the Materials by excavation,

(3) Temporarily stockpile and stabilize materials,

(4) Cease and prevent any [further] migration of the Materials from the source areas and the temporary stockpile,

(5) Stabilize, by the addition of Triple Superphosphate (0-45-0) fertilizer mix to the Materials with Toxicity Characteristic Leaching Procedure (TCLP) lead concentrations in excess of 5 milligrams per liter (mg/l) for disposal purposes,

(6) Collect composite samples representative of the stockpiled Materials and analyze them by TCLP lead for disposal purposes,

(7) If the composite samples are above hazardous TCLP levels for lead of 5 mg/l, add and mix additional Triple Superphosphate (0-45-0) fertilizer mix to the stockpiled Materials. Re-sample and analyze the stockpiled Materials for TCLP lead.

(8) Once the stockpiled Materials are analyzed to have TCLP lead levels below 5 mg/L, load and transport materials to RCRA Subtitle D landfill for final disposal,

(9) Conduct post-excavation confirmatory sampling,

(10) Perform site restoration to the satisfaction of the affected property owner(s).

3.2 Preventing Runoff and/or Migration

Because the disturbed area is owned by a state entity (North Carolina School of the Arts), a site-specific Erosion and Sediment Control Plan was not required. However, silt and safety fencing was erected at the site in selected areas, and all residential areas to control the potential erosion and migration of the Materials. In addition grass, and rip-rap lined ditches and check dams were utilized along the unnamed tributary to the rear of the property. All erosion and runoff control measures were inspected daily or

after any significant precipitation event, and promptly repaired. All sediment buildup was removed and placed in the soil treatment/stockpile area for treatment and disposal.

3.3 Method of Removal/Excavation Activities

The method of removal was excavation and temporary stockpiling of the Materials using mechanical and hand excavating equipment. A listing of major equipment utilized included the following:

(1) Track Excavators
(2) A rubber-tired backhoe
(3) Allu SM Screener/mixer
(4) Track Dozer
(5) Soil Compactor
(6) Water Truck
(7) Dump trucks

In addition, other equipment and facilities used included smaller equipment to break up the soil, x-ray fluorescence (XRF) instrument, Mini-ram dust meters, portable sanitation facilities, equipment and personnel decontamination areas, and soil/Material staging areas.

Excavation activities focused on Materials in the upper 2 feet of soil with detected lead concentrations exceeding 400 mg/kg, the action level approved by the EPA, as shown on Figure 3 and 4. Soils were excavated to predetermined depths (not exceeding 2 feet) keyed to a predetermined grid system as proposed in the SAP, and confirmatory delineation/post-remediation sampling was conducted. Additional excavation was then conducted horizontally and vertically based on the analytical results to a maximum depth of 2 feet. Backhoes/loaders were used to place the excavated Materials in a temporary stockpile staging area for stabilization and testing prior to disposal.

3.4 Staging Method

Excavated Materials were transferred by a front end loader to designated areas on site. The stockpile areas were all lined with an impervious layer of 20-millimeter (mil) polyethylene sheeting prior to the placement of Materials within the stockpile area. Containment was provided by silt fencing to prohibit migration of Materials resulting from storm water runoff. At the end of each workday, the stockpiled Materials were covered with a layer of 6-mil polyethylene sheeting. Stockpiles were kept separate until TCLP results confirmed lead levels within the stockpile were suitable for offsite disposal.

3.5 Stabilization

Following excavation, the Materials were treated with a variable application of Triple Superphosphate (0-45-0) fertilizer mix. The fertilizer mix was delivered to the site in bulk granular form, stored on polyethylene and covered with polyethylene. The average volume of Materials in the stockpile was calculated for each section in order to determine the optimum dosage of Triple Superphosphate (0-45-0) fertilizer mix based on the treatability study (included in Appendix F). A hydraulic excavator, equipped with an Allu SM mechanical screening/mixing bucket, was used to mix the Materials from the treated grid and the Triple Superphosphate (0-45-0) fertilizer mix for placement of the soil/Material in a stockpile.

3.6 Material Waste Characterization, Transportation and Disposal

Representative samples were obtained from the stockpiled and stabilized Materials following the NCDENR Guidelines for Assessment and Corrective Action dated April 2001 (effective July 1, 2001) method of stockpile sampling. The samples were analyzed for lead using the Toxicity Characteristic Leaching Procedure (TCLP, EPA Method 6010) by a NELAP and North Carolina certified laboratory (Pace Analytical Laboratories, Inc., Charlotte, NC). The laboratory analytical data are included in Appendix B. When a sample exceeded the TCLP level of 5 mg/kg it was re-treated and sampled until it was in compliance with the 5 mg/kg lead TCLP limit. The stabilized Materials did not exhibit a characteristic for classification as hazardous waste (e.g., Lead <0.5 mg/kg). A summary of the representative stockpile sample analytical results is provided in Table 1.

Approximately 4,059.91 tons of stabilized Materials were removed from the IMACO Site for final disposal at Allied Waste's BFI/CMS's Subtitle D landfill in Concord, North Carolina. Copies of manifests and disposal certificates for the IMACO Materials are included as Appendix C.

3.7 Site Restoration

Following excavation and completion of post-excavation confirmatory sampling activities described in this report, the excavated areas were backfilled. Backfill material was obtained from off-site sources and tested prior to use on the site. All disturbed areas including access roads, staging areas, and former excavated areas were final graded to match existing topography. Disturbed areas were then re-seeded and covered with straw or mulch, after which all equipment was removed. Portions of an existing fence were removed during the excavation activities and replaced with new fencing and posts prior to demobilization from the site. All temporary construction materials, fences, and signs were also removed from the site.

Construction debris generated during the work was collected and removed from the site. Disposal of construction debris was in accordance with State and Local laws and regulations.

3.8 Deviations from Project Work Plan

Various debris and slag were encountered during excavation that had to be separated and disposed. The EPA approved PWP was modified based on discussions with various representatives including Mr. Matt Huyser of the EPA to indicate that visible slag would be removed. These modifications were sent to the EPA in the weekly project update dated November 2, 2007.

Based on differences between XRF screening results and hard analytical data from the confirmatory samples, the XRF screening level was changed on November 29, 2007 to 300 parts per million (ppm) from 400 ppm as a limit for selecting further sampling or excavation. Additionally, two drums were encountered that required characterization and disposal. Also, kettle bottoms that were encountered could not be recycled as planned and were ground, then mixed with stockpiled soils and stabilization

chemical for disposal. Lastly, some petroleum contaminated soils were encountered which were addressed by Brown & Caldwell, see Table 2. No contamination was encountered beyond the limits of the Site sampling grid established in the SAP (Shown on Figures 3 and 4).

The method of treatment of the excavated soils was changed from EnviroBlend® 2080 to Triple Superphosphate (0-45-0) fertilizer mix based on an additional treatability study, dated September 6, 2007, conducted. This study is included in Appendix E.

3.9 Contractors/Subcontractors

The Contractor that performed the sampling, stabilization, excavation and stockpile work is as follows:

HEPACO, Inc.
2711 Burch Drive
Charlotte, NC 28269
704-598-9787

The Contractor that provided oversight and did other sampling and investigation work is as follows:

Brown & Caldwell.
990 Hammond Drive, Suite 400
Atlanta, Georgia, 30328

The Subcontractor that performed the laboratory soil analyses is as follows:

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

3.10 Permits

No permits were required for the work conducted.

4.0 POST-EXCAVATION CONFIRMATORY SAMPLING

4.1 Objective

The objective of the post-excavation confirmatory sampling was to reasonably assure that the Materials exceeding the specified action level for lead in the upper 2 feet of soil were excavated and removed from the site. Confirmatory assurance was demonstrated through historical sampling results, XRF field screening and laboratory analytical confirmatory testing. These results were used to ensure that excavation to the vertical and horizontal extent of the soil contamination was completed.

4.2 Sampling Methods and Locations

A systematic grid sampling design was implemented for this site in accordance with the Environmental Investigations Standards Operating Procedures and Quality Assurance Manual (EISOPQAM), with the exception that the grid spacing had been established in the PWP and SAP based on previous site assessment activities. The existing surveyed grid was based on X and Y coordinate axes, and was laid-out as shown on Figure 3. Spacing between grid nodes was 20 feet. Confirmation sample location and identification were tied directly to the vicinity of the sample locations on the grid nodes (e.g. C6 or L12). Confirmatory sampling was intended to confirm the removal of Materials above 400 mg/kg.

All materials were screened with an XRF (EPA method 6200) in the field for lead. Three types of sampling were utilized at the site as discussed in the SAP. Type 1 sampling was conducted at residential lots only, not the IMACO lot, Colter lot, or steam sediment. Type 1 sampling consisted of 5-point surface composite samples. If the XRF screening was over 400, ppm Type 2 grid sampling was initiated, if not it was sent to a NELAP certified laboratory for total lead analysis by method EPA 6010B to confirm the results.

Type 2 sampling consisted of grid screening by laying out a 20' x 20' grid and collecting samples from 5 locations within the grid in the same manner as Type 1 samples, and field screening each composite sample with an XRF. If these samples exceeded 400 ppm (this level was later changed to 300 ppm as

discussed in Section 3.8) the grid was determined to require excavation, if not then a Type 3 sample was collected.

Type 3 samples were collected as 5-point composite samples from the bottom of each grid after excavation or from the surface of any IMACO grid which XRF screening indicated did not require removal to confirm that cleanup goals had been achieved. Type 3 samples were analyzed by a NELAP certified laboratory for total lead analysis by method EPA 6010B. All grids where samples did not pass Type 3 analysis were excavated up to 2 feet in depth. The stream sediment sample was collected from grid L18 and was analyzed as a Type 3 sample. Sample locations and results for post excavation samples are shown on Figure 4.

Sampling of Materials took place from November 7, 2007 to February 14, 2008 to confirm that soil remediation goals had been achieved after excavation of material from each grid, and prior to placement of backfill or after XRF screening indicated that excavation was not necessary. Samples were screened with the XRF prior to selection for laboratory analysis. Samples were collected using a stainless steel trowel and stainless steel bowl to collect representative samples from each grid. Samples selected for laboratory analysis were placed into clean laboratory-provided containers. The collected samples were submitted for laboratory analyses for total lead as discussed above and per the approved PWP and SAP.

4.3 Analytical Methods

Samples were field screened using an XRF via method EPA 6200. The confirmatory samples were analyzed by the laboratory for total lead via EPA Method 6010B.

4.4 Decontamination Procedures

To reduce the potential for cross-contamination between borings, sampling equipment was decontaminated as follows:

(1) washed with tap water and phosphate-free detergent solution,

(2) rinsed with tap water,

(3) rinsed with distilled water, and

(4) allowed to air dry.

As appropriate, certain equipment items were wrapped in aluminum foil to reduce the possibility of contamination during storage or transit. Wash and rinse water was treated as investigation derived waste (IDW).

A decontamination pad was constructed on a concrete pad on site to decontaminate vehicles and equipment prior to departure from the site. A confirmatory sample from the pad was collected at the end of the project to confirm that there were no impacts from the decontamination procedures and to classify it for disposal. These results are shown on Table 1.

4.5 Management of Investigation Derived Waste (IDW)

Materials which were classified as IDW due to the investigation activities included the following:

(1) Personnel protective equipment (PPE) which includes disposable Tyvek™ coveralls, gloves, booties, respirator canisters, etc.
(2) Disposable equipment which includes sample jars/containers, etc.,
(3) Decontamination wash water, solvents and rinse water.
(4) Soil cuttings from troweling, hand augering, etc.

All IDW items listed above were added to the stockpile onsite for disposal.

4.6 Sample Handling and Chain of Custody

Immediately following collection of a sample, each pre-cleaned, laboratory-provided sample container was marked with an identifying number and a corresponding site field book entry. Preservatives were added to the empty sample containers by the laboratory prior to shipment, as applicable. All samples were also preserved on ice to maintain a temperature less than 4 ^{O}C. Upon completion of the sampling event, the samples were placed into an appropriately prepared shipping container. Appropriate chain-of-

custody documents were placed with the shipping container. The container was securely sealed and transported to the laboratory for sample analyses.

The chain-of-custody form is an accurate written record, which will trace possession and handling of the samples from the moment of collection through laboratory analysis and final result recording. The activities associated with establishing and maintaining a chain-of-custody are summarized below:

(1) Each sample is labeled with a unique identifying number.

(2) Samples are properly packaged and dispatched as soon as possible to the laboratory for analyses. Field personnel will place a seal (such as a strip of tape) around the shipping container to indicate tampering.

(3) When transferring possession of the samples, the transferee will sign and record the date and time of transfer on the chain-of-custody form. Each person who takes custody fills in the appropriate section of the chain-of-custody form.

(4) Once the samples have arrived at the laboratory, laboratory personnel reconcile the information on the sample label and seal against that on the chain-of-custody form. Discrepancies between the information on the sample and seal are resolved before the sample is assigned for analysis. Samples are then placed in a secured sample storage room or locked cabinet until analyzed.

(5) The following information is included on the chain-of-custody forms:

- Sample identification
- Sample log number (by laboratory)
- Date and time of sample collection
- Number of bottles per sample
- Method of shipment
- Media (e.g. soil)
- Analytical parameters and methods
- Signature(s) of person(s) involved in the chain of possession
- Preservative (depending on sampled medium)

4.7 Quality Assurance/Quality Control

In accordance with EISOPQAM Section 5.13.10, split sampling procedures were used to measure the effectiveness of the sample handling techniques at several locations. Split samples were taken from the same composited mixture.

Field and rinsate blanks were collected at a frequency of one each per day to evaluate sample handling techniques. EPA-approved quality assurance, quality control, and chain-of-custody procedures were used throughout all sample collection and analysis activities.

4.8 Results of Post-Remedial Measures Confirmatory Sampling

Based on the laboratory analytical results, the Materials in the upper 2 feet of soil which showed lead contamination above 400 mg/kg, during the field activities, have been removed from the site. Table 3 and Figure 4 summarize the results of the post excavation confirmatory sampling. The stream sediment sample result (grid L18) is summarized on Table 4. The laboratory analytical data for the post remedial sampling is included in Appendix D. Following remediation of affected areas at the site, residual soil at depths of 2 feet or greater containing lead concentrations above the cleanup goal of 400 mg/kg remains in some discrete grid cells. The affected grid cells are: D18, E18, E19, F17, F18, F19, F20, G17, G18, G19, G20, H16, H17, H18, H19, H20, I16, I20, and I-J22. Orange security fencing was placed in the bottom of the excavation in these grids as requested by the EPA to denote areas where soils over the clean-up goal will remain. Remediation in these grids meets the requirements of the Consent Decree since two feet of clean fill soil was placed above the residual lead-impacted soil, and no further remediation is required.

5.0 ADDITIONAL INFORMATION

5.1 Costs

The costs incurred conducting these remedial activities were approximately $1.1 million. A copy of the schedule of values is included in Appendix F.

5.2 Remedial Alternatives

The following remedial alternatives were evaluated but were determined to not be the most effective means to address the contamination at the site:

A treatability test was conducted for stabilizing metals in soils. A control sample with no stabilization, and samples using various percentages of kiln dust and Portland cement were evaluated along with EnviroBlend®. The treatability study indicated these other methods were not as effective in stabilizing the soils as the Triple Superphosphate (0-45-0) fertilizer. Copies of the treatability studies are included in Appendix E.

Excavation, stabilization, and disposal of the upper 2 feet of material as non-hazardous material was deemed to be the most cost effective permanent solution to remediate the site and reduce risks to human health and the environment.

6.0 CERTIFICATION

Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signed: Date: 5/21/08

James B. Kessler
Project Manager, Hepaco, Inc.

Notarized:

OFFICIAL SEAL
Notary Public, North Carolina
County of Mecklenburg
Dana C. Kennington
My Commission Expires September 21, 2008

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Unscannable Material Target Sheet

DocID: 10421214 Site ID: NCN000409780

Site Name: Industrial Metal Alloy

Nature of Material:

Map:	☒	Computer Disks:	☐
Photos:	☐	CD-ROM:	☐
Blueprints:	☐	Oversized Report:	☐
Slides:	☐	Log Book:	☐

Other (describe): Vicinity Map and Cover Sheet for Imaco Site

Amount of material: _____

* Please contact the appropriate Records Center to view the material *

TABLE 1
Former IMACO Site Remediation
Soil Stockpile / Decon Pad Sample Analytical Results
HEPACO Project No. 7420039

Analytical Method---->		EPA 6010
Parameter ---------->		TCLP Lead
Standard ---------->		<5
Sample	**Date**	**mg/L**
IMA-CS-Treated Stockpile	11/9/2007	0.073
IMA-CS-Treated Stockpile	11/19/2007	0.29
IMA-CS-Treated Stockpile #3	11/28/2007	0.11
IMA-CS-Treated Stockpile #4	12/4/2007	0.56
IMA-CS-Treated Stockpile #5	12/13/2007	0.88
IMA-CS-Treated Stockpile #6	12/17/2007	**5.0**
IMA-CS-Treated Stockpile #6A	12/21/2007	0.19
IMA-CS-Treated Stockpile #7	1/10/2008	0.27
IMA-CS-Treated Stockpile #8	1/11/2008	0.21
IMA-CS-Treated Stockpile #9A	1/30/2008	0.081
IMA-CS-Treated Stockpile #10A	1/30/2008	ND
IMA-CS-Treated Stockpile #11	1/30/2008	0.18
Decon Pad	2/12/2008	2.0

Notes:
mg/L= milligrams per liter
TCLP= Toxicity Characteristic Leaching Procedure
Stockpile samples with an 'A' designation were collected from the stockpile after a second treatment of the stockpile was conducted.

TABLE 2
Former IMACO Site Remediation
Petroleum Contamination Analytical Results
HEPACO Project No. 7420039

Analytical Method---->		EPA 6010 (TCLP)			8082	EPA 8015	EPA 9071	EPA 8015	EPA 8270	
Parameter ---------->		Lead	Barium	Cadmium	PCBs	Diesel Components	Oil and Grease	Gasoline Range Organics	Fluoranthene	Pyrene
NCDENR or EPA Standard ------->		400	848	7.4	1	40	250	10	280	290
Sample	Date	mg/L	mg/L	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
IMA-CS-H23	11/29/2007	0.081	1.8	0.019	0.638	**83.6**	333	ND	0.5	0.461
IMA-CS-SUMP	1/15/2008	0.095	1	ND	ND	21	ND	ND	ND	ND

TABLE 3
Former IMACO Site Remediation
Soil Sample Analytical Results
HEPACO Project No. 7420039

Analytical Method---->				EPA 6010
Parameter ---------->				Lead
Standard ---------->				400
Site Grid	Sample	Depth	Date	mg/kg
A9	IMA-CS-A9-0/6	0-6"	10/30/2007	189
A10	IMA-CS-A10-6/12	6-12"	10/31/2007	79.6
A20	IMA-CS-A20-12/18	12-18"	11/28/2007	88.9
A20	IMA-CS-A20-12/18 DUP	12-18"	11/28/2007	114
A21	IMA-CS-A21-12/18	12-18"	11/30/2007	41.7
A22	IMA-CS-A22-0/6	0-6"	11/27/2007	125
A23	IMA-CS-A23-0/6	0-6"	11/26/2007	127
A24	IMA-CS-A24	0-6"	11/26/2007	59.3
A24	IMA-CS-A24-6/12	6-12"	11/26/2007	75.4
A25	IMA-CS-A25-0/6	0-6"	11/19/2007	170
B6	IMA-CS-B6 18/24	18-24"	10/31/2007	92.2
B8	IMA-CS-B8 0/6	0-6"	11/6/2007	22.1
B10	IMA-CS-B10-6/12	6-12"	10/31/2007	68
B20	IMA-CS-B20-12/18	12-18"	11/28/2007	86.7
B21	IMA-CS-B21-0/6	0-6"	11/28/2007	199
B22	IMA-CS-B22-0/6	0-6"	11/27/2007	222
B23	IMA-CS-B23-0/6	0-6"	11/26/2007	57.3
B24	IMA-CS-B24-0/6	0-6"	11/19/2007	100
B25	IMA-CS-B25-0/6	0-6"	11/19/2007	47.9
C6	IMA-CS-C6 0/6	0-6"	10/31/2007	190
C7	IMA-CS-C7 0/6	0-6"	10/31/2007	49.4
C8	IMA-CS-C8-6/12	6-12"	11/12/2007	166
C8	IMA-CS-C8-0/6	0-6"	11/6/2007	403
C9	IMA-CS-C9-0/6	0-6"	11/6/2007	238
C10	IMA-CS-C10-0/6	0-6"	11/6/2007	251
C20	IMA-CS-C20-18/24	18-24"	1/24/2008	40.5
C20	IMA-CS-C20-12/18 MS/MSD	12-18"	1/9/2008	690
C21	IMA-CS-C21-DUP	0-6"	12/3/2007	71.1
C21	IMA-CS-C21-0/6	0-6"	12/3/2007	80.8
C22	IMA-CS-C22-0/6	0-6"	11/27/2007	157
C23	IMA-CS-C23-0/6	0-6"	11/26/2007	94.1
C23	IMA-CS-C23-0/6 DUP	0-6"	11/26/2007	103
C24	IMA-CS-C24-0/6	0-6"	11/19/2007	35.5
C25	IMA-CS-C25-0/6	0-6"	11/19/2007	38.5
D6	IMA-CS-D6-0/6	0-6"	10/30/2007	208
D9	IMA-CS-D9-0/6	0-6"	11/6/2007	63.1
D10	IMA-CS-D10-6/12 (DUP)	6-12"	11/13/2007	49.6
D10	IMA-CS-D10-6/12	6-12"	11/13/2007	67
D10	IMA-CS-D10-0/6	0-6"	11/6/2007	466
D17	IMA-CS- D17 18/24	18-24"	2/14/2008	95.8

TABLE 3
Former IMACO Site Remediation
Soil Sample Analytical Results
HEPACO Project No. 7420039

Analytical Method---->				EPA 6010
Parameter ---------->				Lead
Standard ---------->				400
Site Grid	Sample	Depth	Date	mg/kg
D18	IMA-CS-D18-12/18	12-18"	1/4/2008	368
D18	IMA-CS-D18-18/24	18-24"	2/8/2008	473
D18	IMA-CS-D18-DUP	18-24"	2/8/2008	1180
D19	IMA-CS-D19-12/18	12-18"	1/7/2008	23.7
D19	IMA-CS-D19-12/18 DUP	12-18"	1/7/2008	28.7
D19	IMA-CS-D19-18/24	18-24"	2/8/2008	112
D20	IMA-CS-D20-12/18	12-18"	1/9/2008	38.9
D21	IMA-CS-D21-0/6	0-6"	12/3/2007	141
D22	IMA-CS-D22-0/6	0-6"	11/29/2007	68.3
D23	IMA-CS-D23-0/6	0-6"	11/29/2007	120
D24	IMA-CS-D24-0/6	0-6"	11/19/2007	43.4
D25	IMA-CS-D25-0/6	0-6"	11/19/2007	89.3
E9	IMA-CS-E9-0/6	0-6"	11/7/2007	244
E18	IMA-CS-E18-18/24	18-24"	1/7/2008	34300
E-18	IMA-CS-E18-18/24	18-24"	2/8/2008	11,000
E19	IMA-CS-E19-18/24	18-24"	1/7/2008	6940
E-19	IMA-CS-E19-18/24	18-24"	2/8/2008	2,850
E20	IMA-CS-E20-12/18	12-18"	1/7/2008	170
E21	IMA-CS-E21-0/6	0-6"	12/3/2007	111
E22	IMA-CS-E22-0/6	0-6"	11/29/2007	104
E23	IMA-CS-E23-0/6	0-6"	11/29/2007	180
E24	IMA-CS-E24-0/6	0-6"	11/19/2007	270
E25	IMA-CS-E25-0/6	0-6"	11/19/2007	97
F9	IMA-CS-F9-12/18	12-18"	11/6/2007	224
F17	IMA-CS-F17-18/24	18-24"	1/8/2008	3830
F-18	IMA-CS-F18-18/24	18-24"	2/8/2008	1,290
F19	IMA-CS-F19-18/24	18-24"	1/8/2008	1530
F-20	IMA-CS-F20-18/24	18-24"	2/8/2008	1,530
F21	MA-CS-F21-0/6	0-6"	12/3/2007	85.6
F22	IMA-CS-F22-0/6	0-6"	12/11/2007	11.3
F23	IMA-CS-F23-0/6	0-6"	11/29/2007	125
F24	IMA-CS-F24-6/12	6-12"	11/27/2007	88
F25	IMA-CS-F25-0/6	0-6"	11/26/2007	158
G9	IMA-CS-G9-18/24	18-24"	11/13/2007	123
G9	IMA-CS-G9-12/18	12-18"	11/6/2007	1580
G17	IMA-CS-G17-18/24	18-24"	2/8/2008	5,490
G18	IMA-CS-G18-18/24	18-24"	1/23/2008	1,480
G19	IMA-CS-G19-18/24	18-24"	1/23/2008	1,070
G20	IMA-CS-G20-18/24	18-24"	1/23/2008	31,700
G21	IMA-CS-G21-0/6	0-6"	12/3/2007	75.4

TABLE 3
Former IMACO Site Remediation
Soil Sample Analytical Results
HEPACO Project No. 7420039

Analytical Method---->				EPA 6010
Parameter ---------->				Lead
Standard ---------->				400
Site Grid	Sample	Depth	Date	mg/kg
G22	IMA-CS-G22-DUP	0-6"	12/11/2007	52.6
G22	IMA-CS-G22-0/6	0-6"	12/11/2007	54.4
G23	IMA-CS-G23-0/6	0-6"	12/11/2007	73.6
G24	IMA-CS-G24-0/6	0-6"	11/27/2007	222
G25	IMA-CS-G25-0/6	0-6"	11/26/2007	256
H9	IMA-CS-H9-6/12	6-12"	11/13/2007	281
H9	IMA-CS-H9-0/6	0-6"	11/6/2007	459
H10	IMA-CS-H10-12/18	12-18"	11/7/2007	351
H11	IMA-CS-HH-6/12	6-12"	11/8/2007	161
H12	IMA-CS-H12-6/12	6-12"	11/9/2007	258
H13	IMA-CS-H13-18/24	18-24"	11/13/2007	309
H14	IMA-CS-H14-12/18	12-18"	11/14/2007	323
H15	IMA-CS-H15-18/24	18-24"	11/16/2007	230
H16	IMA-CS-H16-18/24	18-24"	2/7/2008	67,500
H17	IMA-CS- H17-18/24	18-24"	2/14/2008	21800
H18A	IMA-CS-HA/18-6/12	6-12"	1/24/2008	172
H18A	IMA-CS-HA/18-6/12 DUP	6-12"	1/24/2008	227
H18B	IMA-CS-H18B-18/24	18-24"	1/24/2008	11,700
H19A	IMA-CS-HA/19-6/12	6-12"	1/24/2008	43.3
H19B	IMA-CS-H19B-18/24	18-24"	1/24/2008	7,970
H20	IMA-CS-H20-18/24	18-24"	1/24/2008	3,070
H21	IMA-CS-H21-0/6	0-6"	11/29/2007	319
H22	IMA-CS-H22-12/18	12-18"	12/11/2007	23.8
H23	IMA-CS-H23-6/12	6-12"	12/11/2007	33
H24	IMA-CS-H24-0/6	0-6"	11/27/2007	307
H25	IMA-CS-H25-0/6	0-6"	11/26/2007	227
I9	IMA-CS-I9-0/6	0-6"	11/6/2007	238
I10	IMA-CS-I10-6/12	6-12"	11/8/2007	78.5
I11	IMA-CS-I11-6/12	6-12"	11/8/2007	164
I12	IMA-CS-I12-12/18	12-18"	11/8/2007	29.7
I13	IMA-CS-I3-6/12	6-12"	11/14/2007	171
I14	IMA-CS-I14-12/18	12-18"	11/15/2007	42.6
I15	IMA-CS-I15-12/18	12-18"	11/16/2007	74.5
I16	IMA-CS-I16-18/24	18-24"	2/7/2008	6,040
I17	IMA-CS-I17-12/18	12-18"	1/24/2008	264
I18	IMA-CS-I18-6/12	6-12"	1/24/2008	93.2
I19	IMA-CS-I19-6/12	6-12"	1/24/2008	29.3
I20	IMA-CS-I20-18/24	18-24"	1/30/2008	4,070
I-J21	IMA-CS-I-J21-6/12 DUP	6-12"	1/16/2008	119
I-J21	IMA-CS-I-J21-6/12	6-12"	1/16/2008	207

TABLE 3
Former IMACO Site Remediation
Soil Sample Analytical Results
HEPACO Project No. 7420039

Analytical Method---->				EPA 6010
Parameter ---------->				Lead
Standard ---------->				400
Site Grid	**Sample**	**Depth**	**Date**	**mg/kg**
I-J22	IMA-CS-IJ22-18/24	18-24"	1/23/2008	751
J9	IMA-CS-J9-12/18 DUP	12-18"	11/5/2007	44
J9	IMA-CS-J9-12/18	12-18"	11/5/2007	47.5
J10	IMA-CS-J10-0/6	0-6"	11/8/2007	80.3
J11	IMA-CS-J11-6/12	6-12"	11/8/2007	119
J12	IMA-CS-J12-12/18	12-18"	11/28/2007	20.4
J12	IMA-CS-J12-0/6	0-6"	11/19/2007	12800
J13	IMA-CS-J13-6/12	6-12"	11/14/2007	27.9
J14A	IMA-CS-J14A-0/6	0-6"	11/15/2007	161
J14B	IMA-CS-J14B-6/12	6-12"	11/15/2007	92.2
J15	IMA-CS-J15-6/12	6-12"	11/15/2007	101
J16	IMA-CS-J16-12/18	12-18"	1/14/2008	163
J17	IMA-CS-J17-6/12	6-12"	1/16/2008	40.5
J18	IMA-CS-J18-6/12	6-12"	1/23/2008	19.4
J19	IMA-CS-J19-6/12	6-12"	1/22/2008	149
J20	IMA-CS-J20-6/12	6-12"	1/22/2008	23.5
K9	IMA-CS-K9-0/6	0-6"	11/7/2007	278
K10	IMA-CS-K10-DUP	0-6"	11/8/2007	29.6
K10	IMA-CS-K10-0/6	0-6"	11/8/2007	32.2
K11	IMA-CS-K11-6/12	6-12"	11/20/2007	261
K11	IMA-CS-K11-0/6	0-6"	11/8/2007	287
K12	IMA-CS-K12-6/12	6-12"	11/12/2007	42.8
K13	IMA-CS-K13-0/6	0-6"	11/13/2007	290
K14	IMA-CS-K14-0/6 DUP	0-6"	11/14/2007	55.2
K14	IMA-CS-K14-0/6	0-6"	11/14/2007	85.8
K14B	IMA-CS-K14B-6/12	6-12"	11/14/2007	82.2
K15	IMA-CS-K15-6/12	6-12"	11/16/2007	25.3
K16	IMA-CS-K16-12/18	12-18"	1/14/2008	68.3
K-L 17	IMA-CS-K17 6/12	6-12"	1/16/2008	131
K18	IMA-CS-K18-6/12	6-12"	1/22/2008	66.6
K19	IMA-CS-K19-6/12	6-12"	1/24/2008	106
K19	IMA-CS-K19-18/24	18-24"	1/22/2008	42.9
K22	IMA-CS-K22-0/6	0-6"	11/15/2007	296
L5	IMA-CS-L5-0/6	0-6"	11/7/2007	143
L9	IMA-CS-L9-0/6	0-6"	11/7/2007	28.4
L10	IMA-CS-L10-0/6	0-6"	11/8/2007	98.7
L11	IMA-CS-L11-6/12	6-12"	11/20/2007	191
L11	IMA-CS-L11-0/6	0-6"	11/8/2007	220
L12	IMA-CS-L12-0/6	0-6"	11/14/2007	192
L13	IMA-CS-L13-0/6	0-6"	11/13/2007	106

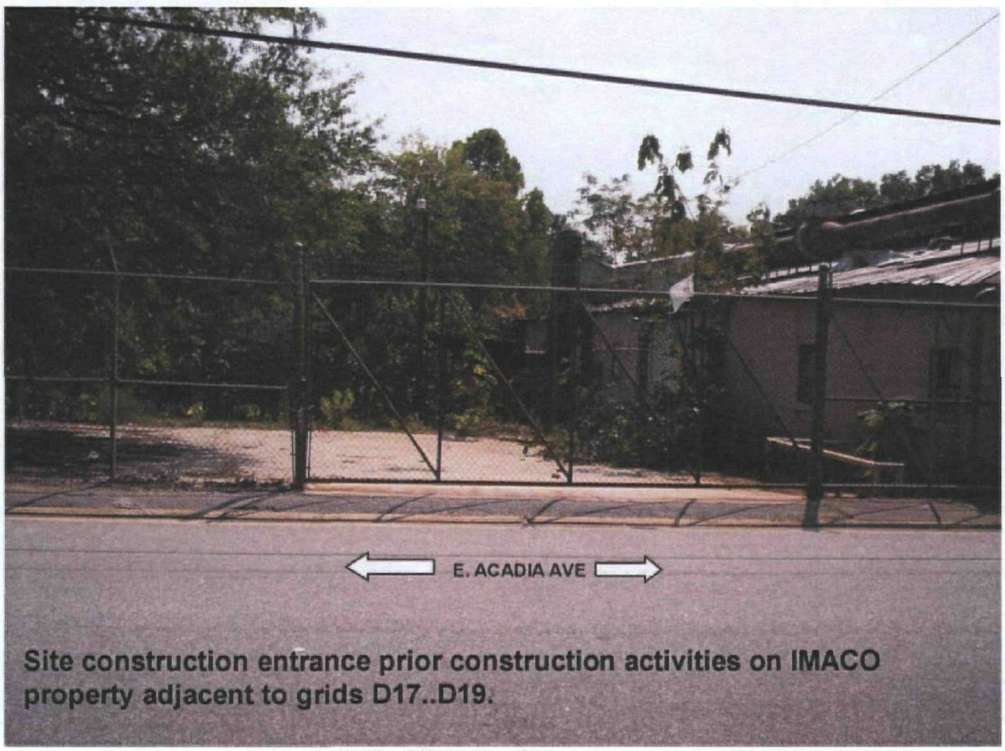
TABLE 3
Former IMACO Site Remediation
Soil Sample Analytical Results
HEPACO Project No. 7420039

Analytical Method---->				EPA 6010
Parameter ---------->				Lead
Standard ---------->				400
Site Grid	Sample	Depth	Date	mg/kg
L14	IMA-CS-L14-0/6	0-6"	11/14/2007	174
L14B	IMA-CS-L14B-6/12	6-12"	11/14/2007	107
L15	IMA-CS-L15-6/12	6-12"	11/15/2007	160
L16	IMA-CS-L16-12/18	12-18"	1/8/2008	77.2
L22	IMA-CS-L22-DUP	6-12"	11/15/2007	155
L22	IMA-CS-L22-6/12	6-12"	11/15/2007	160
M5	IMA-CS-M5-0/6	0-6"	11/7/2007	66.2
M9	IMA-CS-M9-0/6	0-6"	11/7/2007	49.4
M10	IMA-CS-M10-0/6	0-6"	11/8/2007	231
M11	IMA-CS-M11-0/6	0-6"	11/8/2007	120
M12	IMA-CS-M12-0/6	0-6"	11/12/2007	71.5
M13	IMA-CS-M13-6/12	6-12"	11/13/2007	101
M14	IMA-CS-M14-6/12	6-12"	11/14/2007	18.5
M14	IMA-CS-M146-12/18	12-18"	11/28/2007	62.4
M14B	IMA-CS-M14B-6/12	6-12"	11/14/2007	649
M15	IMA-CS-M15-6/12	6-12"	12/5/2007	89.2
N1	IMA-CS-N1-6/12	6-12"	11/20/2007	87.4
N1	IMA-CS-N1-0/6	0-6"	11/6/2007	464
N4	IMA-CS-N4-0/6	0-6"	11/7/2007	110
N5	IMA-CS-N5-0/6	0-6"	11/7/2007	113
N6	IMA-CS-N6-6/12	6-12"	11/20/2007	59.8
N7	IMA-CS-N7-0/6	0-6"	11/7/2007	58.9
N8	IMA-CS-N8-0/6	0-6"	11/7/2007	71.2
N9	IMA-CS-N9-0/6	0-6"	11/7/2007	79.8
N10	IMA-CS-N10-0/6	0-6"	11/8/2007	226
N11	IMA-CS-N11-0/6	0-6"	11/8/2007	260
O5	IMA-CS-O5-6/12	6-12"	11/7/2007	159

Note:
In grids with samples at multiple depths, the shallower samples have been excavated.

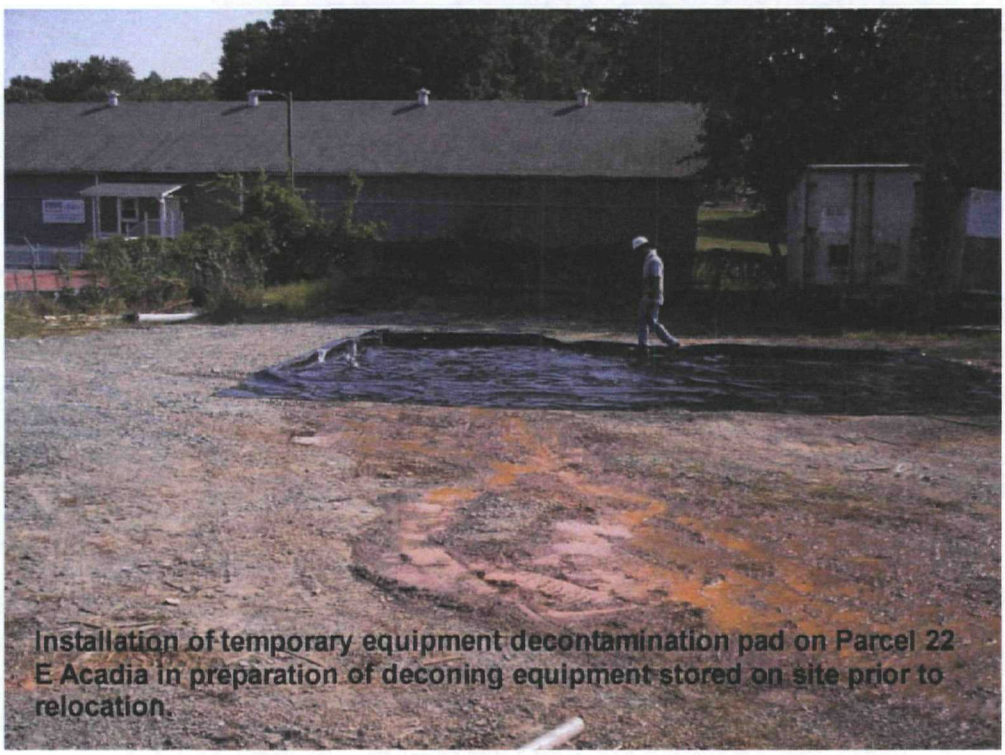
TABLE 4
Former IMACO Site Remediation
Stream Sediment Sample Analytical Results
HEPACO Project No. 7420039

Analytical Method---->				EPA 6010
Parameter ---------->				Lead
Standard ---------->				400
Site Grid	**Sample**	**Depth**	**Date**	**mg/kg**
L-18	IMA-CS-L18-0/6	0-6"	1/15/2008	56.1



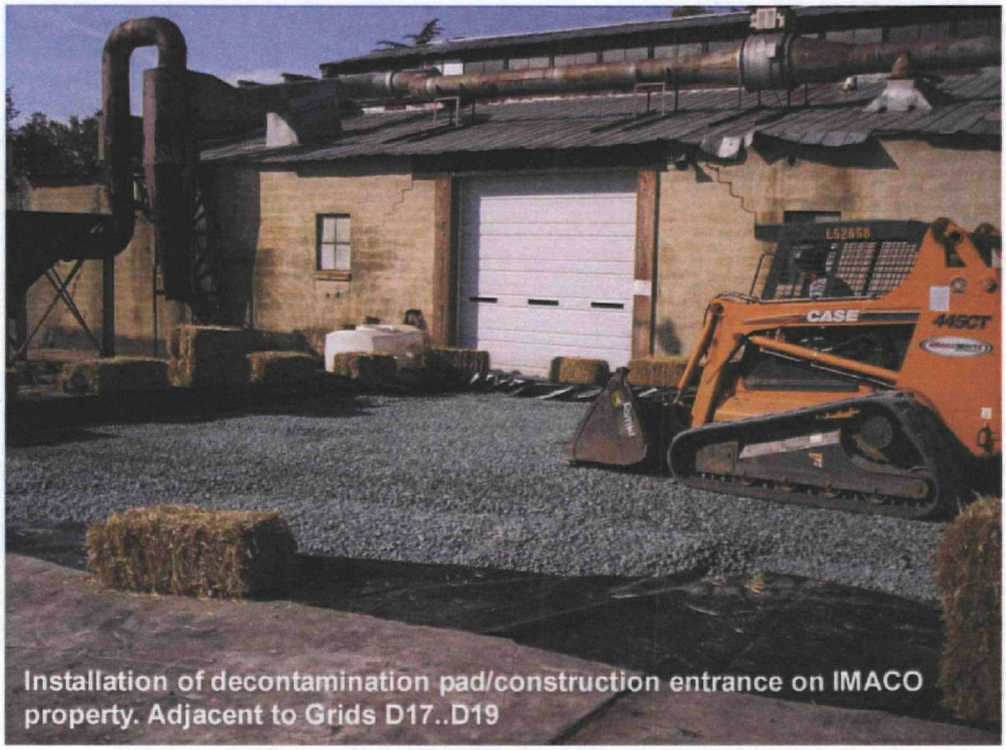
Site construction entrance prior construction activities on IMACO property adjacent to grids D17..D19.

Photograph 1



Installation of temporary equipment decontamination pad on Parcel 22 E Acadia in preparation of deconing equipment stored on site prior to relocation.

Photograph 2



Installation of decontamination pad/construction entrance on IMACO property. Adjacent to Grids D17..D19

Photograph 3

Decontamination of equipment storage trailers prior to relocation from Parcel 22E Acadia.

Photograph 4

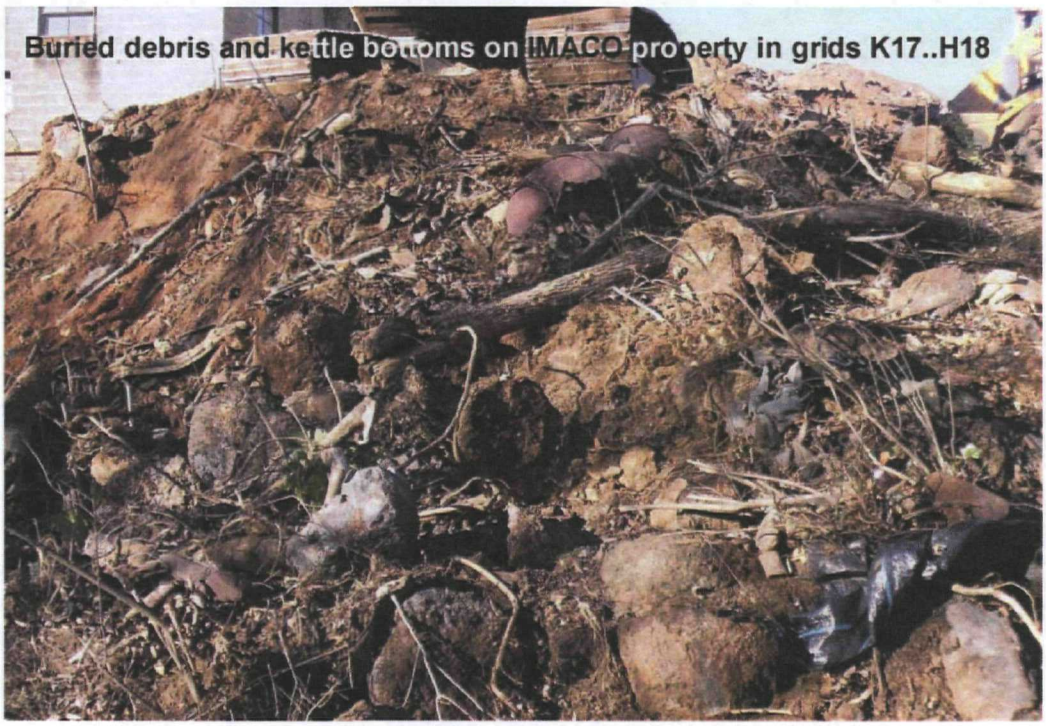
Photograph 5

Photograph 6

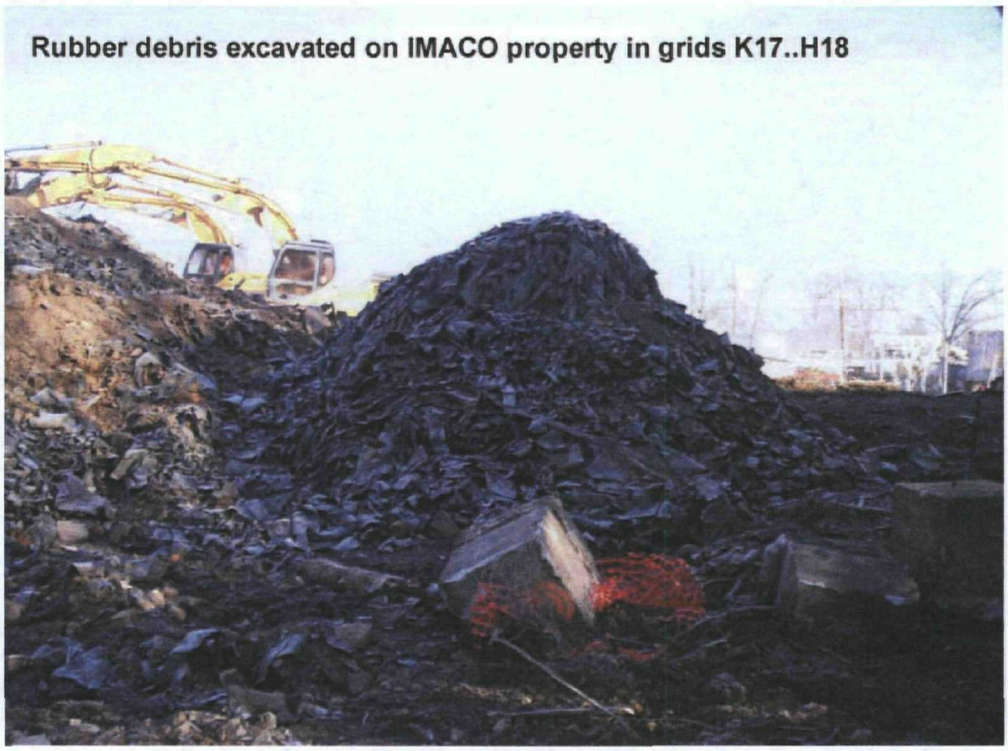
Photograph 7

Photograph 8

Photograph 9



Photograph 10



Photograph 11

Photograph 12

Soil sample preparation/screening prior to Type II and Type III sampling

Photograph 13

Type II soil sampling activities using XRF.

Photograph 14

Photograph 15

Photograph 16

Photograph 17

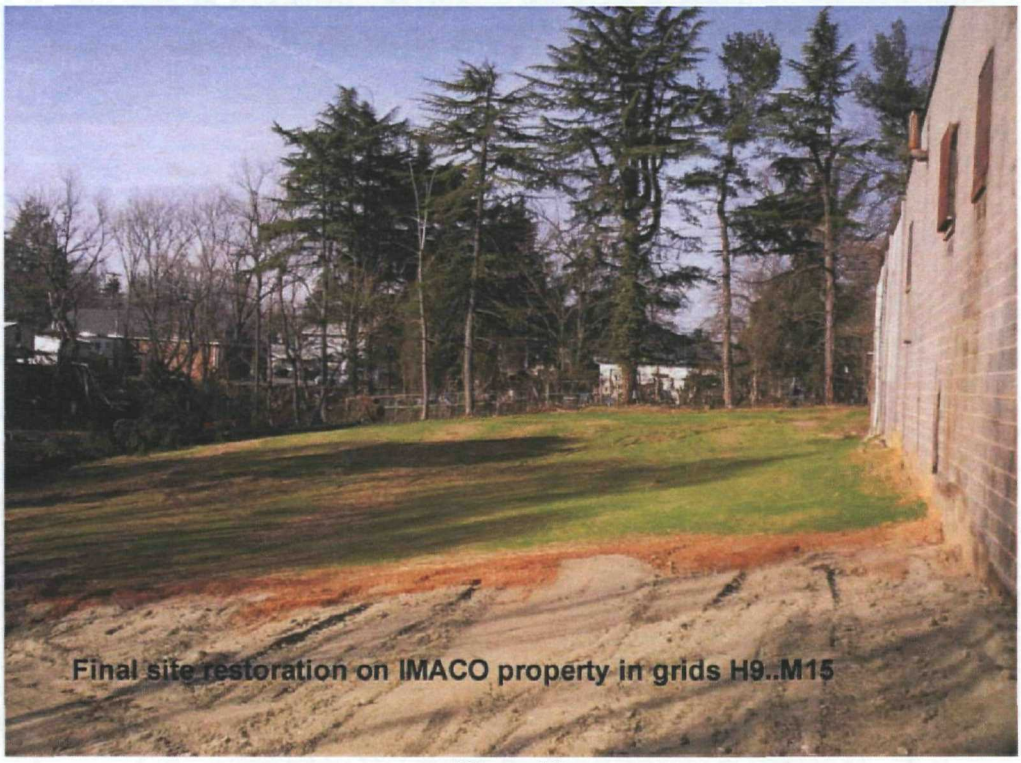


Photo 18

HEPACO Project No. 7420039

BENCH-SCALE TREATABILITY TESTING
FOR
REMOVAL ACTION CONTRACT
FORMER INDUSTRIAL METAL ALLOY SITE
WINSTON-SALEM, NORTH CAROLINA

PREPARED FOR:

NK HOLDINGS, LLC

PREPARED BY:

HEPACO™

Serious experience for serious times.™

HEPACO, Inc.
2711 Burch Drive
Charlotte, N.C. 28269

September 26, 2007

TABLE OF CONTENTS

1.0 INTRODUCTORY SUMMARY

On September 11, 2007 HEPACO representative, Mr. James Kessler, visited the former Industrial Metal Alloy Site (IMACO) located at 20 E. Acadia Avenue, Winston-Salem, North Carolina to collect soil samples from the site. The soil samples where specifically taken in order to conduct a bench-scale stabilization treatability study for the effectiveness of utilizing Triple Superphosphate (0-45-0) fertilizer as a possible treatment chemical for the lead impacted soils located at the site.

2.0 SELECTION AND DESCRIPTION OF TEST SAMPLES

Upon review of previous testing and analysis that had been completed at the site, HEPACO collected soil samples from areas of the site that represented the highest lead content, the lowest lead content and the average lead content. The soil from these locations where collected with a shovel from 0 to 6 inches below grade and placed into one (1) 5-gallon plastic pail to produce one composite sample from the site. The soil sample was transported to HEPACO's warehouse located in Charlotte, North Carolina for bench-scale testing.

3.0 MIX DESIGNS

Based on past experience with lead stabilization projects, HEPACO chose to perform the bench-scale treatability study using triple superphosphate (0-45-0) fertilizer. A sample of triple superphosphate was collected from Weaver Fertilizer Company located in Winston-Salem, North Carolina to perform the bench-scale testing.

The soil was tested with three different doses of the triple superphosphate. Each mix design represents the ratio on a percent basis, of the weight of reagent compared to the weight of the triple superphosphate. The treatment mix is defined as the weight of reagent plus the weight of the soil sample. Therefore, each mix design represents:

$$\frac{\text{(reagent weight)}}{\text{(reagent weight + soil weight)}}$$

The treatability mix designs are shown in **Table 1** below. During testing, no water was added to the treatment mixes, nor were any of the samples kiln-dried.

Table 1 - IMACO Stabilization Treatability Mix Design Summary

Soil Sample ID	Reagent Name	Mix Ratio (reagent dose/mix weight)	Reagent Dose (g)	Soil Weight (g)	Mix Weight (g)
S1-1.5	Triple Superphosphate	1.6%	10	606	616
S2-3	Triple Superphosphate	3%	20	640	660
S3-4.5	Triple Superphosphate	4.5%	26	546	572

4.0 TREATABILITY TESTING PROCEDURES

The soil sample was removed from the 5-gallon plastic pail and placed into a stainless steel pan. The soil was thoroughly mixed and pulverized by hand to form a homogenous soil sample. Rocks and debris larger than ½-inch in diameter were removed from the sample and discarded. The remaining sample was divided into 4 equal quadrants. Equal amounts of soil was collected from each quadrant for each sample and placed into four separate stainless steel pans. The soil samples were labeled CS-0, S1-1.5, S2-3 and S3-4.5. Once each sample was collected they were prepared using the following general procedures

1) Aluminum muffin pan was weighed using electronic scale

2) Soil material was added to aluminum muffin pan and reweighed using electronic scale.

3) Aluminum pan was weighed using electronic scale

4) Reagent was added to aluminum muffin pan and weighed using an electronic scale.

5) Reagent was added to the soil material and thoroughly mixed by hand (using nitrile gloves) to form each treatment mix.

6) The muffin pans containing each treatment mix was allowed to sit at room temperature for 72 hours to cure.

At the end of the 72-hour curing time, samples of the treatment mixes were collected including the control mix, and were sent to Pace Analytical Laboratories for TCLP analysis for RCRA metals.

5.0 TREATABILITY TEST RESULTS

The TCLP data for the three mixes and the control sample are summarized in **Table 2** below. The laboratory data for the treated mix analysis are provided in Attachment A.

As expected, all TCLP results for the RCRA metals except lead were below their respective regulatory limits. Lead was successfully stabilized in all three of the mix designs at 1.6%, 3% and 4.5%.

Table 2 – TCLP Results for the IMACO Site Treatability Mixes

Soil Sample ID	Reagent Name	Mix Ratio (%)	Lead (mg/l) RL-5	Arsenic (mg/l) RL-5	Barium (mg/l) RL-100	Cadmium (mg/l) RL-1	Chromium (mg/l) RL-5	Mercury (mg/l) RL-0.2	Selenium (mg/l) RL-1	Silver (mg/l) RL-5
CS-0	None (control)	NA	**327**	0.027	0.40	0.093	ND	ND	ND	0.10
S1-1.5	Triple Superphosphate	1.6%	4.3	0.089	0.098	0.039	ND	ND	ND	ND
S2-3	Triple Superphosphate	3%	1.5	0.16	0.070	0.028	ND	ND	ND	ND
S3-4.5	Triple Superphosphate	4.5%	0.70	0.16	0.054	0.025	ND	ND	ND	0.041

RL – Regulatory Level
Bold Results Indicate Samples That Exceed The TCLP Regulatory Limit

6.0 CONCLUSION

Bench-scale treatability testing was conducted to assess whether the lead-impacted soil at the IMACO Site could be effectively stabilized to pass TCLP test utilizing triple superphosphate (0-45-0) fertilizer. The testing indicated that the lead and other metals can be stabilized utilizing the selected reagent. HEPACO intentionally collected a soil sample to perform the treatability test that would represent what the expected average TCLP lead concentrations would actually be once full-scale treatment activities would begin at the site. The highest TCLP lead concentration reported to date at the site has been 1,150 mg/l. The TCLP lead concentration in the control sample used in the bench-scale test was 327 mg/l. Based on actual field experience we believe the TCLP lead concentration of the control sample used in the bench-scale test is representative of the average TCLP lead concentration that can be expected at the site during full-scale stabilization activities.

Based on the information gained from the bench-scale test HEPACO is proposing to utilize triple superphosphate as the reagent chemical during full-scale stabilization activities at a mix ratio of 3% by weight. Each ton of soil would require 60 pounds of triple superphosphate (0-45-0) fertilizer, assuming the average TCLP concentrations in untreated soil that were identified in this study. Specific product information for triple superphosphate (0-45-0) is included as Attachment B.

ATTACHMENT A

Laboratory Data

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

September 21, 2007

Mr. James Kessler
HEPACO
2711 Burch Dr.
Charlotte, NC 28269

RE: Project: IMACO 7420039
Pace Project No.: 923792

Dear Mr. Kessler:
Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2007. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Huntersville laboratory unless otherwise footnoted. All Microbiological analyses were performed at the laboratory where the samples were received.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Godwin

kevin.godwin@pacelabs.com
Project Manager

Enclosures

Pace Analytical®
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CERTIFICATIONS

Project: IMACO 7420039
Pace Project No.: 923792

Charlotte Certification IDs
North Carolina Wastewater Certification Number: 12
North Carolina Field Services Certification Number: 5342
South Carolina Certification Number: 990060001
South Carolina Bioassay Certification Number: 990060003
Tennessee Certification Number: 04010
Virginia Certification Number: 00213
Florida/NELAP Certification Number: E87627
Kansas Certification Number: E-10364
Louisiana/LELAP Certification Number: 04034
North Carolina Drinking Water Certification Number: 37706

Asheville Certification IDs
Florida/NELAP Certification Number: E87648
Louisiana/LELAP Certification Number: 03095
New Jersey Certification Number: NC011
North Carolina Drinking Water Certification Number: 37712
North Carolina Wastewater Certification Number: 40
North Carolina Bioassay Certification Number: 9
Pennsylvania Certification Number: 68-03578
South Carolina Certification Number: 990300001
South Carolina Bioassay Certification Number: 990300002
Tennessee Certification Number: 2980
Virginia Certification Number: 00072

Eden Certification IDs
North Carolina Drinking Water Certification Number: 37738
Virginia Drinking Water Certification Number: 00424
North Carolina Wastewater Certification Number: 633

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SAMPLE SUMMARY

Project: IMACO 7420039
Pace Project No.: 923792

Lab ID	Sample ID	Matrix	Date Collected	Date Received
923792001	CS-0	Solid	09/11/07 15:15	09/18/07 08:55
923792002	S1-1.5	Solid	09/17/07 16:30	09/18/07 08:55
923792003	S2-3	Solid	09/17/07 16:35	09/18/07 08:55
923792004	S3-4.5	Solid	09/17/07 16:40	09/18/07 08:55

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(704)875-9092

SAMPLE ANALYTE COUNT

Project: IMACO 7420039
Pace Project No.: 923792

Lab ID	Sample ID	Method	Analytes Reported
923792001	CS-0	EPA 6010	7
		EPA 7470	1
923792002	S1-1.5	EPA 6010	7
		EPA 7470	1
923792003	S2-3	EPA 6010	7
		EPA 7470	1
923792004	S3-4.5	EPA 6010	7
		EPA 7470	1

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ANALYTICAL RESULTS

Project: IMACO 7420039
Pace Project No.: 923792

Sample: CS-0 **Lab ID: 923792001** Collected: 09/11/07 15:15 Received: 09/18/07 08:55 Matrix: Solid

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Arsenic	**0.027**	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-38-2	
Barium	**0.40**	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-39-3	
Cadmium	**0.093**	mg/L	0.0050	1	09/21/07 10:50	09/21/07 13:58	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-47-3	
Lead	**327**	mg/L	0.50	20	09/21/07 10:50	09/21/07 15:34	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 13:58	7782-49-2	
Silver	**0.10**	mg/L	0.025	1	09/21/07 10:50	09/21/07 13:58	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:25	7439-97-6	

Sample: S1-1.5 **Lab ID: 923792002** Collected: 09/17/07 16:30 Received: 09/18/07 08:55 Matrix: Solid

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
[illegible]senic	**0.089**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-38-2	
[illegible]um	**0.098**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-39-3	
Cadmium	**0.039**	mg/L	0.0050	1	09/21/07 10:50	09/21/07 14:06	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-47-3	
Lead	**4.3**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 14:06	7782-49-2	
Silver	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:06	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:30	7439-97-6	

Sample: S2-3 **Lab ID: 923792003** Collected: 09/17/07 16:35 Received: 09/18/07 08:55 Matrix: Solid

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Arsenic	**0.16**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-38-2	
Barium	**0.070**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-39-3	
Cadmium	**0.028**	mg/L	0.0050	1	09/21/07 10:50	09/21/07 14:14	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-47-3	
Lead	**1.5**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 14:14	7782-49-2	
Silver	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:14	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:34	7439-97-6	

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ANALYTICAL RESULTS

Project: IMACO 7420039
Pace Project No.: 923792

Sample: S3-4.5 **Lab ID: 923792004** Collected: 09/17/07 16:40 Received: 09/18/07 08:55 Matrix: Solid

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, TCLP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Arsenic	**0.16**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-38-2	
Barium	**0.054**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-39-3	
Cadmium	**0.025**	mg/L	0.0050	1	09/21/07 10:50	09/21/07 14:18	7440-43-9	
Chromium	ND	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-47-3	
Lead	**0.70**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7439-92-1	
Selenium	ND	mg/L	0.050	1	09/21/07 10:50	09/21/07 14:18	7782-49-2	
Silver	**0.041**	mg/L	0.025	1	09/21/07 10:50	09/21/07 14:18	7440-22-4	
7470 Mercury, TCLP	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	0.20	1	09/21/07 14:16	09/21/07 15:37	7439-97-6	

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QUALITY CONTROL DATA

Project: IMACO 7420039
Pace Project No.: 923792

QC Batch: MERP/1069 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP
Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

METHOD BLANK: 18702
Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Mercury	ug/L	ND	0.20	

LABORATORY CONTROL SAMPLE: 18703

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.2	90	80-120	

MATRIX SPIKE SAMPLE: 18704

Parameter	Units	923792001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	2.5	2.5	98	75-125	

SAMPLE DUPLICATE: 18705

Parameter	Units	923792002 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	ug/L	ND	.1J	4	20	

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QUALITY CONTROL DATA

Project: IMACO 7420039
Pace Project No.: 923792

QC Batch: MPRP/1204 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET TCLP
Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

METHOD BLANK: 18725
Associated Lab Samples: 923792001, 923792002, 923792003, 923792004

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Arsenic	mg/L	ND	0.025	
Barium	mg/L	ND	0.025	
Cadmium	mg/L	ND	0.0050	
Chromium	mg/L	ND	0.025	
Lead	mg/L	ND	0.025	
Selenium	mg/L	ND	0.050	
Silver	mg/L	ND	0.025	

LABORATORY CONTROL SAMPLE: 18726

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	2.5	2.6	106	80-120	
Barium	mg/L	2.5	2.2	87	80-120	
Cadmium	mg/L	2.5	2.4	97	80-120	
Chromium	mg/L	2.5	2.4	97	80-120	
Lead	mg/L	2.5	2.3	93	80-120	
Selenium	mg/L	2.5	2.7	108	80-120	
Silver	mg/L	1.2	1.3	101	80-120	

MATRIX SPIKE SAMPLE: 18727

Parameter	Units	923792001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.027	2.5	2.6	104	75-125	
Barium	mg/L	0.40	2.5	2.5	85	75-125	
Cadmium	mg/L	0.093	2.5	2.5	96	75-125	
Chromium	mg/L	ND	2.5	2.4	98	75-125	
Lead	mg/L	327	2.5	326	-36	75-125	M3
Selenium	mg/L	ND	2.5	2.6	105	75-125	
Silver	mg/L	0.10	1.2	1.3	96	75-125	

SAMPLE DUPLICATE: 18728

Parameter	Units	923792002 Result	Dup Result	RPD	Max RPD	Qualifiers
Arsenic	mg/L	0.089	0.080	11	20	
Barium	mg/L	0.098	0.099	1	20	
Cadmium	mg/L	0.039	0.039	.1	20	
Chromium	mg/L	ND	.005J	70	20	M3
Lead	mg/L	4.3	4.3	.6	20	

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QUALITY CONTROL DATA

Project: IMACO 7420039
Pace Project No.: 923792

SAMPLE DUPLICATE: 18728

Parameter	Units	923792002 Result	Dup Result	RPD	Max RPD	Qualifiers
Selenium	mg/L	ND	.02J	34	20	M3
Silver	mg/L	ND	.018J	13	20	

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QUALIFIERS

Project: IMACO 7420039
Pace Project No.: 923792

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

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ANALYTE QUALIFIERS

M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1138037

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: EMACO	Report To: HEPACO, Inc	Attention: HEPACO, Inc
Address: 20 E Acadia St. Winston-Salem, NC	Copy To:	Company Name: Mr. James Kessler
Email To: j.kessler@hepaco.com	Purchase Order No.:	Address: 2711 Bunch Dr, Charlotte NC 28269
Phone: 704.553.7787 Fax: 704.553.9224	Project Name: EMACO	Pace Quote Reference:
Requested Due Date/TAT: 72 hr Rush, Rush	Project Number: ~~742039~~ 7420039	Pace Project Manager:
		Pace Profile #: 1825-1

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☑ RCRA ☐ OTHER

Site Location STATE: NC

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	TCLP RCRA 8 Metals	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	C5-0	SL	C	9/11/07	1500	9/11/07	1515		1	✓								✓	✓		92379 2001
2	S1-1.5	SL	C	9/11/07	1520	9/11/07	1630		1	✓								✓	✓		
3	S2-3	SL	C	9/11/07	1525	9/11/07	1625		1	✓								✓	✓		2
4	S3-4.5	SL	C	9/11/07	1530	9/11/07	1640		1	✓								✓	✓		4
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Andy Kellum	18SEP07	8:00	JMOORE	9/18	855	3.6	4	N	4

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: James B Kessler

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/17/07

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% ...

ATTACHMENT B

Product Information
for
Triple Superphosphate (0-45-0)

Simplot

PRODUCT DATA SHEET

TRIPLE SUPERPHOSPHATE
0-45-0

GUARANTEED ANALYSIS

Available Phosphate (P_2O_5) 45.0%
Calcium (Ca) 15.5%

Derived from Monocalcium Phosphate and Dicalcium Phosphate.

Warning: This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, requires notification of potential exposure to substances identified by the State of California as causing cancer, birth defects or other reproductive harm.	**Information regarding the contents and levels of metals in this product is available on the internet at http://www.regulatory-info-jr.com**

PHYSICAL CHARACTERISTICS

Lbs. of Nutrients/Ton:	Phosphate (P_2O_5)	900
	Calcium (Ca)	340
	Magnesium (Mg)	12
	Sulfur (S)	16
	Combined Nutrient Total	**1268**
Angle of Repose:	30°	
Bulk Density:	59.4 lbs. per cubic foot (poured) 62.7 lbs. per cubic foot (packed)	
pH (20% solution):	3.1	
Solubility in Water:	90% (% of total P_2O_5)	
Granule Size:	87% passes through a 4.00mm (5 Tyler) and is retained by a 2.00mm (9 Tyler) screen. 100% retained by a 1.18mm (14 Tyler) screen. Average granule size 2.37mm.	

USES

1. Highly effective in eliminating phosphorus deficiencies in all crops, under all soil conditions. It is uniformly sized and blends well with most fertilizers. It is a preferred source of P_2O_5 in high analysis bulk blends.
2. Most effective when applied preplant in bands or broadcast incorporated to alfalfa and other legumes. However, it can be applied effectively as a topdressing on established stands anytime during the year that soil and weather conditions permit. For annual crops it is most effective when tilled in prior to planting.
3. For specific crop recommendations, see your local distributor.

ADVANTAGES

1. Its high concentration of P_2O_5 in uniform, free-flowing granules assures even applications to the field. It stores exceptionally well.

SAFETY

Triple Superphosphate–Simplot 0-45-0. Slight abrasion may result from eye contact or prolonged skin contact. Not generally considered toxic. Nonflammable. 0-45-0 is not regulated by DOT.

Material Safety Data Sheet
J. R. Simplot Company
AgriBusiness

Trade Name: Triple Superphosphate **M12030**
Registration No: None

SECTION 1 CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer or Formulator: J.R. Simplot Company
P.O. Box 70013
Boise, ID 83707
Emergency Phone - Chemtrec: 1-800-424-9300

Product Name: Triple Superphosphate
Common Name: 0-45-0
Chemical Type: Inorganic Chemical Fertilizer

SECTION 2 COMPOSITION INFORMATION

Chemical Name and Synonyms	C.A.S. No.	Chemical Formula	WT%	TLV	PEL
			Hazardous		
None listed					
			Non-Hazardous		
This is a homogeneous granular product derived from:			100%		
Mono-calcium Phosphate	7758-23-8	$Ca.2H_3O_4P$		10 mg/m^3 Nuisance Dust	15 mg/m^3 Nuisance Dust
Mono-dicalcium Phosphate	N/A	N/A		Not listed	Not available

SECTION 3 HAZARDS IDENTIFICATION

Ingestion: Minimal hazard under normal conditions and use. Ingestion of large quantities may cause gastrointestinal discomfort, vomiting, weakness or other medically related problems.
Inhalation: Dusty conditions may cause mechanical aggravation to respiratory mucous membranes.
Eye Contact: Dust from this product may cause particulate discomfort to eyes.
Skin Absorption: Not normally absorbed through the skin.
Skin Contact: Slight dermal abrasion is possible with prolonged contact, especially around cuffs and collars.
Effects of Overdose: Ingestion of large doses may cause diarrhea, nausea, abdominal cramps or formation of methemoglobinemia. Seek medical attention.

SECTION 4 FIRST AID MEASURES

Ingestion: If large amount is ingested, give 2-3 glasses of water and induce vomiting. Seek medical attention.
Inhalation: Remove to fresh air. Seek medical attention if condition persists.
Eyes: Flush eyes with running water for at least 15 minutes. Seek medical attention if condition persists.
Skin: Wash with soap and water. Seek medical attention if condition persists.
Notes to Physician: Consult standard literature. Treatment based on the sound judgment of the physician and the individual reactions.

SECTION 5 FIRE FIGHTING MEASURES

Extinguishing Media: Use media suitable to extinguish source of fire.
Special Fire Fighting Procedures: Product is not combustible.
Unusual Fire and Explosion Hazards: During extremely high temperature fire conditions, the product may reach melting point and decompose to release NH_3, SO_x, PO_x or CN.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Environmental Precautions: Keep out of water supplies, lakes, ponds, streams and rivers. This product is a fertilizer and may promote algae growth.
Steps to be taken in case material is released or spilled:
Keep from entering waterways. Sweep up material and place in suitable container for use as a fertilizer or for disposal.

SECTION 7 HANDLING AND STORAGE

Precautions to be taken in handling and storing:
Store in a cool, dry area. Prevent spillage and separate from strong oxidizers. Use normal safety procedures and good personal hygiene. Keep out of the reach of children.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation Protection: Adequate ventilation.
Respiratory Protection: Approved dust respirator when necessary.
Protective Clothing: Normal clean work clothing.
Eye Protection: In dusty conditions, safety glasses with side shields or goggles may be necessary.

Trade Name: Triple Superphosphate
Registration No: None

M12030

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	Not applicable	**Solubility in Water:**	Soluble
Density:	68 lbs/ft^3	**% Volatiles (by volume):**	Not applicable
Flashpoint:	Non-flammable	**Vapor Pressure, mm Hg:**	Not applicable
pH:	1 g to 10 g H_2O: 2.3-3	**Reaction with Water:**	None
Appearance:	Off-white granules.		
Extinguishing Media:	Use media suitable to extinguish source of fire.		

SECTION 10 STABILITY AND REACTIVITY

Stability (Normal Conditions): Stable
Conditions to Avoid: Extremely high temperatures.
Incompatibility (Material to Avoid): Strong oxidizing agents. Prolonged contact may cause oxidation of unprotected metals.
Hazardous Decomposition Products: During extremely high temperature fire conditions, the product may reach melting point and decompose to release NH_3, SO_x, PO_x or CN.
Hazardous Polymerization: Will not occur

SECTION 11 TOXICOLOGY INFORMATION

Acute Oral Toxicity: LD_{50} (rat) is 5,000-6,000 mg/kg (ppm); not acutely toxic by oral exposure. (TFI Product Testing Results, OECD Guideline 425)
Acute Aquatic Toxicity: Fish 96-hour LC_{50} is 1,560-5,900 mg/L (ppm); daphnia 24-hour EC_{50}: 1,790-1,825 mg/L; algae no toxicity up to 87.6 mg/L. Non-toxic to aquatic organisms. (TFI Product Testing Results)

SECTION 12 ECOLOGICAL INFORMATION

None listed.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste Disposal Procedures: *Pick up with a shovel and broom and use as a fertilizer by applying to soil using good agricultural and soil management.*

SECTION 14 TRANSPORT INFORMATION

Shipping name:	Not regulated by DOT		
Hazard Class:	None	**C.A.S. Number:**	7758-23-8
Reportable Quantity (RQ):	None	**D.O.T. Number:**	None
Labels Required:	None	**Haz Waste No:**	None
Placard:	None	**EPA Regist No:**	None

SECTION 15 REGULATORY INFORMATION

Carcinogenicity: by IARC?: Yes ( ) No (X) by NTP?: Yes ( ) No (X)

Not on the 302 list of SARA reportable quantities.

SECTION 16 OTHER INFORMATION

Flash Point (Test Method):	Non-flammable	**Flammable Limits**	**LOWER**	**UPPER**
Autoignition Temperature:	Not applicable	(% BY VOLUME)	N/A	N/A

MSDS Version Number: 7

Reviewed by: The Environmental Health & Safety Department
March 2007 (208) 389-7394

TECHNICAL MEMORANDUM

16-130170-005

June 15, 2006

TO: PROJECT FILE (130170.005)

FROM: THERESA HUI

SUBJECT: FORMER INDUSTRIAL METAL ALLOY SITE
STABILIZATION TREATABILITY STUDY RESULTS

This technical memorandum provides results from the bench-scale stabilization treatability (ST) test conducted on soils from the Industrial Metal Alloy Company (IMACO) Site in Winston-Salem, North Carolina.

INTRODUCTION

The treatability test was performed by Brown and Caldwell in the Nashville, Tennessee office, on soil collected from the IMACO Site. The objectives of the testing were to identify potential stabilization reagents and doses that can effectively stabilize metals in the soil, and to monitor the compressive strength of the various reagent/soil mixtures over a period of one week.

SELECTION AND DESCRIPTION OF TEST SAMPLES

In March and April 2006, Brown and Caldwell collected soil samples from the IMACO Site and adjacent Colter Electric lot to determine the extent of surface soil contamination (refer to **Figure 1**). Each lot was subdivided into parcels and a single sample from a random location within each parcel was collected and analyzed for lead, arsenic, and cadmium (Method 6010B) and percent solids (Method 2540) by Empirical Laboratories, LLC (Empirical Labs) in Nashville, Tennessee. Analytical results prior to the stabilization tests are provided in **Attachment A**. Two samples from the western portion of the Colter lot and four samples from the IMACO lot were also subjected to the Toxicity Characteristic Leaching Procedure (TCLP) and analysis for the eight RCRA metals, to determine if the soils exceed the RCRA characteristic hazardous waste regulatory limits (i.e., TCLP limits) for the eight RCRA metals. Samples that failed TCLP (i.e., exceeded the regulatory limits) were considered as candidates for treatability testing. Soil sample results and visual observations of these initial soil samples are provided in **Table 1** below.

The initial TCLP results for arsenic and cadmium in all of the untreated soil samples were below the regulatory limits of 5 mg/L and 1 mg/L, respectively. Two soil samples collected from the IMACO lot (S-003 and S-019) and one sample collected from the Colter lot (S-029) exceeded the TCLP regulatory limit for lead of 5 mg/L. The soil sample collected from the southeast corner of the building in the direct path of storm water flow on the IMACO lot (S-019) showed the highest TCLP concentration for lead of 1,150 mg/L.

Since sample S-019 demonstrated the highest TCLP lead concentration in Site soils, this sample was selected for the stabilization treatability testing.

Table 1. Untreated Soil Sample Data and Visual Observations

Sample ID	Lead (mg/kg)	TCLP-Pb (mg/L)	Arsenic (mg/kg)	TCLP-Ar (mg/L)	Cadmium (mg/kg)	TCLP-Cd (mg/L)	Percent Solids (%)	Initial Soil pH	Final Soil pH after TCLP Extraction	Visual Observations
TCLP Regulatory Limit (mg/L)		5		5		1				
Imaco Lot										
S-003	10,700	**400**	18.1	<0.03	6.1	0.14	80	6.6	5.0	3" depth, reddish sandy silt w/ gravel
S-019	49,800	**1,150**	35.8	<0.03	15.5	0.08	85	7.6	5.2	3" depth, brown/black/gray silty sand, machine parts
S-024	1,050	1.0	8.7	<0.03	4.8	0.041	77	7.4	4.9	12" depth, brown/black sandy silt w/3" organic top layer
S-010	580	0.46	5.1	<0.03	1.5	<0.01	88	7.0	4.9	12" depth, organic; >12" depth, wet silty sand, orange
Colter Lot										
S-027	980	--	12	--	0.2	--	86	--	--	3" depth, reddish sandy silt w/ gravel
S-028	1,300	--	7.7	--	2.3	--	87	--	--	3" depth, brown sandy silt, petroleum impact w/ gravel
S-029	15,000	**340**	78	<0.05	0.35	0.3	92	8.2	5.1	3" depth, brown sandy silt, rock/concrete encountered
S-030	23	--	6.6	--	<0.52	--	77	--	--	3" depth, orange/red dense clay w/ gravel
S-031	560	4.8	2.6	<0.05	1.0	<0.01	94	7.9	4.9	6" depth, brown/gray silty sand w/ gravel
S-032	380	--	6.4	--	1.8	--	90	--	--	3" depth, dark brown/black silty sand w/organics
S-033	8,400	--	15	--	7.7	--	81	--	--	6" depth, no gravel
S-034	310	--	31	--	2.3	--	82	--	--	3" depth, brown sandy silt w/ gravel

* BOLD RESULTS INDICATE SAMPLES THAT EXCEED THE TCLP REGULATORY LIMIT

SELECTION OF REAGENTS AND MIX DESIGNS

Based on BC's experience with metals stabilization in soils, and our knowledge of previous site data, the following three stabilization reagents were selected for testing:

- Portland Cement <Type I > (purchased from Home Depot in Nashville, Tennessee)
- EnviroBlend® 2080 (supplied by Premier Chemicals, LLC, 850 First Avenue, King of Prussia, PA 19406)
- Cement Kiln Dust (supplied by Holcim US, Inc., 8677 Hwy 45 Alt. S, Artesia, MS 39736)

The soil was tested with three different doses of each of the listed reagents. Each mix design represents the ratio on a percent basis, of the weight of reagent compared to the total dry weight of the treatment mix. The treatment mix is defined as the weight of reagent plus the dry weight of the soil sample. Therefore, each mix design represents:

$$\frac{[\text{reagent weight}]}{[\text{reagent weight} + \text{dry soil weight}]}$$

The treatability mix designs are shown in **Table 2** below. During testing, no water was added to the treatment mixes, nor were any of the samples kiln-dried. References in Table 2 to moisture content and soil wet weight were calculated based on the reported percent solids in Sample S-019 of 86 percent.

Table 2. IMACO Stabilization Treatability Mix Design Summary

Soil Sample ID	Reagent Name	Mix Ratio (reagent weight/dry mix weight)	Reagent Dose (g)	Mix Weight, Dry (g)	Soil, Dry (g)	Soil, Wet (g)
S-019	Portland Cement	5%	20	400	380	441.86
S-019	Portland Cement	10%	40	400	360	418.60
S-019	Portland Cement	20%	80	400	320	372.09
S-019	EnviroBlend® 2080	2.5%	10	400	390	453.49
S-019	EnviroBlend® 2080	5%	20	400	380	441.86
S-019	EnviroBlend® 2080	10%	40	400	360	418.60
S-019	Cement Kiln Dust	10%	40	400	360	418.60
S-019	Cement Kiln Dust	20%	80	400	320	372.09
S-019	Cement Kiln Dust	40%	160	400	240	279.07

TREATABILITY TESTING PROCEDURES

The treatment mixes were prepared using a Model N-50 Hobart mixer with stainless steel bowl and mixing paddle within a fume hood in the treatability laboratory. The general procedure for preparing each mix was as follows:

(1) Soil material was stirred with a stainless steel spoon to homogenize. Large gravel pieces, glass, and metal debris were removed.

(2) Soil material was weighed using an electronic balance and then placed in a mixing bowl.

(3) Reagent was weighed using an electronic balance and placed in a mixing bowl.

(4) The soil material and reagent were mixed on low speed for five minutes (no water was added) to form each treatment mix.

(5) The treatment mix was removed from the mixing bowl using the stainless steel spoon and was placed in disposable aluminum muffin pans.

(6) The muffin pans containing the treatment mixes were placed in plastic bags at room temperature and sealed to allow curing without moisture loss.

(7) The mixing bowl and mixing paddle were cleaned in preparation of the next mix. Cleaning was achieved by using a brush to remove residual solids under running hot water and detergent followed by wiping and drying with paper towels.

A pocket penetrometer by Soiltest, Inc. was used to measure the compressive strength of the mixes as they cured, including a control "mix" which consisted of soil only and did not contain reagent. One penetrometer reading was taken approximately every hour for the initial five hours, and approximately every 24 hrs for the next five business days. Initially when the mixes were still soft, penetrometer readings were collected using a 1-inch diameter foot adapter on the penetrometer. As some of the mixes gained strength, the 1-inch diameter foot was removed and the standard 0.25-in diameter foot was used.

After one week of curing, samples of the treatment mixes were collected including the control mix, and were sent to Empirical Lab for TCLP analysis of arsenic, cadmium, and lead.

TREATABILITY TEST RESULTS

Stabilization TCLP Results

The TCLP data for the nine mixes and the control mix are summarized in **Table 3** below. The laboratory data for the treated mix analyses are provided in Attachment A.

As expected, all TCLP results for arsenic and cadmium in all mixes were below the regulatory limits of 5 mg/L and 1 mg/L, respectively. Lead was successfully stabilized in only four of the mixes. The successful mixes were the 20% PC mix, the 40% CKD mix, and the 5% and 10% EnviroBlend 2080 mixes.

Table 3. TCLP Results for the IMACO ST Treatability Mixes

Soil Sample ID	Reagent Name	Mix Ratio (%)	TCLP Results		
			Lead (mg/L)	Arsenic (mg/L)	Cadmium (mg/L)
	TCLP Regulatory Limit:		**5**	**5**	**1**
S-019	Portland Cement	5%	**1300**	0.035	0.11
S-019	Portland Cement	10%	**510**	0.098	0.07
S-019	Portland Cement	20%	3.9	<0.03	<0.01
S-019	EnviroBlend® 2080	2.5%	**14**	0.086	0.036
S-019	EnviroBlend® 2080	5%	2.2	0.14	0.02
S-019	EnviroBlend® 2080	10%	0.19	0.16	<0.01
S-019	Cement Kiln Dust	10%	**41**	<0.03	0.064
S-019	Cement Kiln Dust	20%	**35**	<0.03	0.13
S-019	Cement Kiln Dust	40%	2.4	<0.03	<0.01
S-019	None (control)	N/A	**1000**	<0.03	0.049

*** BOLD RESULTS INDICATE SAMPLES THAT EXCEED THE TCLP REGULATORY LIMIT**

Compressive Strength Results

The mix data for treatability testing are tabulated in Attachment B. The table in Attachment B presents the agent-to-soil ratio, date and time, cure time, and the penetrometer data reported in ton/sq-ft.

Figures 2 through 4 present graphs of compressive strength (i.e., derived from penetrometer readings) versus cure time for the treatment mixes. Significant findings from the figures are as follows:

- **Figure 2**: The 5% PC treatment mix achieved a compressive strength slightly greater than 1.0 tons/sq ft within 5 hours, before stabilizing at approximately 1.0 tons/sq-ft thereafter. Similarly, the 10% PC treatment mix achieved a compressive strength slightly greater than 0.5 tons/sq-ft within 30 hours before stabilizing at approximately 0.5 tons/sq-ft thereafter. The PC to dry water ratio of 20% showed no significant change in compressive strength when compared to the control mix.

- **Figure 3**: The three EnviroBlend® 2080 mixes (i.e., 2.5%, 5%, and 10%) showed no significant change in compressive strength compared to the control mix.

- **Figure 4**: The 10% CKD treatment mix achieved a compressive strength of approximately 1.0 tons/sq-ft after one week, although the compressive strength did not stabilize during the testing period. The 20% and 40% CKD mixes showed no significant change in compressive strength compared to the control mix.

Visual observations indicated that mixes containing the highest reagent dosages (20% PC, 10% EnviroBlend® 2080, and 40% CKD) became powder-like or crumbly after 48 hours and corresponded to a decrease or no change in compressive strength when compared to the control mix.

In summary, the compressive strengths of all of the treatment mixes were at least as high as the untreated control mix (i.e., native soil). Therefore, compressive strength does not appear to be an important factor in the consideration of successful reagents and mix designs.

The compressive strengths of the 5% PC, 10% PC, and 10% CKD varied throughout the test period and equilibrated only after about 5 days of curing, suggesting that the stabilization curing times for these mixes could also be a few days, which would be an important consideration if these treatment mixes were to be used for full-scale remediation. This is not an important factor for this project, however, since none of these mixes was successful in meeting the TCLP regulatory limits.

SUMMARY AND CONCLUSIONS

Bench-scale treatability testing was conducted to assess whether the lead-impacted soil at the IMACO Site could be effectively stabilized to pass the TCLP test. The testing indicated that lead and other metals can be stabilized in the most impacted soil samples that were collected for the testing purposes.

A summary of results from the testing are as follows:

- Lead stabilization was achieved in four of the nine ST mixes tested: the 5% and 10% EnviroBlend® 2080 mixes, the 20 % PC mix, and the 40% CKD mix.
- Of all the tested mixes, the EnviroBlend® 2080 5% treatment mix requires the least reagent additive dose to the soil, and would result in the least volume bulking and weight for disposal purposes.
- In general, soil compressive strength is not an important issue for the reagents and mix designs that were successfully tested.

For field implementation, BC recommends that the dose ratio be redefined on the basis of reagent dose to moist soil weight (i.e., in-situ soil). The dose that was defined in previous sections of this memo was on the basis of reagent dose to reagent dose plus dry soil weight. As an example, the following dose ratios would be equivalent for treatment purposes:

$$\frac{\text{[reagent dose]}}{\text{[reagent dose + dry soil weight]}} = \text{5\% EnviroBlend 2080 (Previously reported above)}$$

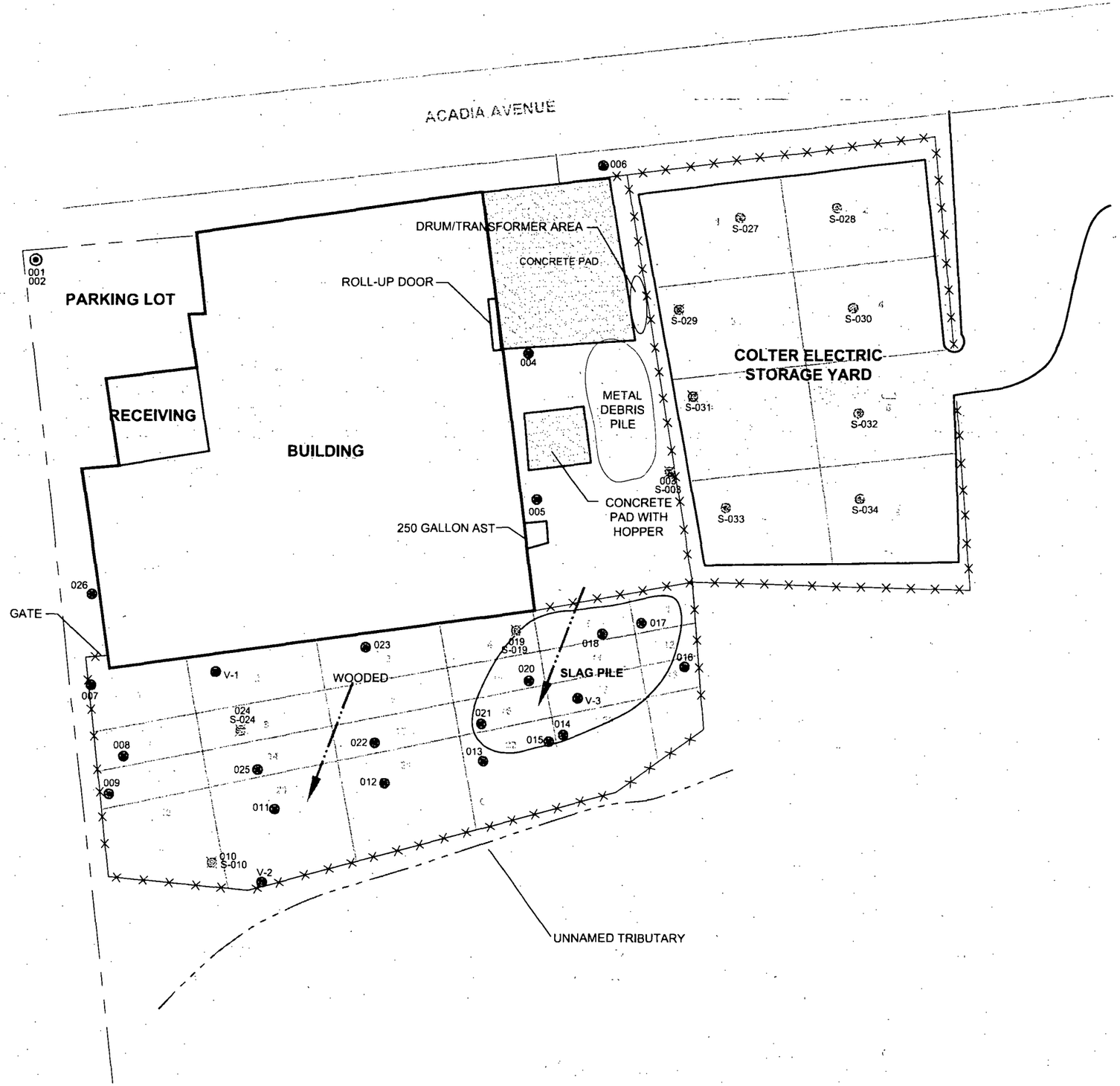
$$\frac{\text{[reagent dose]}}{\text{[moist soil weight]}} = \text{4.5\% EnviroBlend 2080 (re-defined)}$$

Using the re-defined ratio, no conversions would be required in the field. Each ton of native soil would require 90 pounds of EnviroBlend 2080, assuming the highest TCLP concentrations in untreated soil that were identified in this study.

As the above results were derived from a bench-scale test, the results are conceptual and may not translate directly to field application. Environmental variables, such as temperature, moisture content due to humidity/precipitation/percolation/evaporation, and agent delivery and mixing, must be considered when developing an appropriate remedial approach.

Attachments

CONFIDENTIAL AND PRIVILEGED



LEGEND

- Property Line
- Fence Line
- Storm Water Run-Off Flow Direction
- 001 — XRF Soil Screening Sample Location
- V-1 — Soil / Material Profiling Sample Location
- S-003 — Soil Sample Location (Pb, Ar, Cd)
- S-029 — Soil Sample Location for Treatability Study and TCLP Pb, Ar, Cd Analysis
- Sample Grid and Grid Assignment

Note: Soil screening for metals conducted using a portable XRF.

0 40 80

SCALE IN FEET

FORMER INDUSTRIAL METAL ALLOY SITE

FIGURE 1
SOIL SAMPLING LOCATION MAP
20 EAST ACADIA AVENUE
WINSTON-SALEM, FORSYTH COUNTY, NORTH CAROLINA
MARCH AND APRIL 2006

Prepared For: NK HOLDINGS, LLP

BROWN AND CALDWELL

DATE:	04/20/06
SCALE:	1"= 40'
DRAWN BY:	TTH
PROJ.	130170

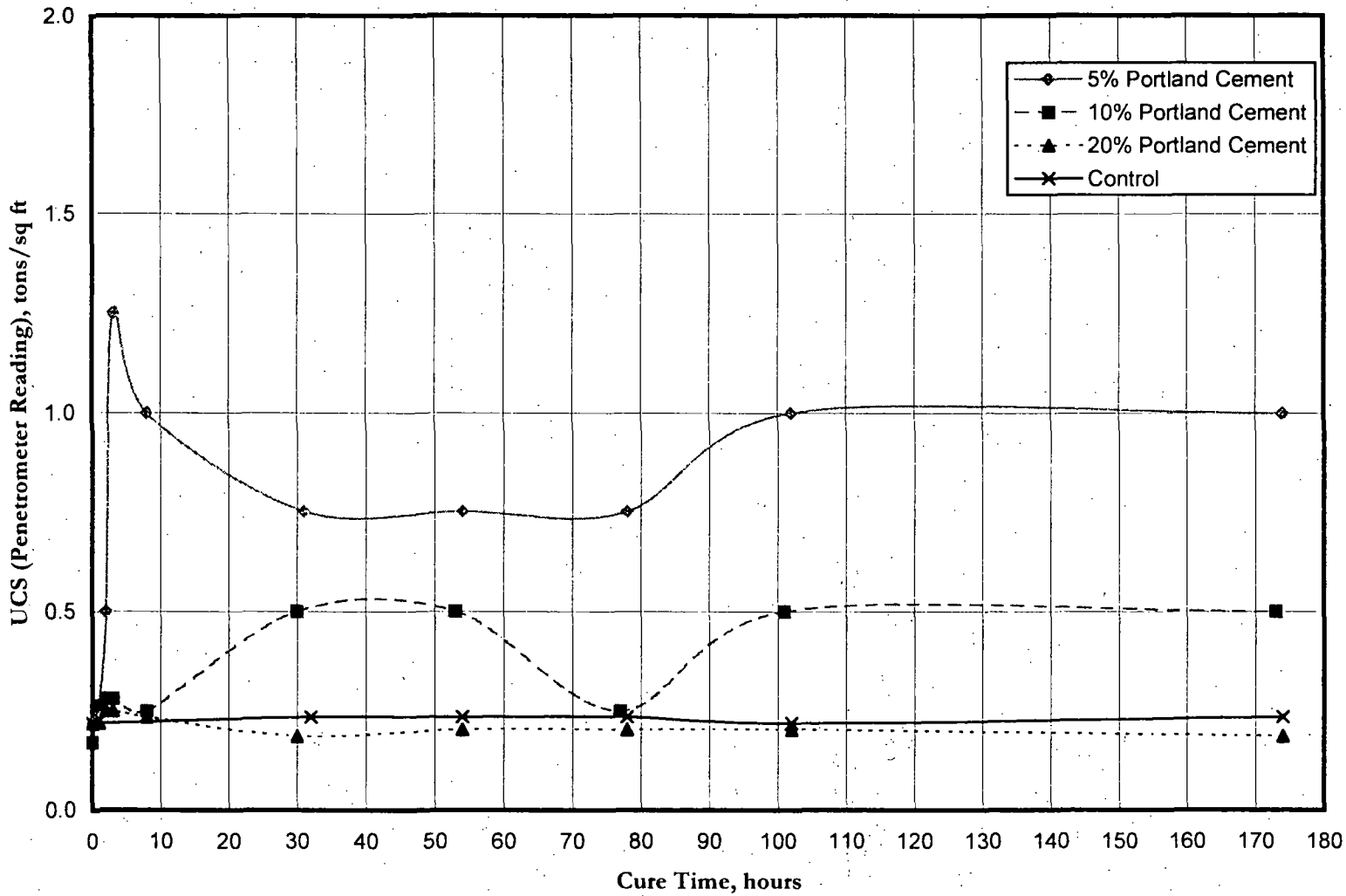


Figure 2. Penetrometer Results for S/S of S-019 with Portland Cement

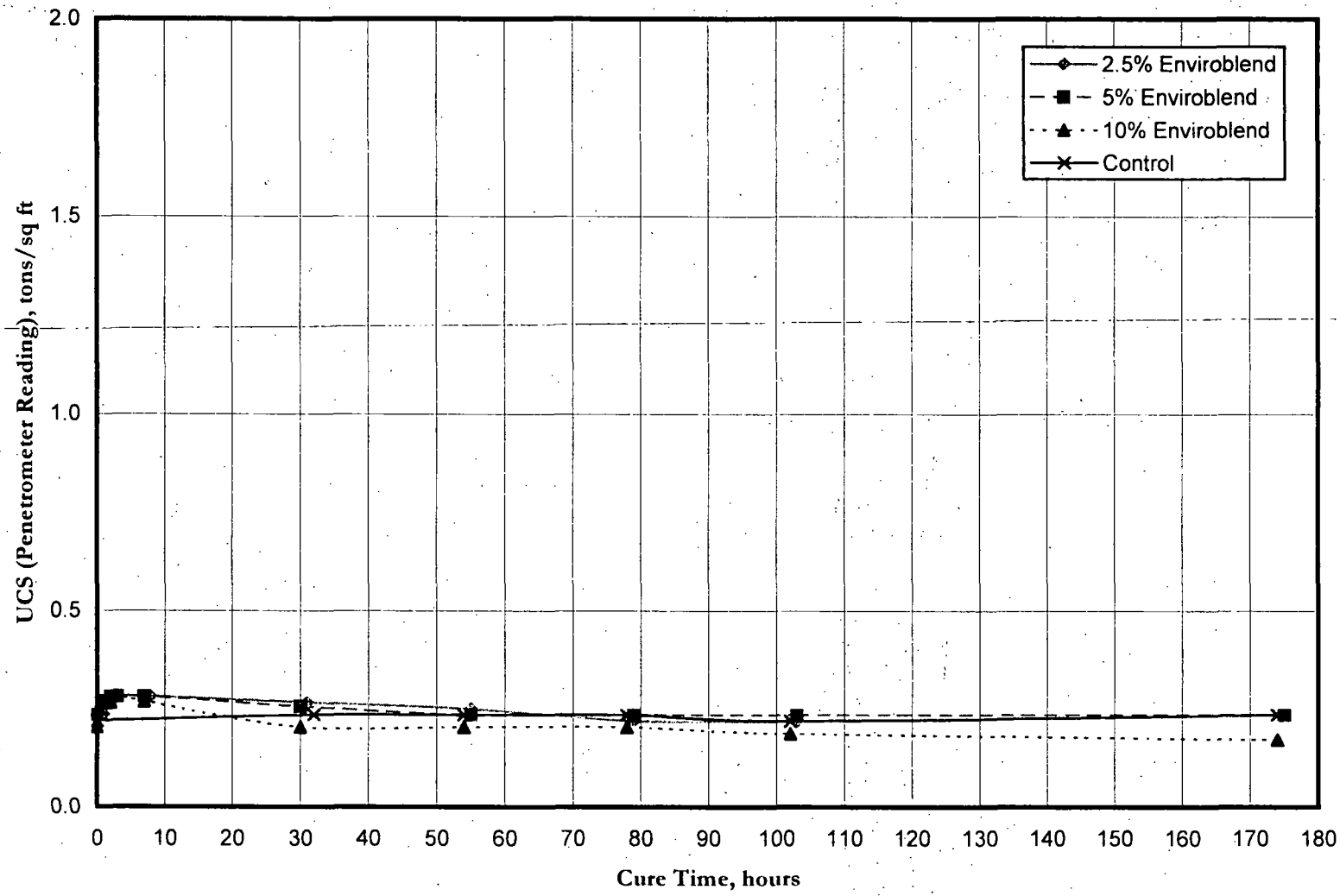


Figure 3. Penetrometer Results for S/S of S-019 with EnviroBlend® 2080

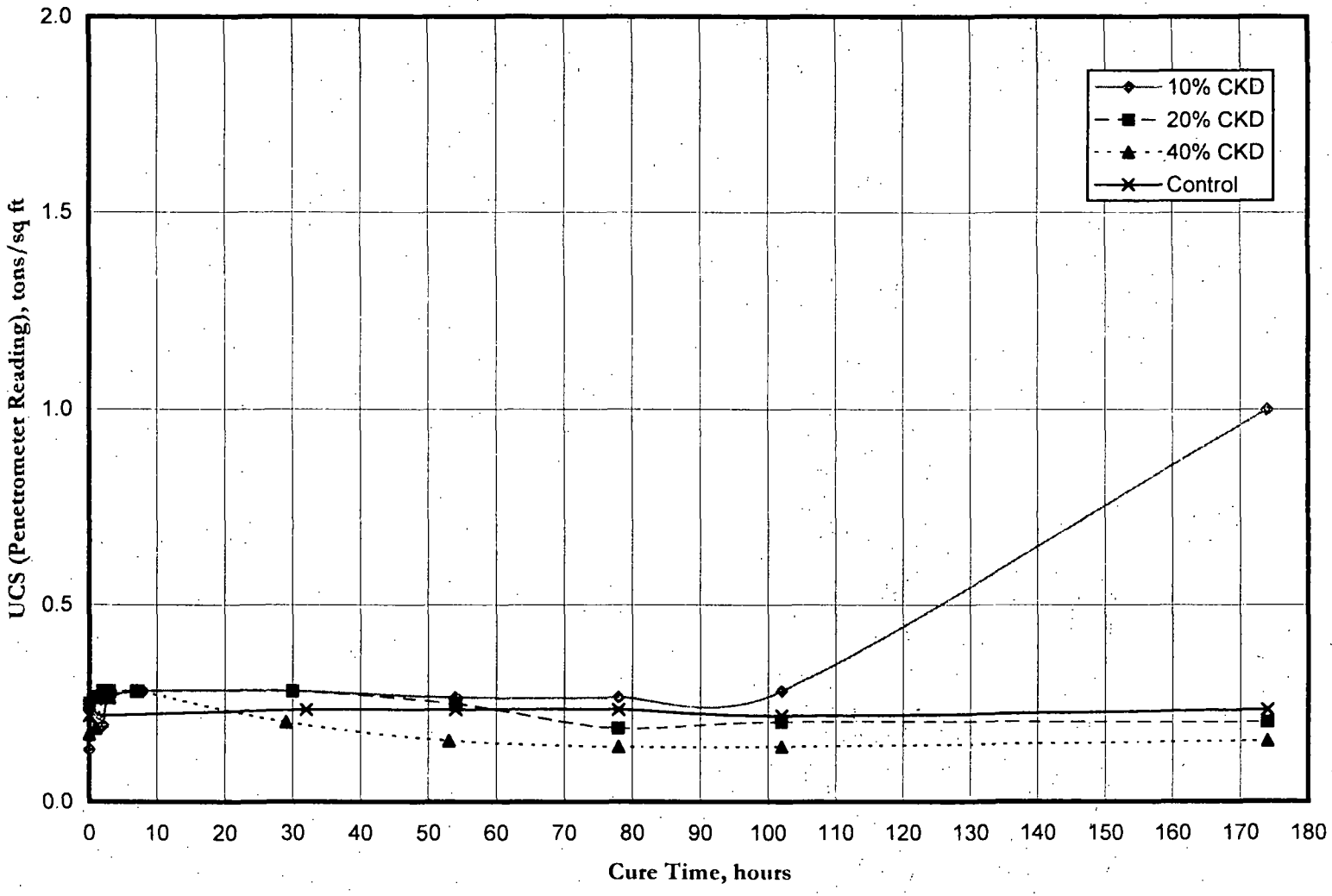


Figure 4. Penetrometer Results for S/S of S-019 with Cement Kiln Dust (CKD)

ATTACHMENT A

LABORATORY REPORTS

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-01
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-027 3/30/06 11:05:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.2	6010B	mg/kg (Dry wt.)	12
Cadmium	0.23	6010B	mg/kg (Dry wt.)	1.2
Lead	0.70	6010B	mg/kg (Dry wt.)	980
% Solids	1.0	2540**	%	86

See attached page for definition of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-02
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-028 3/30/06 11:15:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.1	6010B	mg/kg (Dry wt.)	7.7
Cadmium	0.22	6010B	mg/kg (Dry wt.)	2.3
Lead	0.67	6010B	mg/kg (Dry wt.)	1300
% Solids	1.0	2540**	%	87

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-03
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-029 3/30/06 11:30:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.1	6010B	mg/kg (Dry wt.)	78
Cadmium	0.21	6010B	mg/kg (Dry wt.)	20
Lead	6.4	6010B	mg/kg (Dry wt.)	15000
% Solids	1.0	2540**	%	92

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0603436-04
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					S-029 3/30/06 11:30:00 AM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.050	1311/6010B	mg/L	<0.050
Barium-TCLP	100	0.050	1311/6010B	mg/L	0.28
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.35
Chromium-TCLP	5.0	0.050	1311/6010B	mg/L	<0.050
Lead-TCLP	5.0	0.15	1311/6010B	mg/L	340
Mercury-TCLP	0.20	0.0020	1311/7470A	mg/L	<0.0020
Selenium-TCLP	1.0	0.050	1311/6010B	mg/L	<0.050
Silver-TCLP	5.0	0.010	1311/6010B	mg/L	<0.010
Initial pH - TCLP	NA	NA	1311	Units	8.2
Final pH - TCLP	NA	NA	1311	Units	5.1

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-05
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-030 3/30/06 11:47:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.3	6010B	mg/kg (Dry wt.)	6.6
Cadmium	0.52	6010B	mg/kg (Dry wt.)	<0.52
Lead	0.78	6010B	mg/kg (Dry wt.)	23
% Solids	1.0	2540**	%	77

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-06
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-032 3/30/06 11:57:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.1	6010B	mg/kg (Dry wt.)	6.4
Cadmium	0.22	6010B	mg/kg (Dry wt.)	1.8
Lead	0.66	6010B	mg/kg (Dry wt.)	380
% Solids	1.0	2540**	%	90

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-07
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-031 3/30/06 12:10:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.0	6010B	mg/kg (Dry wt.)	2.6
Cadmium	0.21	6010B	mg/kg (Dry wt.)	1.0
Lead	0.63	6010B	mg/kg (Dry wt.)	560
% Solids	1.0	2540**	%	94

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0603436-08
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					S-031 3/30/06 12:25:00 PM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.050	1311/6010B	mg/L	<0.050
Barium-TCLP	100	0.050	1311/6010B	mg/L	0.18
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	<0.010
Chromium-TCLP	5.0	0.050	1311/6010B	mg/L	<0.050
Lead-TCLP	5.0	0.030	1311/6010B	mg/L	4.8
Mercury-TCLP	0.20	0.0020	1311/7470A	mg/L	<0.0020
Selenium-TCLP	1.0	0.050	1311/6010B	mg/L	<0.050
Silver-TCLP	5.0	0.010	1311/6010B	mg/L	<0.010
Initial pH - TCLP	NA	NA	1311	Units	7.9
Final pH - TCLP	NA	NA	1311	Units	4.9

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-09
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-033 3/30/06 1:22:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.2	6010B	mg/kg (Dry wt.)	15
Cadmium	0.24	6010B	mg/kg (Dry wt.)	7.7
Lead	3.6	6010B	mg/kg (Dry wt.)	8400
% Solids	1.0	2540**	%	81

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte - Treatability
DATE RECEIVED: 03/31/06
DATE REPORTED: 04/12/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0603436-10
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-034 3/30/06 1:29:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	1.2	6010B	mg/kg (Dry wt.)	31
Cadmium	0.24	6010B	mg/kg (Dry wt.)	2.3
Lead	0.72	6010B	mg/kg (Dry wt.)	310
% Solids	1.0	2540**	%	82

See attached page for definitions of terms and qualifiers.

EMPIRICAL LABORATORIES

D. Rick Davis
Vice President

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0604186-01
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-003 4/17/06 9:25:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	0.76	6010B	mg/kg (Dry wt.)	18.1
Cadmium	0.25	6010B	mg/kg (Dry wt.)	6.1
Lead	1.9	6010B	mg/kg (Dry wt.)	10700
% Solids	1.0	2540**	%	80

See attached page for definition of terms and qualifiers.

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0604186-02
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					S-003 4/17/06 9:33:00 AM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.14
Lead-TCLP	5.0	0.15	1311/6010B	mg/L	400
Initial pH - TCLP	NA	NA	1311	Units	6.6
Final pH - TCLP	NA	NA	1311	Units	5.0

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0604186-03
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-019 4/17/06 9:46:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	0.71	6010B	mg/kg (Dry wt.)	35.8
Cadmium	0.24	6010B	mg/kg (Dry wt.)	15.5
Lead	8.9	6010B	mg/kg (Dry wt.)	49800
% Solids	1.0	2540**	%	85

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0604186-04
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					S-019 4/17/06 9:53:00 AM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.080
Lead-TCLP	5.0	0.38	1311/6010B	mg/L	1150
Initial pH - TCLP	NA	NA	1311	Units	7.6
Final pH - TCLP	NA	NA	1311	Units	5.2

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0604186-05
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-024 4/17/06 10:56:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	0.78	6010B	mg/kg (Dry wt.)	8.7
Cadmium	0.26	6010B	mg/kg (Dry wt.)	4.8
Lead	0.39	6010B	mg/kg (Dry wt.)	1050
% Solids	1.0	2540**	%	77

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0604186-06
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					S-024 4/17/06 11:00:00 AM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.041
Lead-TCLP	5.0	0.015	1311/6010B	mg/L	1.0
Initial pH - TCLP	NA	NA	1311	Units	7.4
Final pH - TCLP	NA	NA	1311	Units	4.9

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER				0604186-07
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				S-010 4/17/06 11:25:00 AM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic	0.68	6010B	mg/kg (Dry wt.)	5.1
Cadmium	0.23	6010B	mg/kg (Dry wt.)	1.5
Lead	0.34	6010B	mg/kg (Dry wt.)	580
% Solids	1.0	2540**	%	88

See attached page for definitions of terms and qualifiers.

CLIENT: Charlotte
DATE RECEIVED: 04/17/06
DATE REPORTED: 05/03/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0604186-08
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					S-010 4/17/06 11:30:00 AM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	<0.010
Lead-TCLP	5.0	0.015	1311/6010B	mg/L	0.46
Initial pH - TCLP	NA	NA	1311	Units	7.0
Final pH - TCLP	NA	NA	1311	Units	4.9

See attached page for definitions of terms and qualifiers.

EMPIRICAL LABORATORIES

D. Rick Davis
Vice President

CLIENT: IMACO #130170.005
DATE RECEIVED: 05/23/06
DATE REPORTED: 06/05/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0605291-01	0605291-02	0605291-03
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					CKD - 10% 5/23/06 4:00:00 PM	CKD - 20% 5/23/06 4:00:00 PM	CKD - 40% 5/23/06 4:00:00 PM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030	<0.030	<0.030
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.064	0.13	<0.010
Lead-TCLP	5.0	0.015	1311/6010B	mg/L	41	35	2.4
Initial pH - TCLP	NA	NA	1311	Units	4.8	5.2	8.4
Final pH - TCLP	NA	NA	1311	Units	6.6	5.5	7.5

› attached page for definition of terms and qualifiers.

CLIENT: IMACO #130170.005
DATE RECEIVED: 05/23/06
DATE REPORTED: 06/05/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0605291-04	0605291-05	0605291-06
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					Env - 2.5% 5/23/06 4:00:00 PM	Env - 5% 5/23/06 4:00:00 PM	Env - 10% 5/23/06 4:00:00 PM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	0.086	0.14	0.16
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.036	0.020	<0.010
Lead-TCLP	5.0	0.015	1311/6010B	mg/L	14	2.2	0.19
Initial pH - TCLP	NA	NA	1311	Units	2.5	2.7	2.6
Final pH - TCLP	NA	NA	1311	Units	5.3	5.4	6.2

See attached page for definitions of terms and qualifiers.

CLIENT: IMACO #130170.005
DATE RECEIVED: 05/23/06
DATE REPORTED: 06/05/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0605291-07	0605291-08
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					PC - 5% 5/23/06 4:00:00 PM	PC - 10% 5/23/06 4:00:00 PM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	0.035	0.098
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.11	0.070
Lead-TCLP	5.0	3.8	1311/6010B	mg/L	1300	510
Initial pH - TCLP	NA	NA	1311	Units	5.1	8.8
Final pH - TCLP	NA	NA	1311	Units	4.7	5.8

See attached page for definitions of terms and qualifiers.

CLIENT: IMACO #130170.005
DATE RECEIVED: 05/23/06
DATE REPORTED: 06/05/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0605291-09
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					PC - 20% 5/23/06 4:00:00 PM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	<0.010
Lead-TCLP	5.0	0.015	1311/6010B	mg/L	3.9
Initial pH - TCLP	NA	NA	1311	Units	10.8
Final pH - TCLP	NA	NA	1311	Units	9.9

See attached page for definitions of terms and qualifiers.

CLIENT: IMACO #130170.005
DATE RECEIVED: 05/23/06
DATE REPORTED: 06/05/06

EMPIRICAL LABORATORIES SAMPLE NUMBER					0605291-10
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE					Control S019 5/23/06 4:00:00 PM
ANALYTES	REGULATORY LIMITS	REPORTING LIMITS	USEPA METHOD	UNITS	CONC
Arsenic-TCLP	5.0	0.030	1311/6010B	mg/L	<0.030
Cadmium-TCLP	1.0	0.010	1311/6010B	mg/L	0.079
Lead-TCLP	5.0	3.8	1311/6010B	mg/L	1000
Initial pH - TCLP	NA	NA	1311	Units	2.6
Final pH - TCLP	NA	NA	1311	Units	5.3

See attached page for definitions of terms and qualifiers.

EMPIRICAL LABORATORIES

D. Rick Davis
Vice President

ATTACHMENT B

SOLIDIFICATION/STABILIZATION MIX DATA

Solidification/Stabilization Mix Data for Treatability Testing
Former Industrial Metal Alloy Site

Soil	S/S Agent	Mix Design: Agent/dry soil ratio (g/g)	Date (m/d/y)	Time (h/m)	Cure Time (h)	Foot Dia. (in)	Penetrometer Results: Reading 1 (scale)	Penetrometer Results: Adjusted (ton/sq ft)
S-019	Control	NA	5/15/05	9:43 AM	0.0	1.00	3.5	0.22
			5/16/05	5:18 PM	32.0	1.00	3.75	0.23
			5/17/06	6:01 PM	54.0	1.00	3.75	0.23
			5/18/06	5:58 PM	78.0	1.00	3.75	0.23
			5/19/06	5:42 PM	102.0	1.00	3.5	0.22
			5/22/06	6:55 PM	174.0	1.00	3.75	0.23
S-019	Portland Cement	0.050	5/15/05	9:43 AM	0.0	1.00	3.5	0.22
			5/15/05	10:43 AM	1.0	1.00	4.3	0.27
			5/15/05	11:43 AM	2.0	0.25	0.5	0.50
			5/15/05	12:43 PM	3.0	0.25	1.25	1.25
			5/15/05	6:04 PM	8.0	0.25	1	1.00
			5/16/05	5:18 PM	31.0	0.25	0.75	0.75
			5/17/06	6:01 PM	54.0	0.25	0.75	0.75
			5/18/06	5:58 PM	78.0	0.25	0.75	0.75
			5/19/06	5:42 PM	102.0	0.25	1	1.00
			5/22/06	6:55 PM	174.0	0.25	1	1.00
S-019	Portland Cement	0.100	5/15/05	10:40 AM	0.0	1.00	2.75	0.17
			5/15/05	11:40 AM	1.0	1.00	4.24	0.27
			5/15/05	12:40 PM	2.0	1.00	4.5	0.28
			5/15/05	1:40 PM	3.0	1.00	4.5	0.28
			5/15/05	6:05 PM	8.0	0.25	0.25	0.25
			5/16/06	5:20 PM	30.0	0.25	0.5	0.50
			5/17/06	6:00 PM	53.0	0.25	0.5	0.50
			5/18/06	5:57 PM	77.0	0.25	0.25	0.25
			5/19/06	5:40 PM	101.0	0.25	0.5	0.50
			5/22/06	6:54 PM	173.0	0.25	0.5	0.50
S-019	Portland Cement	0.200	5/15/05	11:25 AM	0.0	1.00	3.5	0.22
			5/15/05	12:25 PM	1.0	1.00	3.5	0.22
			5/15/05	1:25 PM	2.0	1.00	4	0.25
			5/15/05	2:25 PM	3.0	1.00	4	0.25
			5/15/05	6:07 PM	8.0	1.00	3.75	0.23
			5/16/06	5:21 PM	30.0	1.00	3	0.19
			5/17/06	5:59 PM	54.0	1.00	3.25	0.20
			5/18/06	5:56 PM	78.0	1.00	3.25	0.20
			5/19/06	5:38 PM	102.0	1.00	3.25	0.20
			5/22/06	6:52 PM	174.0	1.00	3	0.19
S-019	EnviroBlend® 2080	0.025	5/15/05	10:08 AM	0.0	1.00	3.6	0.23
			5/15/05	11:08 AM	1.0	1.00	3.75	0.23
			5/15/05	12:08 PM	2.0	1.00	4.25	0.27
			5/15/05	1:08 PM	3.0	1.00	4.5	0.28
			5/15/05	7:00 AM	8.0	1.00	4.5	0.28
			5/16/06	5:14 PM	31.0	1.00	4.25	0.27
			5/17/06	5:57 PM	55.0	1.00	4	0.25
			5/18/06	5:55 PM	79.0	1.00	3.5	0.22
			5/19/06	5:36 PM	103.0	1.00	3.5	0.22
			5/22/06	6:50 PM	175.0	1.00	3.75	0.23

Solidification/Stabilization Mix Data for Treatability Testing
Former Industrial Metal Alloy Site

Soil	S/S Agent	Mix Design: Agent/dry soil ratio (g/g)	Date (m/d/y)	Time (h/m)	Cure Time (h)	Foot Dia. (in)	Penetrometer Results: Reading 1 (scale)	Penetrometer Results: Adjusted (ton/sq ft)
S-019	EnviroBlend® 2080	0.050	5/15/05	10:58 AM	0.0	1.00	3.75	0.23
			5/15/05	11:58 AM	1.0	1.00	4.3	0.27
			5/15/05	12:58 PM	2.0	1.00	4.5	0.28
			5/15/05	1:58 PM	3.0	1.00	4.5	0.28
			5/15/05	7:01 AM	7.0	1.00	4.5	0.28
			5/16/06	5:14 PM	30.0	1.00	4.1	0.26
			5/17/06	5:58 PM	55.0	1.00	3.75	0.23
			5/18/06	5:54 PM	79.0	1.00	3.75	0.23
			5/19/06	5:35 PM	103.0	1.00	3.75	0.23
			5/22/06	6:49 PM	175.0	1.00	3.75	0.23
S-019	EnviroBlend® 2080	0.100	5/15/05	11:40 AM	0.0	1.00	3.25	0.20
			5/15/05	12:40 PM	1.0	1.00	4.25	0.27
			5/15/05	1:40 PM	2.0	1.00	4.25	0.27
			5/15/05	2:40 PM	3.0	1.00	4.5	0.28
			5/15/05	7:02 AM	7.0	1.00	4.3	0.27
			5/16/06	5:16 PM	30.0	1.00	3.25	0.20
			5/17/06	5:58 PM	54.0	1.00	3.25	0.20
			5/18/06	5:52 PM	78.0	1.00	3.25	0.20
			5/19/06	5:34 PM	102.0	1.00	3	0.19
			5/22/06	6:48 PM	174.0	1.00	2.75	0.17
S-019	Cement Kiln Dust	0.100	5/15/05	10:20 AM	0.0	1.00	2.1	0.13
			5/15/05	11:20 AM	1.0	1.00	3.4	0.21
			5/15/05	12:20 PM	2.0	1.00	3.1	0.19
			5/15/05	1:20 PM	3.0	1.00	4.25	0.27
			5/15/05	7:12 AM	8.0	1.00	4.5	0.28
			5/16/06	5:12 PM	30.0	1.00	4.5	0.28
			5/17/06	5:56 PM	54.0	1.00	4.25	0.27
			5/18/06	5:51 PM	78.0	1.00	4.25	0.27
			5/19/06	5:32 PM	102.0	1.00	4.5	0.28
			5/22/06	6:46 PM	174.0	0.25	1	1.00
S-019	Cement Kiln Dust	0.200	5/15/05	11:12 AM	0.0	1.00	4	0.25
			5/15/05	12:12 PM	1.0	1.00	4.25	0.27
			5/15/05	1:12 PM	2.0	1.00	4.5	0.28
			5/15/05	2:12 PM	3.0	1.00	4.5	0.28
			5/15/05	7:11 AM	7.0	1.00	4.5	0.28
			5/16/06	5:10 PM	30.0	1.00	4.5	0.28
			5/17/06	5:56 PM	54.0	1.00	4	0.25
			5/18/06	5:50 PM	78.0	1.00	3	0.19
			5/19/06	5:31 PM	102.0	1.00	3.25	0.20
			5/22/06	6:45 PM	174.0	1.00	3.25	0.20
S-019	Cement Kiln Dust	0.400	5/15/05	11:55 AM	0.0	1.00	2.75	0.17
			5/15/05	12:55 PM	1.0	1.00	3	0.19
			5/15/05	1:55 PM	2.0	1.00	4.25	0.27
			5/15/05	2:55 PM	3.0	1.00	4.25	0.27
			5/15/05	7:10 AM	7.0	1.00	4.5	0.28
			5/16/06	5:10 PM	29.0	1.00	3.25	0.20
			5/17/06	5:55 PM	53.0	1.00	2.5	0.16
			5/18/06	5:50 PM	78.0	1.00	2.25	0.14
			5/19/06	5:30 PM	102.0	1.00	2.25	0.14
			5/22/06	6:45 PM	174.0	1.00	2.5	0.16