ADVANCED GeoServices
Engineering for the Environment. Planning for People.™
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January 9, 2009

2003-1097-06

Ms. Anita Boseman
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3590

RE: Former American Lead Site
Completion Report, Revised January 2009

Dear Ms. Boseman:

Enclosed please find three (3) copies of a replacement CD for the Completion Report for activities conducted at the Former American Lead Site in Indianapolis, Indiana from May 2005 to April 2007.

The revised CD contains the following revisions to Appendix L:

- Updated resident concern log to reflect completion of tree removal at 1930 Tallman and reimbursement for landscaping at 1610 E 19th Street; and
- A copy of Advanced GeoServices' July 28, 2008 letter documenting completion of these items.

No other revisions were necessary to the Completion Report to address these items. USEPA has requested that Section 6.0, Project Costs be revised to address completion of these two items. Please note that these two items were addressed as part of the Contractor's warranty. As NL's cost for the Contractor's warranty is already included in the costs presented in Section 6.0, no revisions were necessary.

NL requests that USEPA provide acknowledgement of these revisions, and a letter that confirms that all of the work obligations of the Administrative Order on Consent (AOC) Docket No. V-W-'05-C805 have been met.

If you have any questions, please call Jen DiJoseph at (610) 840 9189 or Chris Reitman at (610) 840 9123.

Sincerely,

ADVANCED GEOSERVICES

Jennifer W. DiJoseph
Senior Project Professional

Christopher T. Reitman
Senior Project Consultant

JWD:CTR:kk

Cc: Karen Campbell, TNA
Kevin Houppert, IDEM
Kevin Lombardozzi, NL
Russ Perry NL

PRIVILEGED AND CONFIDENTIAL
CONTAINS PRIVATE HOMEOWNER INFORMATION

FINAL
COMPLETION REPORT

FORMER AMERICAN LEAD SITE
Indianapolis, Indiana

Prepared For:
NL INDUSTRIES, INC.

Prepared By:
ADVANCED GEOSERVICES
West Chester, Pennsylvania

June 19, 2007
Revised June 24, 2008
Revised January 9, 2009
2003-1097-05

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LETTER OF TRANSMITTAL

TO	Indiana Department of Environmental Management	Date: June 26, 2009 / Job No. 2003-1097-05
	Office of Land Quality	Attention: Mark Jawarski
	100 N. Senate Avenue, MC 66-22 IGN1101	RE: Former American Lead Site
	Indianapolis, IN 46204-2251	

We are sending you:

[X] Attached [ ] Under separate cover via _____ the following items:

[ ] Shop Drawings [ ] Prints [ ] Plans [ ] Samples [ ] Specifications

[ ] Copy of letter [ ] Change order [ ] _____

Copies	Date	No.	Description
1	6/24/09		Final Completion Report
	1/9/09		Revised Report

These are transmitted as checked below:

[ ] For approval [ ] Approved as submitted [ ] Resubmit ___ copies for approval

[X] For your use [ ] Approved as noted [ ] Submit ___ copies for distribution

[ ] As requested [ ] Returned for corrections [ ] Return ___ corrected prints

[ ] For review and comment [ ] _____

[ ] FOR BIDS DUE _____ 19_____ [ ] PRINTS RETURNED AFTER LOAN TO US

REMARKS

Copy to: File

Signed: Jennifer J. DiJoseph
Project Professional

PRIVILEGED AND CONFIDENTIAL
CONTAINS PRIVATE HOMEOWNER INFORMATION

FINAL
COMPLETION REPORT

FORMER AMERICAN LEAD SITE
Indianapolis, Indiana

Prepared For:
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June 19, 2007
Revised June 24, 2008
Revised January 9, 2009
2003-1097-05

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FIGURES

FIGURE

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APPENDICES

APPENDIX

(Appendices are provided in electronic (PDF) format only.)

1.0 INTRODUCTION

This Final Report was prepared by Advanced GeoServices Corp. (Advanced GeoServices) to document the removal activities that were performed from approximately May 2005 to April 2007 by the Respondent (NL Industries, Inc.) at the former American Lead Site (Site), located in Indianapolis, Indiana. The removal activities at the Site that are addressed in this report were performed pursuant to the requirements of the Administrative Order on Consent (AOC) Docket Number V-W-'05-C-805, between the Respondent and the United States Environmental Protection Agency (USEPA) effective February 7, 2005.

1.1 PURPOSE OF WORK

The purpose of this report is to document that the work performed by the Respondent met the conditions of the AOC and satisfied the requirements of Paragraph VIII of the AOC. The first phase of work activities was conducted between May 2005 and September 2006 at residential properties where access had been obtained directly from the property owner. These activities included delineation sampling, removal of lead-impacted soil on 201 residential properties that had lead levels at or above 400 milligram per kilogram (mg/kg), and restoration activities.

The second phase of work activities was conducted in March and April 2007 at the 15 remaining residential properties for which access was provided by USEPA via a court order and the 8 vacant residential properties that were used as a staging area during the first phase.

Key features of the work included:

- Obtaining property access agreements, delineation sampling, and pre-excavation meetings;

- Excavation of surface soil with average total lead concentrations at or above 400 mg/kg on residential properties;

- Characterization and off-site disposal of excavated soil;

- Performing post-excavation confirmation sampling;

- Placement of a distinguishable permeable plastic barrier over remaining soils which exceeded 400 mg/kg (where necessary); and

- Backfilling and restoring excavation areas and landscaping.

Details of how the work was to be performed to meet the AOC were presented in the Removal Action Work Plan (Work Plan) dated February 25, 2005, and revised April 5, 2005 to address USEPA's March 7, 2005 comments. The Work Plan was prepared by Advanced GeoServices, the Respondent's consultant. USEPA approved the Work Plan verbally on April 22, 2005 and in writing on May 17, 2005.

Contact information for key project personnel is provided in Table 1.

1.2 REPORT ORGANIZATION

The remainder of this report is organized as follows:

Section 2.0 – Site Background;
Section 3.0 – Delineation Sampling;
Section 4.0 – Removal Activities;
Section 5.0 – Backfill, Sod, and Restoration;

Section 6.0 – Project Costs;

Section 7.0 – Reports; and

Section 8.0 – Summary and Certification Statement.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

The American Lead Study Area (Study Area) consists of three residential areas to the north and south of the property in Indianapolis, Marion County, Indiana as shown on the Site Location Map (Figure 2-1). The Former American Lead property is located at 2102 Hillside Avenue (formerly listed as 1600 East 21st Street) as shown on Figure 2-2. The property was used for lead smelting between 1946 and 1965. It contains 7.5 acres and is bounded on the east by Hillside Avenue, on the south by 21st Street, on the north by Conrail railroad tracks and on the west by industrial properties. Since at least the 1870's, metal operations have been performed on portions of the Former American Lead property and by other manufacturing companies in a historical heavy industrial area exceeding 100 acres in the immediate vicinity of the Former American Lead property. Current property use at the Former American Lead property is industrial and the surrounding area has a mixture of residential and industrial uses. As a result of investigations performed by the Indiana Department of Environmental Management (IDEM) and the Marion County Health Department (MCHD), USEPA concluded that smelting operations contributed to soil lead impacts in the vicinity of the Former American Lead property.

For the purpose of this report, the Site/Study Area being evaluated refers to the residential properties located in the vicinity of the Former American Lead property which were addressed in the AOC (Figure 2-2). The Site is divided into three areas: north, south, and east. The north area is bounded by 23rd Street to the north, North Arsenal Avenue to the west, Ralston Avenue to the east and the railroad to the south. The South area is roughly bounded by 21st Street to the north, Sheldon Street and Hovey Street to the west, Hillside Avenue to the east and 19th Street to the south. The east area is bounded by Bloyd Avenue to the north, Hillside Avenue to the west, Tallman Avenue to the east and Roosevelt Avenue to the south.

2.2 AOC REQUIREMENTS

To address Site conditions, USEPA executed an AOC with NL Industries Inc., the Respondent, effective February 7, 2005. The AOC required the Respondent to perform the following activities for all residential properties, including churches and playgrounds, within the area defined in the AOC in the vicinity of the Former American Lead property:

- Prepare a Time Critical Removal Action Work Plan (Work Plan);
- Develop and implement a Site Health and Safety Plan, including an Air Monitoring Plan, and Site Contingency Plan;
- Develop and implement a Site Security Plan and Public Relations Plan;
- Develop and implement a Fugitive Dust Control Plan for the time period prior to and during characterization and removal phases, including temporary stabilization of bare soil areas and removal of soil and sediments from residential areas;
- Develop a Storm Water Runoff Control Plan to be implemented at residential and all other locations where excavation is occurring;
- For all residential properties, which include churches and playgrounds, within the area depicted in Figure 2-2, remove and dispose of soil contaminated with lead at or greater than 400 mg/kg up to a maximum excavation depth of one foot from residential locations and up to a maximum excavation depth of two feet in gardens and play areas;

- Perform confirmation sampling to demonstrate that each property meets the clean-up criteria; and

- Backfill excavated areas with clean fill and vegetate to pre-removal conditions.

This final report summarizes the activities carried out at the Site.

3.0 DELINEATION SAMPLING

During the work performed pursuant to the AOC, delineation sampling was conducted at 237 properties, and 225 were found to have lead concentrations in excess of 400 mg/kg. Access for remediation was obtained to 224 properties, which were remediated.

3.1 PROPERTY ACCESS

Prior to mobilization, a public meeting was held by USEPA on May 5, 2005 with residents from the community. Advanced GeoServices provided support to USEPA for the meeting and residents were able to sign access agreements at that time. Following the meeting, Advanced GeoServices mailed or hand-delivered property access request letters to the property owners on behalf of the Respondent. The letters included a property owner consent form. Property access was requested for soil sampling and potential soil removal operations at 237 residential properties. Best efforts were made to obtain access to these properties, including sending regular, certified and overnight mailings, making phone calls, and repeated visits to the property and owner's residences. On December 13, 2005, Advanced GeoServices submitted a "Best Efforts Table" to USEPA which detailed efforts to obtain access to outstanding properties.

Of the 237 residential properties, Advanced GeoServices, IDEM, and USEPA were able to obtain access to 221 properties during the first phase of activity. One additional property provided access for sampling, but denied access once sampling was completed. Although no property owners denied access for sampling, 15 property owners were unresponsive to efforts to obtain access. These 15 properties were the subject of a court order for access that USEPA acquired prior to the second phase of activities. The updated "Best Efforts Table" which summarizes efforts to obtain access by the Respondent at the 15 outstanding properties is provided in Appendix A. The court order providing access is also provided in Appendix A.

Figures 3-1 and 3-2 summarize the status at each of the 237 properties.

3.2 SOIL SAMPLING PROCEDURE

Two hundred thirty seven (237) properties were sampled by ADVANCED GEOSERVICES, and 224 properties were found to require complete or partial soil removal. The soil delineation sampling methodology used by Advanced GeoServices was outlined in the Work Plan. In summary, residential properties were divided into two areas, the front yard and the back yard. Churches and vacant lots were divided into four equally spaced quadrants. Composite soil samples were collected from the 0 to 3 inch and 6 to 12 inch horizons at each property designated for sampling. Each composite sample consisted of five aliquots (grab samples) collected from one area or quadrant. The locations of the aliquots were approximately equally spaced within the area or quadrant of the yard to develop a single representative sample. Gardens and play areas were sampled by collecting a two to three point composite. The sampling procedure included the preparation of a sketch of the property which showed the aliquots for each area or quadrant. Samples were collected a minimum of 5 feet from permanent structures, roads, driveways, downspouts, drainage features, barbeques, and trash burning or storage areas. Sampling was not conducted in paved and gravel areas.

Sampling was performed for each property by first marking points of each aliquot with a flag. Each aliquot was obtained and placed in a resealable plastic bag with similar aliquots from the quadrant. Each soil sample collected was visually characterized according to the Unified Soil Classification System (USCS) classification scheme. The samples were labeled appropriately for the property and area or quadrant in accordance with the Work Plan. Advanced GeoServices collected photographs of properties during delineation sampling.

During 2005 and 2006, all samples collected from the 0 to 3 inch horizon interval were tested on-site using an X-Ray Fluorescence Analyzer (XRF) to determine the total lead concentration. If the 0 to 3 inch sample tested above the action level (400 mg/kg), then the corresponding 6 to 12 inch sample was analyzed using the XRF to determine lead concentrations. The first 20 samples collected between 50 and 1,000 mg/kg total lead were sent to Trimatrix Laboratories in Grand Rapids, Michigan, a USEPA-approved laboratory, for total lead analysis. The lab data was then compared to the XRF data to develop a correlation equation. All concentrations obtained from the XRF were adjusted using the correlation equation. After the initial 20 samples, ten percent of the samples were sent to the lab to confirm the XRF data remained consistent and reliable. Duplicate samples and matrix spike/matrix spike duplicates were conducted once for every 20 samples submitted to the laboratory. All delineation samples collected in 2007 were sent to Trimatrix Laboratories for analysis. However, XRF readings were not taken prior to laboratory analysis as in the previous 2005 and 2006 sampling events.

Each sample submitted to the laboratory was recorded on a Chain-of Custody and placed in a cooler that was sealed with a Custody seal and shipped to the lab.

The property sampling sketches, the delineation sampling results for each property, the corrected XRF data and validated analytical data are provided in Appendix B.

The back yard of [redacted] was re-sampled by USEPA in April 2007. The USEPA representative collected a five-point composite of the back yard, five feet from the house. This sample was not analyzed by XRF. However, it was analyzed at an off-site laboratory, similar to all delineation samples collected in 2007. The USEPA results were greater than 400 mg/kg total lead. This sampling increased the number of properties requiring soil removal to 225. Based on the re-sampling results by the USEPA, the backyard of [redacted] was excavated.

4.0 REMOVAL ACTIVITIES

4.1 RESULTS OF THE DELINEATION SAMPLING

The results of the soil delineation sampling described in Section 3.0 indicated that 225 residential properties required soil removal activities. Of these, two property owners ([redacted] and [redacted] back yard) granted access for sampling, but would not grant access for soil removal.

4.2 SITE PREPARATION ACTIVITIES

Prior to soil excavation activities, site preparation activities were performed by the Respondent's contractor, ENTACT, and Advanced GeoServices. These activities are described in the following sections.

4.2.1 Pre-Excavation Meetings

Prior to soil excavation activities on a given property, an ENTACT representative along with Advanced GeoServices' Quality Assurance (QA) Official met with each property owner to describe the soil removal and restoration activities to be performed on the property. At some tenant-occupied properties, the property owner was contacted by telephone and the pre-excavation meeting was held with the tenant, as requested by the owner. Pre-excavation meeting forms, signed by the owner (or tenant with owner's permission) noting any vegetation that the owner requested to have removed or other special requests. These forms are provided in

Appendix C. The owner or tenant was provided with an emergency contact number for ENTACT and the QA Official representative from Advanced GeoServices.

4.2.2 Photodocumentation

ENTACT performed photodocumentation of the condition of each property prior to excavation activities. Video and photographs were taken of each property, including driveways, sidewalks, building exteriors, and vegetation. Additional photodocumentation was performed when circumstances arose (e.g., suspected damage to property). Representative photographs showing the various stages of activity on the residential properties are provided in Appendix D.

4.2.3 Decontamination Facilities

Dry brush decontamination of equipment was performed before removing the equipment from the excavation area. Any materials that were inadvertently tracked onto sidewalks and streets were immediately removed by ENTACT. Streets and sidewalks were swept clean and washed with a water truck after excavation and backfill operations.

Separate equipment was used for backfill and excavation to prevent potential cross-contamination. All excavation equipment was decontaminated with water in the staging area before being moved to backfill operations.

4.2.4 Soil Staging Area

Fourteen vacant lots comprising 1.3 acres located on Ralston Avenue on the south side of the Site were used as support and staging areas. Temporary office trailers for ENTACT, Advanced GeoServices and USEPA were located at the support zone at [redacted], [redacted] and [redacted]. Clean imported backfill and topsoil were stored at a staging area at [redacted], [redacted], [redacted], [redacted], [redacted] and [redacted]. Excavated soils were stockpiled at a staging area at [redacted], [redacted], [redacted], [redacted] and [redacted]. The clean material staging area was excavated and backfilled prior to use. The support zone and excavated material staging area were constructed by placing stone over in-place materials. These lots were excavated and restored during the second phase of activities in April 2007.

A security fence was erected around the perimeter of each support and staging area. Silt fence was installed at the perimeter of the excavated material and clean fill material staging areas. The soil stockpiles were covered with plastic sheeting during non-working hours and the gates were locked. Plastic sheeting was not placed below stockpiled soil which exceeded the 400 mg/kg project standard for lead because the property also exceeded project standard for lead and had not been excavated. An earthen berm surrounded the excavated soil stockpiles at the excavated material staging area. Plastic sheeting was placed below the berms if soil below the berm had lead concentrations less than 400 mg/kg. As described in additional detail in Section 4.3.1, Personal Air Monitors (PAMs) and Personal Data Random Air Monitors (PDRs) were used to monitor air quality at the soil stockpiles during all activities.

4.2.5 Tree Inspection

Trees at properties requiring excavation were inspected by Bartlett Tree Services (Bartlett), a local arborist. Bartlett provided a recommendation regarding whether the tree was likely to survive the maximum 12 inch excavation. Bartlett's tree inspection reports are provided in Appendix K.

Designated trees thought to have a poor survivability potential were cut down by ENTACT or their subcontractor and removed from the Site. Any remaining stumps were ground to a depth of 12 inches.

4.3 SOIL REMOVAL ACTIVITIES

Properties with lead concentrations in excess of the action level of 400 mg/kg within the 6 to 12 inch sampling horizon were excavated to the maximum depth of 12 inches. When only the 0 to 3 inch horizon exceeded the action level, initial excavations were conducted to 6 inch depth. If confirmatory sampling did not meet the action level, additional 6 inch increments were excavated until the maximum depth was obtained (12 inches, or 24 inches in gardens and play areas). Side yards were also excavated if one or both of the front and back yards required excavation. Mini-excavators and skid-steers performed the excavations. In smaller areas where there was a risk of damage to structures from the equipment or where access was limited, the excavations were performed using hand tools (e.g., shovels). Paved and gravel areas were not excavated.

Trees designated to remain were protected by removing the uppermost grass layer by machine, and then conducting hand excavation within the critical root zone (an area 3 to 4 times the tree diameter) to the maximum depth of 12 inches. Where surrounding grades allowed, excavations near trees were conducted to a maximum depth of 6 inches with 12 inches of backfill being placed as verbally approved by USEPA on October 18, 2005.

Excavation activities began on August 24, 2005. Due to winter weather, ENTACT temporarily suspended excavation and restoration activities on December 16, 2005. Tree removal activities continued until demobilization on February 5, 2006. Remobilization occurred on April 17, 2006. The first phase of excavation activities, on the lots with access, was completed on August 15, 2006. Demobilization was completed on September 23, 2006. Remobilization to complete the work on the lots with court-ordered access and within the staging areas occurred on March 26, 2007 for the second phase of activities. Excavation activities occurred from April 2 to April 23, 2007 prior to final demobilization on April 26, 2007. A total of 224 properties were excavated during the work. One property (1952 Ralston Avenue) was not excavated as the owner denied access for excavation.

4.3.1 Air Monitoring

Air monitoring was performed as described in the Work Plan. Personal Data Rams (PDRs) and personal air monitors (PAMs) were used to measure particulate and lead levels, respectively. Air monitoring equipment was placed at the nearest ingress/egress or window to the house, and upwind and downwind at the perimeter of the area being excavated. Air monitoring equipment was also placed upwind and downwind on the perimeter of the excavated material staging area. The PDRs were calibrated before use. Air monitors were removed from the excavations during rain to prevent damage. The excavation activities were visually monitored and did not produce dust during rain events.

4.3.1.1 **PDR Air Monitor Results**

A summary table providing the maximum and average PDR concentrations for each day is provided in Appendix E. The PDR's readings and mechanical operation were monitored during excavation activities. The results were reviewed to determine the level of dust suppression required. No additional dust suppression techniques, other than those described in Section 4.3.2, were necessary during soil excavation and handling operations.

4.3.1.2 **PAM Results**

PAMs were used in conjunction with PDRs at the Site. PAM samples were collected during the first 7 days of operation, and three times per month thereafter. A sample was collected for one person for each job classification (i.e., operator, laborer) during each event. The PAM cassettes were sent off for laboratory analysis and PAM use continued until lab results were back. PAM use was reduced to monthly since lead concentrations were below the performance standard of 0.025 $\mu g/m^3$ for the duration of the project. PAM results are attached in Appendix F. The last day of PAM use was April 5, 2007.

4.3.2 Dust Control

Water was used for dust suppression by presoaking the yards to be excavated. ENTACT used a water truck for the yards, roads, and the staging areas on the Site. Soil transportation trucks were tarped for dust control during on-site and off-site transport of soil. Plastic sheeting was used to

cover the soil stockpiles when they were not in use. When stockpiles were uncovered, the water truck was used to moisten the soil stockpiles for dust suppression.

4.3.3 Erosion and Sediment Control

The primary means of erosion and sediment control was silt fence at the downslope edge of excavation to prevent sediment release onto the roads and adjacent properties. During backfill operations, while bare soil was exposed at the pre-existing level, silt fence was installed downslope where necessary. Silt logs were installed at the stormwater sewer inlets in order to prevent sediment release into the city stormwater systems. Inlet protection was used downslope on all the streets where excavation was performed. Excavations which were surrounded on all sides by sidewalks, driveways and curbs, which were at least 6 inches higher than the bottom of the excavated soil, did not require the use of any further erosion and sediment control. No erosion control measures were needed after sod was installed on a property. Erosion control mat was installed over seeded areas for additional protection.

4.3.4 Confirmation Sampling

Confirmatory soil sampling was performed by ENTACT immediately following soil removal operations on a property, or portion of a property (area or quadrant). Similar to investigation sampling, each property was divided into two areas (front yard and back yard) with the exception of churches and vacant lots which were divided into four equally spaced quadrants. Five soil aliquots were collected from each area or quadrant to create one five-point composite soil sample. The aliquot locations were evenly distributed throughout each area or quadrant. Gardens and play areas were sampled by collecting a two to three point composite. The first twenty confirmation samples, and ten percent thereafter, were sent by ENTACT to Pace

Analytical Services in Indianapolis, Indiana, a USEPA approved off-site laboratory, and tested for total lead. The first twenty samples were used to develop a correction factor for ENTACT's XRF unit. All confirmatory XRF readings were then adjusted based on this correction factor. The corrected results were then compared to the action level of 400 mg/kg total lead.

Property sketches illustrating the location of the confirmation samples were prepared by ENTACT. The sketches depict the property, each area or quadrant addressed, and each aliquot location. The property sketches and the confirmatory sample results are provided in Appendix G.

4.4 TREATMENT, TRANSPORTATION AND DISPOSAL

Excavated materials were loaded and transported to the staging area in tarped, 5-cubic yard dump trucks. From September 8, 2005, to April 23, 2007, the material was loaded from the staging area or directly from the excavation into tarped dump trucks for off-site disposal.

4.4.1 Amount and Destination of Removed Soil

From September 8, 2005, to April 23, 2007, a total of 47,984 tons of excavated soils, including 897 tons of treated soil, were disposed at Clinton County Landfill in Frankfort, Indiana. Weight tickets and manifests were recorded for each truck sent to the disposal facility and are provided in Appendix H.

4.4.2 Waste Characterization

From August 2005 through June 2006 and in August 2006, ENTACT sampled each excavated soil stockpile at the staging area (approximately 1,000 cubic yards of soil per stockpile, and representing no more than 20 properties) and tested them for Toxicity Characteristic Leaching Procedure (TCLP) lead. Each sample was a composite consisting of five randomly located surface locations of the stockpile.

In June 2006 and March 2007, ENTACT conducted in-situ characterization sampling for the remaining properties which required excavation. Each sample represented a removal area consisting of no more than 20 properties. Each composite sample consisted of five randomly-located points within the removal area. A summary of lots represented by characterization samples is provided in Appendix I.

The samples were sent by ENTACT to Pace Analytical Services in Indianapolis, Indiana for TCLP lead analysis. If laboratory data indicated that the soil exceeded the TCLP criteria for lead (5.0 mg/L), treatment of the soil was required to render the soil non-hazardous. Approximately 897 tons of soil required treatment with a stabilization reagent, granular Triple Superphosphate (TSP), which was mixed into the soil using a trackhoe. Post-treatment samples were collected and analyzed for TCLP lead. In all cases, the treated soil was less than 5.0 mg/L TCLP lead.

The waste characterization information and TCLP data are presented in Appendix I.

5.0 BACKFILL, SOD, AND RESTORATION

5.1 VISIBLE MARKER BARRIER

When confirmatory sample results at the bottom of the maximum excavation depth exceeded 400 mg/kg, a distinguishable visible marker barrier (i.e., orange construction fence) was installed in the bottom of excavation as a visual barrier between existing soil and the new backfill material.

Visible marker barrier was installed at 201 of the 224 excavated properties.

5.2 BACKFILL

Following installation of a visible marker barrier (where required), structural fill was placed to backfill properties to about 3 inches below the final grade. Backfill materials were generally compacted by tracking with skid-steer machinery. The backfill was graded to provide positive drainage away from the homes.

The backfill source was initially tested for geotechnical properties and background contaminants. Analytical data showed that the concentrations in the backfill were less than the IDEM Risk-Based Standards for Cleanup, with the exception of arsenic. A site-specific background standard of 7.204 +/- 0.994 mg/kg arsenic was approved by USEPA. For every 10,000 cubic yards of backfill used further geotechnical analysis was required to confirm the material continued to meet project requirements. Analytical results for the backfill material are provided in Appendix J.

Backfill used during the project came from a former farm located off of I-37 south of State Road 465 operated by Joe Littleton. Approximately 19,500 cubic yards was used from August 2005 to April 2007. Samples BF-003-SF, BF-003-SF-02, and BF-003-SF-03 were collected from this borrow source.

5.3 TOPSOIL

Topsoil was used to backfill the top 3 inches of all properties and restore properties to the original pre-excavation grade. The topsoil source was initially tested for geotechnical and properties and background contaminants. Analytical data showed that the concentrations in the topsoil were less than the IDEM Risk-Based Standards for Cleanup, with the exception of arsenic. A site-specific background standard of 7.204 +/- 0.994 mg/kg arsenic was approved by USEPA. For every 10,000 cubic yards of topsoil used, further geotechnical analysis was required to confirm the material continued to meet project requirements. The topsoil material had a minimum organic content of 3% as determined by ASTM D-2974. Results of the topsoil testing are provided in Appendix J.

Topsoil from the following two sources were used during the project:

- A farm field located on Mann Road, south of Southport Road, north of Highway 144 operated by Joe Littleton. Approximately 7,250 cubic yards was used from August 2005 to June 2006. Sample BF-004-TS was collected from this source.

- A farm field at Highway 37S and State Road 144 in Mooresville, Indiana operated by Hoosier Sand & Gravel. Approximately 8,300 cubic yards was used from June 2006 to April 2007. Sample BF-006-TS was collected from this source.

5.4 RESTORATION

Following backfill, topsoil placement and final grading, sod was used to restore the turf on all properties, except vacant lots and properties where the owner requested seed in lieu of sod. A professional landscaping service was retained by ENTACT to provide and install sod. Sod was watered as necessary after installation until adequate roots developed.

Vacant lots received seed and erosion control mat during restoration. In May and June 2006, hydroseed was applied in lieu of erosion control mat. Due to erosion concerns, ENTACT resumed use of grass seed with straw erosion control mats in July 2006.

When requested by the owner, trees and landscaping removed during the work were replaced with a similar nursery-stock item, or the owner was reimbursed with the monetary equivalent for purchase and installation. A summary of tree and plant reimbursements and installations is provided in Appendix K.

The work was completed by ENTACT on behalf of NL Industries Inc. ENTACT provided NL a one year warranty on the work they completed each year.

5.5 REPAIR TO DAMAGED PROPERTY

Repairs were made to property damaged during the work to return the property to pre-excavation conditions. These repairs included fixing or replacing sidewalks, driveways and fences which were damaged while the work was being completed. A resident concern log with resolutions is

included in Appendix L. On several occasions, unmarked utilities were damaged during excavation. The utility companies were called immediately and the damage was generally repaired within 24 hours.

5.6 PROPERTY CLOSEOUT

Following restoration of a property, a meeting was scheduled with the property owner. The owner and an ENTACT representative inspected the property to determine if restoration was complete, including vegetation, sod, landscaping, tree planting and any repairs that may have been needed. If there were restoration issues, those issues were written on the property closeout form provided by ENTACT. In some instances, the property owner would not sign the closeout form. In these cases, the ENTACT representative noted any restoration issues and the owner's reasons for not signing the closeout form. If the owner's reasons did not pertain to work-related issues, the ENTACT representative signed the closeout form and work on the property was considered complete. ENTACT's property closeout forms are provided in Appendix M. A summary of ENTACT's best efforts to obtain closeout form signatures is also provided in Appendix M.

At the completion of work, USEPA attempted to meet with each owner and provided a letter to the owner which documented the work conducted at the property. The owner was asked to sign the letter to acknowledge receipt. In some instances, the property owner could not be located or would not sign the USEPA closeout letter due to work items which they believed to be outstanding. In these cases, USEPA provided the letter without requesting receipt signature. A complete set of these close-out letters was not provided to the Respondent or ADVANCED GEOSERVICES. Any parties interested in obtaining close-out letters should contact Ms. Anita Boseman of the USEPA at the location identified on Table 1.

5.7 FINAL INSPECTION

A final inspection for the first phase of activities (i.e., the work conducted in 2005 and 2006) was held on September 7, 2006 with representatives of the Respondents, USEPA, IDEM, MCHD, Advanced GeoServices and ENTACT in attendance. Properties of concern and a representative sample of all properties were reviewed during the final inspection. A short meeting was held prior to a site walk, at which time outstanding restoration items were identified that had not yet been addressed. A copy of the minutes from the final inspection is attached in Appendix N. Outstanding restoration items were addressed by ENTACT prior to demobilization on September 23, 2006.

A final inspection was held on April 26, 2007 for the second phase of activities which was completed in 2007. Representatives of the Respondents, USEPA, IDEM, Advanced GeoServices, and ENTACT attended. This inspection included properties that were addressed in 2007 (i.e., properties subject to the court order, the excavated material staging area and the trailer staging area). A short meeting was held prior to a site walk of the 15 court order properties. A few outstanding restoration items were identified and addressed prior to demobilization. A copy of the minutes from the final inspection is attached in Appendix N.

Memos from additional site walks conducted to observe conditions after the final site walk are also included in Appendix N.

6.0 PROJECT COSTS

The estimated cost to complete the removal activities was $5,100,000. This does not include oversight by USEPA, or state and local agencies.

7.0 REPORTS

7.1 WEEKLY REPORTS

Weekly Reports were completed and submitted electronically by ENTACT during construction. The weekly reports included:

- Site activities completed for the previous reporting period;
- Site activities planned for next reporting period;
- Project personnel;
- Health and safety;
- Issues or concerns;
- Planned resolution of issues; and
- A schedule update.

The weekly reports submitted from July 2005 through April 2007 for the project are provided in Appendix O.

7.2 MONTHLY REPORTS

Monthly reports were completed and submitted to the USEPA by Advanced GeoServices. Reports were submitted from April 2005 through April 2007. Each monthly report contained at a minimum:

- Actions Taken During the Previous Month to Comply with the AOC;
- Summary of Data Received During the Reporting Period;
- Activities Planned for the Next Reporting Period; and
- Problems Encountered, Anticipated Problems and Planned Resolutions of Past or Anticipated Problems.

7.3 FIELD DOCUMENTATION

Field documentation by Advanced GeoServices was kept in the form of field log books for daily activities as well as delineation sampling. The field book had entries throughout each day to document the activities performed as well as conversations with property owners, regulators, representatives from the Respondent, Advanced GeoServices, and ENTACT. The delineation sampling logbook includes a record of which properties were sampled and the testing results obtained from the XRF unit.

7.4 HEALTH AND SAFETY

ENTACT performed residential remediation at the American Lead Site from August 2005 through April 2007. During the course of the project, ENTACT experienced zero (0) OSHA recordable injuries to workers and there were no injuries to the residents of the neighborhood. In addition, there were no incidents resulting in significant damage to public or private property.

8.0 SUMMARY AND CERTIFICATION STATEMENT

This Final Report documents that the activities outlined in the Removal Action Work Plan have been successfully completed for the properties identified in this completion report, therefore the requirements for that portion of the Administrative Order on Consent, Docket Number V-W-'05-C-805, have been fulfilled.

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 this 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.

Jennifer W. DiJoseph
Advanced GeoServices

Christopher T. Reitman
Advanced GeoServices

6-24-08
Date

TABLE

TABLE 1
PROJECT PERSONNEL CONTACT INFORMATION

Former American Lead Site
Indianapolis, Indiana

The following individuals may be contacted for additional information about the Site:

United States Environmental Protection Agency

Ms. Anita Boseman
On-Scene Coordinator
United States Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604
Telephone: (312)886-6741

Respondent

Kevin Lombardozzi
Project Coordinator
NL Industries, Inc.
5430 LBJ Freeway
Suite 1700
Dallas, TX 75240
Telephone: (972)-448-1480
Fax: (972)-448-1445

Russ Perry
Alternate Project Coordinator
NL Industries, Inc.
5430 LBJ Freeway
Suite 1700
Dallas, TX 75240
Telephone: (972)-448-1442
Fax: (972)-448-1445

Indiana Department of Environmental Management (IDEM)

Mr. Kevin Houppert
IDEM
100 N. Senate Avenue
MC 66-20 IGCN 1101
Indianapolis, IN 46204
Telephone: (317) 232-8552

TABLE 1
(Continued)
PROJECT PERSONNEL CONTACT INFORMATION

Former American Lead Site
Indianapolis, Indiana

USEPA's Onsite Representative

Karen Campbell
TN & Associates, Inc.
3862 Crest Point Drive
Noblesville, IN 46060
Telephone: (317) 313-1136
Fax: (317) 867-4378

Marion County Health Department

Pam Thevenow
Marion County Health Department
3838 North Rural Street
Indianapolis, IN 46205
Telephone: 317-221-2266
Fax: (317) 221-2288

ENTACT

Mr. Rich Wood
Project Manager
ENTACT
1010 Executive Court
Suite 280
Westmont, IL 60559
Telephone: (630)-986-2900
Fax: (630)-986-0653

Maynard Randall
Field Project Manager
ENTACT
1010 Executive Court
Suite 280
Westmont, IL 60559
Telephone: (630)-986-2900
Fax: (630)-986-0653

TABLE 1
(Continued)
PROJECT PERSONNEL CONTACT INFORMATION

Former American Lead Site
Indianapolis, Indiana

Jordan Wipf
Field Project Manager
ENTACT
1010 Executive Court
Suite 280
Westmont, IL 60559
Telephone: (630)-986-2900
Fax: (630)-986-0653

Advanced GeoServices

Christopher T. Reitman
Project Director
Advanced GeoServices
1055 Andrew Drive
Suite A
West Chester, PA 19380
Telephone: (610)-840-9123
Fax: (610)-840-9199

Jennifer DiJoseph
Project Manager
Advanced GeoServices
1055 Andrew Drive
Suite A
West Chester, PA 19380
Telephone: (610)-840-9189
Fax: (610)-840-9199

Jennifer Stanhope
Quality Assurance Manager
Advanced GeoServices
1055 Andrew Drive
Suite A
West Chester, PA 19380
Telephone: (610)-840-9110
Fax: (610)-840-9199

FIGURES

SOURCES:
U.S.G.S. TOPOGRAPHIC QUADRANGLE
INDIANAPOLIS EAST

SCALE: AS ABOVE

FORMER AMERICAN LEAD SITE

INDIANAPOLIS, INDIANA

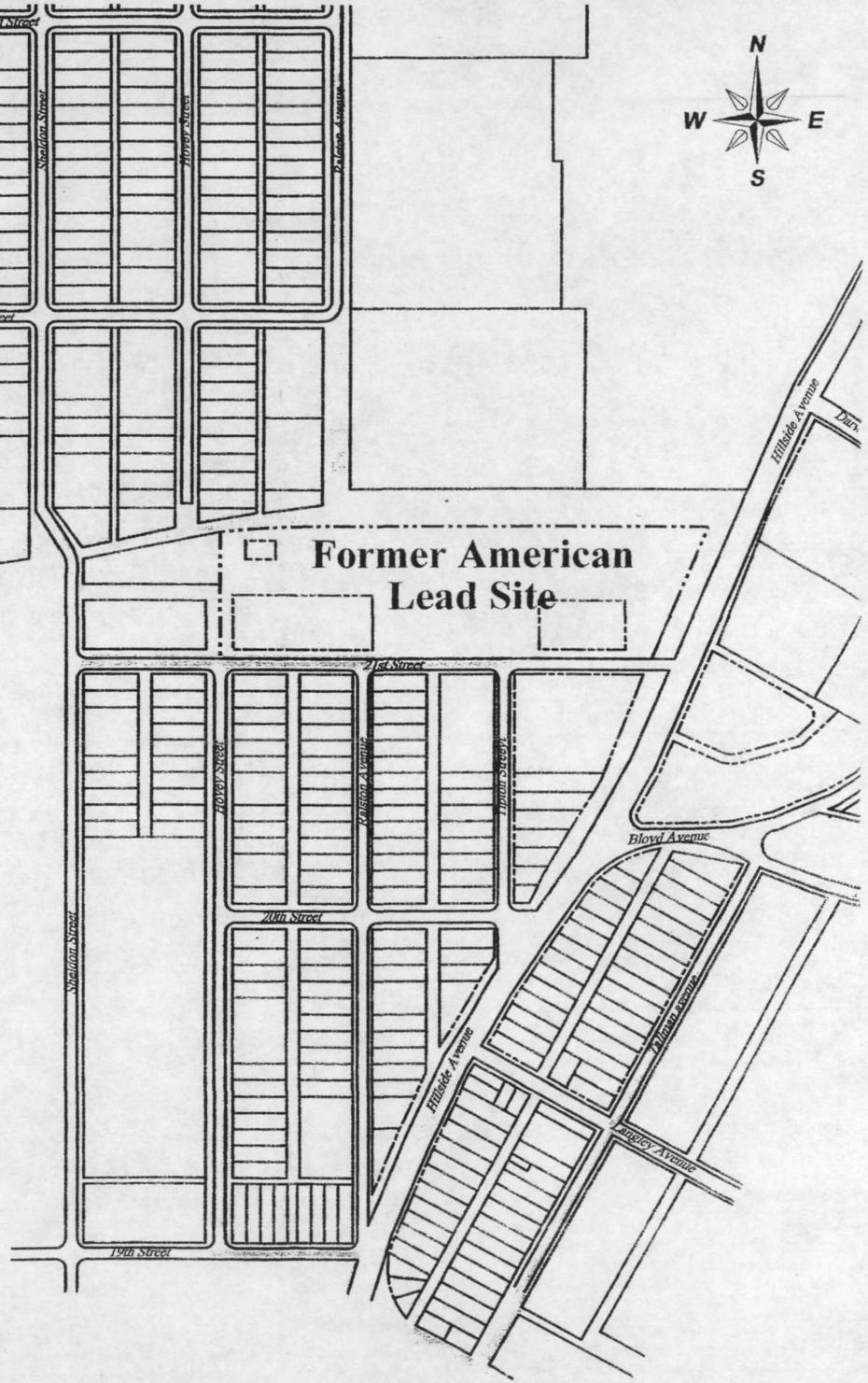
Scale: 1:24000	SITE LOCATION MAP
Originated By:	
Drawn By:	
Checked By: KC	Advanced GeoServices Corp.
Project Mgr: CTR	1055 Andrew Drive, Suite A West Chester, Pennsylvania 19380 (610) 840-9100 FAX: (610) 840-9199
Dwg. No: 2003-1097-01-18	
Project No: 2003-1097-01	FIGURE: 2-1
JUN 24 2008	

J:\American Lead Site\drawings\2003-1097-01\2003-1097-01-18.dwg, FIGURE 1

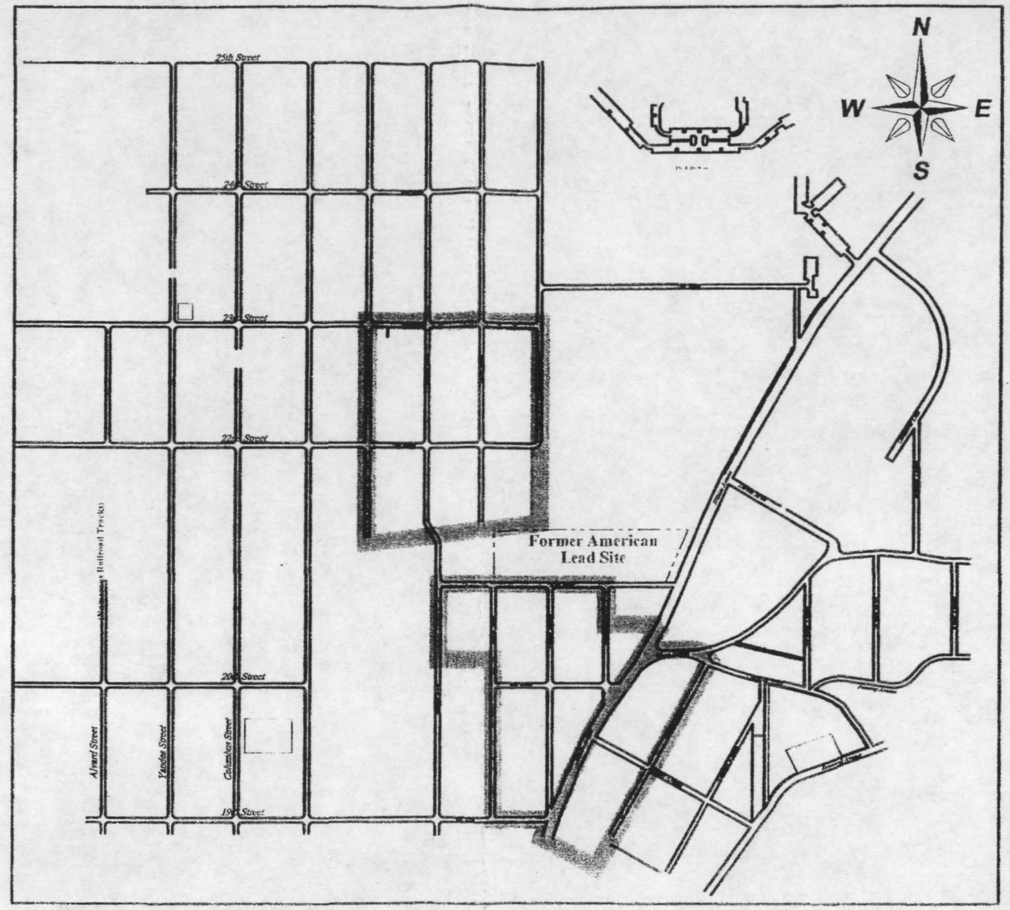
RESIDENTIAL SAMPLE LOCATION MAP

HAS BEEN REDACTED – ONE PAGE

CONTAINS POTENTIAL PERSONALLY-IDENTIFYING INFORMATION



SCALE: 1" = 300'



SCALE: 1" = 800'

NOTE:

1. FIGURE BASED ON DRAWINGS PROVIDED TO AGC BY ESC INC.

FORMER AMERICAN LEAD SITE

INDIANAPOLIS, INDIANA

Scale: AS SHOWN	STUDY AREA
Originated By: K.O.	
Drawn By: P.S.G.	
Checked By: K.O.	
Project Mgr: C.T.R.	
Dwg No. 2003-1097-01-13	
Issued: JUN 24 2003	Project No. 2003-1097-01

Advanced GeoServices Corp.
1055 Andrew Drive Suite A
West Chester, Pennsylvania 19380
(610) 840-9100
FAX: (610) 840-9199

FIGURE: 2-2

J:\American Lead Site\drawings\2003-1097-01\2003-1097-01-13
J:\American Lead Site\drawings\2003-1097-01\2003-1097-01-13.dwg, Figure 2-2

RESIDENTIAL SAMPLE LOCATION MAP

HAS BEEN REDACTED – ONE PAGE

CONTAINS POTENTIAL PERSONALLY-IDENTIFYING INFORMATION

APPENDICES

(Provided in electronic format [PDF] on a CD)

PRIVILEGED AND CONFIDENTIAL
CONTAINS PRIVATE HOMEOWNER INFORMATION

APPENDIX A

Documentation of Best Efforts to Obtain Access