

**QUALITY ASSURANCE PROJECT PLAN
PHASE 1 REMOVAL PROPERTIES SUBSURFACE SOIL SAMPLING EVENT**

**35th AVENUE REMOVAL SITE
BIRMINGHAM, JEFFERSON COUNTY, ALABAMA**

Revision 0

Prepared for:


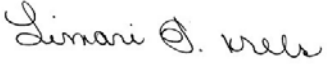
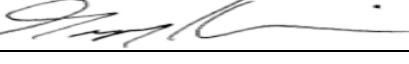
**U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 4
61 Forsyth Street
Atlanta, Georgia 30303**

Prepared by:

**Oneida Total Integrated Enterprises
1220 Kennestone Circle, Suite 106
Marietta, Georgia 30066**

Contract No.	:	EP-W-05-053
Task Order No.	:	TO-05-14-01-5000
Date Submitted	:	January 14, 2014
EPA Task Monitor	:	Rick Jardine
Telephone No.	:	404-562-8764
Prepared by	:	Limari Krebs
Telephone No.	:	678-355-5550

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

SECTION A: Project Planning Elements			
A1. Title (Project Name):	35 th Avenue Removal Site – Phase 1 Removal Properties Subsurface Soil Sampling Event		
Project Location:	The site encompasses three residential neighborhoods: Fairmont, Collegeville, and Harriman Park in Birmingham, Jefferson County Alabama (Figures 1 and 2). The geographic coordinates for an approximate center point of the site are 33.561625 North latitude and -86.802568 West longitude. The Fairmont neighborhood comprises the western portion of the site, Collegeville the southern portion, and Harriman Park the eastern portion.		
Location Description:	<p>The study area for the site is a mixture of residential properties surrounded by industrial facilities historically associated with limestone quarrying, foundries, recycling, and coke and chemical manufacturing operations. It encompasses approximately 2,060 residential and residential-use (childcare facilities; church playgrounds; City Parks and playgrounds; and schools) parcels located south of 49th Street, east of 26th Street/Highway 31, north of 27th Avenue, and west of the railroad lines (Figure 2).</p> <p>This investigation will focus on the 52 residential and residential-use properties where surface soils were found to be contaminated with levels of arsenic, lead, and/or polycyclic aromatic hydrocarbons (PAH) exceeding the 10⁻³ risk levels for direct contact with residential soil during the 2012-2013 EPA Emergency Response and Removal Branch (ERRB) Removal Investigation or located between two adjacent parcels where 10⁻³ exceedances were noted. (Figures 3 -5). Table 1 lists the properties to be sampled during this investigation.</p>		
Originating Organization:	OTIE, 1220 Kennestone Circle, Suite 106, Marietta, Georgia (GA)		
Document Version/Date:	Revision 0 / January 14, 2014		
<i>Approvals</i>			
Approved By:	Russell Henderson	Date:	Signature:
Title	OTIE Project Manager	1/14/14	
Approved By:	Limari Krebs	Date:	Signature:
Title	OTIE Quality Assurance Manager	1/14/14	
Approved By:	Greg Kowalski	Date:	Signature:
Title	OTIE START III Program Manager	1/14/14	

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

Approved By: Title	Rick Jardine USEPA On Scene Coordinator (OSC)	Date:	Signature:
A2. Table of Contents	See Page i		
A3. Distribution List	Katrina Jones	USEPA Region 4 Contract Manager	
	Darryl Walker	USEPA Region 4 Contract manager	
	Rick Jardine	USEPA Region 4 OSC	
	Greg Harper	USEPA Region 4 OSC	
	OTIE Files	OTIE, Marietta, GA	

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

A4. Project/Task Organization

Project Personnel	Organization	Responsibilities
-------------------	--------------	------------------

See attached organizational chart

A5. Project Definition and Background

From November 2012 through June 2013, the surface soils of 1,116 residential and residential-use parcels were sampled as part of the EPA ERRB Removal Investigation. Sampling was conducted to identify the nature and extent of contamination in the surface soils (0-4 inches below ground surface [bgs]) of parcels located within the study boundary of the site. A total 3,160 (2,976 composite and 184 grab) surface soil samples were collected primarily for polycyclic aromatic hydrocarbons (PAH) and Resource Conservation and Recovery Act (RCRA) metals analysis. Field samples were screened ex situ for RCRA metals concentrations using a Niton XL3t X-Ray Fluorescence (XRF) instrument to efficiently identify properties with elevated concentrations in soil. A portion of 1,823 field samples were sieved using a 2-millimeter sieve, and screened in order to assess the lead uptake of the contamination. Of the 3,160 soil samples collected, all but three were analyzed for target compound list (TCL) PAH. XRF field screening results and laboratory analytical data showed arsenic and/or lead concentrations exceeding the Removal Management Levels (RMLs) for direct contact with residential soil in 450 locations in 324 parcels. Analytical data show elevated levels of PAHs, primarily benzo(a)pyrene, at concentrations exceeding the RML of 1.5 milligrams per kilogram (mg/kg) in 145 locations in 102 parcels.

Overall, 394 parcels throughout the site had surface soil results in exceedance of the RMLs for one or more compounds. Of these, 50 parcels had contaminant concentrations greater than 10 times the PAH or arsenic RMLs; or greater than 1,200 mg/kg for lead. Twelve (12) for PAH, one parcel for arsenic only, one parcel for arsenic and lead, and 36 parcels for lead only (Table 1)

The purpose of this sampling event is to conduct subsurface soil sampling and analysis activities at the 52 residential-use properties where previous sampling by EPA ERRB indicate arsenic, lead, and/or PAH contamination in the surface soils at concentrations exceeding the 10^{-3} risk levels or located between two adjacent parcels where 10^{-3} exceedances were noted.

A6. Project Description:

START will collect subsurface soil samples from four distinct depth intervals (up to 24 inches bgs) to assess the vertical extent of contamination at the 52 properties where surface soil concentrations exceeded the 10^{-3} risk levels or are located between two adjacent parcels where 10^{-3} exceedances were noted..

Samples collected will be submitted to TestAmerica Laboratories (TestAmerica) in Savannah, Georgia, a National Environmental Laboratory Accreditation Conference (NELAC) certified laboratory, for analysis. All samples will be analyzed for arsenic and lead in accordance with SW846-6010. Samples collected from the parcels indicating elevated levels of PAH contamination will also be analyzed for low-level PAHs in accordance with SW846-8270.

The analytical data gathered during this field investigation will provide EPA with sufficient information to identify the maximum depth at which removal shall be conducted at the individual properties assessed.

START anticipates collecting 312 field samples from 52 parcels (78 locations). Additional quality assurance/quality control (QAQC) samples including 31 field duplicates and eight rinsate blanks will also be collected.

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

Applicable regulatory information, actions levels, etc.	<u>Compound</u> Benzo(a)pyrene Arsenic Lead	<u>10⁻³ Risk Levels</u> 15 mg/kg 390 mg/kg 1,200 mg/kg	<u>RML</u> 1.5 mg/kg 39 mg/kg 400 mg/kg
Field Study Date:	January 14 – January 23, 2014		
Projected Lab Completion Date:	14 calendar days from the date of sample receipt at the laboratory to submittal of the Electronic Data Deliverable (EDD) and Level IV analytical data package.		
Final Report Completion Date:	Final, validated analytical result tables will be prepared and provided to the OSC two weeks following receipt of the final, Level IV data package from the laboratory.		
A7. Quality Objectives and Criteria			
<i>Problem Statement</i>	Elevated concentrations of hazardous constituents associated with historical operations have been identified in the surface soils of residential properties located at the site. Surface soils at 50 parcels were found to have concentrations of arsenic, lead, and/or PAH exceeding 10 ⁻³ risk levels for direct contact with residential soil. Two additional parcels, located between parcels exceeding the 10 ⁻³ risk levels, will also be assessed as part of this investigation.		
<i>Identify the Decisions</i>	<p>This sampling event will focus on determining the vertical extent of contamination where elevated levels of arsenic, lead, and/or PAH were identified in the surface soils during the EPA ERRB Removal Investigation.</p> <p>Therefore, the following primary decisions have been identified:</p> <p>(1) Are contaminants of concern present on residential properties in the subsurface soils at 6 inches bgs, 12 inches bgs, 18 inches bgs, and 24 inches bgs.</p> <p>(2) Do the concentrations of the detected contaminants exceed RML values?</p> <p>(3) Do the concentrations of the detected contaminants pose an unacceptable risk to human health and/or the environment?</p>		
<i>Decision Inputs</i>	The primary input needed to support the decision making process is the reported analytical concentrations of contamination in samples collected. Analytical results used in the decision-making process will come from TestAmerica laboratories. Reporting limits for target analytes are provided in Attachment 1		
<i>Study Boundary</i>	The site boundary is shown in Figure 2. Figures 3 – 5 show the properties to be sampled as part of this investigation.		

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

<i>Decision Rule</i>	<ul style="list-style-type: none"> • All soil samples collected from the 16 parcels (20 locations) indicating elevated levels of PAH contamination will be analyzed for low-level PAHs in accordance with SW846-8270 and arsenic/lead in accordance with SW846-6010. • For the 36 parcels (58 locations) indicating elevated levels of arsenic and/or lead contamination only - only the soil samples collected at the 6 inch and the 12 inch bgs depths will be initially submitted to the laboratory for arsenic and lead analysis in accordance with SW846-6010. The samples collected at the 18 inch and 24 inch bgs depth will be submitted for analysis only if analytical results for the 6 inch and 12 inch bgs depths indicate contamination.
<i>Error Limits</i>	<p>This sampling effort is designed to sample in areas where surface soil contamination is known to exist based on evidence gathered during previous investigations. However, random and systematic errors could be introduced during sample collection, sample handling and storage, sample analysis and data reduction. The QC measures set forth in this QAPP and the specific analytical methods will serve to minimize these errors. QC samples will be used to monitor the accuracy and precision of the sampling activity as well as the analytical process.</p>
<i>Optimize Sampling Design</i>	<p>The data collection activities will focus on identifying the vertical extent of contamination at properties where surface soil contamination is known to exist. Section B will describe sampling design in detail.</p>
<i>A8. Special Training/Certifications</i>	
<p>Individuals implementing this QAPP must receive, at a minimum, orientation to the project's purpose, scope, and methods of implementation. This orientation is the responsibility of the Project Manager or designee.</p> <p>Any field team members involved with sample collection or handling will have received 40-hour hazardous waste operations and emergency response (HAZWOPER – 29 CFR 1910.120) training.</p> <p>The Health and Safety Officer will have received 8-hour supervisor training course (HAZWOPER – 29 CFR 1910.120). Any other safety-related training is defined in the project HASP.</p> <p>The laboratory performing the analysis for this project is certified under the NELAC in the State of Alabama. The laboratory managers are responsible for ensuring that personnel training are current and documented as defined in the laboratory's SOPs. It is the laboratory's manager's responsibility to determine specific training and certification needs, and for ensuring that any required training is documented.</p>	

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

A9. Documents and Records

Field records that may be generated include the following:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Chains-of-Custody Forms | <input type="checkbox"/> Field Instrument Calibration Logs |
| <input type="checkbox"/> Field Monitoring and Screening Results | <input type="checkbox"/> Soil Borings and Well Logs |
| <input checked="" type="checkbox"/> Site Maps and Drawings | <input checked="" type="checkbox"/> Health and Safety Plan |
| <input checked="" type="checkbox"/> Photographic Log | <input checked="" type="checkbox"/> Site Logbook |
| <input type="checkbox"/> Waste Manifests | <input checked="" type="checkbox"/> Access Agreements |

Field documentation and records will be generated and maintained in accordance with the requirements presented in the following EPA SESD Field Branches Quality System and Technical Procedures: Control of Records (SESDPROC-002-R5), September 2010; Sample and Evidence Management (SESDPROC-005-R2), January 2013; and Logbooks (SESDPROC-010-R5), May 2013. These documents can be found at the following web address: <http://www.epa.gov/region4/sesd/fbqstp/index.html>.

START will retain all file information related to the site in the Marietta, Georgia, OTIE office. Upon EPA request, the entire site file, including all documents generated under the work assignment, will be inventoried and submitted to EPA or to an EPA-designated location within three weeks of the request. In addition, START will provide digital copies of all documents generated under the work assignment, including reports, e-mails, and figures if requested by EPA. All documents generated for the work assignment are the property of EPA and will be retained as part of EPA files. All EPA files will be delivered to EPA at the conclusion of the START contract.

START will use the information collected at the site to complete a Subsurface Soil Sampling Event summary letter report, which summarizes the field investigation activities, and the nature and extent of contamination at the properties studied. Environmental and QA/QC analytical data will be evaluated and data tables will be attached to the report. Significant QA/QC issues regarding sample collection, handling, and analysis will be identified in the report.

A draft version of the report will be available for review and commenting by EPA within six weeks following the completion of the field sampling event. A final version of the report will be available within two weeks following receipt of comments by EPA. Laboratory data will be released to the EPA OSC as validated data two weeks following receipt of the final results from the laboratory.

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

SECTION B: Data Generation and Acquisition

B1. Sampling Design

START has developed a sampling design to ensure that DQOs are fulfilled for the sampling investigation. Specifically, the design takes into account data needs, key decisions, and environmental variables, such as physical and site constraints, and how the spatial and temporal boundaries of the contamination and population at risk will be identified. The sampling design presented in the following sections has been developed based on information obtained from historical investigations performed at residential properties within the site boundary.

Samples will be collected from the 6 inch, 12 inch, 18 inch, and 24 inch bgs depths from the same aliquot locations sampled during the Removal Investigation. A Trimble Global Positioning System (GPS) will be used by sampling team to navigate to each of the geographic coordinates for surface soil aliquots sampled during the Removal Investigation. Table 2 provides a listing of the geographic coordinates for each location to be assessed during this sampling event.

START anticipates collecting 312 soil samples from 52 residential-use properties. Soil samples will be submitted to TestAmerica for arsenic and lead analysis by SW846-6010 based on the decision rule; however, START anticipates submitting a minimum of 196 soil samples for metals analysis. Eighty (80) samples are anticipated for low-level PAH by SW846-8270. Additional QAQC samples including 31 field duplicates and eight rinsate blanks will also be collected. Tables 3 summarizes the analysis to be performed by location.

B2. Sampling Methods, General Procedures

Sampling will be conducted in accordance with the following SESD FBSQTP:

- | | |
|--|--|
| <input type="checkbox"/> Ambient Air Sampling
(SESDPROC-303-R4) | <input type="checkbox"/> Benthic Macroinvertebrate Sorting and Taxonomic
Identification (SESDPROC-509-R1) |
| <input type="checkbox"/> Dye Tracer Measurements
(SESDPROC-504-R0) | <input type="checkbox"/> Fish Field Sampling
(SESDPROC-512-R3) |
| <input type="checkbox"/> Fluvial Sediment Sampling
(SESDPROC-500-R2) | <input type="checkbox"/> Groundwater Sampling
(SESDPROC-301-R2) |
| <input type="checkbox"/> Hydrologic Studies
(SESDPROC-501-R2) | <input type="checkbox"/> Marine Macroinvertebrates
(SESDPROC-511-R2) |
| <input type="checkbox"/> Multi-Habitat Macroinvertebrate Sampling
(SESDPROC-508-R2) | <input type="checkbox"/> Porewater Sampling
(SESDPROC-513-R0) |
| <input type="checkbox"/> Potable Water Supply Sampling
(SESDPROC-305-R1) | <input type="checkbox"/> Pump Operation
(SESDPROC-203-R2) |
| <input type="checkbox"/> Reaeration Measurement By Diffusion Dome
(SESDPROC-505-R2) | <input type="checkbox"/> Reaeration Measurement Using Krypton Gas
(SESDPROC-506-R2) |
| <input type="checkbox"/> Sediment Oxygen Demand
(SESDPROC-507-R2) | <input type="checkbox"/> Sediment Sampling
(SESDPROC-200-R2) |
| <input type="checkbox"/> Soil Gas Sampling
(SESDPROC-307-R2) | <input checked="" type="checkbox"/> Soil Sampling
(SESDPROC-300-R2) |
| <input type="checkbox"/> Surface Water Sampling
(SESDPROC-201-R1) | <input type="checkbox"/> Total Community Metabolism
(SESDPROC-503-R2) |
| <input type="checkbox"/> Trace Contaminant Sampling
(SESDPROC-502-R2) | <input type="checkbox"/> Waste Sampling
(SESDPROC-302-R1) |
| <input type="checkbox"/> Wastewater Sampling
(SESDPROC-306-R2) | <input type="checkbox"/> Water Column Oxygen Metabolism
(SESDPROC-504-R2) |
| <input type="checkbox"/> Wipe Sampling
(SESDPROC-304-R2) | <input type="checkbox"/> Other: |

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

Field measurements will be collected in accordance with the following SESD FBSQTP:

- | | |
|---|---|
| <input type="checkbox"/> Field DO Measurement
(SESDPROC-106-R2) | <input type="checkbox"/> Field Measurement of ORP
(SESDPROC-113-R0) |
| <input type="checkbox"/> Field Measurement of Total Residue Chlorine
(SESDPROC-112-R2) | <input type="checkbox"/> Field pH Measurement
(SESDPROC-100-R2) |
| <input type="checkbox"/> Field Specific Conductance
(SESDPROC-101-R3) | <input type="checkbox"/> Field Temperature Measurement
(SESDPROC-102-R3) |
| <input type="checkbox"/> Field Turbidity Measurement
(SESDPROC-103-R2) | <input type="checkbox"/> Field XRF Measurement
(SESDPROC-107-R2) |
| <input checked="" type="checkbox"/> Global Positioning System
(SESDPROC-110-R3) | <input type="checkbox"/> Groundwater Level Measurement
(SESDPROC-105-R1) |
| <input type="checkbox"/> In Situ Water Quality Mon
(SESDPROC-111-R2) | <input type="checkbox"/> Wastewater Flow Measurement
(SESDPROC-109-R3) |
| <input type="checkbox"/> Other: | |

Soil Sampling

Composite and/or grab soil samples will be collected from previously sampled locations in accordance with FBSQTP for Soil Sampling (SESDPROC-300-R2), from the 6 inch, 12 inch, 18 inch, and 24 inch bgs depths at each aliquot location using stainless steel hand augers. A clean and decontaminated hand auger bucket will be used to auger to 6 inches bgs at each aliquot point for a sample. Once the sampling depth is reached, a second clean and decontaminated auger bucket will be used to collect sample material from each aliquot comprising the 6 inch depth composite sample. Following sample collection, the same auger bucket may be used to auger down to 12 inch sampling depth. Once the sampling depth is reached, a third clean and decontaminated auger bucket will be used to collect sample material from 12 inch depth. The process of hand augering to the desired depth and using a clean and decontaminated auger bucket to collect the sample will be repeated for the 18 and 24 inch depth samples.

Each soil sample will be homogenized in a stainless steel bowl using a stainless steel spoon following collection. One 4-ounce jar will be filled at properties where arsenic and lead are the only constituents of concern. Two 4-ounce jars will be filled at properties where PAHs are the constituents of concern. Information identifying the location and date/time will be inscribed on each jar. All sampling jars will then be placed on ice.

Based on the decision the 4-ounce jars of soils will be submitted to TestAmerica for arsenic/lead and/or PAH analysis.

Sampling activities will not be conducted during or one day after rain events, at the discretion of the OSC, to allow soil material to effectively dry prior to sample collection.

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

All equipment will be handled in accordance with the FBQSTP Equipment Inventory and Management procedure (SESDPROC-108-R4).

Non-dedicated equipment will be decontaminated in accordance with FBQSTP Field Equipment Cleaning and Decontamination (SESDPROC-205-R2) prior to mobilization to the site.

Sample containers used for sample collection will be QC grade purchased from ESS and will be prepared according to the procedures contained in the EPA Specifications and Guidance for Obtaining Contaminant-Free Sample Containers (OSWER Directive 93240.0-05).

The following lists the sampling equipment and supplies to be used during this investigation:

sampling instruments

- Handheld GPS - Trimble GeoXT

sampling supplies

- Stainless Steel Hand-Auger buckets
- Stainless Steel bowls
- Stainless Steel scoop
- Nitric preservative
- 1 Liter Ultra Pure Water (12)
- Coolers
- Ice
- Strapping tape
- Custody seals
- Printer
- Sample Jar labels

Decontamination supplies

- Buckets
- Brushes
- Water
- Aluminum foil
- Distilled water
- Paper towels

PPE

- Nitrile gloves
- hand sanitizer
- hand soap
- water
- insect repellent
- hand wipes
- sunscreen

Other Items

- Logbooks

All investigation derived waste (IDW) will be managed according to the procedures found in the FBQSTP Management of Investigation-Derived Waste procedure (SESDPROC-202-R2). All IDW will be properly disposed of according to best management practices and regulatory requirements.

QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10

B3. Sampling Handling and Custody

All samples will be handled and custody maintained in accordance with the FBQSTP Operating Procedure for Sample Evidence Management (SESDPROC-005-R2) and Packing, Marking, Labeling and Shipping of Environmental and Waste Samples (SESDPROC-209-R2).

Once collected, all samples will be placed in a custody-sealed container and held in a secure location. The FPL or his designee will ensure that custody of samples is maintained until they are shipped to the laboratory.

Chain-of-custody and associated field records will be used to document the samples from collection through delivery to the laboratory.

Samples will be processed using EPA Scribe software.

B4. Analytical Methods

The laboratory analytical data packages will be validated by a START Sr. Chemist.

SESD:	N/A
CLP:	N/A
Other:	low-level PAH in accordance with SW846-8270 arsenic and lead in accordance with SW846-6010

B5. Quality Control

Field:	Quality control for field monitoring and measurements will be conducted in accordance with FBQSTP Field Sampling Quality Control (SESDPROC-011-R3). The following QC samples will be collected as part of this investigation: <ul style="list-style-type: none"> • Field duplicates at a rate of 1 per 10 samples • Rinsate blanks after each decon event • MS/MSD samples at a rate of 1 per 20 samples.
Laboratory:	SW846 methods describe the required accuracy, precision, sensitivity of the analysis required for this project. The MDL/RLs for TestAmerica are provided in Attachment 1.

B6. Instrument/Equipment Testing, Inspection and Maintenance

All equipment will be handled in accordance with the FBQSTP Equipment Inventory and Management procedure (SESDPROC-108-R4).

B7. Instrument/Equipment Calibration and Frequency

All equipment will be calibrated according to the manufacturer's instructions. In addition, all equipment will be handled in accordance with the FBQSTP Equipment Inventory and Management procedure (SESDPROC-108-R4).

B8. Inspection/Acceptance for Supplies and Consumables

All critical supplies and consumables for this field investigation are inspected and maintained by the OTIE Field Team Leader.

**QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10**

B9. Non-direct Measurements:

Optional (Applicability of this item is site-specific).

B10. Data Management

The project manager will be responsible for ensuring that all requirements for data management are met. The reference materials generated during this investigation and included in the final reports will be submitted to the OSC in electronic format on compact disc, and a Scribe database will be created for the analytical results. The Scribe database will be submitted to the OSC with the final reports. All field-generated data will be managed as part of the permanent field record for the project. All laboratory analytical data will be managed in accordance with the requirements of the methods, as well as the EPA Region 4 policy and applicable federal regulations.

SECTION C: Assessment/Oversight

C1. Assessments and Response Actions

Assessments will be conducted during the field investigation according to the SESD Operating Procedure for Project Planning; SESDPROC-016-R2 to ensure the QAPP is being implemented as approved. The Project Manager is responsible for all corrective actions while in the field.

C2. Reports to Management

The Project Manager will be responsible for notifying the EPA Project Manager if any circumstances arise during the field investigation that may adversely impact the quality of the data collected.

**QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10**

SECTION D: Data Validation and Usability

D1. Data Review, Verification, and Validation

OTIE START will perform data assessment on laboratories' hardcopy (and electronic, where applicable) deliverables based on contractual and technical requirements outlined in the analytical method. The PM will review the data qualifier report to determine any data limitations and the impact of any qualified data on overall data usability for the project. Detailed guidance for data assessment may be found in the Guidance for Data Quality Assessment (EPA QA/G-9 2000).

D2. Verification and Validation Methods

The laboratory analytical data packages will be validated by an experienced Sr. START Chemist in accordance with the National Functional Guidelines (NFG). The following guidance documents shall serve as the basis for all data validation:

- USEPA National Functional Guidelines for Organic Data Review, (OSWER 9240.1-05A-P, PB99-963506, EPA 540/R-99-008, October 1999)
- USEPA National Functional Guidelines for Inorganic Data Review, (OSWER 9240.1-45, EPA 540-R-04-004, October 2004).
- USEPA National Functional Guidelines for Low Concentration Organic Data Review, (OSWER 9240.1-34, EPA540-R-00-006, June 2001)

The USEPA performs data validation using a "tiered" approach. The data packages will be evaluated and qualified for all quantitative QC elements e.g., spike recoveries, method and field blank contamination, duplicate sample %RSD, and instrument stability and performance (e.g., initial and continuing calibration results, instrument tuning and internal standard areas) using hard-copy summary forms. This Summary Validation of 100% of the data is equivalent to an EPA CLP "QA Level III" validation and is considered Tier 1. Specific QC elements that will be reviewed during the Summary Validation include:

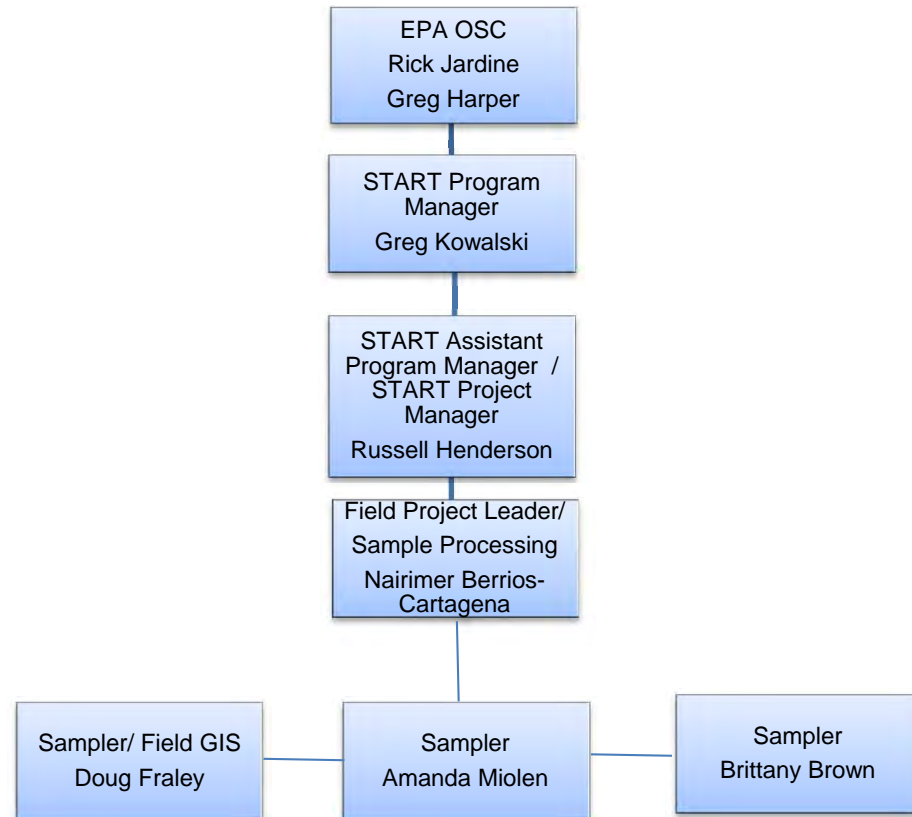
- Presence and completeness of COC and "cooler receipt form" (also known as sample receipt form) documentation
- Sample Index (correlation of field sample ID to laboratory sample ID)
- Laboratory Case Narrative (method deviations and QC anomalies)
- Analytical holding times
- Where applicable, laboratory control standard recoveries
- Method blank contamination
- Surrogate spike recoveries
- Matrix spike compound recoveries
- Matrix spike/matrix spike duplicate RPD values
- Field duplicate RPD values
- Laboratory Duplicate RPD values
- Summaries of initial and continuing Calibration
- Summaries of instrument blanks (e.g., initial calibration blank, CCB, if specified in method)
- Review of reagent/preparation blanks (inorganics)
- Review of Laboratory Control Standards (LCS)
- Instrument stability and performance (e.g., tuning, serial dilution)
- Summaries of internal standards

**QUALITY ASSURANCE PROJECT PLAN
U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
REGION 4 SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM (START)
ONEIDA TOTAL INTEGRATED ENTERPRISES (OTIE) – CONTRACT EP-S5-10-10**

D3. Reconciliation with User Requirements

Data results and site findings are intended to be used by USEPA to make a determination regarding the impact of contaminants to the local environment. OTIE START will perform a review of contaminant concentrations and will summarize these findings in a final report to the USEPA.

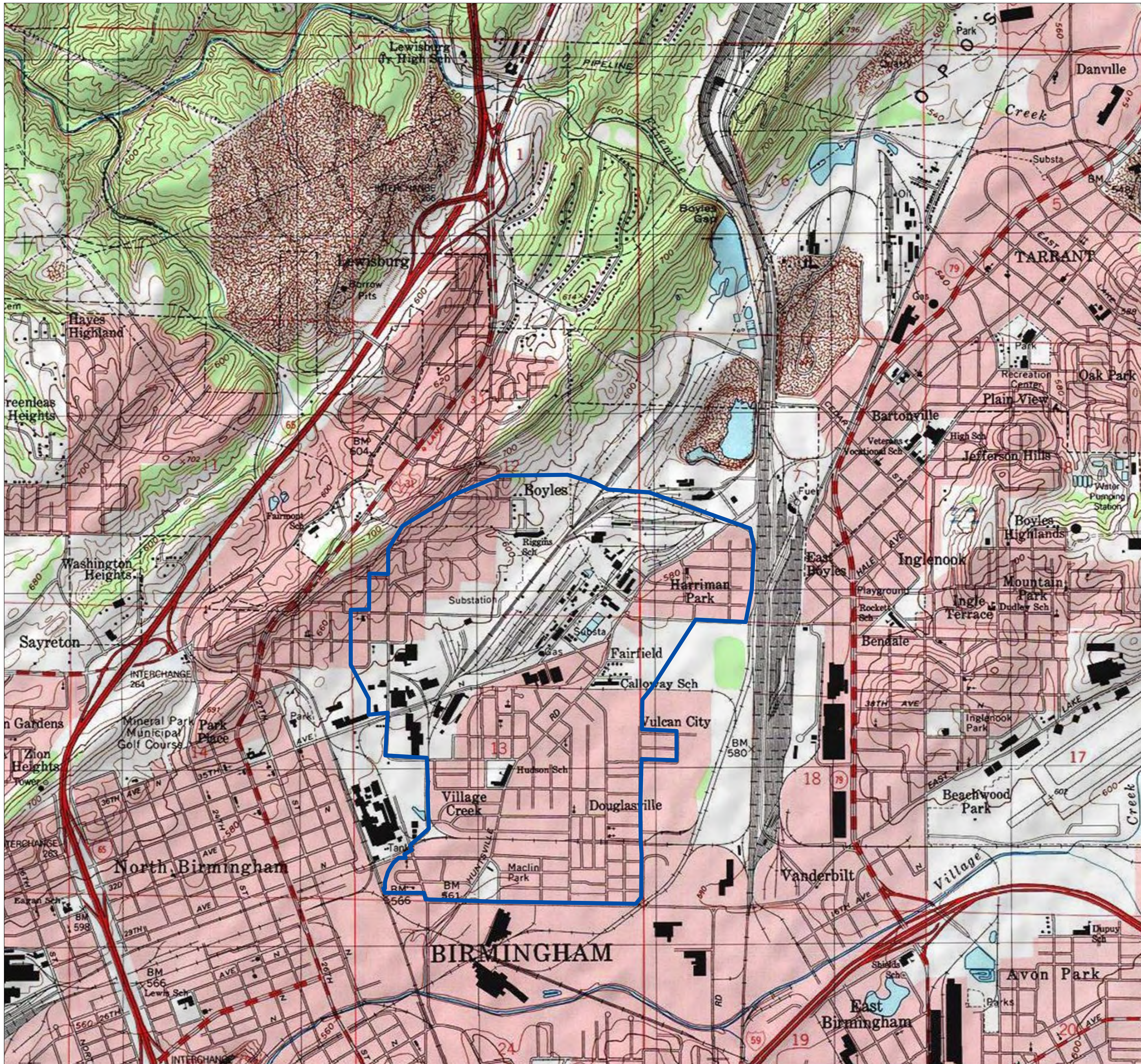
****Footnotes:** This Quality Assurance Project Plan (QAPP) has been prepared and approved according to the EPA *Requirements for Quality Assurance Project Plans (EPA QA/R5 EPA/240/B-01/003)*, U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC, March 2001(USEPA, 2001). This document will be used to ensure that the environmental data collected for this project are of the type and quality for the intended purposes.



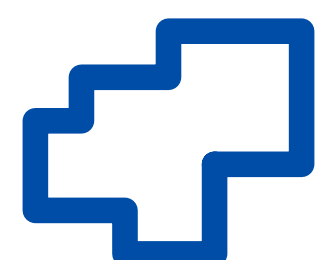
ORGANIZATIONAL CHART

35th AVENUE REMOVAL
Birmingham, Jefferson County, Alabama
TDD: TO-05-14-01-5000



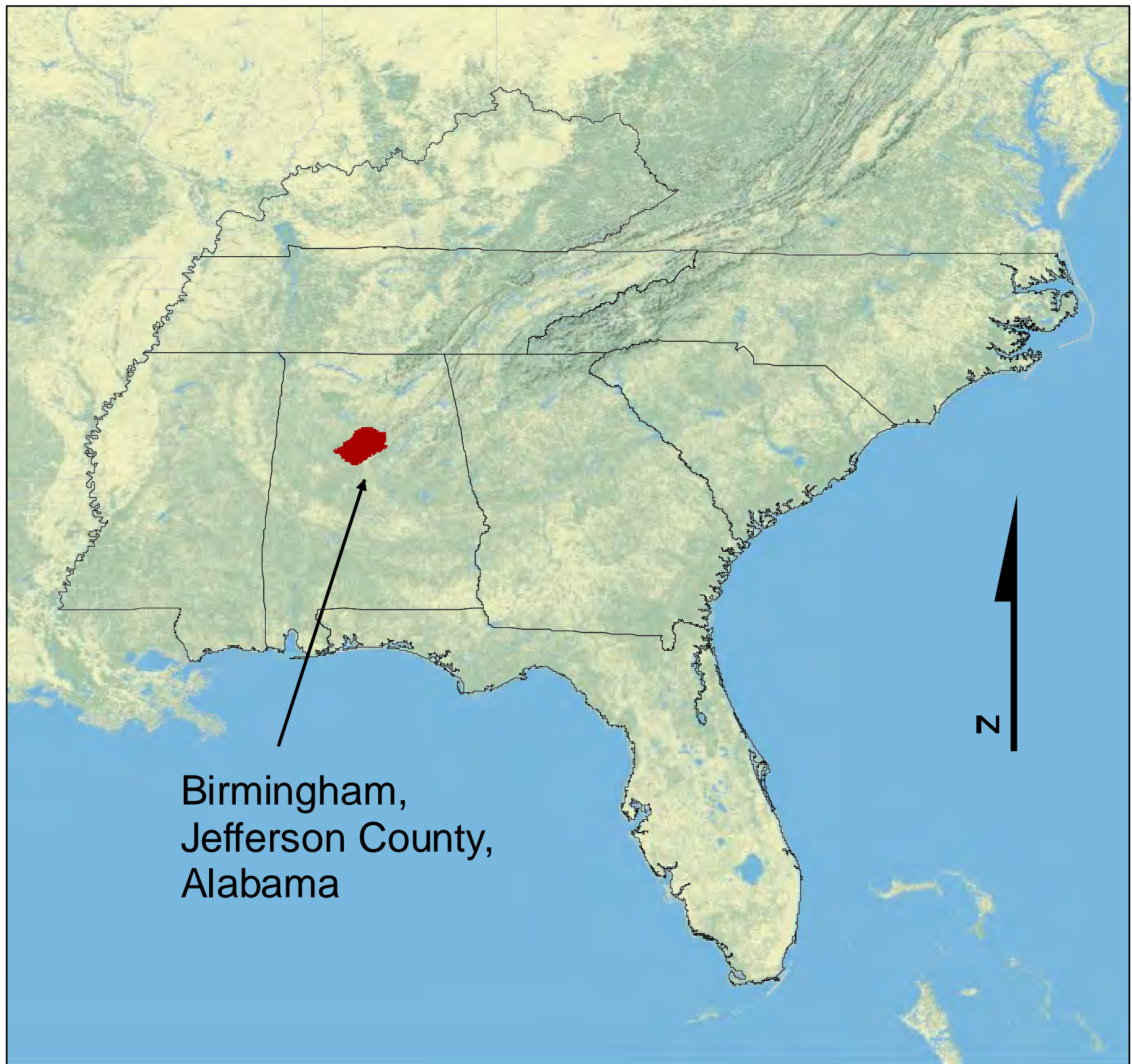


Legend



Study Area

Notes:
USGS Topo Quad. 1:24,000 scale of
Quad Birmingham North Date published: 1978.
Quad ID: 33086-E7

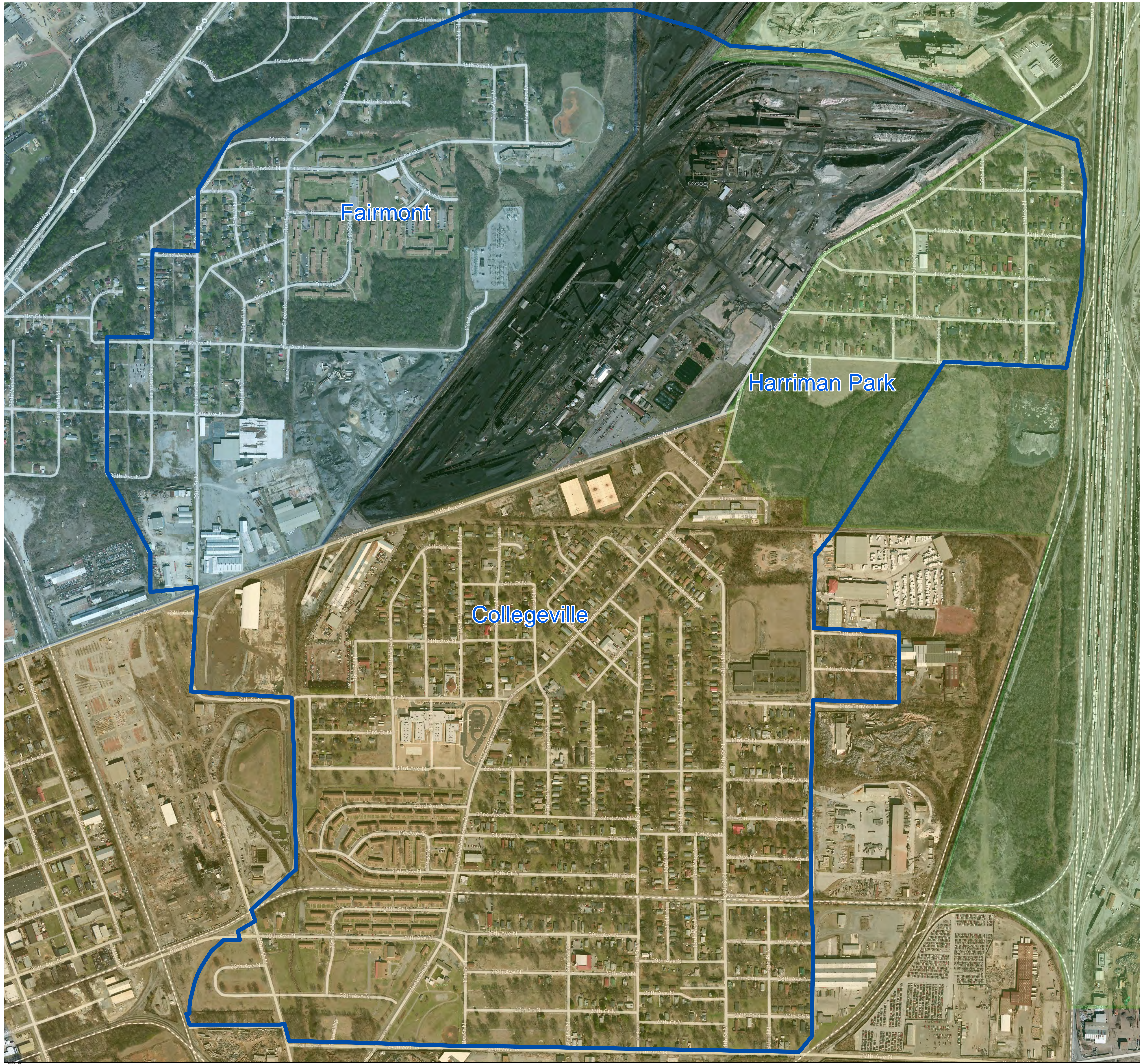


United States Environmental Protection Agency

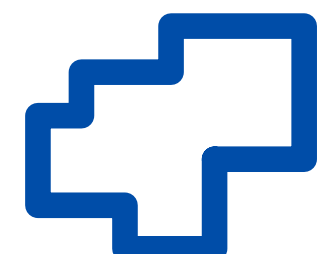
35TH AVENUE REMOVAL
BIRMINGHAM,
JEFFERSON COUNTY,
ALABAMA
TDD No. TO-05-14-01-5000

FIGURE 1
TOPOGRAPHICAL MAP





Legend



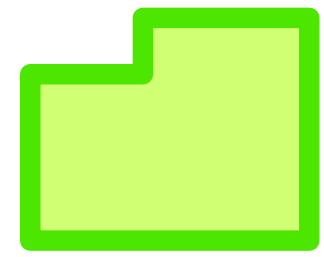
Study Area



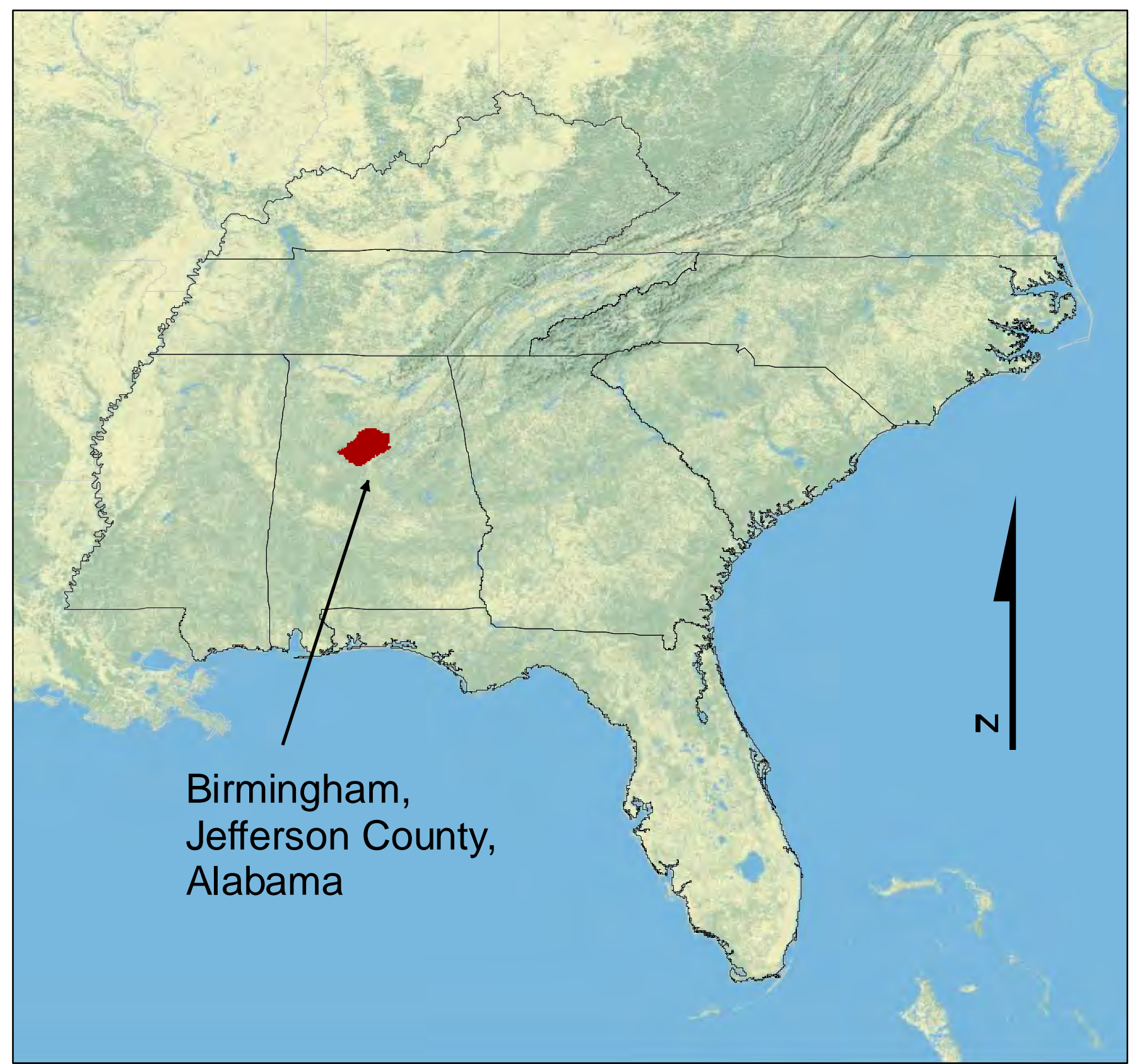
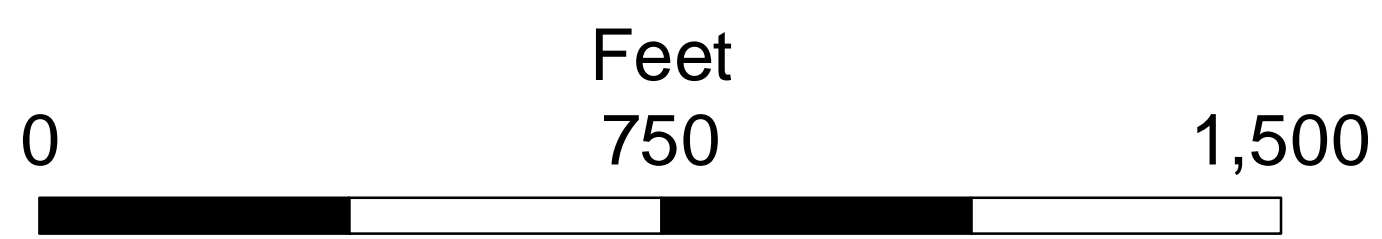
Fairmont



Collegeville



Harriman Park

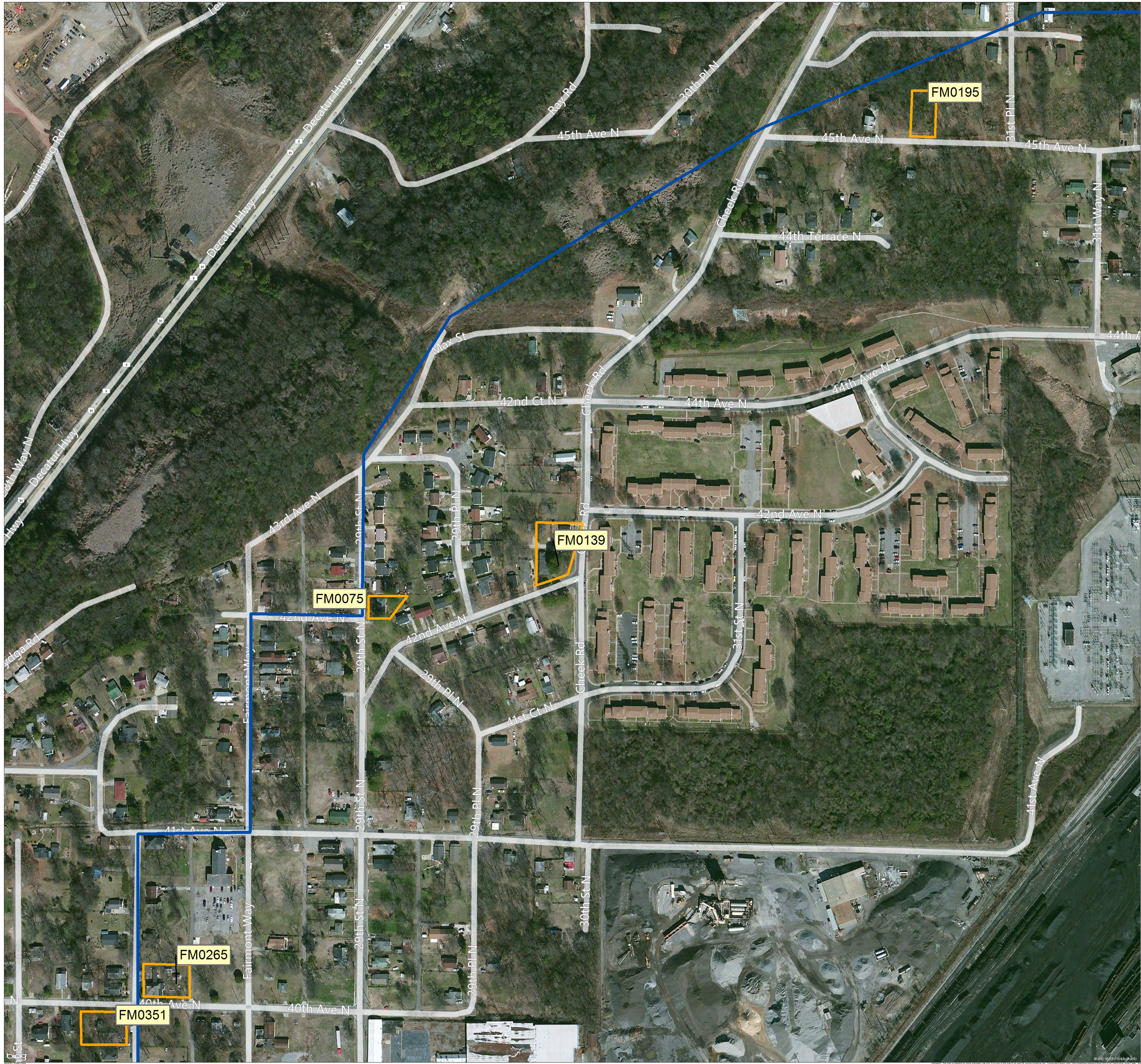


United States Environmental Protection Agency



35TH AVENUE REMOVAL
BIRMINGHAM,
JEFFERSON COUNTY,
ALABAMA
TDD No. TO-05-14-01-5000

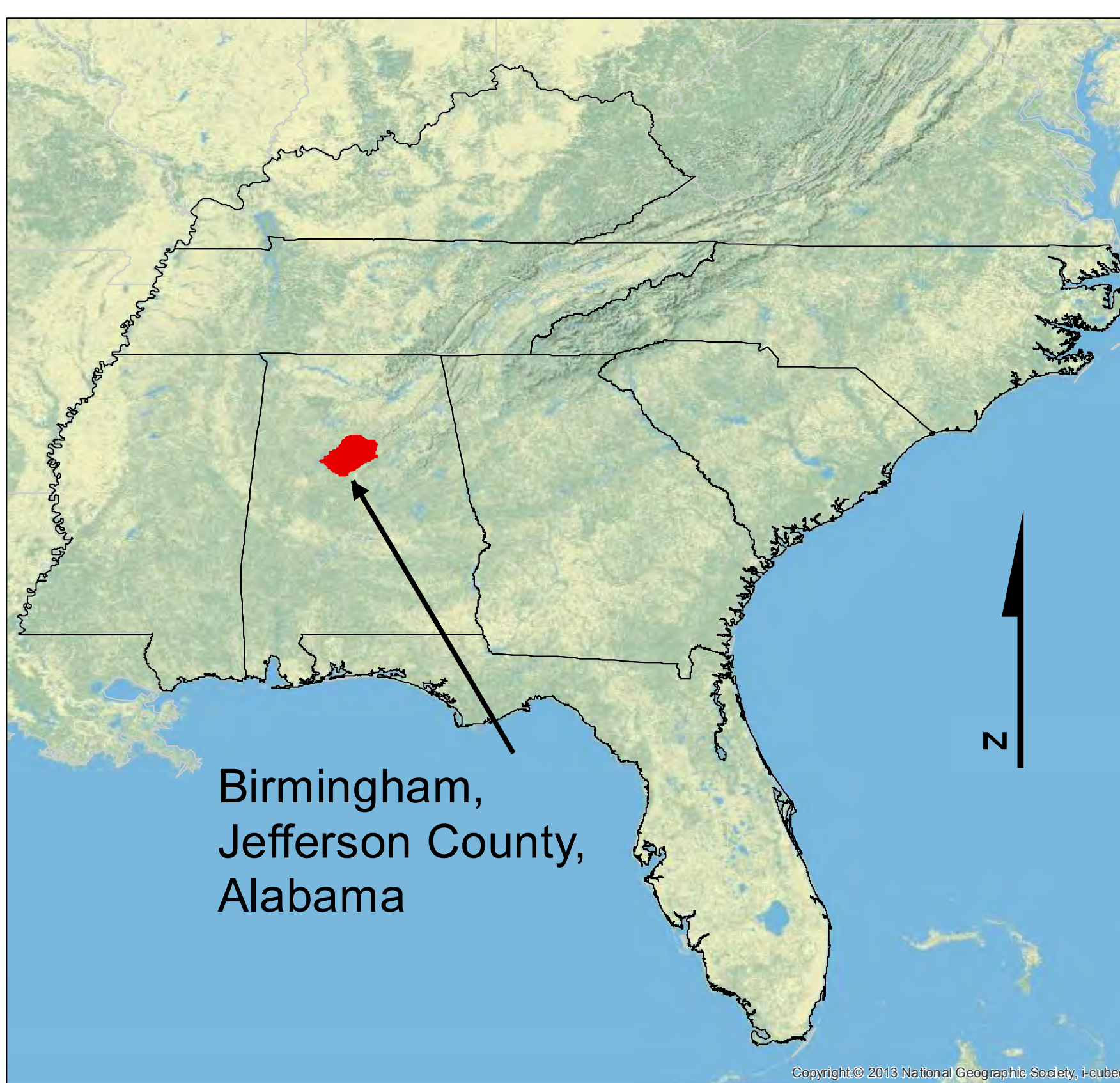
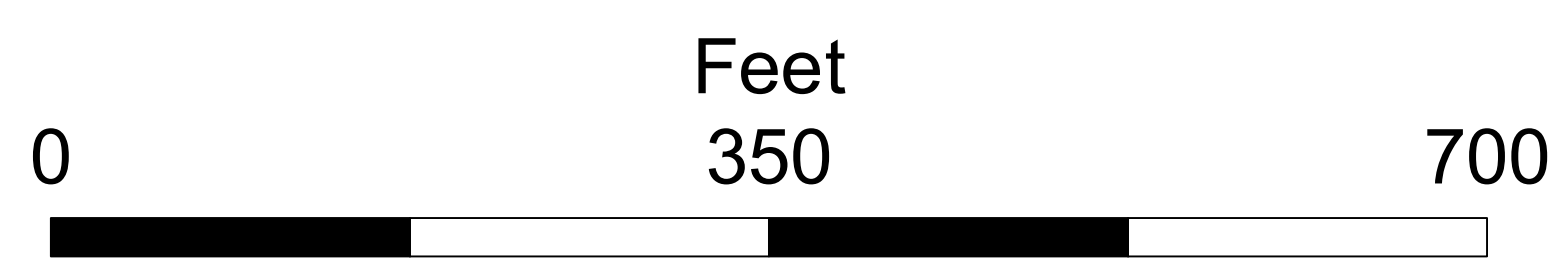
FIGURE 2
STUDY AREA MAP





Legend

-  Subsurface Investigation Parcels
-  EPA Study Line



35TH AVENUE REMOVAL
BIRMINGHAM
JEFFERSON COUNTY
ALABAMA
TDD NO. TO-05-14-01-5000

FIGURE 3
SUBSURFACE INVESTIGATION
PARCELS MAP
FAIRMONT





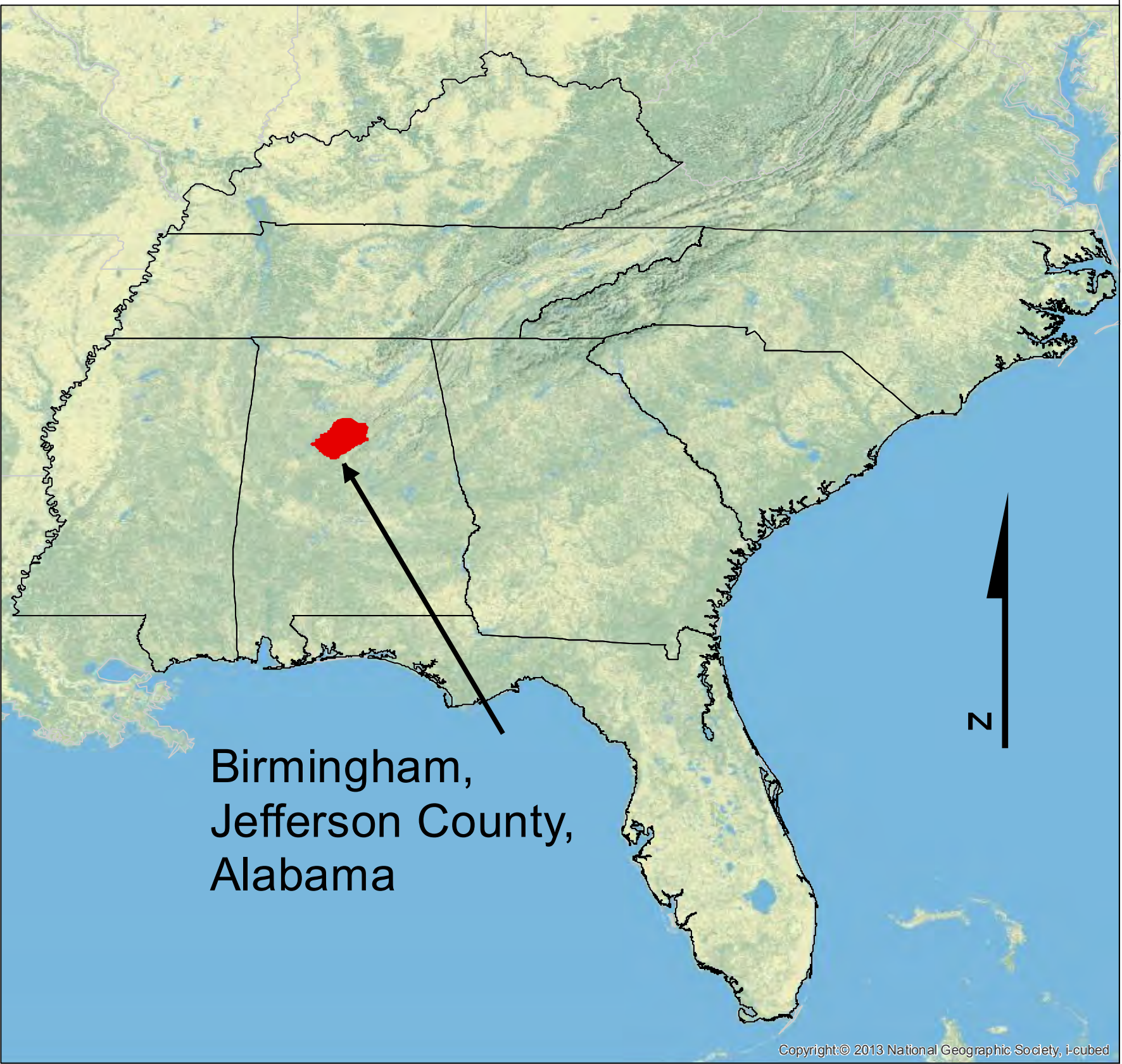
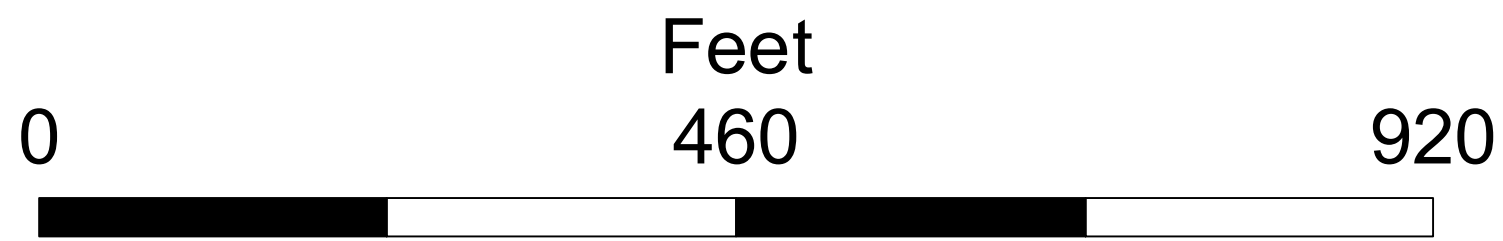
United States Environmental Protection Agency





Legend

-  Subsurface Investigation Parcels
-  EPA Study Line



35TH AVENUE REMOVAL
BIRMINGHAM
JEFFERSON COUNTY
ALABAMA
TDD NO. TO-05-14-01-5000

FIGURE 4
SUBSURFACE INVESTIGATION
PARCELS MAP
COLLEGEVILLE





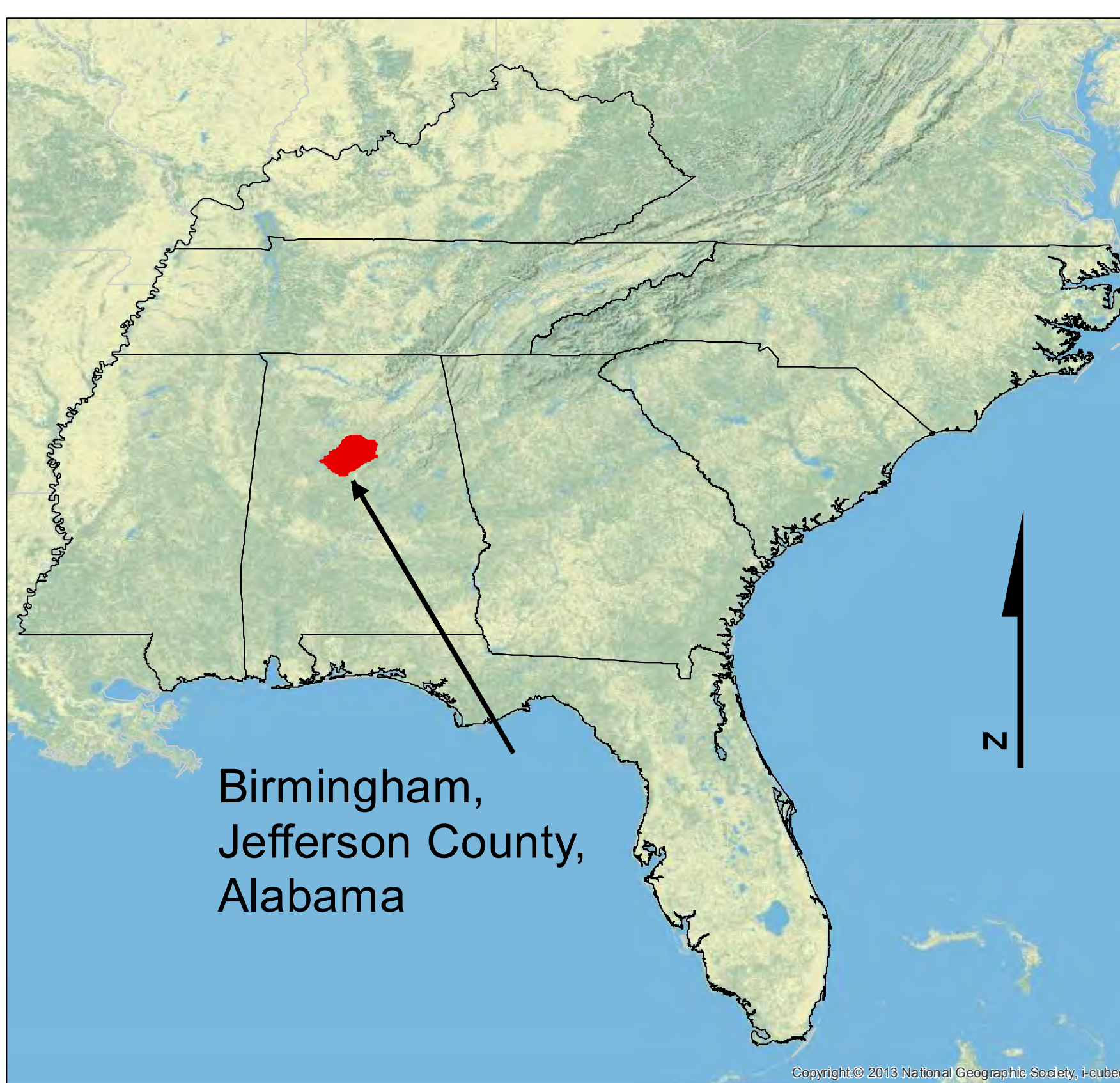
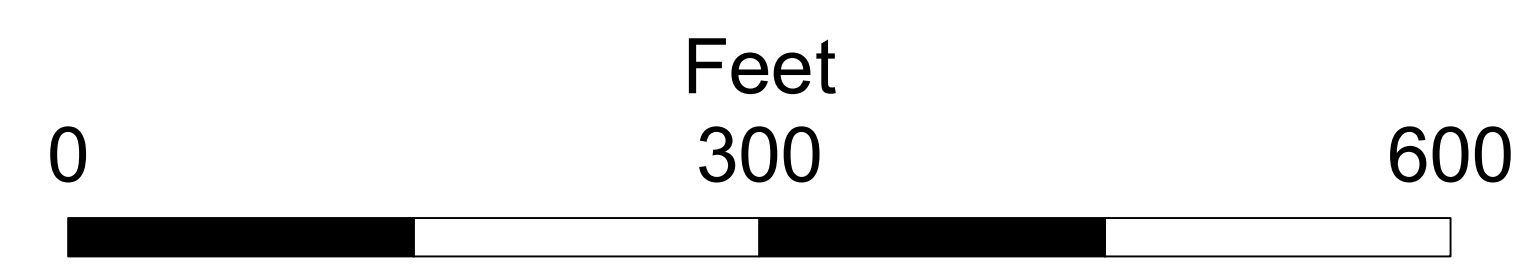
United States Environmental Protection Agency





Legend

-  Subsurface Investigation Parcels
-  EPA Study Line



35TH AVENUE REMOVAL
BIRMINGHAM
JEFFERSON COUNTY
ALABAMA
TDD NO. TO-05-14-01-5000

FIGURE 5
SUBSURFACE INVESTIGATION
PARCELS MAP
HAIRMAN PARK



United States Environmental Protection Agency



TABLE 1
35TH AVENUE REMOVAL SITE
SUMMARY OF PARCELS EXCEEDING 10-3 RISK LEVELS

Parcel ID	Street Name	Street Number	Sublocation	Sample Collection	Location	Lead	Lead Sieved	XRF Lead	XRF Lead Sieved	Arsenic	Arsenic Sieved	XRF Arsenic	XRF Arsenic Sieved	Benzo(a)pyrene
COLLEGEVILLE														
012200131010001003	3394	33rd Pl N	Comp. Vacant Lot	CV0003A				1,309				115		
			Grab Drainage	CV0003B				455				45	54	
012200132019006003	3421	30th Way N	Comp. Front Yard	CV0035A						51	48		49	
			Comp. Back Yard	CV0035B		1,300	1,100	950		44	44			
012200132018012000	3426	30th Way N	Comp. Back Yard	CV0038B		2,900	6,500	2,232				162		
012200134021016000	3146	31st Ave N	Comp. Back Yard	CV0060B		2,000	1,200	637	956			70	70	
			Comp. Side Yard	CV0060C				522	561			80	50	
012200131026006000	3335	31st Pl N	Comp. Back Yard	CV0090B		4,300	420			58		40	50	4.7
012200132020017000	3422	31st Pl N	Comp. Back Yard	CV0109B			10,000							
012200131016021000	3432	31st Way N	Comp. Back Yard	CV0186B		1,000	1,200	938	1,128			88	58	
			Comp. Back Yard	CV0212B				486				40		
012200134012004000	3213	32nd Pl N	Comp. Side Yard	CV0212C		530	1,800	487	571					
			Comp. Front Yard	CV0224A				894				53		
012200134006010000	3320	32nd Pl N	Comp. Back Yard	CV0224B						52	51	64	57	
012200134006011000	3322	32nd Pl N	Comp. Front Yard	CV0226A				501	1,285			74	60	
012200134006012000	3328	32nd Pl N	Comp. Front Yard	CV0228A		1,200	1,200	1,196	778		43	99	40	
			Comp. Back Yard	CV0228B				2,301	907				67	
012200134006013000	3332	32nd Pl N	Comp. Back Yard	CV0230B		440		470						3
012200134006014000	3336	32nd Pl N	Comp. Back Yard	CV0232B		2,100	2,800	1,048	1,941			73	130	
012200134005001000	3337	32nd Pl N	Comp. Vacant Lot	CV0233A				762				52		
			Comp. Vacant Lot	CV0233B				1,463				95		
012200134010009000	3204	32nd St N	Comp. Back Yard	CV0242B		1,100	12,000	790	1,783	44	45	57	127	
012200134010011000	3212	32nd St N	Comp. Front Yard	CV0246A				947	840			72	49	
			Comp. Back Yard	CV0246B		1,100	1,600	923	867		45	74	53	
012200134007009000	3148	33rd Ave N	Comp. Front/Side Yard	CV0285A			1,500							
012200131010077000	3381	33rd Pl N	Comp. Back Yard	CV0407B										54
012200131010076000	3385	33rd Pl N	Comp. Front Yard	CV0409A										15
			Comp. Back Yard	CV0409B										13
012200131017015000	3145	34th Ct N	Comp. Side Yard	CV0529B										1.6
			Comp. Back yard	CV0529C				504				437		
012200134003013000	3312	34th St N	Comp. Front Yard	CV0551A		1,600	1,200	1,038	582			81		
			Comp. Back Yard	CV0551B				753	811			52	43	
012200131010011000	3414	34th St N	Comp. Back Yard	CV0579B		1,500	1,900	1,253	1,629			122		
012200131015016000	3510	Huntsville Rd	Comp. Back Yard	CV0629B		740	2,100	440	477				47	
012200131010038000	3705	Huntsville Rd	Comp. Back Yard	CV0654B		1,200	700	517	503					
012200131015030000	3240	Pearl Ave	Comp. Back yard	CV0694C										47
012200131006005000	3409	Pearl Ave	Comp. Back Yard	CV0710B				2,242				247		
012200134016022000	3434	31st Ave N	Comp. Back Yard	CV0832B			2,900							
012300182004019000	3506	33rd Ter N	Comp. Front Yard	CV0885A										1.8
			Comp. Back Yard	CV0885B				1,866	1,394			107	54	8.3
012300182004020000	3510	33rd Ter N	Comp. Vacant Lot	CV0886A				431						91
			Comp. Vacant Lot	CV0886B										27
012200134044009000	3121	27th Ct N	Comp. Vacant Lot	CV1042B				1,110				119		
			Comp. Vacant Lot	CV1042C			1,600		438				47	
012200134028007000	3412	29th Ave N	Comp. Front Yard	CV1248A			11,000			77				
			Comp. Back Yard	CV1248B				725				90		
012200134026001000	2937	33rd Pl N	Comp. Back Yard	CV1319B		3,700	420							

TABLE 1
35TH AVENUE REMOVAL SITE
SUMMARY OF PARCELS EXCEEDING 10-3 RISK LEVELS

Parcel ID	Street Name	Street Number	Sublocation	Sample Collection	Location	Lead	Lead Sieved	XRF Lead	XRF Lead Sieved	Arsenic	Arsenic Sieved	XRF Arsenic	XRF Arsenic Sieved	Benzo(a)pyrene
FAIRMONT														
012200123011008000 4205	29th St N		Comp.	Front Yard	FM0075A		2,200		517					
			Comp.	Back Yard	FM0075B			1,651	1,354			65	53	
012200123010014000 2940	42nd Ave N		Comp.	Front Yard	FM0139A	690								39
012200123007026000 3136	45th Ave N		Comp.	Vacant Lot	FM0195A				809					
			Comp.	Vacant Lot	FM0195B			2,437	4,460			238	190	
			Grab	Vacant Lot	FM0195C			25,224	26,469			1,336	893	
012200132005005001 4001	Fairmont Pl N		Comp.	Back yard	FM0265B	8,280	18,700	1,017	712					
012200141009014000 3932	Fairmont Pl N		Comp.	Side Yard	FM0351B									18
HARRIMAN PARK														
012200131008013000 3428	34th Ter N		Comp.	Veg Garden	HP0005C	3,000	2,300	1,396	2,403			55	60	
012300073004008000 4504	37th St N		Comp.	Front Yard	HP0023A									33
			Comp.	Back Yard	HP0023B							43		
012300073004009000 4508	37th St N		Comp.	Front Half	HP0025A			1,158	941			67	48	2
			Comp.	Back Half	HP0025B			424	450			58	49	23
012300073012013000 3510	41st Ave N		Comp.	Back Yard	HP0037B			1,869				50		
			Grab	Driveway	HP0037C			2,683						
012300073014017000 3654	41st Ave N		Comp.	Vacant Lot	HP0062A	1,100	1,500	2,452	1,116			73	52	
			Comp.	Vacant Lot	HP0062B			1,001	1,243				62	
012300073009039000 3708	41st Ave N		Comp.	Front Yard	HP0072A			1,262						
012300073010023000 3624	42nd Ave N		Comp.	Vacant Lot	HP0113A									24
012300073010005000 3653	43rd Ave N		Comp.	Back Yard	HP0192B	12,000	27,000	4,157	9,351	42	61	330	259	
012300073010004000 3661	43rd Ave N		Comp.	Front yard	HP0195A				403				41	
			Comp.	Back yard	HP0195C	1,200	1,900	839	1,275			102	68	
012300073008033000 3672	43rd Ave N		Comp.	Vacant Lot	HP0200A			2,232						
			Comp.	Vacant Lot	HP0200B	2,900		6,666						
012300073009022000 3705	43rd Ave N		Comp.	Front Yard	HP0204A					47	51	45		
			Comp.	Back Yard	HP0204B	1,200	1,100	595	873	47	40	52	84	
012300073009011000 3716	43rd Ave N		Comp.	Front Yard	HP0208A									21
012300073006017000 3602	44th Ave N		Comp.	Front Yard	HP0218A			1,654	685				65	
			Comp.	Back Yard	HP0218B					51	47	59	60	
012300073006021001 3628	44th Ave N		Comp.	Vacant Lot	HP0228A									16
012300073011013000 4233	F L Shuttlesworth Dr		Comp.	Front Yard	HP0295A									17

Notes:

Results reports in mg/kg or ppm (XRF)

Bold - Concentration exceed 10⁻³ Risk Levels (1,200 for Lead, 390 for Arsenic, and 15 for Benzo(a)pyrene)

Non-Bold - Concentration exceeds RML but is less than 10⁻³ Risk Level

Comp. - Composite

XRF - X-Ray fluorescence

TABLE 2
35TH AVENUE REMOVAL SITE
SUMMARY OF LOCATIONS TO BE SAMPLED

Location	Removal Investigation Sampling Aliquot Geographic Coordinates						Constituent of Concern	
	1	2	3	4	5	Grab	Ar, Pb	PAH
COLLEGEVILLE								
CV0003A	-86.7991187402 , 33.5586952658	-86.7990499404 , 33.5587595506	-86.7989881809 , 33.558724075	-86.798972974 , 33.558770297	-86.798923965 , 33.5587751615		X	
CV0003B						-86.7990746936 , 33.5587191569	X	
CV0035A	-86.806625915 , 33.5588009131	-86.8066210812 , 33.5587528277	-86.8066232044 , 33.5587212471				X	
CV0035B	-86.8064033052 , 33.5587763364	-86.8063007987 , 33.5587687772	-86.8063404179 , 33.5587525074	-86.806310946 , 33.5587189361	-86.8063960258 , 33.5587292079		X	
CV0038B	-86.807074779 , 33.5588675031	-86.8072356188 , 33.5588812019	-86.8071525049 , 33.5589044938	-86.8071984975 , 33.5589832669	-86.8070610381 , 33.5589603467		X	
CV0060B	-86.8031670904 , 33.5543281199	-86.8030738953 , 33.5543245656	-86.8031268011 , 33.5543950106	-86.8031696542 , 33.5544641396	-86.8030698511 , 33.5544553879		X	
CV0060C	-86.8032012201 , 33.554240755	-86.8032029832 , 33.5542792171	-86.8031974267 , 33.5543091074				X	
CV0090B	-86.804694895 , 33.5571268353	-86.8045729 , 33.5571324591	-86.8046364186 , 33.5571011687	-86.8045641272 , 33.5570656114	-86.8046920419 , 33.5570726502		X	X
CV0109B	-86.8052992015 , 33.5590596359	-86.8053513891 , 33.5590797376	-86.8053149503 , 33.5591013762	-86.805347307 , 33.5591263942	-86.8053098962 , 33.5591407212		X	
CV0186B	-86.8042966909 , 33.5594211604	-86.8042977209 , 33.5596412768	-86.8043629313 , 33.5595420747	-86.8044524467 , 33.5594147315	-86.8044328201 , 33.5596285534		X	
CV0212B	-86.8013474076 , 33.5549040529	-86.801145059 , 33.5548907722	-86.8012511913 , 33.5549406151	-86.801347114 , 33.5549856933	-86.8011718286 , 33.5549721457		X	
CV0212C	-86.8014514138 , 33.5549073542	-86.8014279548 , 33.554906082	-86.8013938629 , 33.5549072196				X	
CV0224A	-86.8017448249 , 33.5562399823	-86.8017836388 , 33.556248174	-86.8017603085 , 33.5562885568	-86.8017614959 , 33.5563260087	-86.801745304 , 33.5563207623		X	
CV0224B	-86.8020369598 , 33.5562516942	-86.8021782104 , 33.5562491427	-86.8020999057 , 33.5563142202	-86.8021552656 , 33.5563680595	-86.80203844 , 33.5563574668		X	
CV0226B	-86.8019911029 , 33.5564003769	-86.8019964146 , 33.5564764035	-86.8020315784 , 33.5564463555	-86.8021035651 , 33.5564047249	-86.8020873762 , 33.5564755597		X	
CV0228A	-86.8018954544 , 33.5565807405	-86.8017465937 , 33.5565468986	-86.8018072098 , 33.5565957778	-86.801903232 , 33.5566268036	-86.8017412656 , 33.5566465097		X	

TABLE 2
35TH AVENUE REMOVAL SITE
SUMMARY OF LOCATIONS TO BE SAMPLED

Location	Removal Investigation Sampling Aliquot Geographic Coordinates						Constituent of Concern	
	1	2	3	4	5	Grab	Ar, Pb	PAH
CV0228B	-86.8021253334 , 33.5565326426	-86.8019827698 , 33.5565416558	-86.802048404 , 33.5565784008	-86.8021315546 , 33.5566195454	-86.8019907984 , 33.5566235623		X	
CV0230B	-86.8021220458 , 33.5566790202	-86.8019925436 , 33.556676629	-86.8020443112 , 33.5567107003	-86.8021443254 , 33.5567802213	-86.801990805 , 33.5567537397		X	X
CV0232B	-86.8019552537 , 33.5568009379	-86.8019316921 , 33.5569178089	-86.8020177489 , 33.5568509257	-86.8021074046 , 33.5567986255	-86.8020790205 , 33.5569086198		X	
CV0233A	-86.8015740295 , 33.5569170555	-86.8015797689 , 33.5568477851	-86.801496857 , 33.556876422	-86.8014437675 , 33.5569115945	-86.8014324642 , 33.5568535245		X	
CV0233B	-86.8013590351 , 33.5568942891	-86.8013956431 , 33.5568327955	-86.8013380333 , 33.5568721365	-86.8012981147 , 33.5568979695	-86.8012856042 , 33.5568376221		X	
CV0242B	-86.8031283254 , 33.5547027135	-86.803189651 , 33.5547168412	-86.8031537025 , 33.5547509372	-86.8031800501 , 33.5547759052	-86.8031251863 , 33.55478163		X	
CV0246A	-86.8028617492 , 33.5549414141	-86.8028612498 , 33.5550140346	-86.8028841236 , 33.5549723322	-86.802886685 , 33.5549336096	-86.8029071653 , 33.5550168302		X	
CV0246B	-86.803100159 , 33.5549245732	-86.8030740408 , 33.5550184286	-86.8031640168 , 33.5549794223	-86.8032162406 , 33.5549368267	-86.8032227393 , 33.5550453531		X	
CV0285A	-86.8037007676 , 33.5555770444	-86.8037437092 , 33.5555932246	-86.8038229061 , 33.5555946212	-86.8038306566 , 33.5556401837	-86.8038178734 , 33.5557007262		X	
CV0407B	-86.7991727895 , 33.5581800875	-86.7990869404 , 33.5581858843	-86.799113381 , 33.5581480429	-86.7990790754 , 33.558112685	-86.7991521007 , 33.5581135804			X
CV0409A	-86.799388323 , 33.55833538	-86.7993364235 , 33.5583398278	-86.7993601999 , 33.5582936892	-86.7993375847 , 33.5582534094	-86.7993887814 , 33.5582519048			X
CV0409B	-86.7991504813 , 33.5583234733	-86.7989868065 , 33.5583109337	-86.7990962047 , 33.5582770183	-86.7989771852 , 33.5582353825	-86.7991384928 , 33.5582337013			X
CV0529B	-86.8031613134 , 33.5593114332	-86.8031663247 , 33.5592092703	-86.8031938537 , 33.5592660875	-86.8032169998 , 33.5592190889	-86.8032221755 , 33.5593158194			X
CV0529C	-86.8034559027 , 33.5593018035	-86.8034623201 , 33.559222579	-86.8034987271 , 33.5592746356	-86.8035518626 , 33.5592384378	-86.8035437294 , 33.5593192511		X	
CV0551A	-86.7984987871 , 33.5559579237	-86.7985912302 , 33.5559474436	-86.7985531965 , 33.5559744537	-86.798604309 , 33.5560077448	-86.7984829144 , 33.5559888193		X	
CV0551B	-86.7986647546 , 33.555943394	-86.7987993952 , 33.5559487439	-86.7987214356 , 33.5559893088	-86.7988131185 , 33.5559999939	-86.7986754184 , 33.5560117137		X	
CV0579B	-86.7993337809 , 33.5597933163	-86.7994112041 , 33.5597499288	-86.7993938376 , 33.5597918044	-86.7994517045 , 33.5597849089	-86.7993806034 , 33.5598393906		X	

TABLE 2
35TH AVENUE REMOVAL SITE
SUMMARY OF LOCATIONS TO BE SAMPLED

Location	Removal Investigation Sampling Aliquot Geographic Coordinates						Constituent of Concern	
	1	2	3	4	5	Grab	Ar, Pb	PAH
CV0629B	-86.8030036237 , 33.5577056137	-86.8030053704 , 33.5578060043	-86.8029848181 , 33.5578268088	-86.8029683853 , 33.5578474923	-86.803009559 , 33.5578524148		X	
CV0654B	0 , 0	0 , 0	0 , 0	0 , 0	0 , 0		X	
CV0694C	-86.8024659328 , 33.5599003909	-86.8025233075 , 33.5599462842	-86.8025745324 , 33.5598631435	-86.8025964939 , 33.5598140081	-86.802644855 , 33.5598418678			X
CV0710B	-86.7997842501 , 33.5613444391	-86.799928166 , 33.5612050097	-86.7998162845 , 33.5612440562	-86.799700399 , 33.5612693617	-86.7998323478 , 33.5611437725		X	
CV0832B	-86.7968932755 , 33.553823865	-86.7969062849 , 33.5538938074	-86.7968578235 , 33.5538573153	-86.7968038875 , 33.5538934891	-86.7968087057 , 33.5538097528		X	
CV0885A	-86.7957145815 , 33.5568555734	-86.7957169312 , 33.5568950904	-86.795677849 , 33.5568773199	-86.7956217613 , 33.5568497547	-86.7956189158 , 33.5568999859			X
CV0885B	-86.7957388507 , 33.5569632682	-86.795744261 , 33.557003246	-86.7957364276 , 33.5570543828	-86.7957359939 , 33.5571015952	-86.7957335684 , 33.5571638098		X	X
CV0886A	-86.7955959637 , 33.5568554149	-86.7955773781 , 33.556990792	-86.7955295419 , 33.5569340173	-86.7954940955 , 33.5569780789			X	X
CV0886B	-86.7955823981 , 33.5570249912	-86.7955555598 , 33.5571724474	-86.7955118414 , 33.5570883969	-86.7954871134 , 33.5571542197	-86.7954978378 , 33.5570034857			X
CV1042B	-86.8039307735 , 33.5503125686	-86.8039381025 , 33.5502476819	-86.8040533313 , 33.5502890394	-86.8042168043 , 33.5502800566	-86.804222757 , 33.5503306676		X	
CV1042C	-86.8039475503 , 33.5502264324	-86.8039657634 , 33.5501287286	-86.8040613775 , 33.5501660223	-86.8042130315 , 33.5501251461	-86.8042223901 , 33.5502565851		X	
CV1248A	-86.7978321009 , 33.5519216954	-86.7977754226 , 33.5519240232	-86.7977478562 , 33.5519208884				X	
CV1248B	-86.7977921811 , 33.5521203339	-86.7977532506 , 33.5521132133	-86.7977661661 , 33.5521605159	-86.7978166493 , 33.5522048277	-86.7977280045 , 33.5521892756		X	
CV1319B	-86.7995706604 , 33.5526483894	-86.7996211633 , 33.552653117	-86.7996104769 , 33.5525940523	-86.7996012868 , 33.5525536187	-86.7995576051 , 33.5525484064		X	

TABLE 2
35TH AVENUE REMOVAL SITE
SUMMARY OF LOCATIONS TO BE SAMPLED

Location	Removal Investigation Sampling Aliquot Geographic Coordinates						Constituent of Concern	
	1	2	3	4	5	Grab	Ar, Pb	PAH
FAIRMONT								
FM0075A	0, 0	0, 0	0, 0	0, 0	0, 0		X	
FM0075B	0, 0	0, 0	0, 0	0, 0	0, 0		X	
FM0139A	-86.8095157921 , 33.5668503224	-86.8094023229 , 33.5667309673	-86.8094761827 , 33.5667437091	-86.809473264 , 33.5666651453	-86.8095593659 , 33.5666259715		X	X
FM0195A	-86.8058619168 , 33.5704590521	-86.8058833484 , 33.5705821256	-86.8058324519 , 33.5705200651	-86.8057948136 , 33.5705748038	-86.8057925771 , 33.5704447208		X	
FM0195B	-86.8058817787 , 33.5706422843	-86.8058556747 , 33.570666914	-86.8057870304 , 33.570638173				X	
FM0195C						-86.8058585779 , 33.5706836673	X	
FM0265B	-86.8134074554 , 33.5632301679	-86.8132890942 , 33.5633294136	-86.8133256509 , 33.5632178856	-86.8133211402 , 33.563133436	-86.8134188419 , 33.5631261293		X	
FM0351B	-86.8139803276 , 33.5629070717	-86.8139860774 , 33.5629630621	-86.8140874226 , 33.5629367013	-86.8141510716 , 33.5629428776	-86.8141559486 , 33.5629746981			X

TABLE 2
35TH AVENUE REMOVAL SITE
SUMMARY OF LOCATIONS TO BE SAMPLED

Location	Removal Investigation Sampling Aliquot Geographic Coordinates						Constituent of Concern	
	1	2	3	4	5	Grab	Ar, Pb	PAH
HARRIMAN PARK								
HP0005C	-86.7977726849 , 33.561427287	-86.7978187945 , 33.5614427716	-86.7978451772 , 33.5614600336				X	
HP0023A	-86.7908507546 , 33.5677275858	-86.7908467942 , 33.5678164677	-86.7908647641 , 33.5677698098	-86.7908939713 , 33.5677244411	-86.7908901947 , 33.5678151306			X
HP0023B	-86.7911231789 , 33.5677588459	-86.7911168555 , 33.5678274044	-86.791189892 , 33.5677900921	-86.7912450851 , 33.5677539407	-86.7912411154 , 33.5678328671		X	
HP0025A	-86.7908250468 , 33.5678851459	-86.7908284692 , 33.5680389969	-86.7909057647 , 33.5679679523	-86.7909508515 , 33.5679009931	-86.7909823999 , 33.5680353242		X	X
HP0025B	-86.7910156866 , 33.567901986	-86.7909946857 , 33.5680385471	-86.7911133499 , 33.5679730123	-86.7911923942 , 33.5679452718	-86.7911874587 , 33.5680259607		X	X
HP0037B	-86.7965425296 , 33.5644088765	-86.7964474656 , 33.5645410368	-86.7964584935 , 33.564480609	-86.7964287716 , 33.5643927221	-86.7963565415 , 33.5645215106		X	
HP0037C						-86.7966085073 , 33.564335888	X	
HP0062A	-86.7921112058 , 33.5640620547	-86.7920966138 , 33.5642301204	-86.7920495738 , 33.5641326979	-86.791955959 , 33.5641849334	-86.7919535153 , 33.5640438146		X	
HP0062B	-86.7920973687 , 33.5642464143	-86.792108635 , 33.5643485755	-86.7920326277 , 33.5643061848	-86.791935051 , 33.5643268461	-86.7919248933 , 33.5642556612		X	
HP0072A	-86.790382314 , 33.5639482103	-86.79039102 , 33.5639921122	-86.7903490948 , 33.5639799398	-86.7903240073 , 33.5639902946	-86.7903088154 , 33.5639466079		X	
HP0113A	-86.792579626 , 33.5650165351	-86.7925000955 , 33.5650182074	-86.792528562 , 33.5651556666	-86.7925698605 , 33.5652382817	-86.7924758814 , 33.5652370147			X
HP0192B	-86.7916468326 , 33.5654897675	-86.7916973965 , 33.5654802933	-86.7917282383 , 33.565477577	-86.7917210327 , 33.5654159003	-86.7917904962 , 33.5654469644		X	
HP0195A	-86.7913753021 , 33.5656680019	-86.791449169 , 33.5656795422	-86.7914810307 , 33.5656426181	-86.791584809 , 33.5656453068	-86.791585697 , 33.5655953506		X	
HP0195C	-86.7915786036 , 33.565544957	-86.7915816011 , 33.5654983508	-86.7915738728 , 33.5654553641	-86.7915611002 , 33.5653931897	-86.7915091186 , 33.5653932028		X	
HP0200A	-86.7909461716 , 33.565799931	-86.7909324265 , 33.5659630693	-86.7908794899 , 33.565889133	-86.7908333737 , 33.5659633834	-86.7908391676 , 33.5658008372		X	
HP0200B	-86.7909332672 , 33.5659899391	-86.7909310944 , 33.5661252454	-86.7908962544 , 33.5660736705	-86.7908318781 , 33.5661281868	-86.7908278501 , 33.5659873915		X	

TABLE 2
35TH AVENUE REMOVAL SITE
SUMMARY OF LOCATIONS TO BE SAMPLED

Location	Removal Investigation Sampling Aliquot Geographic Coordinates						Constituent of Concern	
	1	2	3	4	5	Grab	Ar, Pb	PAH
HP0204A	-86.7905452083 , 33.5656338371	-86.7905176466 , 33.5656460003	-86.7904756627 , 33.5656456242				X	
HP0204B	-86.7905467876 , 33.5655013974	-86.7904681282 , 33.5654886355	-86.790499882 , 33.5654089545	-86.7905519615 , 33.5653066696	-86.7904781247 , 33.5653349414		X	
HP0208A	-86.7900991779 , 33.5657340901	-86.7902098111 , 33.5657485332	-86.7901372032 , 33.5657775474	-86.7900735458 , 33.5657893172	-86.7901896307 , 33.565782973			X
HP0218A	-86.7933957222 , 33.5667946879	-86.7934556952 , 33.5667885419	-86.793518433 , 33.5668146808	-86.793560099 , 33.5668732458	-86.7935794353 , 33.5669258886		X	
HP0218B	-86.793601798 , 33.5669927671	-86.7936458521 , 33.5670552515	-86.7935826148 , 33.5670426395	-86.7936158453 , 33.5671028277	-86.7935152325 , 33.5669705371		X	
HP0228A	-86.792447246 , 33.5667596783	-86.7923671033 , 33.5667542987	-86.7923926588 , 33.5668283855	-86.7924542364 , 33.5669082276	-86.7923892276 , 33.5669157337			X
HP0295A	-86.7959096848 , 33.5659635813	-86.7958831596 , 33.5659469074	-86.7959073056 , 33.5659368429	-86.7959068047 , 33.5659051325	-86.7959346893 , 33.5659188991			X

TABLE 3
35TH AVENUE REMOVAL
SUMMARY OF ANALYSIS BY LOCATION

Parcel ID	Street Name	Street Number	Sublocation	Sample Collection	Location	SW846-6010	SW846-8270
COLLEGEVILLE PROPERTIES							
012200131010001003 3394	33rd Pl N		Comp.	Vacant Lot	CV0003A	X	
			Grab	Drainage	CV0003B	X	
012200132019006003 3421	30th Way N		Comp.	Front Yard	CV0035A	X	
			Comp.	Back Yard	CV0035B	X	
012200132018012000 3426	30th Way N		Comp.	Back Yard	CV0038B	X	
012200134021016000 3146	31st Ave N		Comp.	Back Yard	CV0060B	X	
			Comp.	Side Yard	CV0060C	X	
012200131026006000 3335	31st Pl N		Comp.	Back Yard	CV0090B	X	X
012200132020017000 3422	31st Pl N		Comp.	Back Yard	CV0109B	X	
012200131016021000 3432	31st Way N		Comp.	Back Yard	CV0186B	X	
012200134012004000 3213	32nd Pl N		Comp.	Back Yard	CV0212B	X	
			Comp.	Side Yard	CV0212C	X	
012200134006010000 3320	32nd Pl N		Comp.	Front Yard	CV0224A	X	
			Comp.	Back Yard	CV0224B	X	
012200134006011000 3322	32nd Pl N		Comp.	Front Yard	CV0226A	X	
012200134006012000 3328	32nd Pl N		Comp.	Front Yard	CV0228A	X	
			Comp.	Back Yard	CV0228B	X	
012200134006013000 3332	32nd Pl N		Comp.	Back Yard	CV0230B	X	X
012200134006014000 3336	32nd Pl N		Comp.	Back Yard	CV0232B	X	
012200134005001000 3337	32nd Pl N		Comp.	Vacant Lot	CV0233A	X	
			Comp.	Vacant Lot	CV0233B	X	
012200134010009000 3204	32nd St N		Comp.	Back Yard	CV0242B	X	
012200134010011000 3212	32nd St N		Comp.	Front Yard	CV0246A	X	
			Comp.	Back Yard	CV0246B	X	
012200134007009000 3148	33rd Ave N		Comp.	Front/Side Yard	CV0285A	X	
012200131010077000 3381	33rd Pl N		Comp.	Back Yard	CV0407B	X	X
012200131010076000 3385	33rd Pl N		Comp.	Front Yard	CV0409A	X	X
			Comp.	Back Yard	CV0409B	X	X
012200131017015000 3145	34th Ct N		Comp.	Side Yard	CV0529B	X	X
			Comp.	Back yard	CV0529C	X	
012200134003013000 3312	34th St N		Comp.	Front Yard	CV0551A	X	
			Comp.	Back Yard	CV0551B	X	

TABLE 3
35TH AVENUE REMOVAL
SUMMARY OF ANALYSIS BY LOCATION

Parcel ID	Street Name	Street Number	Sublocation	Sample Collection	Location	SW846-6010	SW846-8270
012200131010011000	3414	34th St N	Comp.	Back Yard	CV0579B	X	
012200131015016000	3510	Huntsville Rd	Comp.	Back Yard	CV0629B	X	
012200131010038000	3705	Huntsville Rd	Comp.	Back Yard	CV0654B	X	
012200131015030000	3240	Pearl Ave	Comp.	Back yard	CV0694C	X	X
012200131006005000	3409	Pearl Ave	Comp.	Back Yard	CV0710B	X	
012200134016022000	3434	31st Ave N	Comp.	Back Yard	CV0832B	X	
012300182004019000	3506	33rd Ter N	Comp.	Front Yard	CV0885A	X	X
			Comp.	Back Yard	CV0885B	X	X
012300182004020000	3510	33rd Ter N	Comp.	Vacant Lot	CV0886A	X	X
			Comp.	Vacant Lot	CV0886B	X	X
012200134044009000	3121	27th Ct N	Comp.	Vacant Lot	CV1042B	X	
			Comp.	Vacant Lot	CV1042C	X	
012200134028007000	3412	29th Ave N	Comp.	Front Yard	CV1248A	X	
			Comp.	Back Yard	CV1248B	X	
012200134026001000	2937	33rd Pl N	Comp.	Back Yard	CV1319B	X	
FAIRMONT PROPERTIES							
012200123011008000	4205	29th St N	Comp.	Front Yard	FM0075A	X	
			Comp.	Back Yard	FM0075B	X	
012200123010014000	2940	42nd Ave N	Comp.	Front Yard	FM0139A	X	X
012200123007026000	3136	45th Ave N	Comp.	Vacant Lot	FM0195A	X	
			Comp.	Vacant Lot	FM0195B	X	
			Grab	Vacant Lot	FM0195C	X	
012200132005005001	4001	Fairmont Pl N	Comp.	Back yard	FM0265B	X	
012200141009014000	3932	Fairmont Pl N	Comp.	Side Yard	FM0351B	X	X
HARRIMAN PARK PROPERTIES							
012200131008013000	3428	34th Ter N	Comp.	Veg Garden	HP0005C	X	
012300073004008000	4504	37th St N	Comp.	Front Yard	HP0023A	X	X
			Comp.	Back Yard	HP0023B	X	
012300073004009000	4508	37th St N	Comp.	Front Half	HP0025A	X	X
			Comp.	Back Half	HP0025B	X	X
012300073012013000	3510	41st Ave N	Comp.	Back Yard	HP0037B	X	
			Grab	Driveway	HP0037C	X	

TABLE 3
35TH AVENUE REMOVAL
SUMMARY OF ANALYSIS BY LOCATION

Parcel ID	Street Name	Street Number	Sublocation	Sample Collection	Location	SW846-6010	SW846-8270
012300073014017000	3654	41st Ave N	Comp.	Vacant Lot	HP0062A	X	
			Comp.	Vacant Lot	HP0062B	X	
012300073009039000	3708	41st Ave N	Comp.	Front Yard	HP0072A	X	
012300073010023000	3624	42nd Ave N	Comp.	Vacant Lot	HP0113A	X	X
012300073010005000	3653	43rd Ave N	Comp.	Back Yard	HP0192B	X	
012300073010004000	3661	43rd Ave N	Comp.	Front yard	HP0195A	X	
			Comp.	Back yard	HP0195C	X	
012300073008033000	3672	43rd Ave N	Comp.	Vacant Lot	HP0200A	X	
			Comp.	Vacant Lot	HP0200B	X	
012300073009022000	3705	43rd Ave N	Comp.	Front Yard	HP0204A	X	
			Comp.	Back Yard	HP0204B	X	
012300073009011000	3716	43rd Ave N	Comp.	Front Yard	HP0208A	X	X
012300073006017000	3602	44th Ave N	Comp.	Front Yard	HP0218A	X	
			Comp.	Back Yard	HP0218B	X	
012300073006021001	3628	44th Ave N	Comp.	Vacant Lot	HP0228A	X	X
012300073011013000	4233	F L Shuttlesworth Dr	Comp.	Front Yard	HP0295A	X	X

Sample Login Analytes / Limits

Job 680-91068-1

Client Job Description:	35th Avenue Superfund Site	Report To:	Oneida Total Integrated Enterprises LLC
Purchase Order #:	2005148-1356		Limari Krebs
Work Order #:			1220 Kennestone Circle
Project Manager:	Lisa Harvey		Suite 106
Job Due Date:	6/18/2013		Marietta, GA 30060
Job TAT:	12 Day Rush		
Max Deliverable Level:	IV	Bill To:	Oneida Total Integrated Enterprises LLC
			Accounts Payable
Earliest Deliverable Due:	6/18/2013		1033 North Mayfair Road
			Suite 200
			Milwaukee, WI 53226

Login 680-91068

Sample Receipt:	6/6/2013 9:00:00 AM	Number of Coolers:	1
Method of Delivery:	FedEx Priority Overnight	Cooler Temperature(s) (C°):	5.1;

Method	Method Description	Rpt Basis			Units	Sample #s Applicable
8270C_LL	Low Level PAHs	Total	MDL	RL		1,2,3,4,5,6,7,8,9,10,11,12,12M S,12MSD,13,14,15,16,17,18
	1-Methylnaphthalene		4.4	40	ug/Kg	
	2-Methylnaphthalene		7.1	40	ug/Kg	
	Acenaphthene		20	100	ug/Kg	
	Acenaphthylene		5	40	ug/Kg	
	Anthracene		4.2	8.4	ug/Kg	
	Benzo[a]anthracene		3.9	8	ug/Kg	
	Benzo[a]pyrene		5.2	10.4	ug/Kg	
	Benzo[b]fluoranthene		6.1	12.2	ug/Kg	
	Benzo[g,h,i]perylene		4.4	20	ug/Kg	
	Benzo[k]fluoranthene		3.6	8	ug/Kg	
	Chrysene		4.5	9	ug/Kg	
	Dibenz(a,h)anthracene		4.1	20	ug/Kg	
	Fluoranthene		4	20	ug/Kg	
	Fluorene		4.1	20	ug/Kg	
	Indeno[1,2,3-cd]pyrene		7.1	20	ug/Kg	
	Naphthalene		4.4	40	ug/Kg	
	Phenanthrene		3.9	8	ug/Kg	
	Pyrene		3.7	20	ug/Kg	
8270C_LL	Low-Level PAH	Total	MDL	RL		21
	1-Methylnaphthalene		0.5	2	ug/L	
	2-Methylnaphthalene		0.5	2	ug/L	
	Acenaphthene		0.5	2	ug/L	
	Acenaphthylene		0.25	1	ug/L	
	Anthracene		0.076	0.2	ug/L	
	Benzo[a]anthracene		0.05	0.2	ug/L	
	Benzo[a]pyrene		0.057	0.2	ug/L	
	Benzo[b]fluoranthene		0.05	0.2	ug/L	
	Benzo[g,h,i]perylene		0.1	0.5	ug/L	
	Benzo[k]fluoranthene		0.057	0.2	ug/L	
	Chrysene		0.069	0.2	ug/L	
	Dibenz(a,h)anthracene		0.05	0.2	ug/L	
	Fluoranthene		0.054	0.5	ug/L	
	Fluorene		0.5	2	ug/L	
	Indeno[1,2,3-cd]pyrene		0.05	0.2	ug/L	
	Naphthalene		0.25	2	ug/L	
	Phenanthrene		0.2	0.5	ug/L	
	Pyrene		0.089	0.5	ug/L	
Moisture	Percent Moisture	Total	RL	RL		1,2,3,4,5,6,7,8,9,10,11,12,13,14 ,15,16,17,18
	Percent Moisture		0.1	0.1	%	

Sample Login Analytes / Limits

Job 680-91068-2

Client Job Description:	35th Avenue Superfund Site	Report To:	Oneida Total Integrated Enterprises LLC
Purchase Order #:	2005148-1356		Limari Krebs
Work Order #:			1220 Kennestone Circle
Project Manager:	Lisa Harvey		Suite 106
Job Due Date:	6/18/2013		Marietta, GA 30060
Job TAT:	12 Day Rush		
Max Deliverable Level:	IV	Bill To:	Oneida Total Integrated Enterprises LLC
			Accounts Payable
Earliest Deliverable Due:	6/18/2013		1033 North Mayfair Road
			Suite 200
			Milwaukee, WI 53226

Login 680-91068

Sample Receipt:	6/6/2013 9:00:00 AM	Number of Coolers:	1
Method of Delivery:	FedEx Priority Overnight	Cooler Temperature(s) (C°):	5.1;

Method	Method Description	Rpt Basis			Units	Sample #s Applicable
200.7_CWA	ICP Metals	Total	MDL	RL		21
	Arsenic		4.6	20	ug/L	
	Barium		2.3	10	ug/L	
	Cadmium		2	5	ug/L	
	Chromium		1.2	10	ug/L	
	Lead		4	10	ug/L	
	Selenium		6.4	20	ug/L	
	Silver		0.89	10	ug/L	
245.1	Mercury	Total	MDL	RL		21
	Mercury		0.091	0.2	ug/L	
6010C	ICP Metals	Total	MDL	RL		12,12MS,12MSD,17,19,20
	Arsenic		0.59	2	mg/Kg	
	Barium		0.3	1	mg/Kg	
	Cadmium		0.1	0.5	mg/Kg	
	Chromium		0.5	1	mg/Kg	
	Lead		0.53	1	mg/Kg	
	Selenium		1	2.5	mg/Kg	
	Silver		0.096	1	mg/Kg	
7471B	Mercury	Total	MDL	RL		12,12MS,12MSD,17,19,20
	Mercury		0.0082	0.02	mg/Kg	
Moisture	Percent Moisture	Total	RL	RL		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18
	Percent Moisture		0.1	0.1	%	
Moisture	Percent Moisture	Total	RL	RL		19,20
	Percent Moisture		0.01	0.01	%	