Integrated Assessment Report
Caney Residential Yards Site

Kansas
Department of Health
and Environment

March, 2015

C3-063-73212

(Includes Child Sites:
1202 N. State Smelter Complaint, C3-063-72925;
Crowe Property, C3-063-73036; and
Roberds Property, C3-063-73037)
EPA I.D. KSN000706578 (1202 N. State Smelter
Complaint/Child)
EPA I.D. Not Yet Assigned (Caney Residential Yards Site/Parent)

Prepared by:

Kansas Department of Health and Environment
Division of Environment
Bureau of
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1000 Jackson St,
Topeka KS, 66612

FINAL

INTEGRATED ASSESSMENT

Caney Residential Yards Site

Caney, Kansas

Prepared by:
Kansas Department of Health and Environment
Bureau of Environmental Remediation
Remedial Section
Site Assessment Program

Date: March 2015

State ID: C3-063-73212
Includes children sites:
C3-063-72925 (1202 N. State Smelter Complaint);
C3-063-73036 (Crowe Property); and
C3-063-73037 (Roberds Property)
EPA I.D. KSN000706578 (1202 N. State Smelter Complaint/Child)
EPA I.D. Number Not Yet Assigned (Caney Residential Yards/Parent)

Project Manager: Randolph L. Brown, P.G., Site Assessment Unit Chief

Project Team Members:
Nicholas Schneider, Environmental Scientist

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1.0 Introduction

This document presents the findings of an Integrated Assessment (IA) conducted by the Kansas Department of Health and Environment (KDHE) to verify if a release of hazardous substances, pollutants or contaminants has occurred at the Caney Residential Yards site in Caney, Montgomery County, Kansas. This assessment was conducted as part of continuing cooperative agreement with the U.S. Environmental Protection Agency (EPA) to perform investigations of selected sites to evaluate potential or actual releases of hazardous substances, pollutants, or contaminants in Kansas. These investigations are performed under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR § 300. The purpose of this IA is to collect additional data to support a site disposition for the Caney Residential Yards site.

2.0 Site Description and Location

The Caney Residential Yards site is located in the northwestern portion of Caney, Montgomery County, Kansas 67333. The site includes properties at 1202 North State Street (Bunch), 1101 North Spring Street (Crowe), 1180 North State Street (Roberds), 1106 North Wood Street, 1111 North Wood Street, and 1105 North State Street. These properties are near the Owen Zinc site and are located near a former rail spur that also connected this area with the American Zinc, Lead and Smelting (AZLS) site. The legal description is Section 12, Township 35 South, Range 13 East. Center global positioning system coordinates for the site are approximately -95.93681 decimal degrees west longitude and 37.02341 decimal degrees north latitude (Reference 1, 2, and 3).

3.0 Site Background

3.1 History

The Caney Brick Company operated a brick plant immediately north of the site between 1902 and 1915. Charles Owen and a partner constructed the Owen Zinc Smelter Works over the site of the Caney Brick Company. In August 1915, AZLS leased the facility from the Owen Zinc Company and operated the smelter works until 1918, when the facility was sold to the Weir Smelting Company. A review of Sanborn Fire Insurance Maps for Caney indicates that in 1912 the only facility on the site was the Caney Brick Company. The 1917 Sanborn Map for Caney indicates the presence of the Owen Zinc Company at the former location of the Caney Brick Company. The Owen Zinc facility had one ore roaster and three furnace buildings. The Weir Smelting Company purchased the land containing the Owen Zinc facility in about 1926 and continued smelter operations until 1931. The 1927 Sanborn Map for Caney describes the Weir Smelter Company facility as “plant being wrecked”.

The Sanborn maps do not indicate any smelter works south of what is currently County Road 1600, which at the time of the Sanborn maps was the city limits and currently forms the northern boundary of the Bunch property. The block containing the Bunch property is indicated as the “Harvey’s Addition” residential area on the Sanborn Maps through the final available Sanborn Map (1936). The rail spur from the Owen Zinc smelter did, however, cross what is currently the northeastern portion of the Bunch property extending from the former Owen Zinc smelter southward into Caney.

The Weir Smelting Company trustee, Dallas W. Knapp, of Coffeyville, began to sell lots divided from the Owen Zinc facility to Wilford Cavaness in 1931. The Weir Smelting Company was apparently bankrupt at that time and trustees were therefore selling assets. The Weir Smelting Company also purchased the AZLS works.

The Caney Glass Company began operation north of the intersection of what is now Myrtle and Spring Street about 1905, and operated as the Caney Window Glass Company and later the Connelly Glass Company (Reference 4). This former facility is also within the site area and has not been assessed.

The Caney Smelter Complaint site, KSN000706287, is located east of the AZLS site and has been assessed separately by KDHE. This site also appears to be impacted by lead contamination from the AZLS site (Reference 5).

3.2 Previous Investigations

The AZLS site, EPA I.D. Number (CERCLIS) KSD984971986 is approximately ½ mile east of this site. Greater detail on the Owen Zinc and AZLS sites can be found in documentation for each site and will not be duplicated here (References 6 and 7). The AZLS site has been extensively assessed as the American Zinc, Lead and Smelting Co. (Former) site, KSD984971986. The Preliminary Assessment (PA) was originally completed by KDHE in 1990. The Site Inspection (SI) was completed by EPA in 1992, and the Removal Assessment was completed by EPA in 1993. A potentially responsible party removal action was completed in 2000 with EPA oversight (Reference 6). The site assessments and removal action documentation for the former AZLS site are available in the EPA site administrative record and will not be duplicated in this report.

The property immediately north of the impacted residential yards contains the Owen Zinc site (KDHE identification number C306300193, EPA identification number KSD984971911). Laboratory analysis of soil, sediment, and surface water samples collected from the Owen Zinc site has indicated the presence of elevated levels of Resource Conservation and Recovery Act (RCRA) heavy metals, primarily lead, cadmium and zinc. In 1991 KDHE completed the PA followed by the SI in 1991 followed by additional supplemental sampling in 1992. In 2001 KDHE completed the Expanded Site Inspection (ESI) for the Owen Zinc site.

Cadmium was detected at a maximum concentration of 1,099 milligrams per kilogram (mg/Kg) in soil, above its residential Tier 2 Risk-based Standards for Kansas (RSK) level of 39 mg/Kg during the 1992 sampling. Lead was detected at a maximum concentration of 4,845 mg/Kg during the 1991 PA, elevated above its residential Tier 2 RSK level of 400 mg/Kg. Zinc was detected at a maximum concentration of 32,210 mg/Kg, above its residential RSK level of 23,000 mg/Kg in the 1991 PA/SSI sampling. Cadmium was detected in surface water at a maximum concentration of 1.147 milligrams per liter (mg/L), above KDHE's Surface Water Quality Standard (SWQS) for domestic water supply of 0.005 mg/L. Lead was detected in surface water at a concentration of 0.011 mg/L, above its domestic water supply SWQS of 0.015 mg/L. Zinc was detected at a maximum concentration of 22.754 mg/L, above its domestic water supply SWQS of 7.4 mg/L.

During the ESI, KDHE collected samples from 76 locations for X-ray fluorescence (XRF) analysis with selected samples being submitted for laboratory confirmation. The maximum detection of lead during the ESI was at sample location 400,300 with an XRF lead value of 2,200 mg/Kg and a laboratory lead value of 4,102.7 mg/Kg. Cadmium was detected at maximum concentrations by XRF analysis at 997.0 mg/Kg at sample location 500,65, and 954.0 mg/Kg at sample location 700,100. Cadmium was detected at a maximum concentration of 748.8 mg/Kg by laboratory analysis at location 600,200. These maximum detections were identified adjacent to or immediately down slope of the former Owen Zinc works.

The ESI verified elevated lead and cadmium levels in soil on the property containing the Owen Zinc site, the adjacent Torres residential property, and in sediment downstream from these properties. The Blue Tee Corporation was identified as a responsible party for the Owen Zinc site in the 2001 KDHE ESI (Reference 7). A responsible party notification was sent to the Blue Tee Corporation by KDHE in 2002 for the Owen Zinc site. The Blue Tee Corporation entered into a Consent Agreement with KDHE in 2004, and conducted a corrective action consisting of consolidating the smelter waste and contaminated soil on the former Owen Zinc smelter into an on-site consolidation cell which was capped. In 2011 an Environmental Use Control was placed on the property containing the former Owen Zinc smelter. The responsible party identification documentation is included in Appendix 11.3. The Blue Tee Corporation was also identified as a successor corporation to AZLS in the Administrative Order on Consent for the AZLS site, EPA I.D. # KSD984971986, Docket Number VII 95 F-0031 (Reference 7).

Mr. Fred Bunch contacted KDHE in 2011 regarding concerns of potential smelter waste present on his property. This site was referred to KDHE's Site Assessment Program in June 2012, and sampling was conducted on the property on June 19, 2012. Mr. Bunch has resided at this address for several years, and had noticed slag present in the yard while gardening and also noticed some plants and trees appearing to be stressed due to slag present in soil within his property. Based on the elevated detections in the Bunch residential yard, and concerns about potential lead impacts to his property, Mr. Roberds contacted KDHE in June 2012 to request sampling on his property. The property owner south of the Roberds property, Mr. Larry Crowe, also contacted KDHE at the same time to conduct sampling on his property (References 1, 2, and 3).

Negotiations between KDHE and Blue Tee to conduct additional off-site response actions at the Owens Zinc site have been ongoing since completion of the 2013 KDHE site assessments. A May 7, 2013, letter from KDHE to Blue Tee requested additional residential yard characterization based on the results of the three KDHE ISEs. In April 2014 Blue Tee submitted the "Final Owen Investigative Work Plan" to KDHE for additional residential yard investigations. A May 23, 2014, letter from KDHE agreed to allow Blue Tee to implement the work plan for additional off-site characterization and repairs to the existing Owens Zinc repository cap with some stipulations. The final Work Plan is included in Appendix 11.8.

A "Draft Owen Residential Sampling Investigation Report" was submitted by Blue Tee to KDHE in July 2014 and the "Draft Owens Residential Soil Removal Action Work Plan" was submitted by Blue Tee after submittal of the Investigation Report to KDHE in July 2014. Since submittal of the draft Removal Action Work Plan, Blue Tee has not agreed to sign an amended Consent Agreement and Final Order (CAFO). The only KDHE agreement in force is that for the original Owens Zinc repository since the CAFO was not signed by Blue Tee.

The Sampling Investigation Report and Removal Action Work Plan have not been approved by KDHE, but are included in Appendix 11.9 and 11.10, respectively. The site was referred back to the Site Assessment Program in February 2015 for further evaluation of other CERCLA response options when Blue Tee did not agree to sign an amended CAFO with KDHE to conduct the additional response actions.

4.0 Physical Setting

4.1 Land Use

The site is located in a residential and commercial area of Caney, Montgomery County, Kansas. The nearest residences are on the site.

4.2 Soils and Geology

The site is located within the Osage Cuestas physiographic area of Kansas. Soils at the site are classified as Bates-Collinsville complex (4 to 20 percent slopes), and Dennis silt loam (1 to 4 percent slopes). The Bates-Collinsville complex is comprised of the Bates series and the Collinsville series. The Bates Series consist of moderately deep, well drained, moderately permeable soils on uplands, formed in material weathered from thinly bedded sandstone and interbedded sandy and silty shale.

The Collinsville series consist of shallow, well drained, moderately rapidly permeable upland soils, formed in material weathered from sandstone. The Dennis series consist of deep, moderately well drained, slowly permeable soils on uplands, formed from material weathered from shale (Reference 9).

The surfical geology at the site consists of shale, siltstone, and fine-grained sandstone of the Pennsylvanian Stranger Formation. Depth to bedrock in the site area is generally shallow and within 10-15 feet or less (Reference 10).

During subsurface drilling for the Owens Zinc ESI, refusal was generally encountered within 2-5 feet below surface which is consistent with the available geological information (References 7 and 10). No groundwater was encountered in any borings advanced for the ESI (Reference 7).

4.3 Hydrogeology

Groundwater availability is generally limited to alluvial areas of the Little Caney River west of the site. With the shallow depth to bedrock across the site area, groundwater is not expected to be encountered at the site before bedrock refusal. Groundwater flow is expected to follow surface contours in the site area. Very small to moderate yields of groundwater can be obtained from the Pennsylvanian Stanton Limestone Formation and the Chanute Shale Formation but groundwater in the site area is typically very mineralized. Area wells range in depth from 40 feet to 200 feet below ground surface (Reference 10).

5.0 Receptors

5.1 Groundwater Pathway

A search of the Kansas Geological Survey water well completion records (Form WWC-5) identified no domestic or public water supply wells constructed within one mile of the site (Reference 10). A total of 15 domestic wells were identified within the four mile target distance limit (Reference 10). There are 2.41 persons per household in Montgomery County, which equates to 37 potential drinking water targets associated with domestic wells within the four mile target distance limit (References 10, 11, and 12). However, this estimate of the groundwater targets is limited by the WWC-5 water well record database, which only contains records of wells drilled since 1975. There are no public water supply wells located within four miles of the site.

5.2 Soil and Air Pathways

The site area is residential and commercial. Approximately 2,140 persons live within one mile (Reference 12). There are multiple residences located within the site area. Areas of lead contamination in soil are located at or within 200 feet of at least five residences from review of the KDHE and Blue Tee sampling results, and of these four residences are Level I as defined by the Hazard Ranking System (HRS): 1202 North State, 1106 North Wood, 1111 North Wood, and 1105 North State Street. The 1101 North Spring Street yard is Level II as defined by the HRS from the available KDHE sample results (References 1, 2, 3, 11, and Appendix 11.9).

5.3 Surface Water Pathway

There are no surface water bodies present at the site. Drainage is generally to the south. The adjacent property to the south appears to receive surface water drainage from the site, and a pond is present within 100 feet of the southern site boundary that may receive drainage from the site. Horses and cattle were observed drinking from the pond during the site field activities. There does not appear to be a well-developed overland flow drainage from the site to any intermittent streams or larger water bodies other than the ponds south of the site. The nearest surface water body is Cheyenne Creek located approximately ½ mile west of the site. The ESI documented sediment impacts between the Owen Zinc site and the Little Caney River from off-site drainage. The probable point of entry as defined by the HRS is ½ mile west of the site as road drainage ditches converge with Cheyenne Creek. Cheyenne Creek converges with the Little Caney River approximately one mile southwest of the site. Future remedial site assessment activities should include additional assessment of the surface water pathway.

6.0 Assessment Activities

6.1 Description of Previous Field Activities

On June 19, 2012, Randolph L. Brown, P.G., inspected the 1202 North State property (Bunch property) and sampled surface soils from 35 locations using stainless steel trowels. Samples were collected into one-quart freezer bags for analysis with KDHE's Innov-X Delta XRF unit and homogenized in the field. Samples were collected from discrete locations at approximately 50 foot spacing. All samples were analyzed with KDHE's Innov-X Delta XRF unit consistent with EPA Method 6200 by analyzing each sample three times with a 30 second analysis time. Of the XRF analyses, 14 samples were submitted to KDHE's Health and Environment Laboratories (KHEL) for metals analysis by EPA Method 6010. Four samples were also submitted to KHEL for Toxicity Characteristic Leachate Procedure (TCLP) analysis by EPA Method 1311.

On July 17, 2013, Randolph L. Brown, P.G., inspected the 1180 North State Street property (Roberds) and sampled surface soils from 22 locations using stainless steel trowels. Samples were collected into one-quart freezer bags for analysis with KDHE's Innov-X Delta XRF unit and homogenized in the field. Samples were collected from discrete locations using an unbiased grid at approximately 50 foot spacing. Based on the on-site XRF analysis, an additional sample location was established 50 feet north of R-16 approximately 25 feet south of the Crowe property line. All samples were analyzed on-site with KDHE's Innov-X Delta XRF unit consistent with EPA Method 6200 by analyzing each sample three times with a 30 second analysis time. Of the XRF analyses, ten samples were submitted to KHEL for metals analysis by EPA Method 6010. The sample with the maximum XRF lead detection was also submitted to KHEL for TCLP analysis.

On July 17, 2013, Randolph L. Brown, P.G., also inspected the 1101 North Spring Street property (Crowe property) and sampled surface soils from six locations using stainless steel trowels. Samples were collected into one-quart freezer bags for analysis with KDHE's Innov-X Delta XRF unit and homogenized in the field. Samples were collected from biased locations in areas with frequent use. Based on the on-site XRF analysis, no additional sample locations were added. All samples were analyzed on-site with KDHE's Innov-X Delta XRF unit consistent with EPA Method 6200 by analyzing each sample three times with a 30 second analysis time. Of the XRF analyses, 10 samples were submitted to KHEL for metals analysis by EPA Method 6010. Since no individual analysis exceeded residential RSKs for lead, no samples were submitted for TCLP analysis.

Since these were pre-CERCLA investigations only discrete samples were collected and not the full quadrant yard approach recommended in the *Superfund Lead-Contaminated Residential Sites Handbook*. The Blue Tee sampling activities can be found in Appendix 11.8 and 11.9.

The July 2014 "Draft Owen Residential Sampling Investigative Report" submitted by Blue Tee also identifies the 1106 North Woord, 1111 North Wood, and 1105 North State Street properties as impacted above 400 mg/kg.

6.2 Quality Assurance and Quality Control

Quality assurance consisted of the laboratory contract lab quality assurance/quality control parameters for each analysis. No significant quality control concerns were identified in the laboratory data and none of the laboratory data were rejected. Quality control parameters for XRF analyses were within those specified in EPA Method 6200 (Reference 13). The regressions for each separate property investigation yielded coefficients of determination of greater than $r^2 = 0.9$ for lead for all three investigations. More details on the regression calculations for each investigation can be found in each specific assessment report in Appendix 11.5-11.7.

7.0 Assessment Results

For the 1202 North State Street property (Bunch), the maximum XRF and laboratory lead detections of 3,751 mg/Kg and 5,100 mg/Kg, respectively, were encountered in sample S-32, located near the northern edge of the Bunch residential garden. A total of 11 XRF or laboratory analyses of the 35 surface soil samples exceeded KDHE's residential Tier 2 RSK for lead of lead of 400 mg/Kg. Cadmium was detected at a maximum of 93 mg/Kg at location S-3 with a corresponding lead detection of 1,500 mg/Kg by laboratory and 1,186 mg/Kg by XRF analysis. The only other cadmium detection above residential Tier 2 RSK levels was also at S-32 with a cadmium detection of 50 mg/Kg. The cadmium

XRF correlation was poor and cadmium XRF detections can only be considered qualitative and generally biased high. Arsenic was detected by laboratory analysis above its residential Tier 2 RSK of 18.9 mg/Kg in samples S-2 and S-36, and both were also above the three times background concentration for arsenic of 20.7 mg/Kg calculated for the Owen Zinc ESI. The arsenic detection in both of these samples was 24 mg/Kg, and each of these locations had a corresponding lead concentration over 400 mg/Kg. Zinc was detected in S-32 by laboratory analysis at 55,000 mg/Kg, above the residential Tier 2 RSK level of 23,000 mg/Kg. No other zinc laboratory detection was above residential Tier 2 levels. Samples S-32 and S-3 indicated zinc above residential Tier 2 RSK levels in XRF analysis, and both locations are associated with laboratory and/or XRF lead detections above 400 mg/Kg. TCLP analysis was also performed on several samples based on XRF results. The maximum TCLP detection for lead was 1.5 mg/L in sample S-32. This level is below the TCLP threshold for lead of 5 mg/L which characterizes lead as a hazardous waste according to RCRA. The maximum cadmium TCLP result was 0.57 mg/L in S-3, also below its TCLP threshold of 1 mg/L. Arsenic was not detected in any of the TCLP analyses. The ISE Report is included as Appendix 11.5.

For the 1180 North State Street property (Roberds), the maximum XRF and laboratory lead detections of 529 mg/kg and 500 mg/kg respectively, were encountered in sample R-16, located in the southwestern portion of the soil sampling grid. This area is approximately bounded from the Bunch property north to approximately 25 feet south of the Crowe property, and from approximately 25 feet east of North State Street to approximately 200 feet east of North State Street. Sample locations with one or more XRF analysis above 400 mg/kg include R-9, R-11, and R-16. R-2 indicated lead by XRF at 395 mg/kg. Arsenic was detected above its residential Tier 2 RSK of 18.9 mg/kg in locations R-4, R-9, R-10, R-11, and R-16. Sample R-5 indicated arsenic by XRF at 29 mg/kg but was not confirmed by laboratory analysis. The maximum arsenic detection was 176 mg/kg by XRF analysis and 140 mg/kg by laboratory analysis in R-10. Cadmium was detected at 67 mg/kg by XRF in R-2 but only 16 mg/kg by laboratory analysis. Cadmium was also detected at 49 mg/kg in R-4 but only 27 mg/kg by laboratory analysis. Zinc was not detected above residential Tier 2 RSKs in any samples by XRF analysis. TCLP analysis was also performed on R-16 based on XRF results, and no TCLP detection for lead was observed. The ISE Report is included in Appendix 11.7.

For the 1101 North Spring Street property (Crowe), the maximum XRF and laboratory lead detections of 336 mg/kg and 320 mg/kg respectively, were encountered in sample C-2. All other laboratory or XRF results were below 300 mg/kg. All results are below the residential Tier 2 RSK for lead of 400 mg/kg. Arsenic was not detected above 11 mg/kg by XRF analysis, and was detected at a maximum of 9.4 mg/kg in C-2. All arsenic detections were below the residential Tier 2 RSK of 18.9 mg/kg. The ISE Report is included in Appendix 11.6.

The maximum lead detection indicated for the 1106 North Wood property during the Blue Tee investigation was 1,677 mg/kg. The maximum lead concentration for the 1111 North Wood property during the Blue Tee investigation was 2,843 mg/kg, and the maximum lead detection for the 1105 North State Street property during the Blue Tee investigation was 550 mg/kg.

8.0 Removal Considerations

Lead, arsenic, cadmium, and zinc have been historically detected above residential RSKs at the site. At least four residential properties have indicated lead above KDHE's residential RSK levels. A large area of residential properties, present between the AZLS and Owen Zinc sites, may be impacted from one or both of these sites. The Blue Tee data, while not approved by KDHE, also indicates other residential properties are or may be impacted with lead above residential RSKs.

The site appears to qualify for consideration of a removal action consistent with the following criteria of §300.400(b)(2) of the NCP: *(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants; (iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate; (vii) the availability of other appropriate federal or state response mechanisms to respond to the release;* and *(viii) Other situations or factors that may pose threats to public health or welfare of the United States or the environment* (Reference 14). The proximity of the site to residential areas of Caney and multiple impacted residential yards may be cited as potential justification for §300.400(b)(2)(viii).

Sampling at the site conducted by KDHE has consisted of biased or semi-stratified sampling strategies utilizing discrete sampling locations. Further removal site assessment and removal actions should also utilize appropriate decision-making and sampling strategies in the *Superfund Lead-Contaminated Residential Sites Handbook*. The TCLP data collected for the IA also indicates that if some of the contaminated soil and waste from the site are excavated, these may potentially be RCRA characteristic hazardous waste and will need additional waste characterization if being disposed off-site.

9.0 Conclusions

Lead, arsenic, cadmium, and zinc are present at this site above residential RSKs. The site property includes two residences and is adjacent to other residential areas of Caney. The site appears to qualify for additional removal site evaluation and consideration of a removal action consistent with the NCP. It is recommended that any future sampling include residential properties between the AZLS and Owen Zinc sites, and the former Connelly Glass Company plant located east of the 1202 North State Street property.

The surface water pathway and other potential exposure pathways should also be assessed through future remedial site assessment either in conjunction with removal action activities or at the completion of removal action activities.

10.0 References

1) *Integrated Site Assessment*, *1202 North State Smelter Complaint*, KDHE, 2013.

2) *Integrated Site Assessment*, *Roberds Property,* KDHE, 2013.

3) *Integrated Site Assessment, Crowe Property,* KDHE, 2013.

4) Sanborn Fire Insurance Maps, Caney, Kansas 1894-1927.

5) *Integrated Assessment, Caney Smelter Complaint*, KDHE, 2015.

6) CERCLA Information System, accessed March 4, 2015.

7) *Expanded Site Inspection, Owen Zinc Site,* KDHE, 2001.

8) Information provided by Maura O'Halloran, Remedial Section, KDHE, March 6, 2015.

9) United States Department of Agriculture, *Soil Survey of Montgomery County*, 2015.

10) Kansas Geological Survey, geology and water well database, available at: http://www.kgs.ku.edu/, accessed March 4, 2015.

11) United States Environmental Protection Agency, November 1992, *The Hazard Ranking System Guidance Manual*, Publication 9345.1-07.

12) U.S. Census Bureau State and County Quick Facts available at: http://quickfacts.census.gov/qfd/, accessed March 4, 2015.

13) U.S. EPA, Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, first edition January 1998 and U.S. Environmental Protection Agency (EPA), Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, revised February 2007.

14) National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR § 300.

15) Kansas Department of Health and Environment, *Risk-based Standards for Kansas (RSK) Manual,* 2014.

16) U.S. Environmental Protection Agency, *Guidance for Performing Preliminary Assessments under CERCLA*, EPA 540/G-91/013, 1991.

17) U.S. Environmental Protection Agency, *Guidance for Performing Site Inspections under CERCLA*, OSWER Directive 9345.1-05, 1992.

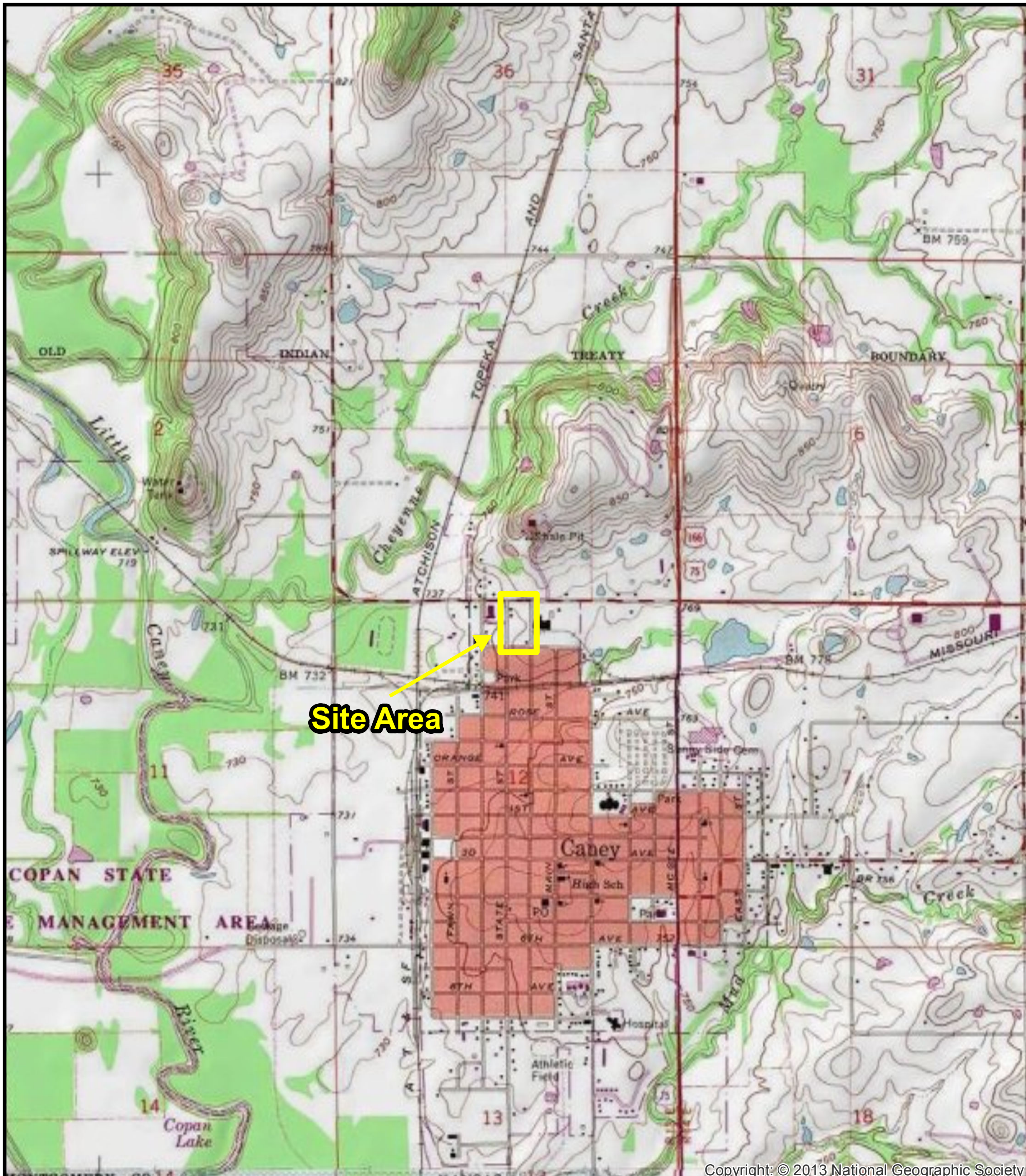
18) U.S. Environmental Protection Agency, *Hazard Evaluation Manual: A Guide to Removal Actions*, EPA Region III, 1993.

11.0 Appendices

11.1 Figures and Tables

Kansas Department of Health and Environment

SITE:	Caney Residential Yards Caney, Kansas		
TITLE:	Area Map		
PROJECT PHASE:		Integrated Assessment	
DRAWN BY: NS	3/5/15	BASEMAP DATE:	2013
CHECKED BY: RB	3/5/15	Figure 1	

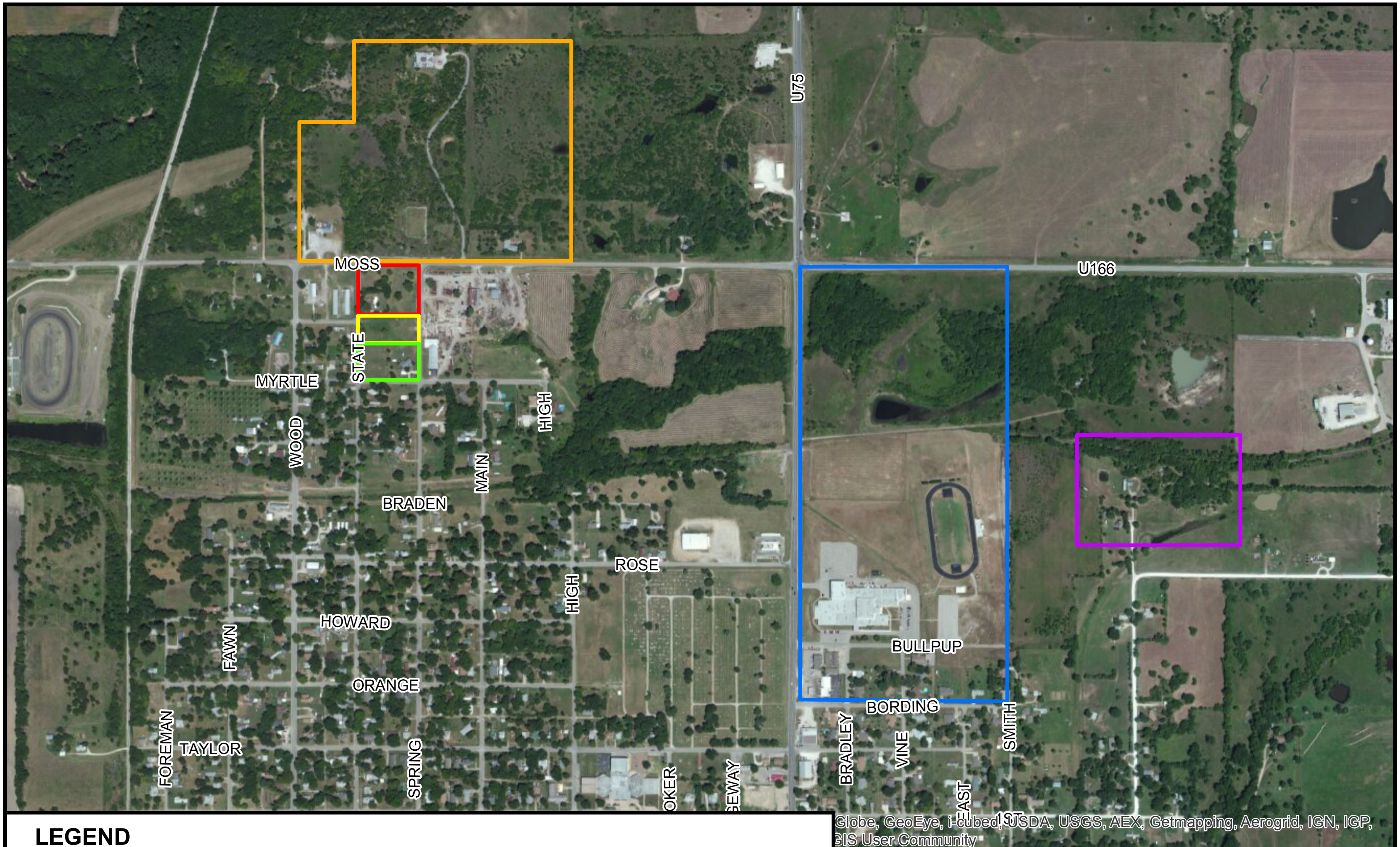


N

0 0.25 0.5 1 Miles

Kansas Department of Health and Environment

SITE:	Caney Residential Yards Caney, Kansas		
TITLE:	Topographic Map		
PROJECT PHASE:	Integrated Assessment		
DRAWN BY: NS	3/5/15	BASEMAP DATE:	2013
CHECKED BY: RB	3/5/15	Figure 2	



LEGEND

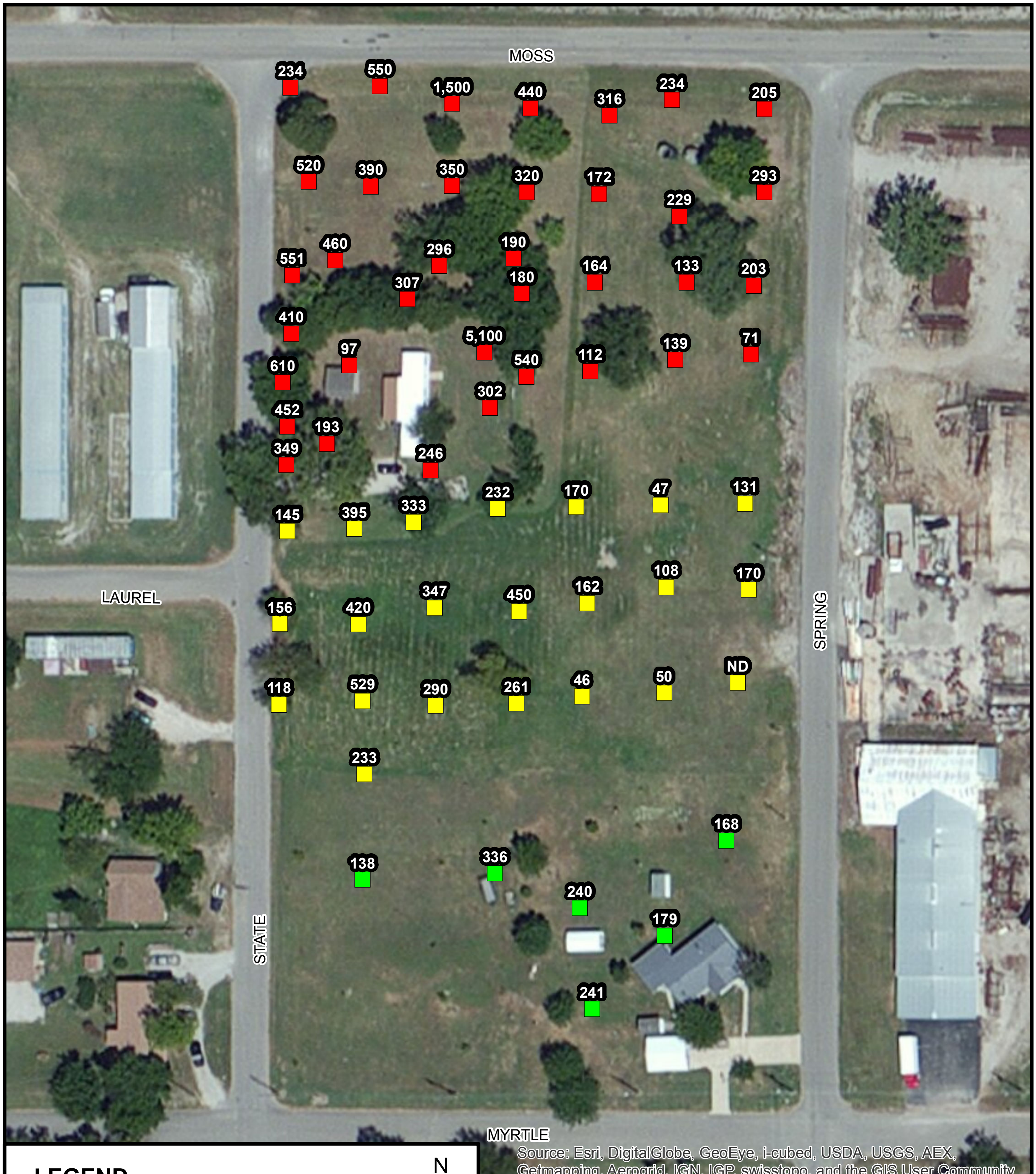
Crowe Property	American Zinc Lead and Smelting Site
Roberds Property	Caney Smelter Complaint Site
1202 North State Property	Owens Zinc Site

0 500 1,000 2,000 Feet

N

Kansas Department of Health and Environment

SITE:	Caney Residential Yards Caney, Kansas			
TITLE:	Site Areas			
PROJECT PHASE:	Integrated Assessment			
DRAWN BY:	NS	3/5/15	BASEMAP DATE:	2013
CHECKED BY:	RB	3/5/15	**Figure 3**	



LEGEND

- Crowe Property Soil Sample
- Roberds Property Soil Sample
- 1202 North State Soil Sample

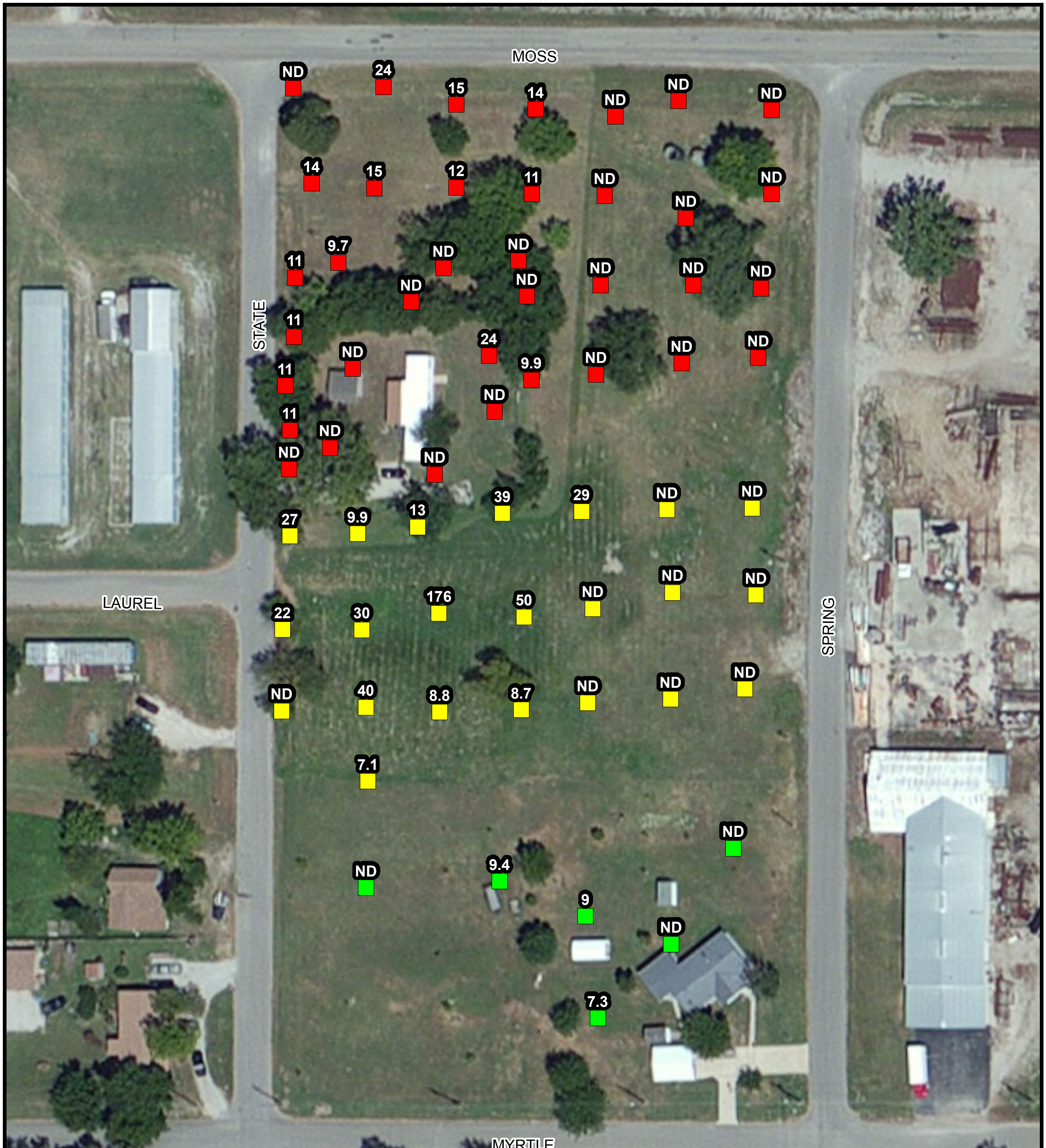
N

0 50 100 200 Feet

Values in mg/kg
ND- Not detected

Kansas Department of Health and Environment

SITE:	Caney Residential Yards Caney, Kansas		
TITLE:	Lead Results for Soil Samples on Residential Properties		
PROJECT PHASE:	Integrated Assessment		
DRAWN BY: NS	3/5/15	BASEMAP DATE:	2013
CHECKED BY: RB	3/5/15	**Figure 4**	



LEGEND

- Crowe Property Soil Sample
- Roberds Property Soil Sample
- 1202 North State Soil Sample

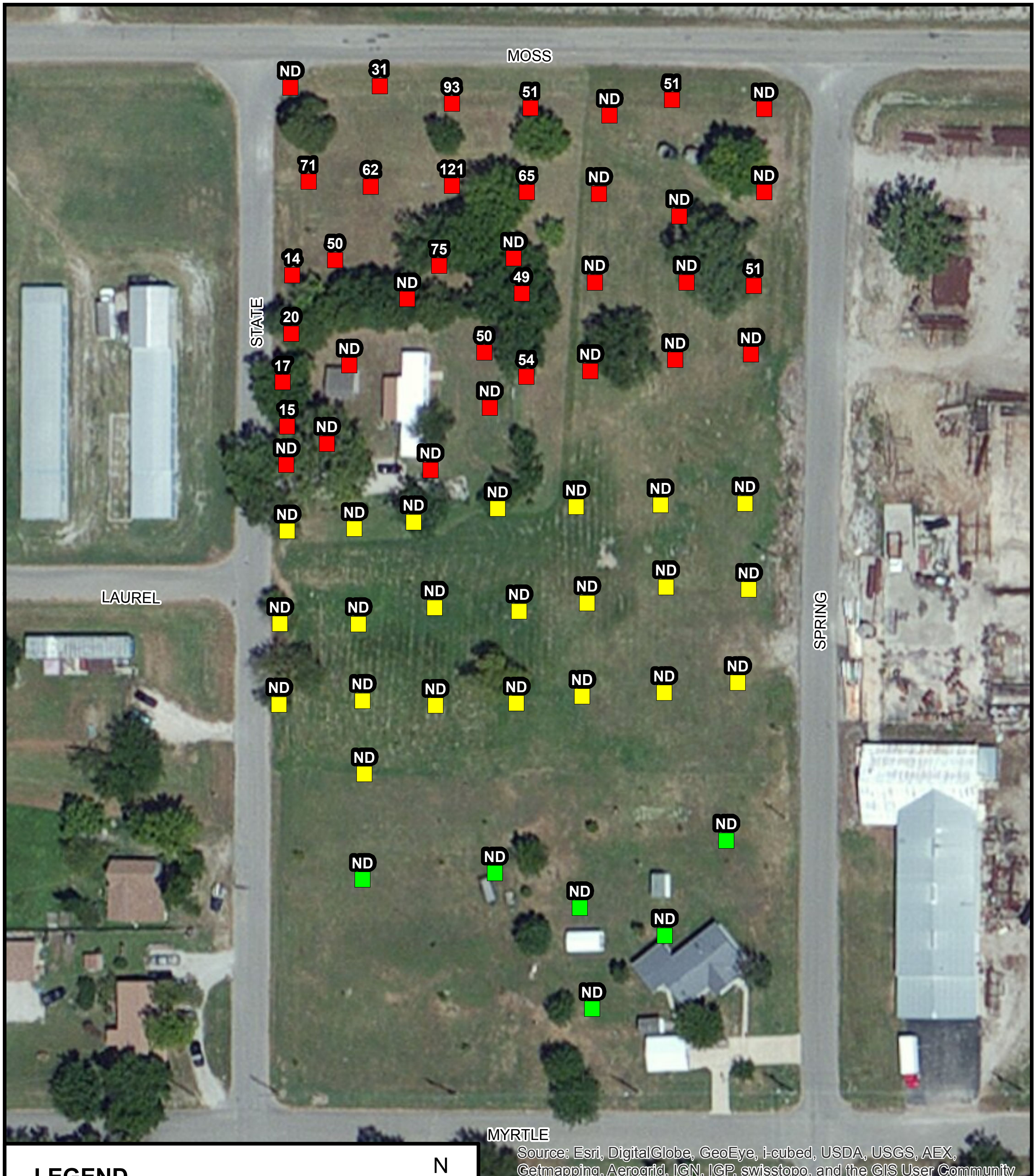
N

0 50 100 200 Feet

Values in mg/kg
ND- Not detected

Kansas Department of Health and Environment

SITE:	Caney Residential Yards Caney, Kansas		
TITLE:	Arsenic Results for Soil Samples on Residential Properties		
PROJECT PHASE:	Integrated Assessment		
DRAWN BY: NS	3/5/15	BASEMAP DATE:	2013
CHECKED BY: RB	3/5/15	Figure 5	



LEGEND

- Crowe Property Soil Sample
- Roberds Property Soil Sample
- 1202 North State Soil Sample

N

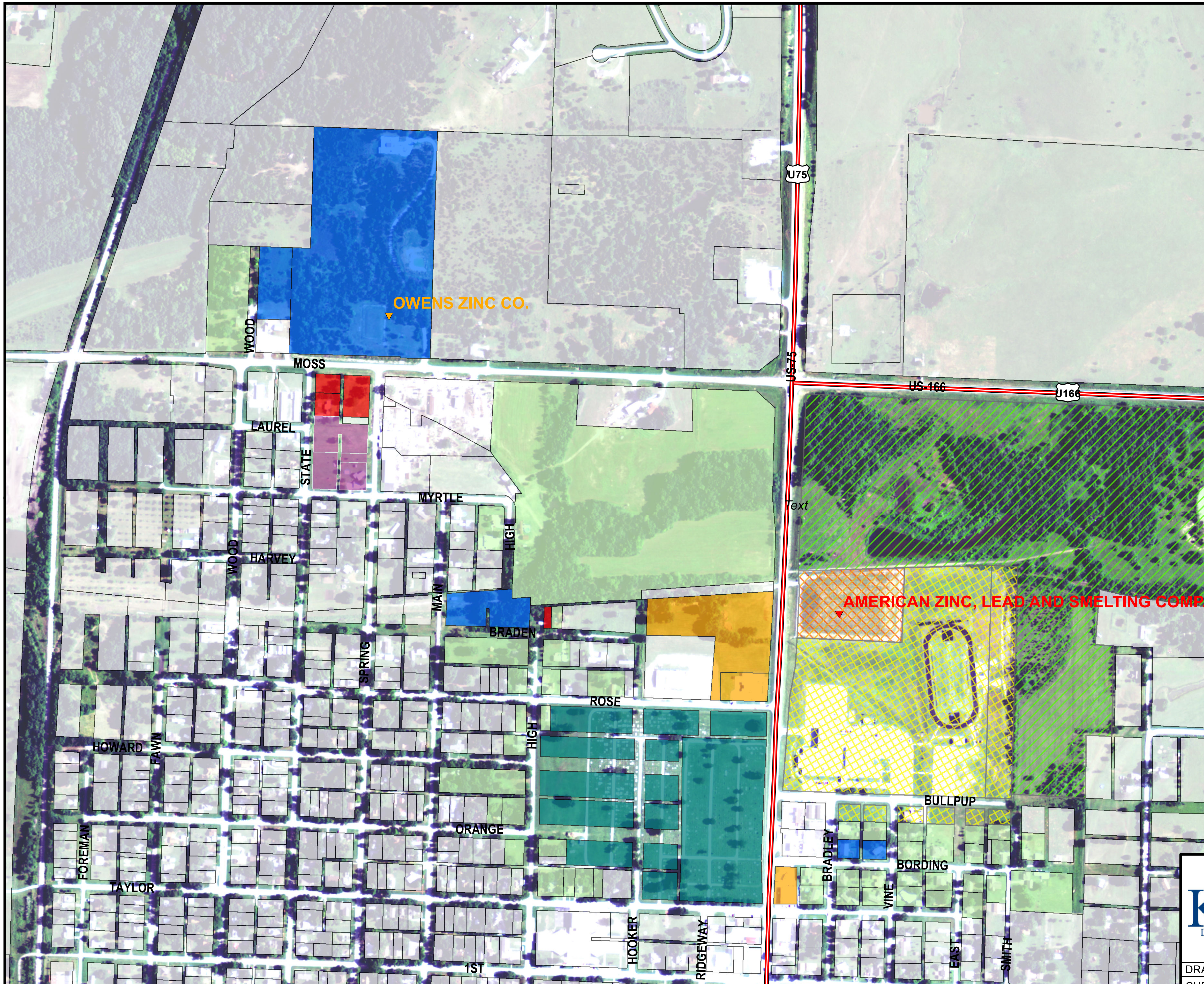
0 50 100 200 Feet

Values in mg/kg
ND- Not detected

Kansas Department of Health and Environment

SITE:	Caney Residential Yards Caney, Kansas
TITLE:	Cadmium Results for Soil Samples on Residential Properties
PROJECT PHASE:	Integrated Assessment

DRAWN BY:	NS	3/5/15	BASEMAP DATE:	2013
CHECKED BY:	RB	3/5/15	**Figure 6**	



Legend

US Route Divided

KDHE Identified Sites

SITENAME

- AMERICAN ZINC, LEAD AND SMELTING COMPANY
- OWENS ZINC CO.

Parcels

- Property Not Sampled (450)
- Agricultural Property, Remediated (1)
- AZLS Repository (1)
- Non-Residential Property, >RSK*, No Remediation (3)
- Cemetary, Not Sampled (13)
- Residential Property, <RSK (45)
- Residential Property, > RSK, No Remediation (4)
- Residential Property, Remediated (5)
- Residential Property, KDHE Assessment Ongoing (4)
- School Property (8)

Value in parentheses ( ) indicates the number of properties in each category within the map extent.

**Concentration data screened against KDHE's Risk-Based Standards for Kansas (RSK) Manual Tier 2 Levels for lead of 400 mg/kg for residential properties and 1,000 mg/kg for non-residential properties. The approved cleanup level for the AZLS site was 500 mg/kg for residential properties.*

Working Draft
Subject to Modification

For Discussion Purposes Only

N

0 375 750 1,500 Feet

Map Source: Aerial Photograph 2012 National Agriculture Imagery Program (NAIP)

Kansas Department of Health and Environment

SITE:	Owens Zinc Site Caney, Kansas		
TITLE:	Historical Residential Property Assesment Findings		
PROJECT PHASE:	Residential Assessment		
DRAWN BY: CC	7/22/2013	BASEMAP DATE:	2012
CHECKED BY: PG	7/22/2013	Figure 1	

11.2 Hazardous Substance Information

ATSDR

AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

LEAD

CAS # 7439-92-1

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2005

This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,280 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is lead?

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?

❏ Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.

❏ When lead is released to the air, it may travel long distances before settling to the ground.

❏ Once lead falls onto soil, it usually sticks to soil particles.

❏ Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.

How might I be exposed to lead?

❏ Eating food or drinking water that contains lead. Water pipes in some older homes may contain lead solder. Lead can leach out into the water.

❏ Spending time in areas where lead-based paints have been used and are deteriorating. Deteriorating lead paint can contribute to lead dust.

❏ Working in a job where lead is used or engaging in certain hobbies in which lead is used, such stained glass.

❏ Using health-care products or folk remedies that contain lead.

How can lead affect my health?

The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

How likely is lead to cause cancer?

We have no conclusive proof that lead causes cancer in humans. Kidney tumors have developed in rats and mice that had been given large doses of some kind of lead compounds. The Department of Health and Human Services (DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on

Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house dust or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood.

How can families reduce the risks of exposure to lead?

❏ Avoid exposure to sources of lead.

❏ Do not allow children to chew or mouth painted surfaces that may have been painted with lead-based paint.

❏ If you have a water lead problem, run or flush water that has been standing overnight before drinking or cooking with it.

❏ Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children

❏ If your home contains lead-based paint or you live in an area contaminated with lead, wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

Is there a medical test to determine whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your recent exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth or bones can be measured by X-ray techniques, but these methods are not widely available. Exposure to lead also can be evaluated by measuring erythrocyte protoporphyrin (EP) in blood samples. EP is a part of red blood cells known to increase when the amount of lead in the blood is high. However, the EP level is not sensitive enough to identify children with elevated blood lead levels below about 25 micrograms per deciliter (µg/dL). These tests usually require special analytical equipment that is not available in a doctor's office. However, your doctor can draw blood samples and send them to appropriate laboratories for analysis.

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that states test children at ages 1 and 2 years. Children should be tested at ages 3-6 years if they have never been tested for lead, if they receive services from public assistance programs for the poor such as Medicaid or the Supplemental Food Program for Women, Infants, and Children, if they live in a building or frequently visit a house built before 1950; if they visit a home (house or apartment) built before 1978 that has been recently remodeled; and/or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers a lead level of 10 µg/dL to be a level of concern for children.

EPA limits lead in drinking water to 15 µg per liter.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for lead (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ARSENIC

CAS # 7440-38-2

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

Division of Toxicology and Environmental Medicine ToxFAQs™ **August 2007**

This fact sheet answers the most frequently asked health questions (FAQs) about arsenic. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to higher than average levels of arsenic occur mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. At high levels, inorganic arsenic can cause death. Exposure to lower levels for a long time can cause a discoloration of the skin and the appearance of small corns or warts. Arsenic has been found in at least 1,149 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is arsenic?

Arsenic is a naturally occurring element widely distributed in the earth's crust. In the environment, arsenic is combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds.

Inorganic arsenic compounds are mainly used to preserve wood. Copper chromated arsenate (CCA) is used to make "pressure-treated" lumber. CCA is no longer used in the U.S. for residential uses; it is still used in industrial applications. Organic arsenic compounds are used as pesticides, primarily on cotton fields and orchards.

What happens to arsenic when it enters the environment?

❏ Arsenic occurs naturally in soil and minerals and may enter the air, water, and land from wind-blown dust and may get into water from runoff and leaching.
❏ Arsenic cannot be destroyed in the environment. It can only change its form.
❏ Rain and snow remove arsenic dust particles from the air.
❏ Many common arsenic compounds can dissolve in water. Most of the arsenic in water will ultimately end up in soil or sediment.
❏ Fish and shellfish can accumulate arsenic; most of this arsenic is in an organic form called arsenobetaine that is much less harmful.

How might I be exposed to arsenic?

❏ Ingesting small amounts present in your food and water or breathing air containing arsenic.
❏ Breathing sawdust or burning smoke from wood treated with arsenic.
❏ Living in areas with unusually high natural levels of arsenic in rock.
❏ Working in a job that involves arsenic production or use, such as copper or lead smelting, wood treating, or pesticide application.

How can arsenic affect my health?

Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs.

Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet.

Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso.

Skin contact with inorganic arsenic may cause redness and swelling.

Almost nothing is known regarding health effects of organic arsenic compounds in humans. Studies in animals show that some simple organic arsenic compounds are less toxic than inorganic forms. Ingestion of methyl and dimethyl compounds can cause diarrhea and damage to the kidneys

How likely is arsenic to cause cancer?

Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. Inhalation of inorganic arsenic can cause increased risk of lung cancer. The Department of Health and Human Services (DHHS) and the EPA have determined that inorganic arsenic is a known human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic arsenic is carcinogenic to humans.

How can arsenic affect children?

There is some evidence that long-term exposure to arsenic in children may result in lower IQ scores. There is also some evidence that exposure to arsenic in the womb and early childhood may increase mortality in young adults.

There is some evidence that inhaled or ingested arsenic can injure pregnant women or their unborn babies, although the studies are not definitive. Studies in animals show that large doses of arsenic that cause illness in pregnant females, can also cause low birth weight, fetal malformations, and even fetal death. Arsenic can cross the placenta and has been found in fetal tissues. Arsenic is found at low levels in breast milk.

How can families reduce the risks of exposure to arsenic?

❏ If you use arsenic-treated wood in home projects, you should wear dust masks, gloves, and protective clothing to decrease exposure to sawdust.

❏ If you live in an area with high levels of arsenic in water or soil, you should use cleaner sources of water and limit contact with soil.

❏ If you work in a job that may expose you to arsenic, be aware that you may carry arsenic home on your clothing, skin, hair, or tools. Be sure to shower and change clothes before going home.

Is there a medical test to determine whether I've been exposed to arsenic?

There are tests available to measure arsenic in your blood, urine, hair, and fingernails. The urine test is the most reliable test for arsenic exposure within the last few days. Tests on hair and fingernails can measure exposure to high levels of arsenic over the past 6-12 months. These tests can determine if you have been exposed to above-average levels of arsenic. They cannot predict whether the arsenic levels in your body will affect your health.

Has the federal government made recommendations to protect human health?

The EPA has set limits on the amount of arsenic that industrial sources can release to the environment and has restricted or cancelled many of the uses of arsenic in pesticides. EPA has set a limit of 0.01 parts per million (ppm) for arsenic in drinking water.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit (PEL) of 10 micrograms of arsenic per cubic meter of workplace air (10 $\mu g/m^3$) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Arsenic (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CADMIUM

CAS # 7440-43-9

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2008

This fact sheet answers the most frequently asked health questions (FAQs) about cadmium. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to cadmium happens mostly in the workplace where cadmium products are made. The general population is exposed from breathing cigarette smoke or eating cadmium contaminated foods. Cadmium damages the kidneys, lungs, and bones. Cadmium has been found in at least 1,014 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is cadmium?

Cadmium is a natural element in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide).

All soils and rocks, including coal and mineral fertilizers, contain some cadmium. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium does not corrode easily and has many uses, including batteries, pigments, metal coatings, and plastics.

What happens to cadmium when it enters the environment?

- Cadmium enters soil, water, and air from mining, industry, and burning coal and household wastes.
- Cadmium does not break down in the environment, but can change forms.
- Cadmium particles in air can travel long distances before falling to the ground or water.
- Some forms of cadmium dissolve in water.
- Cadmium binds strongly to soil particles.
- Fish, plants, and animals take up cadmium from the environment.

How might I be exposed to cadmium?

- Eating foods containing cadmium; low levels are found in all foods (highest levels are found in shellfish, liver, and kidney meats).
- Smoking cigarettes or breathing cigarette smoke.
- Breathing contaminated workplace air.
- Drinking contaminated water.
- Living near industrial facilities which release cadmium into the air.

How can cadmium affect my health?

Breathing high levels of cadmium can severely damage the lungs. Eating food or drinking water with very high levels severely irritates the stomach, leading to vomiting and diarrhea.

Long-term exposure to lower levels of cadmium in air, food, or water leads to a buildup of cadmium in the kidneys and possible kidney disease. Other long-term effects are lung damage and fragile bones.

How likely is cadmium to cause cancer?

The Department of Health and Human Services (DHHS) has determined that cadmium and cadmium compounds are known human carcinogens.

How can cadmium affect children?

The health effects in children are expected to be similar to the effects seen in adults (kidney, lung, and bone damage depending on the route of exposure).

A few studies in animals indicate that younger animals absorb more cadmium than adults. Animal studies also indicate that the young are more susceptible than adults to a loss of bone and decreased bone strength from exposure to cadmium.

We don't know if cadmium causes birth defects in people. The babies of animals exposed to high levels of cadmium during pregnancy had changes in behavior and learning ability. There is also some information from animal studies that high enough exposures to cadmium before birth can reduce body weights and affect the skeleton in the developing young.

How can families reduce the risks of exposure to cadmium?

❏ In the home, store substances that contain cadmium safely, and keep nickel-cadmium batteries out of reach of young children.
❏ Cadmium is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.
❏ If you work with cadmium, use all safety precautions to avoid carrying cadmium-containing dust home from work on your clothing, skin, hair, or tools.
❏ A balanced diet can reduce the amount of cadmium taken into the body from food and drink.

Is there a medical test to determine whether I've been exposed to cadmium?

Cadmium can be measured in blood, urine, hair, or nails. Urinary cadmium has been shown to accurately reflect the amount of cadmium in the body.

The amount of cadmium in your blood shows your recent exposure to cadmium. The amount of cadmium in your urine shows both your recent and your past exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to cadmium in drinking water at concentrations of 0.04 ppm for up to 10 days is not expected to cause any adverse effects in a child.

The EPA has determined that lifetime exposure to 0.005 ppm cadmium is not expected to cause any adverse effects.

The FDA has determined that the cadmium concentration in bottled drinking water should not exceed 0.005 ppm.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 5 $\mu g/m^3$ for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Cadmium (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ZINC
CAS # 7440-66-6

Division of Toxicology ToxFAQs™ **August 2005**

This fact sheet answers the most frequently asked health questions (FAQs) about zinc. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Zinc is a naturally occurring element. Exposure to high levels of zinc occurs mostly from eating food, drinking water, or breathing workplace air that is contaminated. Low levels of zinc are essential for maintaining good health. Exposure to large amounts of zinc can be harmful. It can cause stomach cramps, anemia, and changes in cholesterol levels. Zinc has been found in at least 985 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is zinc?

Zinc is one of the most common elements in the earth's crust. It is found in air, soil, and water, and is present in all foods. Pure zinc is a bluish-white shiny metal.

Zinc has many commercial uses as coatings to prevent rust, in dry cell batteries, and mixed with other metals to make alloys like brass, and bronze. A zinc and copper alloy is used to make pennies in the United States.

Zinc combines with other elements to form zinc compounds. Common zinc compounds found at hazardous waste sites include zinc chloride, zinc oxide, zinc sulfate, and zinc sulfide. Zinc compounds are widely used in industry to make paint, rubber, dyes, wood preservatives, and ointments.

What happens to zinc when it enters the environment?

❏ Some is released into the environment by natural processes, but most comes from human activities like mining, steel production, coal burning, and burning of waste.
❏ It attaches to soil, sediments, and dust particles in the air.
❏ Rain and snow remove zinc dust particles from the air.
❏ Depending on the type of soil, some zinc compounds can move into the groundwater and into lakes, streams, and rivers.
❏ Most of the zinc in soil stays bound to soil particles and does not dissolve in water.
❏ It builds up in fish and other organisms, but it does not build up in plants.

How might I be exposed to zinc?

❏ Ingesting small amounts present in your food and water.
❏ Drinking contaminated water or a beverage that has been stored in metal containers or flows through pipes that have been coated with zinc to resist rust.
❏ Eating too many dietary supplements that contain zinc.
❏ Working on any of the following jobs: construction, painting, automobile mechanics, mining, smelting, and welding; manufacture of brass, bronze, or other zinc-containing alloys; manufacture of galvanized metals; and manufacture of machine parts, rubber, paint, linoleum, oilcloths, batteries, some kind of glass, ceramics, and dyes.

How can zinc affect my health?

Zinc is an essential element in our diet. Too little zinc can cause problems, but too much zinc is also harmful.

Harmful effects generally begin at levels 10-15 times higher than the amount needed for good health. Large doses taken by mouth even for a short time can cause stomach cramps, nausea, and vomiting. Taken longer, it can cause anemia and decrease the levels of your good cholesterol. We do not know if high levels of zinc affect reproduction in humans. Rats that were fed large amounts of zinc became infertile.

Inhaling large amounts of zinc (as dusts or fumes) can cause a specific short-term disease called metal fume fever. We do not know the long-term effects of breathing high levels of zinc.

Putting low levels of zinc acetate and zinc chloride on the skin of rabbits, guinea pigs, and mice caused skin irritation. Skin irritation will probably occur in people.

How likely is zinc to cause cancer?

The Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified zinc for carcinogenicity. Based on incomplete information from human and animal studies, the EPA has determined that zinc is not classifiable as to its human carcinogenicity.

How can zinc affect children?

Zinc is essential for proper growth and development of young children. It is likely that children exposed to very high levels of zinc will have similar effects as adults. We do not know whether children are more susceptible to the effects of excessive intake of zinc than the adults.

We do not know if excess zinc can cause developmental effects in humans. Animal studies have found decreased weight in the offspring of animals that ingested very high amounts of zinc.

How can families reduce the risks of exposure to zinc?

❑ Children living near waste sites that contain zinc may be exposed to higher levels of zinc through breathing contaminated air, drinking contaminated drinking water, touching or eating contaminated soil.

❑ Discourage your children from eating soil or putting their hands in their mouths and teach them to wash their hands frequently and before eating.

❑ If you use medicines or vitamin supplements containing zinc, make sure you use them appropriately and keep them out of the reach of children.

Is there a medical test to determine whether I've been exposed to zinc?

There are tests available to measure zinc in your blood, urine, hair, saliva, and feces. These tests are not usually done in the doctor's office because they require special equipment. High levels of zinc in the feces can mean high recent zinc exposure. High levels of zinc in the blood can mean high zinc consumption and/or high exposure. Tests to measure zinc in hair may provide information on long-term zinc exposure; however, the relationship between levels in your hair and the amount of zinc you were exposed to is not clear.

Has the federal government made recommendations to protect human health?

The EPA recommends that drinking water should contain no more than 5 milligrams per liter of water (5 mg/L) because of taste. The EPA requires that any release of 1,000 pounds (or in some cases 5,000 pounds) into the environment be reported to the agency.

To protect workers, the Occupational Safety and Health Administration (OSHA) has set an average limit of 1 mg/m^3 for zinc chloride fumes and 5 mg/m^3 for zinc oxide (dusts and fumes) in workplace air during an 8-hour workday, 40-hour workweek.

Similarly, the National Institute for Occupational Safety and Health (NIOSH) has set the same standards for up to a 10-hour workday over a 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for Zinc (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

11.3 Responsible Party Information

K A N S A S

RODERICK L. BREMBY, SECRETARY — KATHLEEN SEBELIUS, GOVERNOR

DEPARTMENT OF HEALTH AND ENVIRONMENT

Bureau of Environmental Remediation

MEMORANDUM

Date: May 10, 2007

To: Rick Bean AS

Through: Scott Nightingale, Jonathan Kahn

From: Aspen Junge

Subject: Owens Zinc
Project Code C3-063-00193

Investigation of the historical chain of responsibility for the Owens Zinc smelter in Caney indicates that Blue Tee Corporation is a potentially responsible party for this site.

Site Location

The site is approximately 20 acres located in the SE ¼ and SW ¼ of Section 1, Township 35, Range 13 East, north of Caney in Montgomery County, KS.

Site History

In 1915 Charles Owen purchased the former Caney Brick Co. property and began constructing a zinc smelter (Montgomery County Register of Deeds, Sanborn Maps). The unfinished smelter was leased by American Zinc, Lead and Smelting Co. in August of that year (Montgomery County Register of Deeds). American Zinc, Lead and Smelting Co. completed construction of the smelter and operated it until sometime in late 1917 (Norris, p. 68). The smelter was purchased by Weir Smelting Co. in November 1918 and operated by Wier Smelting Co. until it went bankrupt in 1931 (Montgomery County Register of Deeds). The property was sold by sheriff's deed in December 1931 to a private owner.

American Zinc, Lead and Smelting Co. remained in business mining and smelting zinc. On December 5, 1966, it changed its name to American Zinc Company, and in January 1973 to Azcon Corporation (Moody's Manual). According to a memo given to us by Blue Tee attorneys, "It is undisputed that Blue Tee has successor CERCLA liability with respect to [American Zinc, Lead and Smelting Company]."

Azcon is currently part of Blue Tee Corporation (Blue Tee Corp. website, Azcon Corp. website).

References

American Metal Market. December 12, 1985.

Azcon website. http://www.azcon.net/about.htm. Accessed April 19, 2007.

Babst, Calland, Clements and Zomir. August 20, 2005. Memo to BER regarding Blue Tee successorship for American Zinc, Lead and Smelting Co.

Blue Tee Corporation website. http://www.bluetee.com/companies.html. Accessed April 19, 2007.

Hansen, Robert P. (ed.). 1973. Moody's Industrial Manual. Moody's Investors Service, Inc.: NY.

Montgomery County Register of Deeds. Deeds for the Owen Zinc Co. property.

Norris, James D. 1968. AZn: A History of the American Zinc Company. State Historical Society of Wisconsin: Madison.

Sanborn Maps for Caney, KS. 1912, 1917.

Owens Zinc
Project Code C3-063-00193
Timeline of Events

1915	**July**	**15**-- Charles Owen purchases parcel from J. T. Everhart and wife (Montgomery County Register of Deeds); **26**-- Charles and Pauline Owen quit claim to Owen Zinc Co. (Montgomery County Register of Deeds)
1915	**August**	**12**-- American Zinc Co. leases smelter (Montgomery County Register of Deeds)
1916	**June**	**2**-- Owen Zinc Co. purchases parcel from Maggie and John Green (Montgomery County Register of Deeds)
1916	**July**	**1**-- American Zinc Co. and Owen Zinc extend lease (Montgomery County Register of Deeds)
1916	**October**	**1**-- American Zinc Co. and Owen Zinc sign new lease contract, plant to be expanded, Caney Pipeline Co. (controlled by Charles Owen) agrees to provide gas (Montgomery County Register of Deeds)
1917	**December**	**31**-- Connelley buys property from Owens Zinc Co. (Montgomery County Register of Deeds)
1918	**November**	**8**-- Charles I. Gause buys a parcel from G. W. and Mabel Connelley (Montgomery County Register of Deeds); **9**-- Weir Smelting Co. buys a parcel from Charles I. and Lita Gause (Montgomery County Register of Deeds)
1930		No longer operating (Mineral Industry)
1931	**December**	**31**-- Weir Smelting Co. property sold by sheriff to Wilfred Cavaness (Montgomery County Register of Deeds)

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CALLAND
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AND
ZOMNIR
A PROFESSIONAL CORPORATION

August 20, 2005

TERRANCE GILEO FAYE
Of Counsel
tfaye@westol.com

Mr. Rick L. Bean, L.G.
Section Chief, Remedial Section
Bureau of Environmental Remediation
Kansas Dept. of Health and Environment ("KDHE")
Curtis State Office Building
1000 SW Jackson St., Ste. 410
Topeaka, KS 66612-1367

Via Facsimile Transmittal
And First Class Mail

RECEIVED
AUG 24 2005
BUREAU OF
ENVIRONMENTAL REMEDIATION

Re: **McNally Pittsburg Foundry**
Former Granby Mining and Smelter Company
Pittsburg, Kansas Site ("Site")

Dear Mr. Bean:

Blue Tee Corp. ("Blue Tee") has received and reviewed your April 28, 2005 correspondence concerning the above-referenced Site, and subsequently received and reviewed the May 2004 and December 2004 Focused Assessment Phase I/Phase II Reports. Blue Tee appreciates the extension of time allowed for Blue Tee to respond to the request of KDHE to enter into negotiations for a consent order to address remedial issues at the Site. Unfortunately, under the circumstances outlined herein, Blue Tee cannot agree to enter into the requested negotiations.

As you know, Blue Tee has cooperatively addressed other Kansas sites (Caney, KA; Owen, KA; Deering, KA and Neodesha, KA) and agrees that work with KDHE at other sites has proceeded in a streamlined and cost-effective manner. When historic facts support Blue Tee's relationship to a site, it is Blue Tee's policy to step forward to affirmatively address potential environmental issues. However, your assertion that Blue Tee is a potentially responsible party at this site due to a relationship with Granby Mining and Smelter Company ("Granby Mining") is incorrect. Blue Tee is **not** the successor to Granby Mining and, therefore, bears no liability for the actions of Granby Mining.

Attached is a copy of a legal memorandum regarding the successor issues involving Blue Tee/American Zinc Company/Granby Mining. In March 2005, this memorandum was provided to Attorney Dan Breedlove at Region VII of the Environmental Protection Agency relative to the Newton County, MO Site. The memorandum explains the legal analysis of the transaction whereby American Zinc

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Company acquired the assets of Granby Mining and is instructive here to demonstrate why Blue Tee is not the corporate successor to Granby Mining. Please review the document and contact me if you have any questions or concerns regarding any issues raised.

Finally, Blue Tee notes that your April 28, 2005 request was also transmitted to Mr. Todd Dillman of Metso Minerals Industries, Inc. If you have received any correspondence from Mr. Dillmann please forward a copy of that documentation to me.

Again thank you for the opportunity to review this matter.

Sincerely,

Terri Faye

Terrance Gileo Faye

TGF/ega

cc: W.C. Blanton, Esq. Blackwell Sanders
G. Uphoff, EMS
T. Dillmann, Metso Minerals Industries, Inc.

LEGAL MEMORANDUM REGARDING BLUE TEE/AMERICAN ZINC/GRANBY MINING SUCCESSOR ISSUES

PREPARED BY W.C. BLANTON
BLACKWELL SANDERS PEPER MARTIN LLP
March 2, 2005

— BACKGROUND AND SUMMARY —

U.S. EPA Region VII ("EPA") contends that Blue Tee Corp. ("Blue Tee") is a successor to the CERCLA[1] liabilities of Granby Mining and Smelting Company ("Granby Mining") and that, therefore, Blue Tee's CERCLA liability in connection with the Newton County Mine Tailings Superfund Site ("Newton County Site" or "Site") should include both the liability attributable to American Zinc, Lead and Smelting Company ("American Zinc") and that attributable to Granby Mining.[2] In support of its contentions, EPA to date has merely asserted that American Zinc acquired all the stock of Granby Mining in 1916. The agency has offered no detailed factual or legal analysis to support its position.

This memo demonstrates that EPA's contention that Blue Tee is a successor to Granby Mining's CERCLA liabilities relating to the Site is not well-founded as a matter of fact or law. First, the transactions in question were structured so as to constitute a legitimate, reasonable, and appropriate means under state law for American Zinc to acquire Granby Mining's assets without thereby incurring any Granby Mining liabilities not expressly assumed. Second, the transactions in question and related events do not form the basis for imputing any CERCLA liability Granby Mining might have to American Zinc either (a) on the theory that the transactions amounted to a <u>de</u> <u>facto</u> merger of Granby Mining and American Zinc that gives rise to an exception to the

[1] The Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601.

[2] It is undisputed that Blue Tee has successor CERCLA liability with respect to American Zinc.

general rule that a corporate purchaser of assets does not thereby succeed to all liabilities of the seller of those assets, or (b) on the theory that American Zinc merely continued Granby Mining's business and is subject to an exception to that general rule.

— **ISSUES** —

1. What is the generally applicable standard for imposing corporate successor liability under CERCLA?

2. What law governs the issue of whether American Zinc, a Maine corporation, is a successor to the CERCLA liabilities of Granby Mining, a Missouri corporation, and/or Granby Company ("Granby Co."), a Maine corporation, relating to the Newton County Site?

3. Under the applicable law, is American Zinc a successor to the CERCLA liabilities of Granby Mining?

— **SHORT ANSWERS** —

1. General principles of applicable state law relating to corporate successor liability should be applied in determining whether American Zinc is the successor to any CERCLA liabilities of Granby Mining or Granby Co. relating to the Site.

2. Because Missouri has greater interests affected by the determination of whether American Zinc is the successor to the CERCLA liabilities of Granby Mining and/or Granby Co. relating to the Site, Missouri law applies to this issue.

3. American Zinc is not a successor to the CERCLA liabilities of Granby Mining relating to the Site.

— KNOWN FACTS[3] —

The complete record now available demonstrates that there was nothing untoward regarding the structure or the financing of American Zinc's acquisition of Granby Mining's assets.

I. BACKGROUND

- In March or April of 1916, George Walker, a St. Louis stockbroker who controlled a block of Granby Mining stock,[4] asked Harry Kimball, then president of American Zinc, whether American Zinc would be interested in purchasing the assets of Granby Mining.
- Negotiations among Mr. Gatch (then president of Granby Mining), Mr. Walker, Mr. Kimball and William Coolidge, a director of American Zinc, continued in St. Louis, New York and Boston over the following five or six weeks. Both Mr. Kimball and Mr. Coolidge made it clear throughout the negotiations that they/American Zinc would not buy anything but all of the stock of Granby Mining.
- Mr. Gatch and other stockholders of Granby Mining decided they would not sell the Granby Mining stock for less than $400 per share, a price that was generally considered to be very high.
- Mr. Kimball and Mr. Coolidge were taken aback by the high price demanded by the Granby Mining stockholders but ultimately told Mr. Walker that "[w]e will not decide this. We will

---

[3] These facts were gleaned from the Missouri Supreme Court's opinion in Loud v. St. Louis Trust, 281 S.W. 744 (Mo. 1926), an abstract of the trial record in the Loud case, American Zinc's corporate minutes, a statement by American Zinc printed in certain publications at the time, and certain other American Zinc-related documents, copies of which are attached as the Appendix hereto.

[4] Mr. Walker's firm controlled a total of 2260 shares of Granby Mining stock as follows:

- An option on 1,735 shares held in trust by the St. Louis Union Trust Company as part of the Blake estate at issue in the Loud case;
- An option on 25 shares also held in trust by the St. Louis Union Trust for a Mrs. Scott.
- Ownership of 500 shares, which it purchased in November, 1915 at $140 per share.

have to go down to Boston, meet the board [of American Zinc], put up this proposition to them, tell them the whole story and see whether they are willing to pay the price."

- The American Zinc Board of Directors agreed to the $400 per share price if adequate time were given for an examination of the property.
- At some point in the negotiations, Mr. Coolidge told Mr. Walker "that if this deal is consummated, [American Zinc] did not intend to buy the stock, the stock would be sold to Kimball or some nominee, and that [American Zinc] would buy the property, as they wanted it clear of any legal difficulties."
- The net quick assets of Granby Mining exceeded $2,750,000, of which nearly $1,000,000 was in cash. Granby Mining's liabilities just prior to the stock purchase were less than $300,000. American Zinc believed that "[f]rom sales already made, the net quick assets of [Granby Mining] should be increased to above $4,000,000 by January first next."

II. THE STOCK PURCHASE

- On May 1, 1916, Mr. Kimball acquired in his own name a 30-day option to purchase all of Granby Mining's stock (20,000 shares) at $400 per share, a total of $8 million. Mr. Holliday, a St. Louis attorney representing American Zinc, worked out and prepared the option contract.
- Mr. Kimball caused a purportedly thorough examination of the mining, smelting, and other properties of Granby Mining made by engineering and operating personnel of American Zinc, and other outside engineers.
- On May 31, 1916, Granby Co. was organized under Maine law for the purpose of acquiring the stock of Granby Mining. This new company was capitalized at $20,000. Its owners, directors, and officers were A.P. Brewer, H.P. Sweetser, and Robert Almeder (these three

persons all serving in multiple capacities). According to the American Zinc annual report for 1915 and 1916, these men were not directors or officers of American Zinc, although Mr. Sweetser was the Clerk of American Zinc (a non-officer and non-director position).

- On May 29, 1916, Mr. Kimball exercised the option to purchase the stock of Granby Mining in his own name. The purchase price of $8 million apparently did not have to be paid at the time the option was exercised but had to be paid shortly thereafter.
- Mr. Kimball officially presented the deal in concept to the American Zinc Board of Directors at its June 1, 1916 regularly scheduled meeting. The Board approved the deal at its June 2, 1916 special meeting.
- The funding mechanisms for the stock purchase were as follows:
    - $4 million in checks. These funds were the proceeds of a $4 million loan from American Zinc to Granby Co., which was secured by all the stock of Granby Co. Mr. Coolidge controlled the checks and acted as an attorney for "the company" [whether for Granby Co. or American Zinc is unclear], and handled objections by the Granby Mining stockholders regarding the form of the checks. (No copy of any document memorializing this loan agreement is available.)
    - $2 million in first mortgage bonds of Granby Mining secured by a mortgage on Granby Mining's real property, issued to its selling shareholders as dividends. The bonds were payable in 10 years, bearing interest at 5% per annum, with a sinking fund of $100,000 per year. (No copy of this mortgage is available.)[5]
    - $2 million in a loan from Mr. Walker's companies, which was payable on or before January 1, 1917. The loan was secured by $2 million in collateral trust notes, which

[5] Apparently, the selling Granby Mining stockholders were satisfied that the bonds they received were worth a full 25% of the total stock sales price.

notes were secured by a pledge of the 20,000 shares of Granby Mining stock. (No copy of this loan agreement is available.) Mr. Walker then borrowed the $2 million needed to fulfill his agreement from several St. Louis financial institutions, securing his loans from them with the collateral trust notes issued by Granby Co.[6]

SEE EXHIBIT 1 FLOWCHART RE THIS TRANSACTION.

III. THE ASSETS PURCHASE

- On June 6, 1916, American Zinc entered into an Asset Purchase Agreement with Mr. Kimball and Granby Co. ("APA") by which the latter parties agreed to cause all of the property and assets of Granby Mining, including cash, accounts and bills receivable, contracts, choses in action, and real and personal property to be conveyed to American Zinc.[7] These assets were taken subject to the first mortgage of $2 million. In consideration of the transfer of Granby Mining's assets, American Zinc cancelled and discharged the $4 million loan made to the Granby Co., agreed to make available to Granby Co. the funds needed to repay its $2 million loan from Walker, and assumed responsibility for the mortgage on the Granby Mining property and payment of the $2 million in bonds that were issued to the former Granby Mining shareholders.[8]
- The APA recites that Mr. Kimball's actions in taking title to the Granby Mining stock, in receiving and making application of any dividends thereon, in executing the $2 million in

[6] Apparently, those institutions were satisfied that these notes were "real" and constituted sufficient security for their substantial loans to Mr. Walker's company.

[7] The APA recites that Mr. Kimball's actions in taking title to the Granby Mining stock, in receiving and making application of any dividends thereon, in executing the $2 million in collateral trust notes and pledging the Granby Mining shares, and in all other matters related to the transaction, were taken solely as attorney and agent for Granby Co.

[8] In July 1916, The American Zinc and Lead Journal reported that the American Zinc Directors planned to call a meeting of American's stockholders to seek authorization to issue 40,000 new common shares at $50, with the intent to use the $2 million raised by the stock issuance to pay a portion of the purchase price of the Granby Mining assets. However, there is no evidence that this was ever done.

collateral trust notes and pledging the Granby Mining shares and in all other matters related to the transaction, were taken solely as attorney and agent for the Granby Co.

- American Zinc's purchase of the Granby Mining assets per the APA, was ratified by the American Zinc Directors on July 13, 1916.
- Mr. Kimball deposited the stock of the Granby Co. with American Zinc's Treasurer as security for the asset purchase agreement.
- On September 12, 1916, the American Zinc Directors authorized American Zinc's "proper officers . . . to take such action as may be necessary to complete the purchase of the property of the Granby Mining and Smelting Company. . . ." In this regard, Mr. Kimball stated that he had undertaken an effort to acquire for American Zinc the collateral trust notes securing the $2 million loan from Walker and had already acquired at par less 1/4 of 1% $440,000 par value of those notes, leaving $1,560,000 par value still to be paid or acquired. The Board then ratified Mr. Kimball's actions in this regard, directed him to take the steps necessary to acquire or pay the remaining notes, authorized the Treasurer to advance the funds necessary for acquiring or paying the remaining notes, and authorized the Treasurer to borrow up to $1,560,000 to fund this effort.
- American Zinc's 1916 Annual Report indicates that Granby Mining, prior to delivery of its assets to American Zinc, purchased 16,000 preferred shares of American Zinc at an average price of less $65 per share.[9] It is not known with certainty whether this stock was among the assets subsequently transferred to American Zinc. However, that would have been consistent with the APA, as Granby Mining otherwise would have been a de facto creditor of American Zinc, i.e., still in possession of a substantial asset.

[9] This may be how some of the needed $1.56 million actually was raised, but there is no record of that being so.

SEE EXHIBIT 2 FLOWCHART RE THIS TRANSACTION.

IV. MISCELLANEOUS

- By mid-June 1916, American Zinc's Manager of its Missouri mines, H.I. Young, was providing Mr. Kimball analytical results for samples taken from the Granby Mining Klondike Mine property; and by mid-July Mr. Young was including the Klondike Mine in his weekly operations reports to Mr. Kimball.
- On October 27, 1916, Granby Mining executed a Quit-Claim Deed, by which that company conveyed all of its interest in certain properties in Newton County to American Zinc.[10]
- The Quit-Claim Deed pertaining to Granby Mining's Newton County properties was signed by Granby Mining's President, Thomas W. White (who had replaced Elias Gatch following Granby Co.'s acquisition of all of Granby Mining's stock), and attested by its Secretary, H.B. Heltzell. Neither Mr. White nor Mr. Heltzell were at that time officers or directors of American Zinc.
- There is no specific information available as to how the $300,000 in liabilities of Granby Mining that existed before the APA were satisfied. However, the properties and operations acquired by American Zinc were profitable in 1916. Furthermore, any Granby Mining liabilities existing at the end of 1916 were reflected in the American Zinc Annual Report for 1916. There is no evidence that any of these liabilities was not timely satisfied.[11]
- American Zinc's 1916 Annual Report identifies Granby Mining as one of its subsidiary companies. Furthermore, there is financial information in the 1916 American Zinc Annual

[10] That deed recites that the properties were conveyed subject to a Mortgage Deed of Trust made the first day of June 1916 by and between Granby Mining and The Northern Trust Company of Chicago securing Granby Mining's issue of $2 million of bonds and further recited that both the Mortgage Deed of Trust and the bonds had been assumed by American Zinc.

[11] American Zinc "advanced" $300,000 to one of its subsidiaries during 1916. However, it is unknown whether this had anything to do with Granby Mining's liabilities existing at the time of the APA.

Report that clearly is related to Granby Mining consistent with it being a subsidiary of American Zinc, particularly its pre-acquisition transactions. Moreover, when Granby Co. was dissolved in 1919, the judicial decree of dissolution noted that Granby Co. had no assets (such as Granby Mining stock) and no liabilities. A reasonable inference is that Granby Co. transferred ownership of Granby Mining to American Zinc in 1916.

- The American Zinc annual reports for 1916-1920 show that it was paying off the bonds issued to the former Granby Mining shareholders as required.
- On May 29, 1918, an Assistant Attorney General of Maine certified to the Secretary of State of Maine that he had received satisfactory proof that Granby Co. had ceased to transact business and therefore was excused from filing annual returns with the Secretary of State so long as its franchises remain unused. Granby Co. was dissolved by virtue of a decree issued by a Justice of the Supreme Judicial Court of Maine sitting in equity, on January 22, 1919 following some sort of hearing.
- Granby Mining remained in good standing as a Missouri corporation until it was administratively dissolved on January 1, 1927. Missouri law at that time provided that any corporation that failed to file the required annual papers with the Office of the Secretary of State would be subject to a fine of up to $1,000. R.S. 1909 § 3030. A corporation that failed to comply for a period of six months was deemed to have forfeited its charter. R.S. 1909 § 3036.
- On August 17, 1927 three attorneys with a St. Louis law firm that served as counsel to American Zinc for some purposes incorporated a new company named Granby Smelting & Refining Company ("Granby Smelting"). On May 18, 1935, one of those incorporators advised American Zinc that Granby Smelting had been created solely for the purpose of

maintaining some control over the "Granby" name. American Zinc's ongoing relationship with Granby Smelting continued at least until mid-1942, when American Zinc and Granby Smelting personnel were discussing Granby Smelting's annual filing requirements with the Secretary of State. This strongly suggests that the administrative dissolution of Granby Mining in 1927 was not intended.

— UNKNOWN FACTS —

Much of what transpired with respect to American Zinc's acquisition of all of Granby Mining's assets is unknown. Among the potentially significant questions in this regard are the following:

- How did Granby Co. acquire title to the Granby Mining stock, i.e., directly from the former shareholders, or via assignments from Mr. Kimball?
- Who were the directors and other officers of Granby Mining after that company was acquired by Granby Co., and when were the prior officers and directors replaced (assuming that they all were)?
- Did Granby Mining transfer its American Zinc preferred stock back to American Zinc as part of the assets that were transferred?
- When and how were Granby Mining's assets other than its Newton County properties conveyed to American Zinc?
- When and exactly how was Walker repaid?
- Did American Zinc advance $300,000 to Granby Mining? If so, why?
- When and how were the approximately $300,000 in Granby Mining liabilities paid?

— CONCEPTUAL OVERVIEW —

The corporate structures and multiple agreements among numerous individuals and companies (many of which were completely unrelated to American Zinc) were absolutely legitimate as a matter of corporate law. One basic legal principle applicable here is that corporations are mere legal constructs recognized by the law to serve the salutary social and economic purpose of protecting natural persons from incurring liability (or at least limiting certain liabilities) that they would otherwise incur. An equally important basic principle of corporate law is that the liability-limiting effect of using a corporate form is secured by rigorous adherence to the required corporate formalities. The corollary of these principles of corporateness that must be recognized here was succinctly articulated by the Supreme Court of the United States in United States v. Bestfoods, 524 U.S. 51, 61 (1998), as follows: "It is a general principle of corporate law deeply 'ingrained in our economic and legal systems' that a parent corporation (so-called because of control through ownership of another corporation's stock) is not liable for the acts of its subsidiaries." (Citation omitted). In short, the very essence of corporateness is the exaltation of form over substance.

Therefore, as the Supreme Court went on to note in Bestfoods, "CERCLA is . . . like many other congressional enactments in giving no indication that 'the entire corpus of state corporation law is to be replaced simply because a plaintiff's cause of action is based upon a federal statute,' . . . and the failure of the statute to speak to a matter as fundamental as the liability implications of corporate ownership demands application of the rule that '[i]n order to abrogate a common-law principle, the statute must speak directly to the question addressed by the common law' . . . ." Id., 524 U.S. at 63. Thus, it takes considerably more than is present here to overcome the powerful presumption of validity of the corporate structures and formal transactions employed by the parties in 1916.

There is nothing inherently "wrong" about American Zinc structuring the transactions in question so as to acquire Granby Mining's assets without incurring its liabilities. Indeed, a large percentage (probably a substantial majority) of all corporate acquisition deals have been structured as asset purchases for many years. That is undoubtedly why there is a "general rule" that liability does not attach to the acquiring company in an asset purchase transaction, absent the circumstances that constitute one or more of the limited exceptions to that general rule.

There are numerous reasons why an asset purchase cannot proceed as a straightforward buy-sell agreement between the acquiring and the divesting entities. The use of either a related or unrelated third party to acquire the stock of a target company and then sell its assets to the company financing the stock acquisition is a widespread and completely acceptable practice in the mergers and acquisitions arena, as pointed out by Mr. Cameron in his expert witness report.

— LEGAL ANALYSIS —

I. THE GENERAL STANDARD IS APPLICABLE STATE CORPORATE LAW.

As an initial step of a proper legal analysis, it is necessary to note that there is no authority for the proposition that corporate structures may be disregarded simply because they are created for the purpose of advancing another corporation's interest. Rather, such liability-limiting structures may be ignored only in a few, specific circumstances, all of which involve some abuse of the corporate form to accomplish some injustice to a third party.

Here, the only evidence that directly or indirectly addresses the issue of whether the creation and function of Granby Co. at all relevant times satisfied all required corporate formalities and complied with all applicable corporate reporting and filing requirements shows that American Zinc, Granby Co., and Granby Mining (following its acquisition by Granby Co.) observed all corporate formalities. The companies had completely separate officers and directors, and the evidence is undisputed that both Granby Co. and Granby Mining complied with all applicable state laws necessary to maintain their legal viability for substantial periods after the transactions in question. It is also undisputed that Granby Co. and Granby Mining satisfied all legal obligations they assumed in connection with the transactions in question. Finally, even a casual review of the minutes of the American Zinc Board of Directors' meetings reveals that this Board was careful to recognize and defer to the independence of the officers and directors of American Zinc's subsidiaries.

In short, Blue Tee is not aware of any evidence that either American Zinc, Granby Co., or Granby Mining deviated in any manner whatsoever from required norms of corporate behavior in connection with the transactions by which American Zinc acquired Granby Mining's assets. Therefore, in the absence of some compelling reason, there can be no disregard of the liability-limiting structures employed by the parties here.

A. Historical CERCLA Analysis

1. Based on Corporate Law

CERCLA does not address when, or even if, successor liability attaches in the context of an asset purchase. The courts, though, are widely in agreement that general principles of corporate successor liability do apply to CERCLA.[12] Many federal courts have relied upon rules of state law to determine when CERCLA successor liability exists because corporations are creations of state law.[13]

[12] Anspec Co. v. Johnson Controls, Inc., 922 F.2d 1240, 1245 (6th Cir. 1991); Smith Land & Improvement Corp. v. Celotex Corp., 851 F.2d 86, 92 (3d Cir. 1988). Furthermore, EPA has long taken the position that a successor corporation is liable for the acts of its predecessor under a "continuity of business operation approach." EPA Memorandum, "Liability of Corporate Shareholders and Successor Corporations for Abandoned Sites under CERCLA," Courtney M. Price, Assistant Admin. For Enforcement and Compliance Monitoring (June 13, 1984).

[13] United States v. Davis, 261 F.3d 1, 54 (1st Cir. 2001); Atchison, Topeka & Santa Fe Railways v. Brown & Bryant, 132 F.3d 1295, 1302 (9th Cir. 1997); Redwing Carriers, Inc. v. Saraland Apartments, 94 F.3d 1489, 1501-02 (11th Cir. 1996); Anspec Co. v. Johnson Controls, Inc., 922 F.2d 1240, 1247 (6th Cir. 1991).

The traditional corporate law rule is that a corporation that acquires the assets of another company is not liable for the pre-sale actions of the seller.[14] However, several exceptions to that rule have developed over the years. These exceptions apply if:

- The purchaser expressly or impliedly agrees to assume liabilities;
- The acquisition was entered into fraudulently in order to escape liability;
- The acquisition amounts to a de facto merger; or
- The successor company is a mere continuation of the predecessor.[15]

The first exception (voluntary assumption of liabilities) and the second exception (fraudulent attempt to escape liability) are straightforward. They are, therefore, relatively easy to apply.

Some transactions that do not meet state statutory requirements for formal mergers have been considered de facto mergers by courts when (1) there is a continuation of the enterprise of the seller in terms of continuity of management, personnel, physical location, assets, and operations;[16] (2) there is a continuity of shareholders; (3) the seller ceases operations, liquidates, and dissolves as soon as legally and practically possible; and (4) the purchasing corporation assumes the obligations of the seller necessary for uninterrupted continuation of business operations. Although not all of these factors must be present, some courts have been reluctant to find de facto mergers when a purchaser acquires assets and no stock is transferred between the two entities.[17]

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[14] Santa Maria v. Owens-Illinois, Inc., 808 F.2d 848, 856 (1st Cir. 1986); State of New York v. Storonske Cooperage Co., 174 B.R. 366, 375 (N.D.N.Y. 1994).

[15] Louisiana-Pacific Corp. v. Asarco, Inc., 909 F.2d 1260, 1263 (9th Cir. 1990).

[16] Louisiana-Pacific, 909 F.2d at 1264; Philadelphia Electric Co. v. Hercules, Inc., 762 F.2d 303, 310 (3d Cir. 1985).

[17] Louisiana-Pacific, 909 F.2d at 1264; (refusing to find a de facto merger where purchaser paid cash, promissory note, and payment of debts without any transfer of stock); Arnold Graphics Indus. v. Independent Agency Center,

The mere continuation exception has been applied where the successor appears to be a reorganized version of the predecessor rather than an unrelated entity. Courts generally have applied this exception when only one corporation remains after the assets have been transferred and there is an identity of officers, stockholders and directors between the two corporations.[18]

2. Based on Federal Common Law

Some courts have purportedly created federal common law to expand the circumstances where successor liability exists under CERCLA.[19] These courts have developed the "substantial continuation" or "substantial continuity" theory.

Substantial continuity differs from the mere continuation exception because it does not require shareholder continuity.[20] Rather, the focus is on whether the business operation continues rather than whether the business entity survives. The factors courts have identified as relevant to a substantial continuity determination are:

- Retention of the same employees;
- Retention of the same supervisory personnel;
- Retention of the same production facilities in the same locations;
- Production of the same product;
- Retention of the same name;

Inc., 775 F.2d 38, 42 (2d Cir. 1985) (stating that there must be continuity of stockholders to find a de facto merger); Chrysler Corp. v. Ford Motor Corp., 972 F. Supp. 1097, 1110-11 (E.D. Mich. 1997) (stating that successor liability was not present when purchaser remained in existence and purchaser did not assume seller's production niche).

18 Mexico Feed & Seed, 980 F.2d at 487; United States v. Carolina Transfer Co., 978 F.2d 832, 837 (4th Cir. 1992); Gould, Inc. v. A & M Battery & Tire Service, 950 F. Supp. 653, 655 (M.D. Pa. 1997); United States v. Distler, 865 F. Supp. 398, 401 (W.D. Ky. 1991) (no mere continuation when transaction was asset purchase, did not involve stock transfer, and none of seller's shareholders, directors, or officers became shareholder, director, or officer of new purchaser).

19 B.F. Goodrich v. Betkoski, 99 F.3d 505, 519 (2d Cir. 1996); United States v. Mexico Feed & Seed Co., Inc., 980 F.2d 478, 487 n.9 (8th Cir. 1992); United States v. Carolina Transformer Co., 978 F.2d 832, 838 (4th Cir. 1992); Smith Land & Improvement Corp. v. Celotex Corp., 851 F.2d 86, 91-92 (3d Cir. 1988).

20 Mexico Feed & Seed, 980 F.2d at 487-89.

- Continuity of assets;
- Continuity of general business operations; and
- Whether the successor holds itself out as a continuation of the previous enterprise.[21]

The more these factors are present, the greater the chance of a finding of successor liability on the basis of a "substantial continuation."

Some courts also take into account whether the successor had knowledge of the liabilities of the predecessor.[22] It is unclear whether these courts simply include knowledge as one factor of the substantial continuation test or impose notice of environmental liabilities as a prerequisite for a finding of successor liability. Other courts have specifically held that knowledge of liabilities by the successor is irrelevant.[23]

B. Recent Developments

In 1992, the Eighth Circuit, in which jurisdiction the Blue Tee successor issues arise, hinted that applying federal common law to CERCLA successor liability issues would be appropriate. See U.S. v. Mexico Feed & Seed Co., Inc., 980 F.2d 478, 487 n.9 (8th Cir. 1992) ("[T]he issue of whether federal or state law should be used in analyzing successor liability was not raised by the parties and we do not decide it. However, considering the national application of CERCLA and fairness to similarly situated parties, the district court was probably correct in

[21] Carolina Transformer Co., 978 F.2d at 838.

[22] Mexico Feed & Seed, 980 F.2d at 490; Atlantic Richfield Co. v. Blosenski, 847 F. Supp. 1261, 1289 (E.D. Pa. 1994); Allied Corp. v. Acme Solvents Reclaiming, 812 F. Supp. 124, 129 (N.D. Ill. 1993); Anderson v. City of Minnetonka, 1993 U.S. Dist. LEXIS 4846 (D. Minn. January 27, 1993); United States v. Atlas Minerals & Chemicals, Inc., 824 F. Supp. 46, 50 (E.D. Pa. 1993) (distinguishing cases that employed the substantial continuity test because those cases involved a successor with knowledge of environmental contamination).

[23] New York v. National Service Indus., Inc., 134 F. Supp. 2d 275, 280 (E.D.N.Y. 2001) (stating that if a purchaser has knowledge of liabilities, then it militates toward imposing successor liability but that knowledge is not necessary), reversed on other grounds 352 F.3d 682 (2d Cir. 2003); United States v. Pierce, 1995 WL 356017 (N.D.N.Y. February 21, 1995); Chesapeake & Potomac Telephone Co. of Virginia v. Peck Iron & Metal Co., 814 F. Supp. 1266, 1269-70 (E.D. Va. 1992).

applying federal law."). However, there is now reason for the Eighth Circuit to reconsider that view.

In United States v. Bestfoods, 524 U.S. 51 (1998), the United States Supreme Court applied state law in addressing the related issue of when a parent corporation would incur CERCLA liability based on the conduct of a subsidiary.[24] The Bestfoods decision did not, however, rule out the application of federal common law to the issue of corporate successor liability under CERCLA. Bestfoods, 524 U.S. at 63 n.9.[25]

Subsequent to Bestfoods, though, a number of federal courts have held that corporate parent CERCLA liability issues should be determined based upon state law. See Jennifer Martin, Consistency in Judicial Interpretation? A look at CERCLA Parent Company and Shareholder Liability after United States v. Bestfoods, 17 Ga. St. U. L. Rev. 409, 449-459 (2000). However, the Eighth Circuit has not addressed this issue in a written opinion since the Bestfoods decision.

The Second Circuit has recently concluded that Bestfoods requires the application of state corporate common law rules rather than CERCLA-specific rules (i.e., federal common law rules) whenever determining whether liability under CERCLA passes from one corporation to another, not just in the context of the parent-subsidiary relationship. New York v. National Services Indus., Inc., 352 F.3d 682 (2d Cir. 2003). Accordingly, the Second Circuit has concluded that its

[24] Bestfoods contains strong language that recognizes the rights of corporate owners of another corporation to exercise a significant amount of control over the subsidiary's operations.

[25] Because the courts below had applied state law without any party making an issue of that being done, the Supreme Court expressly noted that it was not deciding this issue in the case before it. However, the court did state both (a) the rationale for not upsetting well-established principles of state corporate law just because a federal statute is involved and (b) the case for developing a uniform federal common law of corporate liability under a statute for which there is a substantial need for uniformity of results.

previous adoption of the substantial continuity doctrine in B.F. Goodrich v. Betkoski, 99 F.3d 505 (2d Cir. 1996) "is no longer good law." Id., 352 F.3d at 683.[26]

Finally, the Second Circuit noted that its conclusion "that the substantial continuity doctrine is not a part of general federal common law and, following *Bestfoods*, should not be used to determine whether a corporation takes on CERCLA liability as the result of an asset purchase," 352 F.3d at 687, is consistent with dicta by the only other Circuit that has considered whether the substantial continuity doctrine survives Bestfoods.[27]

In light of Bestfoods, National Services Indus., and Davis, it seems quite unlikely that the Eighth Circuit would press on with the Mexico Feed & Seed view of federal common law in the context of successor corporation CERCLA liability. Accordingly, a federal district court analyzing the successor liability issues under consideration here is unlikely to conclude that it is bound by the Mexico Feed & Seed decision in this regard. Rather, it will employ applicable state law principles.

II. A CHOICE OF LAW ANALYSIS IS NECESSARY.

The first step in performing a choice of law analysis is to determine whether there is a conflict between the substantive laws of the interested jurisdictions. See Mobil Oil Corp. v. Linear Films, Inc., 718 F. Supp. 260, 268 (D. Del. 1989) ("Courts will not enter into a choice of law analysis where the differences between two state laws are insignificant and the outcome would be the same under either state's law."). As noted above, there is a significant difference

[26] In Betkoski, the Second Circuit had concluded that the substantial continuity theory of successor liability advances CERCLA's primary goals in the same manner as that theory functions in the federal labor law context — per its organized labor case endorsement by the U.S. Supreme Court. The court further noted that the substantial continuity doctrine has been applied by the First and Fifth Circuits in the context of product liability cases, but pursuant to the corporate successor law of certain states that are among the minority of states that have adopted the substantial continuity doctrine in product liability cases. That is, as the court noted, those federal product liability decisions do not constitute part of federal common law in any event.

[27] That dicta is found in United States v. Davis, 261 F.3d 1 (1st Cir. 2001), in which the court noted that Bestfoods "left little room for the creation of a federal rule of liability under the [CERCLA] statute." Id., 261 F.3d at 54.

between the federal common law of successor CERCLA liability under Mexico Feed & Seed, i.e., the "substantial continuity" theory, and state law of successor liability generally. Significant differences also exist between the substantive laws of Missouri and Maine regarding corporate successor liability.

Missouri law is consistent with the general state corporate law principles discussed above. That is, when all of the assets of a corporation are sold or transferred, the transferee is not liable for the transferor's debts and liabilities, subject to the standard four exceptions. Young v. Fulton Iron Works Co., 709 S.W.2d 927, 938 (Mo. App. 1986). Only the de facto merger and mere continuation exceptions are of interest here.[28]

Maine's law regarding corporate successor liability is relatively simple and inflexible: "Absent a contrary agreement by the parties, or an explicit statutory provision in derogation of the established common law rule, a corporation that purchases the assets of another corporation in a *bona fide*, arms-length transaction is not liable for the debts or liabilities of the transferor corporation." Director of Bureau of Labor Standards v. Diamond Brands, Inc., 588 A.2d 734, 736 (Me. 1991) (emphasis in original).

III. MISSOURI SUBSTANTIVE LAW GOVERNS.

A. Missouri Choice Of Law Rules Apply.

In diversity cases, federal district courts apply the choice-of-law rules of the state in which they sit. See Moses v. Union Pacific R.R., 64 F.3d 413, 418 (8th Cir. 1995). Federal courts also apply state choice-of-law rules when the matter is not addressed by federal law, regardless of the source from which the cause of action is deemed to have arisen for the purpose

[28] There is no evidence that American Zinc expressly or impliedly agreed to assume all the debts and liabilities of Granby Mining or Granby Co., although it did assume some specific, known ones. There also is no evidence that the transactions at issue were a fraudulent attempt to escape debts and liabilities.

of establishing federal jurisdiction. See A.I. Trade Finance, Inc. v. Petra International Banking Corp., 62 F.3d 1454, 1463 (D.C. Cir. 1995). CERCLA is silent on this choice-of-law issue. Chrysler Corp. v. Ford Motor Co., 972 F. Supp. 1097, 1101 n.1 (E.D. Mich.1997). Therefore, a court likely will look to Missouri's choice-of-law rules to determine which jurisdiction's substantive law governs whether American is a corporate successor to Granby Mining. U.S. v. Conservation Chemical Co., 653 F. Supp. 152, 176 (W.D. Mo. 1986).

B. Missouri Would Apply Missouri Substantive Law.

Missouri's choice-of-law rules regarding corporate successor liability are not well defined. In this case, there are several possibilities.[29] However, it is highly likely that a court would conclude that Missouri's choice of law rules require the application of Missouri substantive law to these issues, in accordance with the principles set forth in Sections 301 and 302 of the Restatement (Second) of Conflict of Laws.

Because the issues of whether American's purchase of Granby Mining's assets is a de facto merger or a mere continuation are unique to corporations, a court will use Section 302 to make choice-of-law determinations here. Section 302 directs the court to apply the law of the state of incorporation, unless another state has a more significant relationship to the occurrence. Therefore, Maine law would apply unless Missouri has a more significant relationship to the matter.

Other than being incorporated in Maine, American Zinc appears to have little or no contact with Maine. This mitigates against application of Maine law in this instance because "when the corporation has little or no contact with [the state of incorporation] . . . some other

[29] A complete discussion of this issue is beyond the scope of this memorandum.

state will almost surely have a greater interest than the state of incorporation." Restatement § 302 cmt. g.

Indeed, Missouri has significant interests in this matter. Both corporations involved conducted extensive business operations in Missouri. The activities that caused a release of hazardous substances were carried out in Missouri. States have a strong interest in their law being applied to determine liability at Superfund sites within their borders. See AT&T Global Info. Solutions Co. v. Union Tank Car Co., 29 F. Supp. 2d 857, 866 (S.D. Ohio 1988). The released hazardous substances have or may impact the health of Missouri's citizens or its natural resources. The state or local governments may incur costs responding to the threats posed by the contamination. The Missouri Department of Natural Resources is involved in the remediation of the contamination.

Based upon American Zinc's lack of contact with Maine and Missouri's significant interest in the matter, a court likely will apply Missouri substantive corporate law to the issue of whether American Zinc is liable as a successor to either Granby Mining or Granby Co. under the theories of de facto merger and mere continuation.

IV. AMERICAN ZINC IS NOT A SUCCESSOR TO GRANBY MINING.

Granby Co. and Mr. Kimball agreed to either transfer or cause to be transferred to American Zinc all the assets of Granby Mining. Although Granby Mining is not a named party to the APA, the transfer of assets necessarily required Granby Mining's concurrence. The Newton County properties were transferred directly from Granby Mining to American Zinc via quitclaim deed. It is possible that some assets, though, were first transferred from Granby Mining to Granby Co. and then to American Zinc. However, the more likely scenario is that Granby Co., as the sole stockholder of Granby Mining, caused Granby Mining to transfer its assets directly to American Zinc. For purposes of this analysis, it is assumed that all Granby Mining assets were transferred directly by that company to American Zinc.

A. De facto Merger

As noted above, a de facto merger under Missouri law may occur if the following elements are present:

- A continuation of management, personnel and general business operations;
- A continuity of shareholders resulting from the purchasing corporation paying for the assets with shares of its own stock so the selling corporation stockholders become a constituent part of the purchasing corporation;
- The seller corporation ceasing ordinary business operation and dissolving as soon as possible; and
- The purchasing corporation assuming those obligations necessary to continue normal, ordinary business operations.

Harashe v. Flintkote Co., 848 S.W.2d 506, 509 (Mo. App. Ct. 1997). None of these factors are present here.

First, there was no continuation of management and personnel in general business operations. Rather, former Granby Mining management was promptly (and probably immediately) replaced by the American Zinc management team in charge of all Missouri operations.[30] Furthermore, the former Granby Mining general business operations clearly did not continue; they were totally folded into American Zinc's operations. Finally, there is a blank record as to the extent to which non-management personnel were retained or replaced.

[30] Following its purchase by Granby Co., Granby Mining had a new President, who executed the company's Quit-Claim Deed to American Zinc conveying the Newton County properties. It also had a new Manager of its Klondike Mine who was reporting directly to Mr. Kimball, so the management structure for operations at the former Granby Mining properties was changed.

It may not be an unreasonable assumption that there was not wholesale replacement of the general labor force at the mines, mills, and smelters acquired by American Zinc from Granby Mining. However, it is equally reasonable to assume that the American Zinc "engineering and operating forces" who had examined the mining, smelting, and other properties of Granby Mining prior to its acquisition by Granby Co., i.e., the skilled technical force of American Zinc, assumed responsibility for the newly acquired operations and properties. Thus, the first factor to be considered is not present here.

Second, American Zinc did not pay for the Granby Mining assets with shares of its own stock. The selling Granby Mining shareholders received only cash and bonds for their stock. Granby Co. received only $6 million in debt relief for causing Granby Mining's assets to be transferred to American Zinc. Granby Mining received only $2 million in debt relief for transferring its assets. As a result of these transactions, Granby Mining was owned entirely by Granby Co., not American Zinc; and there is no evidence that American Zinc ever owned any Granby Co. stock.[31] In short, there was no continuity of shareholders, whether viewed as a single transaction or a series of transactions. American Zinc purchased the assets of Granby Mining when it was owned by Granby Co. Neither "bought out" Granby Mining shareholders nor Granby Co. received any American Zinc stock in the deal, and American Zinc certainly obtained no Granby Mining stock. Therefore, the second factor to be considered is not present here.

Third, Granby Mining obviously ceased its ordinary business operations upon transferring its assets to American Zinc. However, it did not dissolve as soon as possible

[31] It appears from the American Zinc annual report for 1916 that the company acquired the Granby Mining stock from Granby Co. some time during that year. However, that transfer clearly was not part of the transactions undertaken in June 1916.

thereafter. Rather, that corporation remained in existence and in good standing with the State of Missouri for more than ten years after the transaction on its part.[32] Significantly, Harashe articulates this factor by use of the conjunctive word "and" not the disjunctive word "or." That is, this factor is not present unless the selling corporation dissolves as soon as possible, as well as ceasing ordinary business operations. Therefore, the third factor to be considered is not present here.

Fourth, although American Zinc assumed responsibility for both the first mortgage on Granby Mining's assets and the ten-year bonds secured by those assets in connection with its acquisition of the assets, the mortgage and bonds cannot reasonably be characterized as "those obligations necessary to continue normal, ordinary business operations."[33] As to day-to-day ordinary costs of doing business, there is no direct evidence as to how the Granby Mining liabilities existing at the time of the transactions in question were satisfied.[34] However, the evidence that is available strongly supports an inference that Granby Mining satisfied all such obligations prior to transferring its assets to American Zinc.

Granby Mining had substantial "quick assets" at the time of this deal. There is no plausible reason why that company's relatively modest outstanding liabilities of only $300,000

[32]Considering the legal requirements that had to be satisfied to keep Granby Mining in good standing with State of Missouri and the information available regarding American Zinc's relationship with Granby Smelting, a court should reasonably infer that American Zinc intentionally caused Granby Mining to remain a legally viable corporation for a legitimate business purpose, i.e., maintaining control over the "Granby" name.

[33]As part of the APA, American Zinc received "all the property and assets of [Granby Mining], including cash, accounts and bills receivable, contracts, chooses in action, and real and personal property of every name and nature whatsoever." American Zinc took the real property subject to a $2 million first mortgage and assumed the liability of paying off the bonds secured by that mortgage, which means only that American Zinc took the assets "as is."

[34]This factor cannot be directed at "obligations necessary to continue normal, ordinary business operations" after the transactions in question occurred, because every purchaser of assets who uses them is the party who incurs those post-transaction obligations. That is, the buyer does not "assume" those obligations from the selling party; it incurs them on its own behalf in the first instance.

would not have been paid out of those "quick assets" rather than those liabilities being carried into American Zinc along with Granby Mining's cash. Furthermore, Granby Mining retained title to its assets — and therefore legal responsibility for the associated obligations — for a number of months after the asset purchase agreement between American Zinc on the one hand and Granby Co. and Mr. Kimball on the other was executed. As late as September 12, 1916, the transfer of assets had not been accomplished, and the Newton County assets were not transferred to American Zinc for more than another month. It seems highly unlikely that Granby Mining could have kept its ordinary business creditors at bay for more than 120 days, waiting to transfer its assets to American Zinc. Rather, the only reasonable inference is that Granby Mining took care of its debts prior to transferring its assets to American Zinc. Therefore, the fourth factor to be considered is not present here.

In summary, none of the four factors to be taken into account in determining whether a de facto merger should be deemed to have occurred are present here. Therefore, that exception to the general rule does not apply here. Therefore, the general rule does apply. That is, American Zinc as a mere purchaser of assets (which it must be considered in the absence of any evidence that would justify disregarding the legal viability of Granby Co.) is not subject to the imputation of any Granby Mining liabilities not expressly assumed by American Zinc.

In this regard, CERCLA liabilities that arose 64 years after the events in question are no exception. Consequently, Granby Mining's mining, milling, and smelting activities in Newton County generally, and the Granby Subdistrict specifically, may not properly be taken into account in determining Blue Tee's equitable share of the response costs at issue in this lawsuit on the basis of any exception to the general rule that shields a purchaser of assets from such liability.

B. Mere Continuation

Analyzing whether American Zinc was a mere continuation of Granby Mining under Missouri law overlaps with the discussion above regarding a possible de facto merger in several important ways. However, America Zinc certainly was not created in order to purchase Granby Mining's assets. No commonality existed between the incorporators, some officers, and stockholders of the two corporations before June 1, 1916, and there is no evidence of any common officers or directors. Notice of the transfer was well publicized and must reasonably be inferred to have been made known to Granby Mining's employees and creditors.

This evidence falls well short of the literal interpretation that Missouri courts apply to the doctrine of mere continuation. See Chemical Design, Inc. v. American Standard, Inc., 847 S.W.2d 488, 492 (Mo. App. 1993). Therefore, a court will likely hold that American Zinc is not a mere continuation of Granby Mining under Missouri law.

— CONCLUSION —

Based on the analysis set forth above, there are two "bottom line" conclusions. First, under Missouri law, American Zinc may not be found to have "successor liability" based upon Granby Mining's mining, milling, and smelting operations under the legal theories that there was a de facto merger between American Zinc and Granby Mining or that American Zinc merely continued the Granby Mining business; rather, the general rule of no liability for a purchaser of corporate assets applies here. Second, American Zinc therefore is not a successor to the CERCLA liabilities of Granby Mining relating to the Site.

BLUE TEE CORP.

HOME | COMPANIES | LOCATIONS | INFORMATION | GOVERNANCE

An Employee Owned Company

Blue Tee Corp.
250 Park Avenue South
New York, NY 10003

Phone: (212) 598-0880
Fax: (212) 598-0896
Email: admin@bluetee.com

Corporate Office Personnel

Blue Tee Companies:

Azcon
www.azcon.net
List of Addresses

Brown-Strauss
www.brown-strauss.com
List of Addresses

George E Failing (GEFCO)
www.gefco.com
List of Addresses

PumpStar
www.pumpstar.com
List of Addresses

Southco, Inc.
www.southcoinc.com
Southco Info
List of Addresses

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Steco
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AZCON CORPORATION

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An Industry Leader Since 1863

Railroad Industry Services / AZ Railcar | Foundry Services | Barge Services | Scrap Management & Transprotation Services | Industrial Scrap Services | Brokerage Services

About Us

Founded in 1863, AZCON Corporation is one of the nation's oldest and largest brokers and processors of recyclable ferrous scrap products.

In addition to scrap iron, AZCON offers a range of products including relaying and re-rolling rail, semi-finished steel, prime steel bar, and usable railroad equipment including locomotives, rolling stock, and their component parts.

AZCON is a specialist in Scrap management and transportation services to steel mills, foundries, and industrial plants.

Associations:

ISO International Organization for Standardization
ISO 9001:2000

BLUE TEE CORP.

CRS

ISRI Institute of Scrap Recycling Industries, Inc.

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CORPORATE RECORDS & BUSINESS REGISTRATIONS

Database Last Updated:	04-19-2007
Update Frequency:	WEEKLY
Current Date:	04/19/2007
Source:	AS REPORTED BY THE SECRETARY OF STATE OR OTHER OFFICIAL SOURCE

COMPANY INFORMATION

Name:	BLUE TEE CORP.
Address:	ATTN: BRUCE A COGGESHALL 1 MONUMENT SQUARE PORTLAND, ME 04101 USA

FILING INFORMATION

Filing Number:	2300328744
Filing Date:	01/30/1978
State of Incorporation:	MAINE
Date Incorporated:	01/30/1978
Duration:	PERPETUAL
Status:	MERGED
Status Attained Date:	09/30/1996
Corporation Type:	PROFIT
Business Type:	FOREIGN FOR PROFIT BUSINESS CORPORATION
Where Filed:	SECRETARY OF STATE/CORPORATE DIVISION STATE CAPITOL OKLAHOMA CITY, OK 73105

REGISTERED AGENT INFORMATION

Name:	CORPORATION SERVICE COMPANY
Address:	115 SW 89TH ST

	OKC, OK 73139
Appointed Date:	11/13/1995

NAME INFORMATION

Former Name:	GOLD FIELDS AMERICAN INDUSTRIES, INC.
Status:	FORMER
Filing Date:	03/10/1986
Expiration Date:	03/10/1991
Former Name:	AZ HOLDING CORPORATION
Status:	FORMER
Filing Date:	11/27/1978
Expiration Date:	11/27/1983
Former Name:	**AZCON** CORPORATION
Status:	FORMER
Filing Date:	11/27/1978
Expiration Date:	10/20/1988

ASSOCIATED ENTITIES INFORMATION

Name:	AZCON CORPORATION
Type:	FOREIGN FOR PROFIT BUSINESS CORPORATION
Filing Date:	11/27/1978
Filing Number:	2310134698
Jurisdiction:	MAINE
Capacity:	NON-SURVIVOR
Name:	BLUE TEE CORP.
Type:	FOREIGN FOR PROFIT BUSINESS CORPORATION
Filing Date:	09/30/1996
Filing Number:	2300573623
Jurisdiction:	DELAWARE
Capacity:	SURVIVOR

AMENDMENT INFORMATION

Amendments:	09/30/1996	CERTIFICATE OF MERGER
	11/13/1995	AMENDED CERTIFICATE OF QUALIFICATION
	10/18/1993	AMENDED CERTIFICATE OF QUALIFICATION
	11/02/1992	AMENDED CERTIFICATE OF QUALIFICATION
	03/25/1992	AMENDED CERTIFICATE OF QUALIFICATION
	02/01/1990	CERTIFICATE OF MERGER
	12/11/1989	AMENDED CERTIFICATE OF QUALIFICATION
	11/06/1989	ANNUAL CERTIFICATES - TAC

03/10/1986	AMENDED CERTIFICATE OF QUALIFICATION
10/20/1983	AMENDED CERTIFICATE OF QUALIFICATION
12/01/1980	AMENDED CERTIFICATE OF QUALIFICATION
11/27/1978	AMENDED CERTIFICATE OF QUALIFICATION
11/27/1978	CERTIFICATE OF MERGER
01/30/1978	CERTIFICATE OF QUALIFICATION(TAC)

STOCK INFORMATION

Authorized Capital: $10,033,269
Actual Amount Invested: $10,033,269
Paid On Credit: $10,033,269

Preferred Stock:
- Dollar Value: $5,000,000
- Authorized Shares: 5,000
- Par Value: $1,000
- Voting Rights: NO
- Convertible: NO

Preferred Stock:
- Dollar Value: $5,000,000
- Authorized Shares: 5,000
- Par Value: $1,000
- Voting Rights: YES
- Convertible: NO

Common Stock:
- Dollar Value: $15,000
- Authorized Shares: 1,500,000
- Par Value: $0.01
- Voting Rights: YES
- Convertible: NO
- Stock Class: E

Common Stock:
- Dollar Value: $7,500
- Authorized Shares: 750,000
- Par Value: $0.01
- Voting Rights: YES
- Convertible: NO
- Stock Class: D

Common Stock:
- Dollar Value: $4,900

Authorized Shares:	490,000
Par Value:	$0.01
Voting Rights:	YES
Convertible:	NO
Stock Class:	C

Common Stock:

Dollar Value:	$2,100
Authorized Shares:	210,000
Par Value:	$0.01
Voting Rights:	YES
Convertible:	NO
Stock Class:	B

Common Stock:

Dollar Value:	$3,769
Authorized Shares:	376,923
Par Value:	$0.01
Voting Rights:	YES
Convertible:	NO
Stock Class:	A

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INDUSTRIAL MANUAL

MOODY'S INVESTORS SERVICE, INC.
99 CHURCH STREET, NEW YORK, N. Y. 10007 (212) 267-8800

SEE FOLLOWING PAGE FOR COMPLETE LIST OF OFFICES

In 1970, formed Harrell Marine, Inc. and purchased Harrell Ranches, Inc. for $257,000.

In June 30, 1971, Co. exchanged its 100% ownership in its marketing subsidiaries both foreign and domestic for 536,470 com. shs. of a newly formed Co. Harrell Marketing Corp.

During 1971, acquired 14% of Seneca Foods Corp. (see Moody's OTC Industrial Manual).

In Sept. 1970, sold Formula 409 Division to Clorox Co. (see alphabetical index) for $7,000,000.

Business: Company is engaged in food brokerage business which derives its primary income from commissions earned from sales and marketing services.

Subsidiary: Harrell Marketing Corp. (95% owned).

Officers

W. L. Harrell, Chmn. & Pres. & Treas.
J. H. Sussman, Treas.
J. H. Goodfriend, Secretary

Directors

Herbert Tenzer	D. F. Matson
C. M. Kelly	Gustave Simons
W. L. Harrell	

Auditors: Peat, Marwick, Mitchell & Co.

General Counsel: Tenzer, Greenblatt, Fallon & Kaplan, NYC.

Executive Office: 4161 Carmichael Ave., Jacksonville, Fla. 32207.

Consolidated Income Account, yrs. ended Sept. 30:

	1972	1971
Commission rev.	$5,779,271	$4,308,634
Sell., etc., exp.	5,799,364	5,543,123
Oper. loss	20,093	1,234,489
Oth. income, net	200,983	278,514
Total income	180,890	*d*955,975
Fed. income tax	*cr*69,534	*cr*190,975
Minority interest	43,185	5,275
Inc. cont. oper.	207,239	*d*770,275
Loss disc. oper.	------	1,080,839
Extraord. charge	[2]55,632	[1]371,051
Net income	151,607	*d*2,222,165
Earn., com. share	$0.20	*d*$2.93
No. of com. shares	757,888	757,899

[1]Comprising: Exps. incurred in connection with relocation of Corp. headquarters, $124,547; loss on disp. of merchandise returned by purchaser of Harrell Farms, Inc., $66,825; loss on plt. oper., returns & allow. & coupon redemp. related to Formula 409 div. sold in 1970, $179,679; balance, $371,051. [2]Comprising: Excess tax benefit aver. book loss arising from disp. of subs. held for sale; prepay. penalties, net of tax benefit & minority interest, $105,904; net prov. for loss on J. D. Jewell note, $49,400; balance $55,632.

Consolidated Balance Sheet, as of Sept. 30:

Assets:	1972	1971
Cash	$796,339	$816,684
Ctf. of deposit	------	1,275,000
Receivables, net	1,781,309	966,342
Rl. est. for sale	------	85,265
Prepayments, etc.	114,371	188,382
Total current	$2,692,019	$3,331,673
Net prop., etc.	297,423	193,413
Escrow dep.	------	800,000
Inv. Seneca Foods	1,134,492	1,134,492
Oth. invests.	------	363,973
Inv. uncons. subs.	------	2,250,018
Notes receiv.	703,392	690,350
Other assets	365,836	561,566
Intangibles	908,689	622,091
Total	$6,101,851	$9,947,576
Liabilities:		
Notes, etc., pay.	$196,512	$1,464,610
Accts. payable	118,230	536,333
Accruals	163,647	148,799
Income taxes	785,645	2,128,802
Oth. curr. liab.	59,934	62,956
Total current	$1,323,968	$4,341,500
Long term debt	103,417	1,140,964
Minority interest	91,482	33,735
Common stk. ($1)	763,214	763,214
Addit. pd. in cap.	2,194,026	2,194,026
Retained earnings	1,655,863	1,504,256
Stockhold. equity	4,613,103	4,461,496
[1]Reacquired stk.	30,119	30,119
Net stkhld. eq.	4,582,984	4,431,377
Total	$6,101,851	$9,947,576
Net current assets	$1,368,051	*d*$1,009,827

[1]5,326 (1971, 5,315) com. shs. at cost.

Long-Term Debt: Outstg., Sept. 30, 1972, (excluding current maturities) $103,417 consisting of: (1) $48,000 4% note payable $24,000 annually; (2) $31,320 non-interest bearing note payable $870 monthly; (3) $24,097 other notes payable.

Capital Stock: Harrell International, Inc.; common; par $1:

Auth., 2,000,000 shs.; outstg., 757,888 shs.; in treasury, 5,326 shs.; reserved for options, 107,292 shs.; par $1.

W. L. Harrell, Pres., owns 32.04% of shs.

Dividends: Paid 15% in stock in 1970.

Has one vote per sh. with non-cumulative voting for directors. No preemptive rights.

Offered (150,000 $1 par shs.) at $14.50 a sh. on June 14, 1967 thru Dempsey-Tegeler & Co., Inc., and associates. Proceeds of 100,000 shs. for Co. account for property additions, improvements and working capital.

Transfer Agent and Registrar: Chase Manhattan Bank (N. A.), NYC.

Traded: OTC.

Price Range:	1972	1971	1970	1969	1968
High	4⅜	6	8	13¼	20½
Low	1¾	1½	4	4¼	8

AMERICAN TRAINING SERVICES, INC.

History: Incorporated in N. J. Oct. 13, 1964.

In May 1970, acquired John Adams Institute, Miami for com. shs. and cash.

Business: Co. is a private trade school operating correspondence courses and a field training school for the instruction of men in operation and preventive maintenance of tractor-trailers and trucks and heavy equipment. Co. also offers hotel and motel management training.

Co. has developed a paramedical training program and hopes to begin marketing it by summer 1973.

Property: Leases office space in Cherry Hill, N. J. Approx. 170 acres are leased, and 180 acres for facility in Nashville, Tenn. for its tractor-trailer and heavy equipment field training center in Williamstown, N. J.

Officers

E. M. Shore, Chmn.
A. K. Fox, Pres.
W. R. Yocom, Senior Vice-Pres.
J. B. Beneman, Vice-Pres.
Karlton Zamost, Vice-Pres.
G. A. Roomberg, Sec. and Treas.

Directors

E. M. Shore	R. Arum
A. K. Fox	J. B. Beneman
W. R. Yocom	G. A. Roomberg
Ben Shindler	

Auditors: Morris J. Root.

General Counsel: Arum, Friedman & Katz.

No. of Stockholders: Apr. 23, 1973, 1,400.

No. of Employees: Apr. 23, 1973, 225.

Executive Office: One A.T.S. Blvd., P. O. Box 435, Cherry Hill, New Jersey, 08002.

Consol. Income Acct., yrs. ended:

	Feb. 28,'73	Feb. 29,'72
Oper. revenues	$13,853,054	$7,192,650
Expenses	11,014,368	5,772,729
Net earnings	2,838,686	1,419,921
Interest income	22,182	13,831
Total	2,860,868	1,433,752
Income taxes	1,434,000	706,183
Net income	1,426,868	727,569
Earn., com. share	$0.66	[1]$0.68
No. of com. shs.	2,174,083	1,076,414

[1]$0.34, adj. for 100% stk. split 6/72.

Consolidated Balance Sheet, as of:

Assets:	Feb. 28,'73	Feb. 29,'72
Cash & equiv.	$824,846	$422,876
Receivables, net	6,846,862	2,915,843
Inventories	32,365	36,415
Prepayments	48,398	13,100
Total current	$7,752,471	$3,388,234
Prop., etc., net	479,498	344,688
Deferred charges	------	25,491
Other assets	2,643	11,802
Total	$8,234,612	$3,770,215
Liabilities:		
Accruals	$2,558,398	$911,293
Income taxes	2,393,644	1,065,576
Total current	$4,952,042	$1,976,869
Common stk. ($0.10)	217,408	107,641
Capital surplus	696,345	635,364
Retained earnings	2,368,817	1,050,341
Total	$8,234,612	$3,770,215
Net current assets	$2,800,429	$1,411,365

Capital Stock: American Training Services, Inc. common, par $0.10:

Auth., 3,000,000 shs.; outstg., 2,174,083 shs.; reserved for options, 150,000 shs.; par $0.10.

$0.10 par shares split 3-for-2 Jan. 24, 1972.

Has one vote per sh.; no preemptive rights.

No cash dividends paid.

Paid 100% stock div. June 26, 1972.

Transfer Agent and Registrar: Continental Stock Transfer Corp.

Offered (250,000 shs.) at $3 per sh. on Oct. 22, 1969 thru Charles Plohn & Co., New York and Robinson & Co., Inc., Philadelphia. Proceeds for general purposes.

Listed: On ASE (Symbol: ATZ).

Price Range:	[1]1972	[2]1971	1970	1969
High	25	33½	4¾	3½
Low	14⅝	2⅜	1½	2⅜

[1]After 100% stk. div. of June. Before stk. div. but after 3-for-2 split of Jan., 46½-24; before 3-for-2 split, 41-33¼ (w.i.basis, 27¾-22). Ranges on National S.E. (listed on ASE in 1973).

[2]22¼-21 on w.i. basis reflecting 3-for-2 split of Jan. 1972.

AZCON CORPORATION

History: Incorporated in Maine, Jan. 23, 1899 as American Zinc, Lead & Smelting Co. Name change to American Zinc Company Dec. 5, 1966; present name adopted in Jan., 1973.

Present name adopted Dec. 5, 1966. Company first purchased certain zinc producing properties in southwestern Missouri. In 1911 and 1912 it bought tracts of land containing zinc ore in Mascot, Tenn., to which territory was added subsequently through purchase or lease.

In 1916 company acquired all property of Granby Mining & Smelting Co., including smelter at East St. Louis, Ill.

In 1951 purchased mining and concentrating facilities of Nellie B. Mining Co.

Jan. 1, 1958 acquired Knoxville Sangravl Material Co., Knoxville, Tenn. (now Knoxville Sand & Gravel Co.).

On Dec. 31, 1966, merged following subsidiaries: American Zinc Co. of Ill., American Zinc Co. of Okla., American Zinc Co. of Tenn., American Zinc Oxide Co., and American Limestone Co.

On May 31, 1972 acquired business of Drilling Equipment Division of Westinghouse Air Brake Co., for $10,000,000 and $1,000,000 note.

On May 31, 1972 acquired Brown-Strauss Corp.

In Apr. 1973 acquired Union Steel Co., Chicago a distributer of steel products.

Sells Certain Mining Facilities: In Dec. 1971, Co. sold its zinc oxide plants in Ill. and O., its mines, plants and other properties in Tenn. and its American Limestone division to American Smelting & Refining Co. Included in purchase are mining properties and mill of New Market Zinc Co., a joint venture of American Zinc and Gold Fields American Corp. Purchase price was about $27,000,000, consisting of cash and $18,000,000 in 6% notes payable in 5 annual equal installments.

In addition to proceeds received at closing of sale described above, Co. may also receive future payments from Asarco over five years from Dec. 1, 1971, contingent on market price of zinc and zinc concentrate production during this period from mining properties sold. For each one cent increase in average monthly published price of Prime Western zinc above 15 cents per pound (fractions in proportion) Co. is to receive $4 per ton of zinc concentrate production from mining properties sold. For seven months subsequent to Dec. 1, 1971, during which time that price ranged from 17 cents to 18 cents per pound, Co. earned $525,811, which amount has been recorded as extraordinary income in accompanying statement of income (loss). Published price of Prime Western zinc on Aug. 18, 1972 was 18 cents per pound.

Also during fiscal 1972 Co. sold various idle properties, primarily its East St. Louis, Ill. electrolytic refinery and Dumas, Tex. smelter. East St. Louis, Ill. property was sold to American Metal Climax, Inc., for $3,000,000 on June 29, 1972, under an option agreement entered into July 1, 1971. Dumas, Tex. smelter was dismantled and sold.

After sale of most of its assets (other than retained assets described under "Property—Mineral Interest and Other Property") and a reduction of its debts. Co. acquired in 1972, businesses constituting its present operating divisions.

Business: Company operates its two primary businesses through two divisions, its Brown-Strauss Division and its Gefco Division.

Brown-Strauss Division distributes, both for resale and end use, carbon steel products such as reinforcing bars, structural shapes, flat rolled products, pipe and tubing.

Gefco Division engineers, manufactures and markets portable rotary drills and accessory equipment primarily for drilling (a) water wells for agricultural, residential and industrial purposes, (b) soil test holes for the construction industry and (c) exploration holes in the search for minerals, oil and gas. This Division also manufactures servo-hydraulic vibrators used in exploration for oil and gas.

Company also plans mineral exploration, including further exploration on certain properties in which it owns an interest.

Property: Brown-Strauss Division administrative offices, and its warehousing facilities, are owned by Co. and are located in an industrial area of Kansas City, Kan. Gefco Division administrative offices and its manufacturing facilities, are owned by Co. and are located in Enid, Okla., on a 41 acre tract of land. In addition, Gefco Division leases 13 regional sales and service outlets in U. S. and Canada. Division also maintains a sales office in United Kingdom.

Mineral Interest and other Property: Company also has the following mineral and other interests in real property:

1. A 24½% interest in a joint venture under a letter of intent with Granite City Steel Co., a wholly-owned subsidiary of National Steel Corp. ("Granite City") and Getty Oil Company ("Getty") in exploration of a

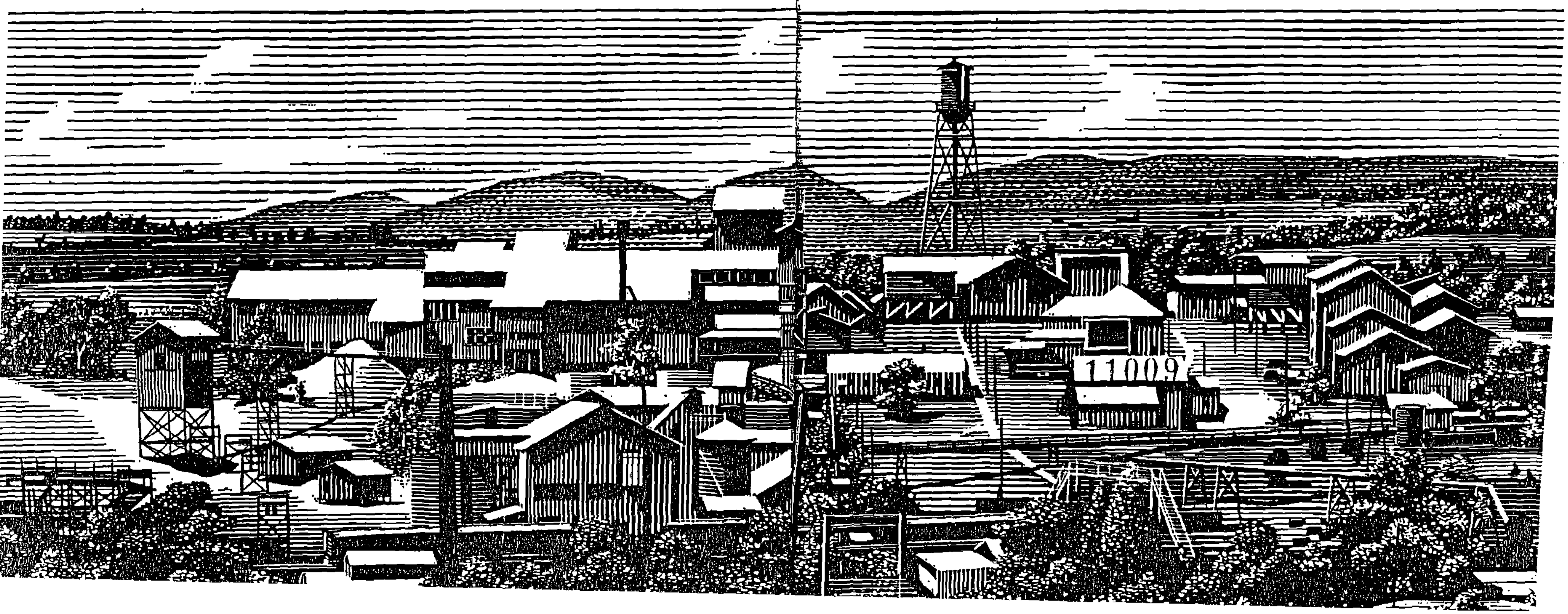
AZn

A HISTORY OF THE

AMERICAN ZINC COMPANY

BY JAMES D. NORRIS

STATE HISTORICAL SOCIETY OF WISCONSIN : MADISON : 1968



demands on the steel industry for munitions, equipment, and especially for ship construction. Military needs pre-empted much of the steel formerly available to galvanizers, with the result that zinc consumed in galvanizing declined 70 per cent during the year. The loss of 70 per cent of the market which ordinarily consumed approximately 65 per cent of the spelter produced in the United States paralyzed the zinc industry.

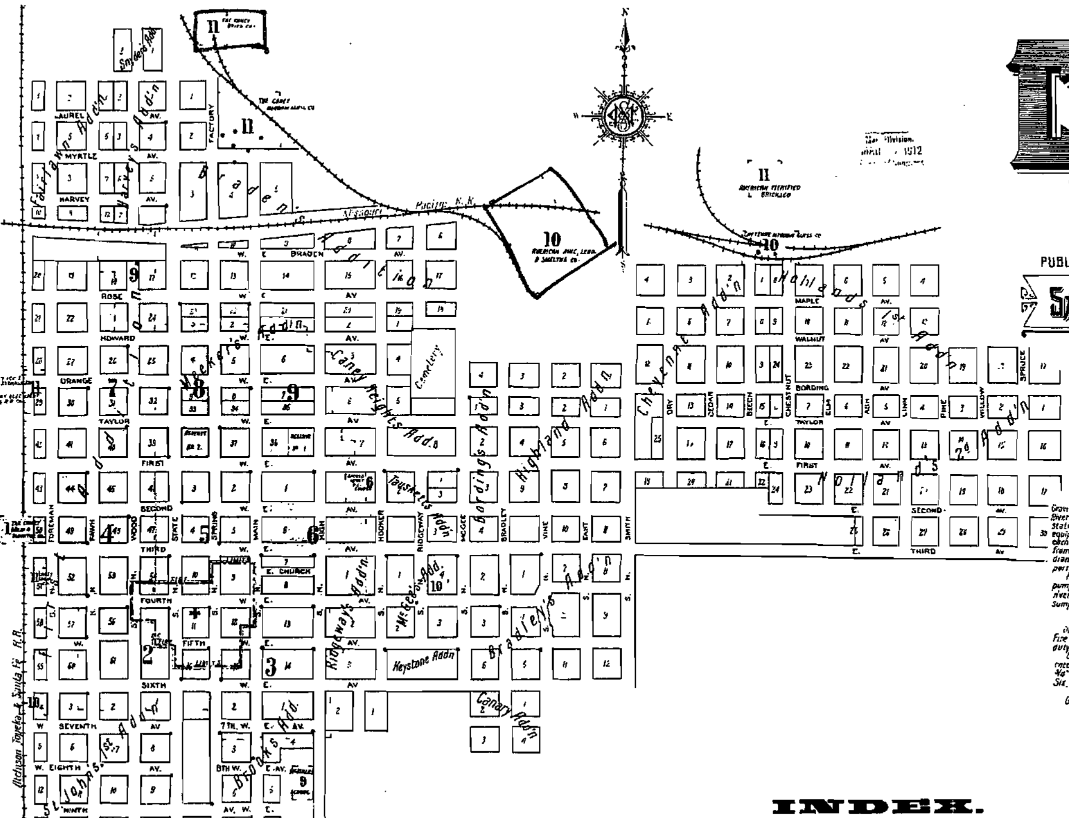
Believing, or at least hoping, that the government would purchase huge quantities of spelter for military purposes, most smelters continued to produce even after prices dropped so low as to make profitable operations impossible. As a general rule smelters were always hesitant to shut down because curtailment for any considerable length of time resulted in serious expense, disintegration of physical equipment, and loss of personnel, making quick resumption of operations impossible. So long as smelter operators anticipated higher prices or larger demand in the immediate future, most of them continued smelting. Large stocks of spelter accumulated—driving prices even lower. By the end of 1917, however, American Zinc ceased operation at both its gas-fired smelters in Kansas, and the two coal-fired plants in Illinois were only 60 per cent active. Over the nation 40 per cent of the retorts were idle.[27] Clearly the early war boom was over.

President Kimball's optimistic predictions, based on the assumption that at least two years were required to build and put a zinc smelter in operation, proved completely wrong. The number of retorts in zinc furnaces at the beginning of 1915 was only 113,914; by the end of the same year over 156,000 were in production, a 40 per cent increase. Within two years the producing capacity in the United States zinc industry doubled, leaping from 400,000 tons to approximately 800,000 tons per year. Indeed, the exceptionally high prices in early 1915 attracted so many "adventurers" into the smelting business that by the middle of that year the boom in the zinc market reached its climax.[28] By the time the United States entered the war zinc producers were already complaining about severe competition and over-production. Although the federal government established the maximum price for grade "A" spelter at 12 cents a pound in late 1917, the ceiling price had no effect since zinc was already selling below 9 cents a pound.[29]

On December 19, 1916, almost immediately after the final takeover of the Granby property, Kimball resigned to accept the presidency of the Remington Arms Corporation. For Kimball the Granby acquisition represented the capstone of the expansion and growth of American Zinc from a small and almost defunct locally oriented mineral-leasing concern into one of the largest firms in the domestic zinc industry—vertically integrated, owning its own mines, smelters, mills, and acid plants. Taking over a company with little or no internal organization, assets of only a little over a million dollars, and desperately short of working capital, in fourteen years Kimball developed a well-functioning organization with assets exceeding $20,000,000 and ample operating capital. The 1916 *Annual Report* informed the stockholders that because of Kimball's efforts "your company was ready for the European War." Kimball would have been the first to add that American Zinc's greatly improved financial position resulted primarily from the extraordinary conditions occasioned by that conflict.[30]

Even though he resigned as president, Kimball remained active in American Zinc affairs as a director and influential advisor to his successor, Charles W. Baker, who assumed the presidency of American Zinc as a temporary expedient. Most of Baker's experience had been in the steel industry. Two years after graduating from Harvard in 1884, he started working for Carnegie, Phipps and Company. In 1899 Baker became a junior partner in Carnegie Steel Corporation, and was later sales manager of the Illinois Steel Company and the Tennessee Coal, Iron and Railroad Company. He retired from active business life in 1910, but in 1915, in an effort to promote sales, he agreed to serve as vice president of American Zinc, and in 1917 Kimball's sudden departure and the shortage of trained executives brought him temporarily out of retirement. With the definite understanding that his was only an interim appointment until a permanent president could be selected, Baker assumed Kimball's duties. He re-

11 Sheets



Insurance Maps of Caney

Montgomery County

Kansas

Published by the Sanborn Map Company, 11 Broadway, New York

SCALE 50 FT. TO AN INCH

Jan'y 1912

Population, 3600. Prevailing Winds, S & S.W.

WATER FACILITIES

Gravity system of water works owned & operated by the town. Water supply from Little Caney River flows by gravity through a tunnel ... into a walled ... galls. capacity at pumping station which is situated on ... miles S.W. of post office. Pumping station equiped with two Burnham single, double acting pumps ... capacity 382 000 galls each per 24 hours, 8" suction and 6" discharge. One man on duty daytime only. Pumps draw from well and discharge into a 10" main supplying stand pipe of 371 000 galls capacity 30 ft. diam., 70 ft high located 600 ft. N.W. of pumping station, base elevated 112 ft above business portion of town. Stand pipe supplies town through 12" main.

About ten miles of water pipes, 4" to 12" diam. Original mains were laid in 1902. New pumping station was built and additional mains were laid in 1906. 55 double hydrants. Average pressure 75 lbs. Fire pressure 90 lbs. when stand pipe is full. Average daily consumption ½ million galls.

FIRE DEPARTMENT

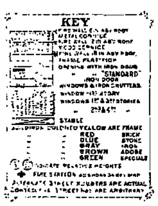
One fully paid man on constant duty. One chief and seven volunteers. Two horses. Fire alarm by telephone, and bell on hose tower at fire station. Two policemen on duty at night.

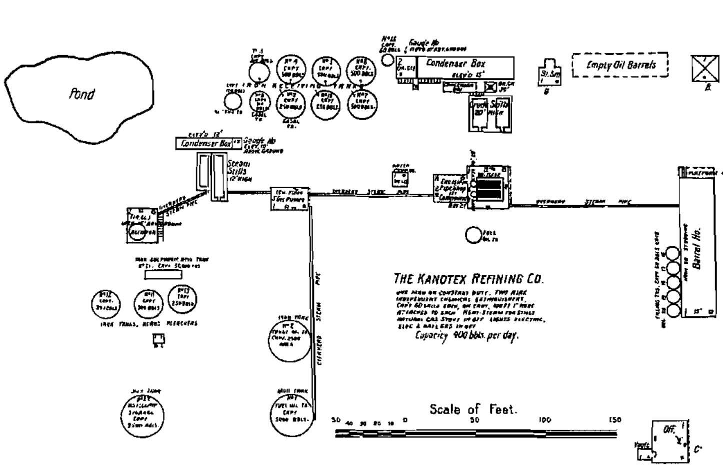
One 2 horse hose wagon carrying 1000 ft. 2½" cotton, rubber lined hose. 500 ft. 2½" cotton, rubber lined hose in reserve. All hose in fairly good condition. One Anderson ¾" cut-off nozzle. Two ¾" and one 1" Anderson nozzles. Two 28 ft. extension ladders. Six, 3 gall. hand chemical extinguishers.

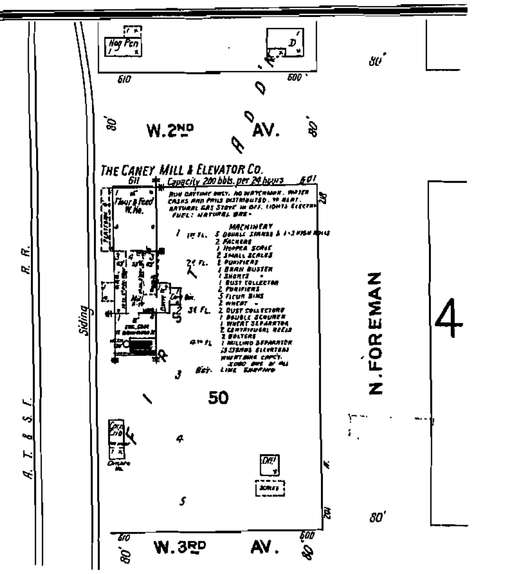
Grades level. About four miles of brick paved streets. 41 electric arc lights.

INDEX.

* Indicates only one side of Street shown.





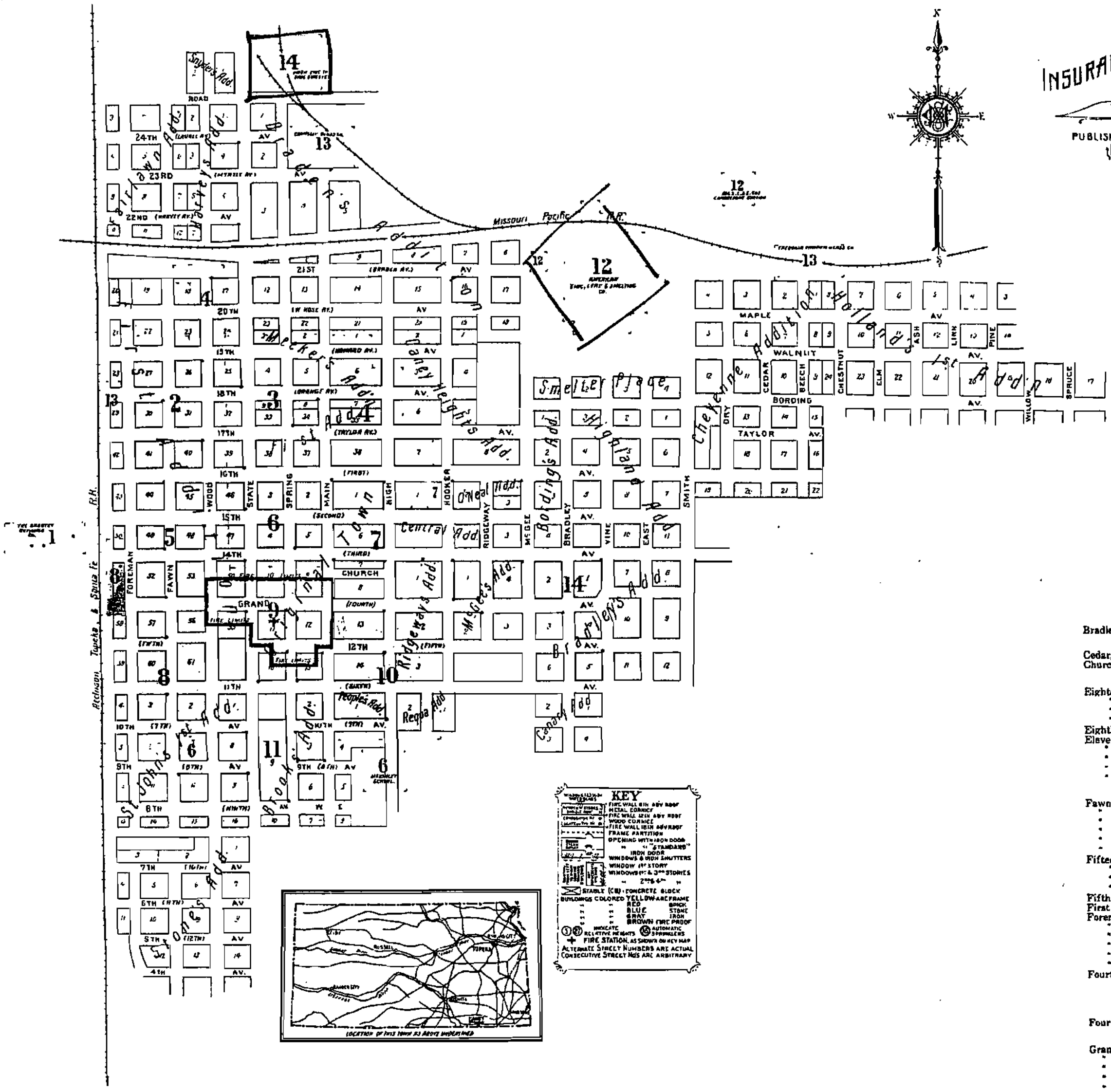


May 24 1917 15 Sheets (1913)

INSURANCE MAPS of CANEY KANSAS

MONTGOMERY COUNTY

PUBLISHED BY the SANBORN MAP COMPANY
11 BROADWAY, NEW YORK
APRIL 1917
Scale 50ft to an inch



Population 5000

PREVAILING WINDS, SO. WEST

WATER FACILITIES. Municipal water works. Stand pipe system installed in 1902. New pumping station built in 1906 and mains extended. Water supply from Little Caney River. Pumping station located about 1¼ miles N.W. of business section. Stand pipe 30' × 70', capy 371,000 galls, elevated 117 ft above business section. Old reservoir ½ mile North of town is kept full and held in reserve for use in case of emergency.

One Laidlaw-Dunn-Gordon compound duplex force pump (12-21¾ × 12) capy 750 galls per min. pumps to stand pipe or directly into mains. Two Durham duplex force pumps capy 580,000 galls per day which is not in use.

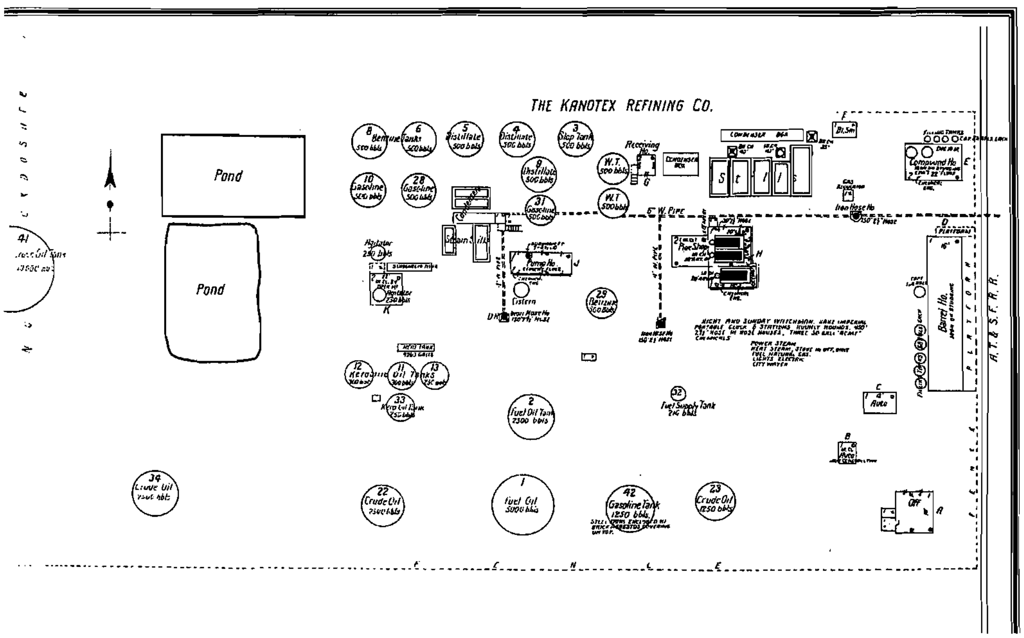
12 miles of water pipes, 4" to 12" diam. 56 double hydrants. Domestic pressure 60 lbs. Fire pressure 90 lbs. Average daily consumption ½ million galls.

FIRE DEPARTMENT. One paid man, 5 volunteers. One auto hose and chemical wagon. One 30 gall chemical. Two 3 gall chemicals. 1000 ft 2½" cotton hose, 150 ft chemical hose.

Fire alarm by bell
Grades level
Business section brick paved
Public lights electric

INDEX

* Indicates only one side of Street shown.



J. T. Everhart to Chas. Owen — WARRANTY DEED.

KNOW ALL MEN BY THESE PRESENTS That J. T. Everhart, and his wife, S. A. Everhart, parties of the first part, in consideration of the sum of One (1) Dollars and other valuable considerations in hand paid, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell and convey unto Charles Owen, Caney, Kansas the following described real property and premises, situate in Montgomery County, State of Kansas, to-wit:

West half of the Southwest Quarter of the Southeast quarter of Section One, Township 35 South, Range 13 East, containing 20 acres except and reserving tract heretofore conveyed for cemetery about 2 acres, and [illegible] feet off South side for road,

Together with all the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

To have and to hold said described premises unto said party of the second part, his heirs and assigns, forever, free, clear, and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and incumbrances of whatsoever nature.

Signed and delivered this 15th day of July 1915.

Witnesses:

J. T. Everhart

S. A. Everhart.

STATE OF KANSAS)
MONTGOMERY COUNTY) SS.

Before me, a Notary Public, in and for said County and State, on this 15th day of July 1915 personally appeared J. T. Everhart and his wife S. A. Everhart, to me known to be the identical persons who executed the within and foregoing instrument, and who acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

Witness my hand and official seal the day and year last above written.

C. A. Lloyd
Notary Public.

My commission expires June 20, 1917 (L.S.) I. R. Stamp 50 cts.

Recorded July 17, A.D. 1915 at 8 A.M. Attest, Nelle Barrett, Register of Deeds.

Transferred July 17, A.D. 1915 Attest, A. J. Valentine, County Clerk.

John Green To J. T. Everhart — WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS, That John Green and his wife Maggie Green, parties of the first part, in consideration of the sum of Nine Hundred (900) Dollars in hand paid, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell and convey unto J. T. Everhart, the following described real property and premises, situate in Montgomery County, State of Kansas, to-wit:

West half of Southwest Quarter of Southeast Quarter of Section One (1) Township Thirty five (35) South Range Thirteen (13) East, containing 20 acres except and reserving tract heretofore conveyed for cemetery about 2 acres and [illegible] feet off South side for road.

Together with all the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

To have and to hold said described premises unto said party of the second part, his heirs and assigns, forever, free, clear, and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and incumbrances of whatsoever nature.

Signed and delivered this [illegible] day of July 1915.

John Green
Maggie Green.

Witnesses:

[illegible]

[illegible] and State, on this [illegible] day of [illegible] Maggie Green to me known to be the [illegible] foregoing instrument, and who acknowledged [illegible] free and voluntary act and deed [illegible]

[illegible] day and year last above written.

C. A. Lloyd
Notary Public.

[illegible] (L.S.)

[illegible] Register of Deeds.

[illegible] County Clerk.

STATE OF MONTANA } SS.
COUNTY OF MONTANA }

BE IT REMEMBERED, That on this ---day of January, A.D. 1915, before me the undersigned a Notary Public , in and for said county and state aforesaid, came Maude M. Prather, and C. D. Prather her husband, who are personall y known to me to be the same persons who executed the within instrument of writing, and such persons duly acknowledged the execution of the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my notarial seal, the day and year last above written.

George F. Streich
Notary Public.

Residing at Melstone, Mont. My commission expires July 24th, 1917 (L.S.)

STATE OF MONTANA } SS.
COUNTY OF MUSSELSHELL }

BE IT REMEMBERED, that on this 3rd day of January, A.D. 1915, before me the undersigned A Notary Public, in and for the county and state aforesaid, came Margurite M. Jacobs, and husband C. M. Jacobs, who are personally known to me to be the same persons who executed the within instrument of writing and such persons duly acknowledged the execution of the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Notarial Seal, the day and year last above written.

J. J. McFaul
Notary PUblic.

My commission expires Dec. 13, 1916 (L.S.)
Recorded Aug 5, A.D. 1915 at 1 P.M. Attest, Nelle Barrett, Register of Deeds.
Transferred April 12, A.D. 1915 Attest, A. J. Valentine, County Clerk.

Chas. Owen
To
Owen Zinc Co.

QUITCLAIM DEED.

KNOW ALL MEN BY THESE PRESENTS: That Charles Owen, and his wife, Pauline W. Owen, in consideration of the sum of One Dollar in hand paid, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell, convey and quitclaim unto Owen Zinc Company the following described real property and premises, situate in Montgomery County, State of Kansas, to-wit:

West half of Southwest quarter of Southeast quarter of Section One (1) Township 35 South, Range 13 East, containing 20 acres, except and reserving tract heretofore conveyed for cemetery about 2 acres and 28 feet off south side for road; and; Commencing at the Southeast corner of the Southwest quarter Section 1, Township 35S. Range 13 E. running thence North 600 Feet, thence west 100 feet, thence south 600 feet, thence east 100 feet, to the place of beginning, except that part of the above described land which is located on the south side of same and is dedicated to and used as a public road.

together with all the improvements thereon and the appurtenances thereunto belonging.

To have and to hold the said described premises unto the said grantee its heirs, and assigns forever.

Signed and delivered this 28th day of July, 1915.

Charles Owen--------Seal.

I. R. Stamp 50 cts.

Pauline W. Owen----Seal.

ACKNOWLEDGMENT.

STATE OF KANSAS, Montgomery County, SS.

Before me, the undersigned Notary Public in and for said County and State on this 28th day of July, 1915, personally appeared Charles Owen and his wife Pauline W. Owen to me known to be the identical persons who executed the within and foregoing instrument, and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

Witness my hand and official seal the day and year above written.

C. A. Lloyd
Notary Public.

My commission expires June 20, 1917 (L.S.)
Recorded August 5, A.D. 1915 at8 A.M. Attest, Nelle Barrett, Register of Deeds.
Transferred August 5, A.D. 1915 Attest, A. J. Valentine, County Clerk.

FRANK F. MISCH & SONS MFGS., COFFEYVILLE, KAN.

This Indenture, Made this 2nd day of June, A. D. 1916 between Maggie Green and John Green, husband and wife,

of Montgomery County, in the State of Kansas of the first part, and Owen Zinc Company

of Montgomery County, in the State of Kansas of the second part

WITNESSETH, That ~~the~~ said parties of first part, in consideration of the sum of Twenty Five Hundred and no/100 DOLLARS

the receipt whereof is hereby acknowledged, do by these presents Grant, Bargain, Sell and Convey unto said party of the second part, his heirs and assigns, all the following described Real Estate, situated in the County of Montgomery and State of Kansas, to-wit:

The East Half, of the South West quarter of the South East quarter of Section One, Township Thirty Five, Range Thirteen, East, containing Twenty acres more or less according to the government survey thereof.

TO HAVE AND TO HOLD THE SAME, Together with all and singular, the tenements, hereditaments and appurtenances thereunto belonging, or in any wise appertaining, forever.

And said Parties of the first part for themselves their heirs, executors or administrators, do hereby covenant, promise and agree to and with said party of the second part that at the delivery of these presents they are lawfully seized, in their own right of an absolute and indefeasible estate of inheritance, in fee simple, of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear, discharged and unincumbered of and from all former and other grants, titles, charges, estates, judgments' taxes, assessments and incumbrances of what nature or kind soever:

and that they will warrant and forever defend the same unto said party of the second part, his heirs and assigns, against said parties of the first part, their heirs, and all and every person or persons whomsoever lawfully claiming or to claim the same.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hands the day and year first above written.

I. R. Stamp
$2.50
attached.

Maggie Green
John Green

STATE OF KANSAS,
Montgomery County, } ss.

BE IT REMEMBERED, That on this 2nd day of June A. D. 1916, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Maggie Green and John Green her husband,

who are personally known to me to be the same persons who executed the within instrument of writing, and such persons duly acknowledged the execution of the same.

In Testimony Whereof, I have hereunto set my hand and affixed my Notarial seal, the day and year last above written.

E. R. West, Notary Public

My ~~commission~~ term expires Oct. 4th 1916.

Address

This instrument was filed for record this 8 day of June A. D. 1916 at 8 o'clock a. M.

Fees $ Nellie Burrett Register of Deeds

Entered in Transfer Record in my office this 8 day of June A. D. 1916.

By Deputy A. J. Valentine County Clerk

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k. M.
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County Clerk

act and deed for the uses and purposes therein set forth.
WITNESS MY HAND, and seal this 25 day of January, 1917
W D Julian
My commission expires 2/21 1918 (LS). Notary Public
STATE OF MISSOURI }
COUNTY OF JACKSON } SS

On this 17th day of February 1917, before me, the undersigned, a Notary Public, in and for the County and State aforesaid, personally appeared, W F Scott, a single man, and Chas L Scott and Mary C Scott, his wife, to Me known to be the identical persons who executed the within and foregoing instrument, and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.
WITNESS MY HAND and seal this 17th day of February 1917.
R Tillotsen
My commission expires January 31st-1920 (LS). Notary Public
Recorded February 26 A D 1917 at 9 A.M. Attest: Nelle Barrett, Register of Deeds.

J E Stone,
to
Wichita Nat Gas Co.

RIGHT OF WAY CONTRACT.

FOr and in consideration of the sum of $10.00 Ten Dollars, to us in hand paid, receipt of which is hereby acknowledged, J E Stone signer does hereby grant to Wichita Nat Gas Co its successors and assigns, the use of a right of way to erect, maintain, and operate Telegraph and Telephone Line. Said sum is acknowledged as full consideration for right-of-way, and also for damages occasioned by installing the first Line. Grantee to be responsible for damages to growing crops, occasioned by making furture repairs to said Line, and the Laying and maintaining other lines, covering certain lands in MontgoMery County, Kansas State, described as follows, to-wit:

Lot # 1 Sec 14 Twp 35 R 13 East

IN WITNESS WHEREOF, The GraNtor has hereuNto set his hand and seal this 5th day of Feby 1917

J E Stone (SEAL)

STATE OF Kansas }
County of Montgomery } ss

On this 5th day Of Feby 1917 before me, the undersigned, a Notary Public, in and for the County and State aforesaid, personally appeared J E Stone to me known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that he executed the same as his free and voluntar act and deed for the uses and purposes therein set forth.
WITNESS MY HAND and seal this 5th day of Feby 1917
E V [illegible]
My commission expires June 7-1919 (LS). Notary Public
Recorded February 26 A D 1917 at 9 A M Attest: Nelle Barrett, Register of Deeds.

Owen Zinc Co.,
to
American Zinc Lead & Smelting Co.,

1209-American Z.L.&S Co.
Owen Zinc Co. Leases, etc.,

PLANT SITE LEASE, GAS CONTRACT, ETC.,

this agreement, made by and between OWEN ZINC COMPANY, a corporation, under the laws of the State of West Virginia, as first party, AMERICAN ZINC,LEAD & SMELTING COMPANY, a corpoRation under the laws of the state of Maine, as second party of the second part, and CANEY PIPE LINE COMPANY, A corpOration under the LAWS of the State of Kansas, as third party, WITNESSETH:

WHEREAS, on or about the 12th day of August, 1915, the parties of the first and second part hereto made and entered into a written contract, by the terms of which in substance, among other things, said first party let and leased unto said second party its zinc smelting plend (hereinafter referred to as the "Owen Plant"), then in course of construction upon upon a part of the west half (½) of the southwest quarter (¼) of the southeast quarter (¼) of Section one (1) Township thirty-five (35), Range thirteen (13), in Montgomery County in the State of Kansas for the period of time ending at midnight the 30th day of September, 1916, to which contract reference is hereby made for greater certainty, and,

WHEREAS, the first and second parties hereto desire to renew and extend said lease and the said second party desires to lease from said first party a site for the construction, maintenance and operation of one block of zinc smelting furnances and a roasting kiln and the necessary buildings, appurtenances and auxiliary equipment, and the second party desires to procure from the [illegible] party hereto and the latter desires to furnish a supply of natural gas for the operation of the said Owen Plant and in and about the construction, maintenance and operation of said block of furnances and roasting kiln to be constructed by the second party as aforesaid;

NOW THEREFORE, in consideration of the premises and of the covenants and agreements hereinafter contained, it is agreed by and between the parties hereto as follows:

FIRST:

The said first and second parties hereto covenant and agree to and with each other that their said written contract of date the 12th day of August, 1915, shall be and the same is hereby renewed, extended and continued in force for the additional period of time ending at twelve o'clock midight the 31st day of December, 1917, provided and it is expressly agreed that said second party may, at its election, extend and continue said last mentioned contract (as amended, changed and extended by this contract) in full force and effect for an additional period of time ending at twelve o'clock, midnight, the 30th day of June 1921, by giving to said first party at least thirty days prior to said 31st day of December, 1917, written notice of its intention to do so, service of which notice may be made by delivering the same to the president, vicepresident or secretary of said first party or by letter, addressed to said first party at the city of Caney, Kansas, and duly mailed, postage prepaid.

SECOND.

The said first party hereby lets and leases unto the said second party, for the period of the time beginning the 1st day of July, 1916, and ending at twelve o'clock midnight the 30th day of June, 1921, certain real estate, free and clear of incumbrances, situated in Montgomery County in the State of Kansas and more particularly described as follows, to-wit: That part of the said west half (½) of the southwest quarter (¼) of the southeast quarter (¼) of Section one (1) Township thirty-five (35), Range thirteen (13), on which second party is constructing, and which may be necessary for the construction and operation of, one block of zinc smelting furnances comprising approximately six hundred and forty (640) retorts, [illegible] one roasting kiln, also all stacks, structures, appurtenances, machinery auxiliary equipment and property necessary or convenient for use in the construction, maintenances and operation of said furnances and kilns (hereinafter referred to as the "American Plant") together with the right on the part of said second party to maintain and operate said American Plant thereon and to remove the same therefrom at the determination of this lease; and the said second party agrees to pay as ground rental therefor the sum of One ($1.00) Dollar per annum, payment thereof to be made on the 1st day of July in each year by check or otherwise direct to said first party or by deposit to its credit in Caney Valley National Bank, or its successor, at the city of Caney, Kansas.

THIRD

Said second party covenants and agrees to make prompt payment of said rental to pay such taxes as may be levied or assessed against the leased premises described in the next preceding paragraph hereof, to cause no unnecessary damage to or wastage of said premises, to hold said first party harmless from and indemnified against all damages which may be caused to the person or property of third parties in the mantenance and operation of said American Plant and to remove said American Plant from the leased premises within one hundred and eighty (180) days from the date of the determination of this lease thereof and thereupon to surrender possession of said premises to the said first party.

FOURTH.

Said second party agrees that while and during the time it keeps said American Plant or any part thereof in operation, within the leasehold period (as hereby or hereafter extended) of said contract of August 12, 1915, it will not exercise the option therein given to it to cancel said last mentioned contract in case the price of spelter fall below the minimum

therein provided but will keep both furnaces of said Owen plant in operation or pay to said first party the minimum
rental provided by and in accordance with said last mentioned contract.

FIFTH;

The said third party hereby covenants and agrees to furnish and deliver to said second party, and the latter agrees to take and receive, at said Owen Plant all natural gas which may be necessary for use in the operation of said last mentioned plant and the construction operation and maintenance of said American Plant, respectively, while the aforesaid leases thereof (as hereby made or extended or hereafter extended), respectively, remain in force, and the said second party agrees to pay for all gas so furnished and delivered at the rate of nine (.09) cents per thousand cubic feet at the meter hereinafter mentioned; provided, and it is expressly agreed, that from and after the 31st day of December, 1917, the rate to be paid by said second party for said gas shall be the same per thousand cubic feet that is generally charged under actual contracts by the Wichita Pipeline Company and other similar standard pipeline companies for natural gas furnished or to be furnished, at the plant of the consumer, in large quantities (which shall be construed, to mean not less than one million cubic feet per day of twenty-four hours) during the same period of time, to operators of other zinc smelting plants located in the state of Kansas and within fifty miles of the city of Caney therein, for use in the operation of their said plants; and provided, further, and it is expressly further agreed, that nothing herein shall be construed as requiring said third party to furnish said gas when, by reason of an insufficient supply or otherwise it is unable to do so, nor during such periods of time as it may be prevented from so doing by reason of breakage of its lines, fires, floods or other cause beyond its control, but in the event of its failure from any cause to furnish said gas said second party shall be privileged to procure elsewhere all or any part of the supply necessary for said purposes, until such time as party of the third part makes necessary repairs and is prepared to furnish said gas.

TENTH

Second party shall have and is hereby given the right, at its election, to extend and continue this contract said contract of date August 12, 1915, (but not separately) in full force and effect for an additional period of time ending at midnight the 30th day of June, 1926, by giving to said first party and said thirty party at lease fifteen (15) days prior to the 30th day of June 1921, written notice of its intention to do so, service of which notice may be made by delivering the same to the President, Vice-President or Secretary of said first party or by letter addressed to said first party at the city of Caney, Kansas, and duly mailed, postage pre-paid.

IN WITNESS WHEREOF the parties hereto have dated this instrument and each of said parties has caused the same to be signed by its President or Vice-President attested by its Secretary or Assistant Secretary and sealed with its corporate seal at the city of Caney, Kansas, this 1st day of October 1916

OWEN ZINC COMPANY,
By Charles Owen
President

Attest W H Edgett
Secretary (corseal)

AMERICAN ZINC, LEAD & SMELTING COMPANY
By Chas W Baker
President

Attest: F W Batchelder
Secretary (cor seal)

The CANEY PIPE LINE COMPANY
By Charles Owen
President

Attest W H Edgett
Secretary. (cor.seal)

STATE OF Kansas }
COUNTY OF Montgomery } ss

I hereby certify that on the 1st day of October 1916 before me, the undersigned notary public in and for said last mentioned county and state came Charles Owen, to me personally known to be the same person who executed the foregoing written instrument as President of OWEN ZINC COMPANY_ a corporation_ and thereupon duly acknowledged the execution of the same to be the act of said corporation.

WITNESS my hand and noterial seal at the city of Caney, the day and year last above written.

C A Lloyd
Notary Public

My commission expires June 2, 1917 (LS).

DEED RECORD

This Indenture, Made this 31st day of [illegible] A. D. 1917, between

[illegible] Company a corporation existing under the laws of the State of West Virginia [illegible]

of Montgomery County, in the State of Kansas of the first part, and

[illegible]

of Montgomery County, in the State of Kansas of the second part.

WITNESSETH, That the said party of the first part, in consideration of the sum of

$2100 [illegible] Thousand [illegible] Hundred and 00/100 DOLLARS

the receipt whereof is hereby acknowledged, do[illegible] by these presents, Grant, Bargain, Sell and Convey unto said party of the second part [illegible] heirs and assigns, all the following described Real Estate, situated in the County of Montgomery and State of Kansas, to-wit:

The East half of the Southwest quarter of Southeast quarter of Section One -1- and [illegible] half of the Southwest quarter of the Southeast quarter of Section One -1- all in Township 35 South Range 13 East except and [illegible] land heretofore conveyed for Cemetery about 2 acres and 28 feet of south side for road [illegible] commencing at the Southeast corner of Southwest quarter of Sec. 1 Twp. 35 S. Range 13 East [illegible] Thence North [illegible] ft Thence West [illegible] ft Thence South [illegible] ft Thence East to place of beginning except that part of [illegible] land on the South side [illegible] dedicated [illegible] and used as a Public road

TO HAVE AND TO HOLD THE SAME, Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging, or in anywise appertaining, forever.

And said [illegible] Company a Corporation [illegible] for its heirs, executors or administrators, do[illegible] hereby covenant, promise and agree to and with said party of the second part that at the delivery of these presents [illegible] lawfully seized, in its own right of an absolute and indefeasible estate of inheritance, in fee simple of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear, discharged and unincumbered of and from all former and other grants, titles, charges, estates, judgments, taxes, assessments and incumbrances of what nature or kind soever;

and that it will warrant and forever defend the same unto said party of the second part [illegible] heirs and assigns against said party of the first part; its heirs, and all and every person or persons whomsoever lawfully claiming or to claim the same

IN WITNESS WHEREOF, The said part[illegible] of the first part ha[illegible] hereunto set its hand the day and year first above written.

[illegible]

[illegible] Seal [illegible] Charles [illegible] President

Attest [illegible] Secretary

STATE OF KANSAS, [illegible] County, } SS. BE IT REMEMBERED, That on this 31st day of [illegible] A. D. 1917, before me, the undersigned, a [illegible] in and for the County and State aforesaid, came [illegible]

who [illegible] personally known to me to be the same person who executed the within instrument of writing, and such person duly acknowledged the execution of the same.

In Testimony Whereof, I have hereunto set my hand and affixed my [illegible] seal, the day and year last above written.

[illegible], Notary Public

My Commission Term expires [illegible] 19[illegible]

Address

This instrument was filed for record this 17 day of Sept A. D. 1918 at 4 o'clock P M.

[illegible] Register of Deeds

Fees $

Entered in Transfer Record in my office this 17 day of Sept A. D. 1918

By Deputy [illegible] Valentine County Clerk

CRANEY MISCH & SONS MFGS., COFFEYVILLE, KAN. 24718

This Indenture, Made this eighth day of November A. D. 1918, between

I. W. Connelly and Mabel Connelly husband and wife

of Montgomery County, in the State of Kansas of the first part, and

Charles D. Saure

of Montgomery County, in the State of Kansas of the second part.

WITNESSETH, That the said parties of the first part, in consideration of the sum of

One Dollar and Other Valuable Considerations and — DOLLARS 100

the receipt whereof is hereby acknowledged, do — by these presents, Grant, Bargain, Sell and Convey unto said party of the second part his heirs and assigns, all the following described Real Estate, situated in the County of Montgomery and State of Kansas, to-wit:

The East half of the S W 1/4 of the Southeast 1/4 of Sec 1 and the W 1/2 of the S W 1/4 of the S.E. 1/4 of Sec 1 Twp 35 S. R 13 E except and reserving tract heretofore conveyed for Cemetery about 2 acres and 28 feet off South Side for a road and commencing at the S.E. corner of S W 1/4 of Sec 1 Twp 35 S R 13 E running thence North 600 feet thence west 100 feet thence South 600 feet thence east to place of beginning except that part of described land on the South Side of same used and dedicated as a public road.

TO HAVE AND TO HOLD THE SAME, Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging, or in anywise appertaining, forever.

And said I. W. Connelly and Mabel Connelly for their heirs, executors or administrators, do — hereby covenant, promise and agree to and with said party of the second part that at the delivery of these presents they are lawfully seized, in their own right of an absolute and indefeasible estate of inheritance, in fee simple of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear, discharged and unincumbered of and from all former and other grants, titles, charges, estates, judgments, taxes, assessments and incumbrances of what nature or kind soever;

and that they will warrant and forever defend the same unto said party of the second part his heirs and assigns against said parties of the first part, their heirs, and all and every person or persons whomsoever lawfully claiming or to claim the same

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hands the day and year first above written.

I. W. Connelly

Mabel Connelly

I. R. Stamp
$ 0.50

STATE OF KANSAS, Montgomery County, ss.

BE IT REMEMBERED, That on this Eighth day of November A. D. 1918, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came

I. W. Connelly and Mabel Connelly

who are personally known to me to be the same person — who executed the within instrument of writing, and such persons duly acknowledged the execution of the same.

In Testimony Whereof, I have hereunto set my hand and affixed my Notarial seal, the day and year last above written.

H. W. Bollinger, Notary Public

My Commission Term expires June 7" 1919

Address

This instrument was filed for record this 13 day of Dec A. D. 1918 at 8 o'clock A. M.

Fees $

Ello Barrett, Register of Deeds

Entered in Transfer Record in my office this 10 day of Dec A. D. 1918.

By Deputy

L. J. Valentine, County Clerk

DEED RECORD

FRANK F. MISCH & SONS MFGS., COFFEYVILLE, KAN. 24738

This Indenture, Made this Ninth day of November 1918 A. D. 191 , between Charles I. Gause, and Lita Gause, Husband and wife

of Montgomery County, in the State of Kansas of the first part, and The Weir Smelting Co. a Corporation

of Cherokee County, in the State of Kansas of the second part.

WITNESSETH, That the said parties of the first part, in consideration of the sum of Eight Thousand Nine Hundred and 110 DOLLARS the receipt whereof is hereby acknowledged, do by these presents, Grant, Bargain, Sell and Convey unto said parties of the second part their heirs and assigns, all the following described Real Estate, situated in the County of Montgomery and State of Kansas, to-wit:

The W½ of the SW¼ of the SE¼ of Sec. 1, Twp. 35, R. 13 E, being 20 acres more or less, except and reserving a tract heretofore conveyed for a cemetery of about 2 acres; and 28 feet off the south side for a road; And commencing at the SE Corner of the SW¼ of Sec. 1, Twp 35, R. 13 E, running thence north 600 feet, thence West 100 feet, thence south 600 feet, thence east to place of beginning, except that part of described land on the south side of same used and dedicated as a public road:

TO HAVE AND TO HOLD THE SAME, Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging, or in anywise appertaining, forever.

And said Charles I. Gause and Lita Gause for their heirs, executors or administrators, do hereby covenant, promise and agree to and with said party of the second part that at the delivery of these presents they are lawfully seized, in their own right of an absolute and indefeasible estate of inheritance, in fee simple of and in all and singular the above granted and described premises, with the appurtenances; that the same are free, clear, discharged and unincumbered of and from all former and other grants, titles, charges, estates, judgments taxes, assessments and incumbrances of what nature or kind soever:

and that they will warrant and forever defend the same unto said party of the second part its heirs and assigns against said parties of the first part, their heirs, and all and every person or persons whomsoever lawfully claiming or to claim the same

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hands the day and year first above written.

I. R. Stamp
$900
attached

Charles I. Gause
Lita Gause

STATE OF KANSAS,
Montgomery County, } SS.

BE IT REMEMBERED, That on this Ninth day of November A. D. 1918, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Charles I. Gause and Lita Gause

L. S.

who are personally known to me to be the same persons who executed the within instrument of writing, and such persons duly acknowledged the execution of the same.

In Testimony Whereof, I have hereunto set my hand and affixed my notorial seal, the day and year last above written.

H. V. Bolinger, Notary Public

My Commission Term expires June 7 1919

Address

This instrument was filed for record this 9 day of May A. D. 1919 at 1 o'clock P. M.

Fees $

R. C. Harner Register of Deeds

Entered in Transfer Record in my office this 9 day of May A. D. 1919

By Deputy Elmer Joyce County Clerk

TRUSTEE'S DEED.

IN THE DISTRICT COURT OF THE UNITED STATES
FOR THE DISTRICT OF KANSAS
THIRD DIVISION.

In the matter of The Weir Smelting Company, a Corporation, Bankrupt	IN BANKRUPTCY NO. 2411.

TRUSTEE'S DEED

KNOW ALL MEN BY THESE PRESENTS:

I, Dallas W. Knapp, of Coffeyville, in the County of Montgomery, State of Kansas, duly elected, qualified and acting Trustee in Bankruptcy of the estate of The Weir Smelting Company, of Caney, in the County of Montgomery, State of Kansas, Bankrupt.

WHEREAS, By an order made by the District Court of the United States for the District of Kansas, Third Division, on the 15th day of October, 1931, in Bankruptcy proceedings then pending in said Court against the above named Bankrupt, I, the said Dallas W. Knapp, as Trustee of the estate of the said Bankrupt, was duly authorized and empowered to sell the assets of the Bankrupt's estate hereinafter described; and

WHEREAS, I, the said Dallas W. Knapp, Trustee of the estate of the said Bankrupt, having caused the property hereinafter described to be appraised as required by law and having given due notice of the intended sale of the said property as required by law, and by the order of the above named Court aforesaid, and having in all things fully complied with said Order of Court and with the requirements of the Statute in such cases made and provided, did, on the 28th day of October, 1931, by virtue of said Order of Court and pursuant thereto and to the said notice, sell at public sale to Wilfred Cavaness, the hereinafter described property, for the sum of Three Thousand Two Hundred and NO/100 ($3,200.00) Dollars, free and clear of all liens and encumbrances.

NOW, THEREFORE, KNOW YE, That I, Dallas W. Knapp, in my capacity of Trustee of the estate of The Weir Smelting Company, Bankrupt aforesaid, by virtue of the power and authority in me vested, as aforesaid, and in consideration of the sum of Three Thousand Two Hundred and NO/100 ($3,200.00) Dollars, to me in hand paid by the said Wilfred Cavaness, the receipt of which is hereby acknowledged do, hereby grant, bargain, sell and convey unto the said Wilfred Cavaness, his heirs and assigns, the following described property situated in Montgomery County, Kansas, to-wit:

The Southwest Quarter (SW¼) of the Northwest Quarter (NW¼) of Section Seven (7), and that part of the Northwest Quarter (NW¼) of the Northwest Quarter (NW¼) of said Section lying South of the Railroad right-of-way of the D. M. &A. Division of the Missouri Pacific Railway Company as now located thereon, all lying in Township Thirty-five (35), Range Fourteen (14) East of the 6th P.M., except two tracts described as follows:
1. Commencing 30 feet North and 24 feet West of the Southeast corner of the SW¼ of the SW¼ of the NW¼ of said Section Seven (7), thence North 130 feet, thence West 95 feet, thence South 130 feet, thence East 95 feet to the place of beginning, and
2. Commencing at a point 30 feet North and 30 feet East of the SW corner of said SW¼ of the NW¼ of said Section Seven (7), thence North 130 feet, thence East 50 feet thence South 130 feet, thence West 50 feet to the place of beginning.

The West Half (W½) of the Southwest Quarter (SW¼) of the Southeast Quarter (SE¼) of Section One (1), Township Thirty-five (35), Range Thirteen (13) East, being 20 acres more or less, except and reserving a tract heretofore conveyed for a cemetery of about 2 acres; and 28 feet off of the South side for a road, and commencing at the Southeast corner of the Southwest Quarter (SW¼) of Section One (1), Township Thirty-five (35), Range Thirteen (13), running thence North 600 feet, thence West 100 feet, thence South 600 feet, thence East to place of beginning except that part of described land on the south side of same used and dedicated as a public road.

Lots One (1), Two (2), and Three (3), and Five (5), and Six (6), in Block One (1), Snyders Addition to Caney, Kansas,

including all the tenements, hereditaments and appurtenances thereunto belonging.

TO HAVE AND TO HOLD, the above bargained premises, to the said Wilfrid Cavaness, his heirs and assigns forever.

IN WITNESS WHEREOF, I, the said Dallas W. Knapp, Trustee as aforesaid, have hereunto set my hand and seal, this 24 day of December, 1931.

Dallas W. Knapp
Trustee.

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Blue Tee set to buy GFAI for $124M - Blue Tee Acquisition Corp.; Gold Fields American Industries

American Metal Market, Dec 12, 1985 by Roberta C. Yafie

NEW YORK--Blue Tee Acquisition Corp., headed by Richard A. Secrist, has reached agreement with Gold Fields American Corp. to acquire a majority interest in its industrial subsidiary, Gold Fields American Industries (GFAI), for $124 million. The deal leaves the parent firm, Consolidated Gold Fields Plc, with a 25 percent stake in the new firm.

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The new company, headquartered here, will be called Blue Tee Corp., with Secrist, the current president and chief executive officer of GFAI, as president.

In a telephone interview Secrist said he expects the deal to be completed by Dec. 31. An extraordinary general meeting of shareholders of Gold Fields, the parent company of Gold Fields American, will be held Dec. 27 to approve the agreement.

A last-minute addition to the deal is Skytop Brewster Co., Conroe, Texas, a manufacturer of drilling and servicing rigs and related oilfield equipment. an agreement-in-principle between Gold Fields American and Richard Branham, president of Branham Industries Inc., to sell Skytop fell through, according to Secrist. At presstime yesterday, Branham was unavailable for comment.

The agreement with Blue Tee, calls for the disposal of the Skytop Brewster assets to a subsidiary of the acquisition company; the acquisition of Union Tractor Ltd., Edmonton, Alberta, by a Canadian subsidiary of Blue Tee; and "certain conditions precedent under the management group's financing arrangement with a major New York bank." A Gold Field American spokesman called the financial conditions "standard to any closing" and would not reveal the identity of the bank.

The $124 million purchase price is comprised of a cash payment of approximately $96,5 million; $10 million cumulative preferred stock in Blue Tee, a demand loan note of approximately $13 million (Canadian) regarding the Canadian subsidiary which Bluc Tee will issue to Gold Fields and repay immediately after closing, and the assumption by Blue Tee of the liabilities of some $8 million industrial revenue bonds.

According to the agreement, the cash consideration is subject to cash movements both in GFAI and in relation to the Skytop Brewster assets between July 31, 1985, and the closing. Since July 31, Gold Fields American has received approximately $11 million in cash from the subsidiary.

In addition, Gold Fields American has the right to receive common shares of Blue Tee representing between 25 percent and 45 percent of the total. Secrist called this aspect of the deal "part of our offer" and said it was not unusual for someone who is a preferred shareholder in a company like this to also get some of the common shares to benefit the future success of the company.

"If they do increase the stake, they assume additional capital conditions that they would make," he added.

The investors are the presidents of the industrial businesses, as well as other key managers, or about 30 people, Secrist said.

Those businesses are Azcon Corp., Chicago, scrap processors; Brown-Strauss Steel Inc., Aurora, Colo-based steel distributors; George E. Failing Co. Inc., Enid, Alka., water-well drilling equipment and seismic vibrator producer; King Oil Tools Inc., Humble, Texas, drilling equipment producer; Knoxville Iron Co., Knoxville, Tenn., minimill; Steel Service Co., Knoxville rebar fabricator; Mechanical Seal & Service Inc., Odessa, Texas, pump replacement parts maker; Standard Alloys & Manufacturing Co., Port Arthur, Texas, specialty foundry; Skytop Brewster and Union Tractor. Union Tractor will continue to be operated as an indirect subsidiary because it is a Canadian company.

He said Gold Fields American still owns Skytop Brewster's oilfield related inventory, which is being sold at auctions held in November and this month. Blue Tee will own the plant, machinery and equipment and receivables, and would still talk to any interested buyer for the company, which has been for sale for three years.

"There are pieces of that business that we're going to continue, but at a much more smaller scale," Secrist said.

Otherwise, he plans to run the company as it has been operating with the same management, now its investors, in place.

Joining Secrist from GFAI at the top management level will be William M. Kelly, vice president, operations control; David Alldian, controller; and Glenn Smith, treasurer.

1 - 2 - Next

Interactive Corporate Services

MAINE

Department of the Secretary of State

Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Fri Apr 20 2007 10:02:02. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
AZCON CORPORATION	18990011 D	BUSINESS CORPORATION	MERGED

Filing Date	Expiration Date	Jurisdiction
01/26/1899	N/A	MAINE

Other Names	(A=Assumed ; F=Former)
AMERICAN ZINC COMPANY	F
AMERICAN ZINC LEAD AND SMELTING COMPANY	F

Clerk/Registered Agent

KENNETH BAIRD
477 CONGRESS STREET
PORTLAND, ME 04101

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Interactive Corporate Services

MAINE

Department of the Secretary of State

Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Fri Apr 20 2007 10:54:43. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
BLUE TEE CORP.	19780824 D	BUSINESS CORPORATION	MERGED

Filing Date	Expiration Date	Jurisdiction
01/12/1978	N/A	MAINE

Other Names	(A=Assumed ; F=Former)
AZ HOLDING CORPORATION	F
AZCON CORPORATION	F
GOLD FIELDS AMERICAN INDUSTRIES, INC.	F

Clerk/Registered Agent

SEVERIN M. BELIVEAU
% CORPORATION SERVICE COMPANY
45 MEMORIAL CIRCLE
AUGUSTA, ME 04330

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BEFORE THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
Charles Curtis Building
1000 SW Jackson, Suite 560
Topeka, Kansas 66612-1368

IN THE MATTER OF:	)	
	)	**CONSENT ORDER**
POLLUTION AT	)	**Case No. 03-E-0022**
	)	
OWENS ZINC SITE,	)	
	)	
CANEY, KANSAS.	)	

PRELIMINARY STATEMENT

The parties hereto, the Kansas Department of Health and Environment ("KDHE"), and Blue Tee Corp. (hereinafter "Respondent"), successor to the American Zinc Lead and Smelting Company, having agreed that settlement of this matter is in the best interests of all parties and the public, hereby represent and state as follows:

1. KDHE is a duly authorized agency of the State of Kansas, created by act of the legislature.
2. KDHE has general jurisdiction of matters involving hazardous substance and hazardous substance cleanups under the authority of the Kansas Environmental Response Act (K.S.A. 65-3452a, et seq.) and has general authority and responsibility to protect the waters and soils of the state under the authority of K.S.A. 65-161, et seq.
3. The Respondent agrees to undertake all actions required by the terms and conditions of this Consent Order. In any action by KDHE to enforce the terms of this Consent Order, the Respondent agrees not to contest the authority or jurisdiction of the Secretary of Health and Environment ("Secretary") to issue this Consent Order.

4. This Consent Order shall apply to and be binding upon KDHE and the Respondent, its agents, successors, and assigns. The signatories to this Consent Order certify that they are authorized to execute and legally bind the parties they represent to this Consent Order. No change in the ownership or corporate status of the Respondent shall alter its responsibilities under this Consent Order.

5. The Respondent shall provide a copy of this Consent Order to any subsequent owners or successors before ownership rights are transferred. The Respondent shall provide a copy of this Consent Order to all contractors, subcontractors, laboratories, and consultants which are retained to conduct any work performed under this Consent Order, within 14 days after the effective date of this Consent Order or the date of retaining their services, whichever is the latter. Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Consent Order and for ensuring that its contractors and agents comply with this Consent Order.

6. While the Respondent to this Consent Order does not admit liability for the contamination at the Owens Zinc Site ("Site"), which is described in paragraph 10 below, nevertheless it agrees to enter into this Consent Order to conduct the removal action defined in the attached approved Corrective Action Plan ("CAP") marked as Exhibit 1 and incorporated herein.

CONTRIBUTION PROTECTION

7. KDHE acknowledges that under 42 U.S.C. 9613(f)(2), by entry of this Consent Order, Respondent is not liable for claims for contribution regarding matters addressed herein, and that this Consent Order does not discharge any other potentially responsible parties.

8. KDHE acknowledges that Respondent has a right of contribution under federal law and may have such rights under state law, against other potentially responsible parties who may have created, contributed to, or otherwise have become responsible for the matters described herein, in that Respondent has expended or will expend reasonable response costs in performance of the activities required under this Consent Order, and KDHE agrees to provide reasonable assistance, upon request, to Respondent and to assist with enforcement of its claims against such third parties. The assistance referred to herein shall include making available records which relate to this matter, providing statements or testimony of staff upon notification when such requirements are relevant to the proceedings, or such other assistance as is reasonable and appropriate.

9. The KDHE hereby expressly reserves a cause of action or any claims of whatever kind or nature not subject to this Consent Order which it may have or hereafter have against any other person or persons not afforded protection hereunder.

KDHE□S FINDINGS OF FACT

KDHE makes the following findings of fact:

10. The Site is located immediately north of Caney, Montgomery County, Kansas as shown on the Site Map attached as Exhibit 2. The geographic coordinates of the Site are 38° 32' 00" North latitude and 95° 56' 42" West longitude. The legal description of the Site is the SW 1/4 of the SE 1/4 and the SE 1/4 of the SW 1/4 of Section 1, Township 35 South, Range 13. The Site has the EPA identification number KSD984971911. The Site consists of the former Owens Zinc Smelter Facility ("the Facility") and adjacent areas effected by the Facility.

11. The Site was originally the location of the Caney Brick Company which operated between 1902 and 1915. The shale pit located north of the Site boundary was utilized as raw material for firing bricks at the Site. The Site still contains a significant area of brick fragments. Charles Owen and a partner constructed the Facility on a portion of the site of the former Caney Brick Company. In August, 1915, the American Zinc, Lead and Smelting Company leased the Facility from the Owen Zinc Company. In 1918, the Facility was sold to the Weir Smelting Company. The Facility had one (1) ore roaster and three (3) furnace buildings. The Weir Smelting Company purchased the land containing the Facility in about 1926.

12. The Site consists of approximately eight (8) acres of land at the former location of the Facility and adjacent residential and commercial areas at the north edge of Caney. The smelter works formerly present at the Site have been abandoned for approximately 70 years. Some foundations, as well as brick and slag piles, remain at the Site. Ten (10) drums of unknown waste material are also present in the south-central part of the Site. A shale pit used for raw materials for bricks by the former Caney Brick Company is located beyond the north Site boundary.

13. In 1991 KDHE's Bureau of Environmental Remediation conducted a Preliminary Assessment ("PA") at the Site which was followed by a 1991 Screening Site Inspection ("SSI"). In 1992 KDHE collected additional samples at the Site. Cadmium was detected in soil samples during the 1992 sampling event at a maximum concentration of 1,099 milligrams per kilogram (mg/kg), above the residential setting Risk-Based Standards for Kansas cleanup goal ("RSK goal") of

39 mg/kg and slightly above the non-residential setting RSK goal of 1,000 mg/kg. Lead was also detected in soil samples during the 1992 sampling at a maximum concentration of 4,845 mg/kg during the 1991 PA exceeding the residential RSK goal of 400 mg/kg and the non-residential RSK goal of 1,000 mg/kg. Zinc was detected during the PA/SSI sampling at a maximum concentration of 32,210 mg/kg, above the residential RSK level of 23,000 mg/kg.

14. In 2001, KDHE conducted an Expanded Site Inspection ("ESI") at the Site. Elevated levels of lead, cadmium, zinc, and other metals were identified in surficial soils at the Site during the ESI through X-ray fluorescence ("XRF") analysis near the former Facility. XRF analysis indicated the presence of lead at concentrations up to 2,200 mg/kg; laboratory analysis indicated lead in soil at concentrations up to 4,102.7 mg/kg. These maximum lead levels detected in soil are in excess of the non-residential RSK goal for lead of 1,000 mg/kg and the residential RSK goal for lead of 400 mg/kg. Cadmium was detected up to a maximum concentration of 997.0 mg/kg via XRF analysis and up to a maximum concentration of 748.8 mg/kg via laboratory analysis. These maximum cadmium detections in soil were identified on the Moore property immediately adjacent to or immediately downslope of the Facility. While not in excess of KDHE's non-residential RSK goal for cadmium of 1,000 mg/kg, these levels are in excess of the 39 mg/kg residential RSK goal for cadmium. The maximum detection of arsenic was 16.2 mg/kg, above its residential RSK goal of 11 mg/kg, collocated with a lead detection of 857 mg/kg and a cadmium detection of 119.8 mg/kg. All detections of arsenic above residential

RSKs were co-located with lead detections above 400 mg/kg. Zinc was detected above its residential RSK goal of 23,000 mg/kg in four (4) of the laboratory samples, with a maximum detected concentration of 86,104.4 mg/kg.

15. Sediment sample analyses from the road ditch adjacent to the Facility indicated levels of lead, zinc, and cadmium in sediments downstream of the Site at concentrations greater than three times background.

16. Soil contamination detected at the Facility and adjacent areas is or may be causing or threatening to cause pollution of the soils and/or waters of the State.

KDHE□S CONCLUSIONS OF LAW

KDHE makes the following conclusions of law:

17. Respondent is a "person" within the meaning of K.S.A. 65-164, et seq., and K.S.A. 65-3452a, et seq.

18. Some of the contaminants identified in the soil at the Site are "hazardous substances" as defined by K.S.A. 65-3452a.

19. The presence of the contaminants identified in the soil at the Site constitutes "pollution" as defined by K.S.A. 65-164.

20. The area defined in paragraph 10 and identified as the Owens Zinc Site constitutes a "site" within the meaning of K.S.A. 65-3453.

21. The facts above constitute:

    a. the discharge, abandonment, or disposal of hazardous substances;

    b. the pollution of the land of the state or the threat of pollution of the land of the state;

c. a hazard to persons, property or public health or threatens to become a hazard to persons, property or public health.

22. Under the facts as shown above, the KDHE has concluded, and the Secretary has confirmed, that there is a need for a response action to prevent a continuing release or threat of release of hazardous substances.

23. The KDHE has authority to enter the Consent Order herein, and to make the findings of fact and conclusions of law herein stated.

24. The Secretary of Health and Environment is authorized by K.S.A. 65-3453 and K.S.A. 65-164, et seq., and the regulations issued pursuant thereto to enter an order confirming the agreement of the parties, and ordering the actions and obligations required by the foregoing findings of fact and conclusions of law. The parties hereto agree to the following activities and the commitments.

ORDER

25. Within thirty (30) days from the effective date of this Consent Order, Respondent shall commence the implementation of the tasks detailed in the CAP. The work shall be conducted in accordance with the standards, specifications and schedules contained in the CAP.

26. Respondent shall provide preliminary and final reports to KDHE according to the deliverables schedule contained in the CAP.

27. After KDHE reviews the preliminary reports and after KDHE reviews the final reports, KDHE shall notify Respondent in writing, of KDHE's approval or disapproval of these reports or any part thereof. KDHE may also notify Respondent in writing of KDHE's disapproval of Respondent's implementation of the CAP.

28. In the event of any KDHE disapproval of a submitted report or disapproval of Respondent's implementation of the approved CAP, KDHE shall send Respondent a Notice of Disapproval delineating the deficiencies, requiring revisions to the reports or modified work to cure the deficiencies in the work and setting a schedule for response by Respondent, provided however that any such requirements are consistent with the objectives of the CAP and Consent Order.

29. Thereafter, Respondent shall amend and submit to KDHE a revised report to correct the identified deficiencies in the reports in accordance with KDHE's requirements and/or shall cure any deficiencies identified with the implementation of the CAP.

30. KDHE may determine that additional tasks consistent with the objectives of the approved CAP are necessary in addition to the approved CAP tasks including reports, which have been completed pursuant to this Consent Order. KDHE may require Respondent to implement any such additional tasks within a timeframe mutually agreeable by the parties. If the parties are unable to mutually agree to a timeframe, KDHE shall specify one. KDHE agrees to meet with Respondent upon request to discuss the basis for the request for such additional work. Subject to the dispute resolution provisions contained herein, the failure by Respondent to implement additional tasks as required by KDHE, shall be considered a violation of this Consent Order.

31. All work performed pursuant to this Consent Order shall be under the direction and supervision of a professional engineer or geologist licensed in the State of Kansas with expertise in hazardous waste site investigations and remediation. Within thirty

(30) days of the effective date of this Consent Order, Respondent shall notify KDHE in writing of the name, title, license number and qualification of the engineer or geologist, and of any contractors or subcontractors and their personnel to be used in carrying out the terms of this Consent Order.

32. Any reports, plans, specifications, schedules and attachments required by this Consent Order are, upon approval by KDHE, incorporated into this Consent Order. Any noncompliance with such approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Consent Order.

33. No informal advice, guidance, suggestions, or comments by KDHE regarding reports, plans, specifications, and any other writing submitted to Respondent will be construed as relieving Respondent of its obligation to obtain written approval, if and when required by this Consent Order.

QUALITY ASSURANCE

34. All samples analyzed pursuant to this Consent Order shall be analyzed using laboratory or field screening analytical methodologies approved by KDHE.

35. All sample collection and analysis shall be performed in compliance with the approved CAP, including scheduling of analyses, documentation of sample collection, handling and analysis.

36. Laboratory analytical report forms shall be submitted to KDHE for all analytical work performed pursuant to this Consent Order. Any deviations from the procedures and methods set forth in these documents must be approved in writing by KDHE prior to use. Respondent will notify KDHE in writing within five (5) working days of notice or knowledge of a potential deviation from prescribed procedures or methods. Such

notice shall provide information as to the nature of the deviation, if known, and outline a proposed investigation to determine whether the sample or results are potentially representative or should not be considered valid. If the results cannot be validated by evaluation of the Quality Assurance/Quality Control procedures, historical data, or laboratory protocol, Respondent will resample upon KDHE's approval and discretion. Respondent will notify KDHE at least seven (7) days before conducting resampling. Failure to follow the above procedure for notification of deviations will be considered violations of this Consent Order and will be subject to an administrative penalty of $1,000 per violation and the data resulting therefrom shall be invalid.

37. Respondent shall use the quality assurance, quality control, and chain of custody procedures specified in the Quality Assurance Project Plan, which is part of the approved CAP, for all sample collection and analysis performed pursuant to this Consent Order, unless otherwise agreed to in writing by KDHE.

38. All contracts for field work shall provide that KDHE representatives are allowed access, for auditing and evaluation purposes, at reasonable times upon reasonable request, to all personnel utilized by Respondent for sample collection and analysis and other field work. Upon request by KDHE, the laboratories shall perform analysis of a reasonable number of known samples provided by KDHE to demonstrate the quality of the analytical data.

REPORTING

39. Respondent shall provide KDHE with written quarterly progress reports, pursuant to the effective date of the Consent Order. At a minimum, these progress reports

shall: (1) describe the actions, progress, and status of projects which have been taken toward achieving compliance with this Consent Order, as well as the actions which are scheduled for the next quarter; (2) identify any requirements under this Consent Order that were not completed as provided and any problem areas and anticipated problem areas in complying with this Consent Order; and (3) include all results of sampling, tests, data, and conclusions drawn from data generated pursuant to the CAP.

ACCESS

40. KDHE and any of its agents or contractors are authorized by Respondent to enter and freely move about the Site on property for which Respondent has gained access. This authorization is for the purposes of, *inter alia*: interviewing Site personnel and contractors; inspecting records, operating logs, and contracts related to the activities set out in the CAP; reviewing the progress of Respondent in carrying out the terms of the approved CAP and this Consent Order; conducting such sampling and tests as KDHE deems necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to KDHE by Respondent. Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to the approved CAP.

41. Respondent shall be responsible for obtaining access to the Site for itself, KDHE and any of its agents or contractors. Respondent shall use its best efforts to obtain access agreements from the present owner(s) of such property within thirty (30)

days of the effective date of this Consent Order. Any such access agreement shall be incorporated by reference into this Consent Order. In the event that agreements for Site access are not obtained within thirty (30) days of commencing work at the Site, Respondent shall notify KDHE regarding both the lack of and its failure to obtain such agreements within seven (7) days thereafter. In the event that KDHE obtains access for Respondent, all costs incurred by KDHE to obtain access shall be reimbursed by Respondent with the exception of direct payment for access. Upon KDHE's obtaining access for Respondent, Respondent shall undertake the approved work on such property. KDHE shall not be responsible for any injury or damage to persons or property caused by the negligent or willful acts or omissions of Respondent, its officers, employees, agents, successors, assigns, contractors, or any other person acting on Respondent's behalf in carrying out any activities pursuant to the terms of this Consent Order.

SAMPLING AND DATA/DOCUMENT AVAILABILITY

42. Respondent shall make available to KDHE all results of sampling, tests, or other data generated by or on its behalf with respect to the implementation of this Consent Order. Respondent shall submit these results in the progress reports described in the "Reporting" section of this Consent Order. KDHE will make sampling results and other data available to Respondent.

43. Respondent shall notify KDHE at least seven (7) days before commencing any work at the Site. At the request of KDHE, Respondent shall provide or allow KDHE or its authorized representatives to take split samples of all samples collected by Respondent pursuant to this Consent Order. Similarly, at the request of

Respondent, KDHE shall allow Respondent or its authorized representatives to take split or duplicate samples of all samples collected by KDHE under this Consent Order. KDHE shall notify Respondent at least seven (7) days before conducting any sampling under this Consent Order, provided, however, that if seven (7) days notice of sample collection activity is not possible, KDHE and Respondent shall give such advance notice to enable each party to have a representative present during said sample collection activity.

RECORD PRESERVATION

44. Respondent agrees that it shall preserve, during the pendency of this Consent Order and for a minimum of six (6) years after its termination, all records and documents in its possession or in the possession of its divisions, employees, agents or consultants or contractors which relate in any way to this Consent Order and which have not previously been provided to KDHE. At the conclusion of six (6) years, before disposing of such records and documents, Respondent shall then make such records and documents available to KDHE for inspection or KDHE's retention or shall provide copies of any such records to KDHE.

STIPULATED PENALTIES

45. For each period of time that Respondent fails to meet the schedule contained in the CAP, Respondent shall pay as stipulated penalties the following: $1,000 for the first week of delay or part thereof; $1,000 per day for each day of delay for the 8th through 14th day; and, $1,000 per day of delay thereafter, provided there is not a force majeure event, as defined below.

46. Any stipulated penalties shall be payable within twenty-one (21) days after

Respondent's receipt of demand by KDHE and shall be paid by certified check to:

Bureau of Environmental Remediation
Attn: Administration
Charles Curtis Building
1000 SW Jackson, Suite 410
Topeka, Kansas 66612-1367

A copy of the check and a transmittal letter shall be sent to the KDHE contact specified herein. Respondent shall remit a check for the full amount of penalty stated in the demand.

47. Should Respondent fail to comply with a time requirement of any tasks required by this Consent Order, the period of noncompliance shall terminate upon Respondent's performance of said requirement.

OTHER CLAIMS AND PARTIES

48. Nothing in this Consent Order shall constitute or be construed as a release for any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation not a signatory to this Consent Order for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the facility.

OTHER APPLICABLE LAWS

49. All actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the substantive requirements of all applicable local, state, and federal laws and regulations. On or before the effective date of this Consent Order,

KDHE and Respondent shall each designate a Project Coordinator. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Order. The KDHE Project Coordinator will be KDHE's designated representative. To the maximum extent possible, all communications between Respondent and KDHE and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators. The parties agree to provide at least seven (7) days written notice prior to changing Project Coordinators. The absence of the KDHE Project Coordinator from the Site shall not be cause for the stoppage of work.

NOTIFICATION

50. Unless otherwise specified, reports, notice or other submissions required under this Consent Order shall be in writing and shall be sent to:

a. **For KDHE:**
Rob Bixby
Bureau of Environmental Remediation
Charles Curtis Building
1000 SW Jackson, Suite 410
Topeka, Kansas 66612-1367

b. **For Respondent:**
Terrance Gileo Faye, Esq.
1 North Maple Avenue
Greensburg, PA 15601

Gary Uphoff
Environment Management Services Company
5934 Nicklaus Drive
Fort Collins, CO 80528

FORCE MAJEURE

51. Delays that result from causes not foreseeable and beyond the Respondent's control and which cannot be overcome by due diligence shall not be a violation of the Respondent's obligations under this Consent Order. The Respondent shall notify KDHE orally as soon as possible, but no later than five (5) business days after the Respondent knows of any delay or anticipated delay in compliance with the requirements of this Consent Order, and in writing no later than five (5) business days after the oral notification of the delay. The written notice shall describe the nature of the delay, whether and why the delay was unforeseeable and beyond the control of the Respondent, the actions taken and/or that will be taken to mitigate, prevent and/or minimize further delay, and the anticipated length of the delay. The Respondent shall adopt all measures to avoid or minimize such delay. To the extent a delay is caused by circumstances beyond the control of the Respondent, or those resulting from delays caused by KDHE or any third party not under the control or employment of any of the signatories hereto, the schedule shall be extended for a period equal to the delay resulting from such circumstances. Such an extension does not alter the schedule for performance or completion of other tasks required by this Consent Order unless the delay of one event or deliverable by necessity delays a subsequent event or deliverable, or unless specifically altered by amendment of this Consent Order. Failure to comply with the notice provision of this section may be grounds for KDHE to deny the Respondent an extension of time for performance. Unexpected delay events do not include unanticipated or increased costs of performance, changed economic circumstances, or normal

precipitation events. In the event of an excessive rainfall event, Respondent shall contact KDHE's designated contact person who will not unreasonably withhold an extension for performance. All such extensions shall be memorialized in writing. If KDHE determines that the delay as stated in the Respondent's written notice to KDHE was not due to unexpected delay events, an administrative penalty may be assessed as provided in paragraph 45.

DISPUTE RESOLUTION

52. If Respondent disagrees, in whole or in part, with any decision by KDHE pursuant to this Consent Order, Respondent shall notify KDHE within thirty (30) days of receipt of the decision. The parties shall then have an additional thirty (30) working days to attempt to resolve the dispute. If an agreement is reached, the resolution shall be reduced to writing, signed by each Party and incorporated thereupon into this Consent Order. If agreement is not reached, KDHE shall issue a final written decision on the dispute.

53. Respondent reserves its right to appeal any decision of the KDHE, which is not consistent with law or which is arbitrary or capricious concerning a dispute under this Consent Order, to an administrative body with applicable jurisdiction and thereafter in compliance with the Kansas Administrative Procedures Act. The final decision or resolution of the applicable authority or court shall be incorporated as a part of this Consent Order. For purposes of this Consent Order, final order or decision shall mean an order or decision from which no appeal may be taken.

54. In the event that Respondent seeks dispute resolution concerning a date for performance of an act set out in the CAP, the date for performance of such act shall

be extended for a period equal to the delay resulting from the invocation of the dispute resolution provision. However, such extension does not alter the schedule for performance of completion of other tasks required by this Consent Order unless the extension of one event or deliverable by necessity delays a subsequent event or deliverable or unless the schedule herein is specifically altered by the amendment of this Consent Order.

55. However, in the event that it is determined that dispute resolution was not sought in good faith, administrative penalties may be assessed at the rate of $1,000 per day for each day of delay caused by such invocation of the dispute resolution provisions. The question of "good faith" is itself subject to the dispute resolution and appeal process.

REIMBURSEMENT OF COSTS

56. Three (3) months after the effective date of this Consent Order and quarterly thereafter, KDHE shall submit to Respondent an accounting of all oversight costs incurred by KDHE with respect to this Consent Order during the previous three (3) month period. Oversight costs shall not exceed Twenty-five Thousand Dollars ($25,000) per year.

57. KDHE shall submit to Respondent the cost of preparing and maintaining the Administrative Record, from the execution date of the Consent Order. These costs include but are not limited to photocopying, assembling, mailing, updating, storage and other maintenance services. Upon receipt of such accounting, Respondent agrees to reimburse KDHE for such amount.58KDHE shall submit to Respondent an accounting of those costs described above which have been incurred by KDHE

with respect to this Consent Order during the previous fiscal year. Respondent shall, within thirty (30) calendar days from receipt of a said accounting, remit a check for the amount of those undisputed costs made payable to the Secretary of Health and Environment. Checks should specifically reference the identity of this Site, and should be addressed to:

Bureau of Environmental Remediation
Attn: Administration
Charles Curtis Building
1000 SW Jackson, Suite 410
Topeka, Kansas 66612-1367

A copy of the check and transmittal letter shall be sent to the KDHE contact specified herein. Respondent shall remit a check for the full amount of those undisputed costs. The provisions of paragraphs 56, 57 and 58 are subject to the dispute resolution provisions herein.

COVENANT NOT TO TAKE FURTHER ACTION

58. Except as provided in this paragraph, effective upon completion of activities described in the CAP, the KDHE hereby covenants not to take further action against the Respondent for additional requirements in connection with the activities described therein. However, the requirements of this Consent Order represent the best professional judgment of the KDHE at this time, based upon available information. If circumstances change, or if additional information is needed to determine if a potential threat exists or if data indicates that a threat of danger to public health or safety, or the environment exists, or a threat of pollution is different than is contemplated herein, KDHE retains the right to reasonably modify the dates

and requirements of the CAP or add additional reasonable requirements respecting the CAP as necessary and appropriate to achieve the objectives of the approved CAP and the Respondent retains the right to appeal any such modifications or additional requests subject to the Dispute Resolutions provisions of this Consent Order. All such modifications shall be in writing. Any such modification of dates or requirements shall necessitate a modification of the dates now set forth in the CAP for Deliverables.

EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

59. This Consent Order shall become effective when signed by the Secretary of the Department of Health and Environment.

60. This Consent Order may be amended by mutual agreement of KDHE and Respondent. Such amendments shall be in writing, shall have as their effective date the date on which they are signed by both parties, and shall be incorporated into this Consent Order. Nothing herein shall limit KDHE's ability to require additional tasks as set forth in paragraph 30 herein.

TERMINATION

61. The provisions of this Consent Order shall terminate upon Respondent's receipt of written notice from KDHE that Respondent has demonstrated that the terms of this Consent Order, including any additional tasks which KDHE has determined to be necessary have been satisfactorily completed.

IN WITNESS WHEREOF, the parties have affixed their signatures below:

BLUE TEE CORP:

Terrance Gileo Faye

By:
Title: Special Counsel

Date: 4/8/04

STATE OF KANSAS:

Roderick L. Bremby, Secretary
Kansas Department of Health &
Environment

Date: 4.23.04

CERTIFICATE OF MAILING

I hereby certify that on this 27th day of April, 2004, a true and correct copy of the above and foregoing Consent Order was deposited in the United States Mail, postage prepaid, and addressed to:

Terrance Gileo Faye, Esq.
1 North Maple Avenue
Greensburg, PA 15601

Kama J. Maruska
KDHE Staff Member

IN WITNESS WHEREOF, the parties have affixed their signatures below:

BLUE TEE CORP:

_______________________________ Date:_______________________

By:_____________________________

Title:___________________________

STATE OF KANSAS:

_______________________________ Date: 4.23.04

Roderick L. Bremby, Secretary
Kansas Department of Health &
Environment

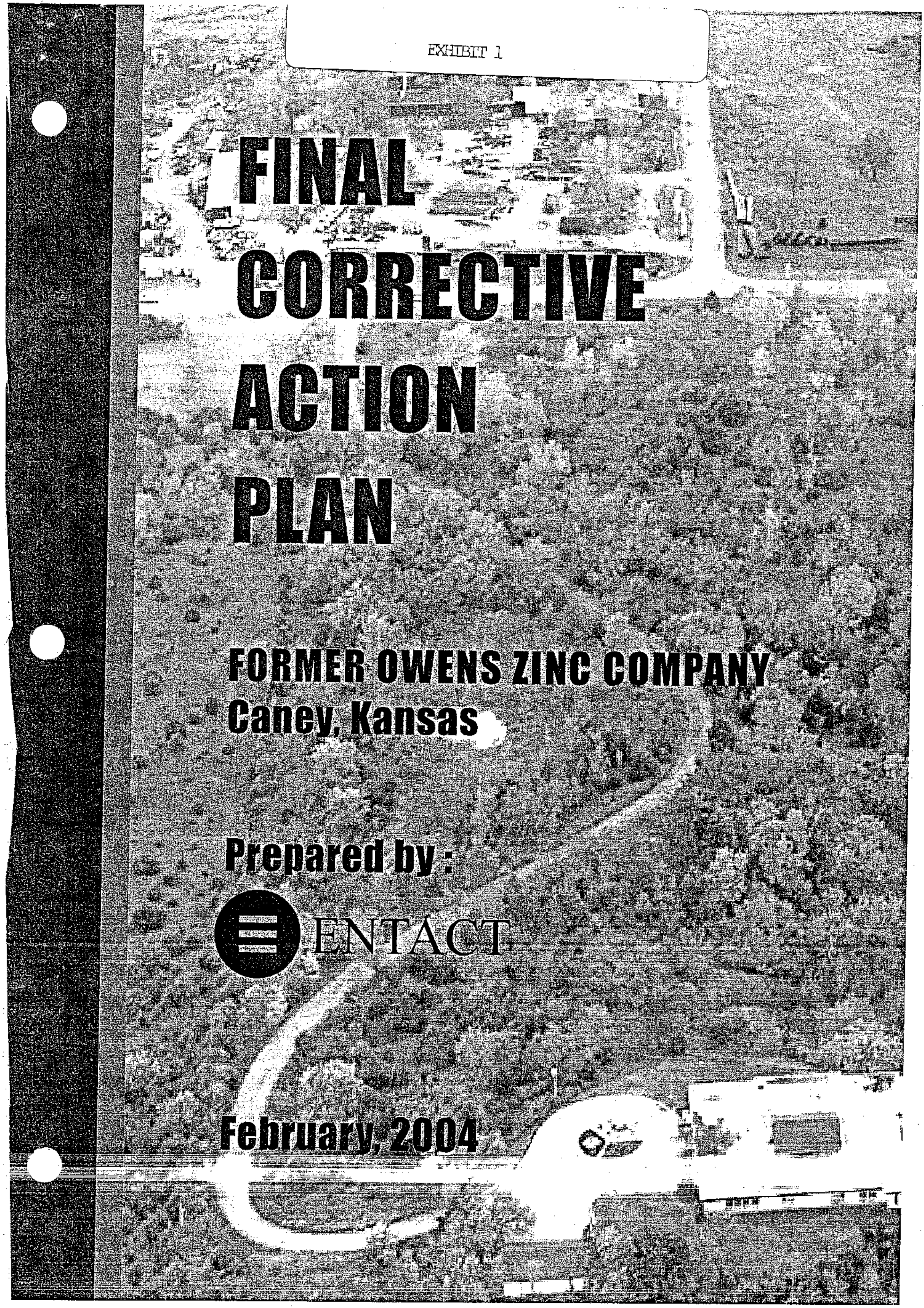
CERTIFICATE OF MAILING

I hereby certify that on this ____ day of _________________________, 200___, a true and correct copy of the above and foregoing Consent Order was deposited in the United States Mail, postage prepaid, and addressed to:

Terrance Gileo Faye, Esq.
1 North Maple Avenue
Greensburg, PA 15601

____
KDHE Staff Member

EXHIBIT 1



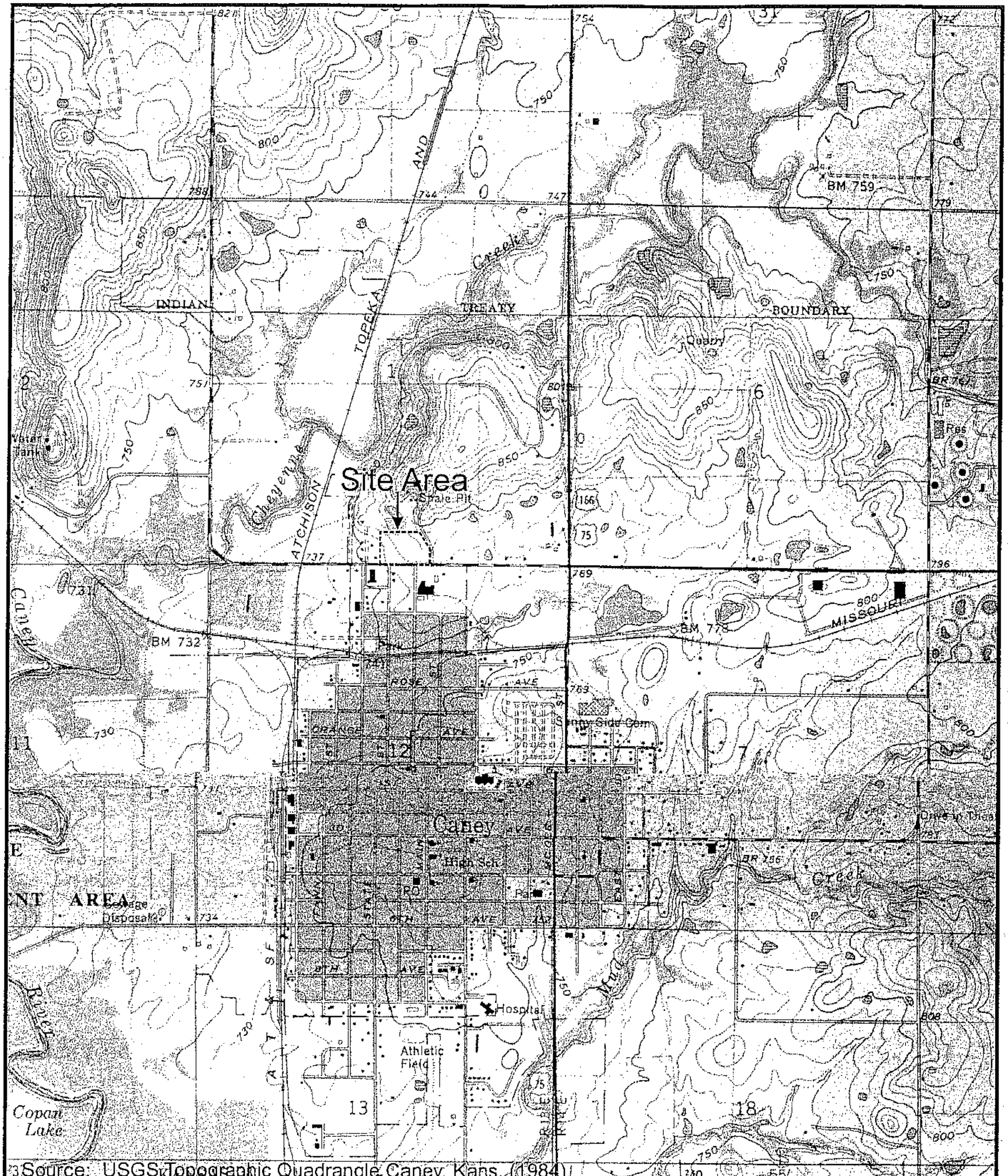
FINAL CORRECTIVE ACTION PLAN

FORMER OWENS ZINC COMPANY
Caney, Kansas

Prepared by :

ENTACT

February, 2004



Source: USGS Topographic Quadrangle Caney, Kans. (1984)

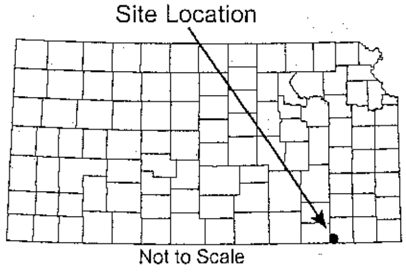


EXHIBIT 2

SITE AREA MAP
Owen Zinc Site
Expanded Site Inspection
Caney, Kansas
July, 2000

N
W E
S

Approximate Scale:
1 inch -= 2095 feet

Legal Services
1000 SW Jackson, Ste 560
Topeka, Kansas 66612

Kansas

Phone: 785-296-0685
Fax: 785-296-7119
nulrich@kdheks.gov
www.kdheks.gov

Robert Moser, MD, Secretary Department of Health & Environment Sam Brownback, Governor

May 7, 2013

Terrance Gileo Faye
Babst, Calland, Clements, and Zomnir P.C.
1 N. Maple Avenue
Greensburg, Pennsylvania 15601

RE: Residential Assessment Findings
Owens Zinc Site, Caney, Kansas ("Site")

Dear Terri:

Due to information KDHE recently gathered, it is necessary to cooperatively move forward with additional actions at the referenced Site. We are hopeful that the positive relationship between KDHE and Blue Tee Corporation (Blue Tee) will continue in our efforts to mitigate existing public health threats. In 2011, the Kansas Department of Health and Environment (KDHE) received a complaint regarding smelter waste on the ground surface at a residential property near the former Owens Zinc Site in Caney, Kansas. In response, KDHE conducted field reconnaissance and collected samples to evaluate the nature of contamination on the property. The results of KDHE's assessment are presented in the enclosed Integrated Site Evaluation report.

KDHE's evaluation identified smelter waste originating from the former Owens Zinc property and elevated concentrations of lead, cadmium, zinc and arsenic in surficial soils at the residential property, with some smelter waste and contaminated soil located near a swimming pool and garden area. The smelter waste and associated environmental contamination pose a significant threat to local public health and the environment and require further response actions, including additional characterization to delineate the vertical and lateral extent of impacts and subsequent soil removal activities.

These residential impacts are part of the Owens Zinc Site as defined in Paragraph 10 of the April 2004 Consent Order between KDHE and Blue Tee. Although the additional characterization and removal activities that are now necessary at the Site are outside the scope of the existing Corrective Action Plan (CAP), which is incorporated into the Consent Order, the existing documents can easily be modified to address the new findings. We propose addressing the additional work through an Addendum to the CAP as a streamlined and less onerous alternative to negotiating an Amended Consent Order between KDHE and Blue Tee.

Based on our past dealings with Blue Tee, we trust that Blue Tee will proceed with this critical work in a timely manner. Within 30 days of the date of this letter please provide your written response indicating whether Blue Tee elects to conduct this work under the existing Consent Order framework (i.e., an Addendum to the CAP), or prefers to negotiate an Amended Consent Order. Due to the significance of the public health threat, if we do not receive an affirmative response from Blue Tee within 30 days, we may initiate the appropriate administrative actions and/or a federal referral. Should you have any questions regarding this letter, please contact me by phone at 785-296-0685 or email at nulrich@kdheks.gov.

Sincerely,

Nancy L. Ulrich
KDHE Environmental Attorney

Enclosure

c: Rick Bean, KDHE > Owen's Zinc file C3-063-00193
Chris Carey, KDHE

Legal Services
1000 SW Jackson, Ste 560
Topeka, Kansas 66612

AD ASTRA PER ASPERA
Kansas

Phone: 785-296-0685
Fax: 785-296-7119
nulrich@kdheks.gov
www.kdheks.gov

Robert Moser, MD, Secretary | Department of Health & Environment | Sam Brownback, Governor

May 23, 2014

Terrance Gileo Faye
Babst, Calland, Clements, and Zomnir P.C.
1 N. Maple Avenue
Greensburg, Pennsylvania 15601

RE: CAFO Requirements for implementing Work Plan
Owens Zinc Site, Caney, Kansas ("Site")

Terri:

As discussed in recent communications, at your request KDHE will agree to Blue Tee implementing the investigative Work Plan at the referenced site without amending the existing Consent Agreement (CAFO) or executing an Amended Consent Agreement. Our agreement to move forward without an order is based on the need for an expedited investigation, due to coordination with certain repairs to the cap on the EPA repository. Nevertheless, KDHE cannot approve investigation work unless the work meets minimum program requirements. The following is a list of requirements from the 2004 CAFO that the Parties agree will be followed in implementing the Work Plan:

Par. #31 – Use of a licensed geologist or engineer
Par. #33 – Informal advice, guidance, suggestions or comments by KDHE not substitute for writing
Pars. #34-38 – Quality assurance and quality control of data generated
Pars. #40-41 – Access
Par. #42 – Sampling and data/document availability
Par. #43 – Advance notice of field activities
Par. #44 – Record preservation
Par.#49 – Other applicable laws
Pars.#56-57 – Reimbursement of KDHE costs

If there are additional field work requirements that you believe apply to the investigation work, please let us know. We are confident that Blue Tee's consultants are familiar with these technical and practical provisions, and the work can now proceed as set out in Blue Tee's Work Plan and the paragraphs identified in this letter. Thank you for your cooperation.

Sincerely,

Nancy L. Ulrich
KDHE Environmental Attorney

c: Randy Carlson, KDHE > Owen's Zinc file C3-063-00193
Chris Carey, KDHE

liability at lead smelter sites, Blue Tee does not believe that the information is relevant to this matter.

In addition, Blue Tee concurs with your statement that "any [additional] activities that might be conducted at the Site would be outside the scope of the existing Corrective Action Plan (CAP), which is incorporated into the Consent Order...." In fact, Paragraph 58 of the Consent Order expressly provides that "effective upon completion of activities described in the CAP, the KDHE hereby covenants not to take further action against the Respondent for additional requirements in connection with the activities described therein." Consistent with the covenant not to take further action, and in evidence of the fact that the activities described in the CAP were completed, the parties executed a Long-Term Care Agreement (the Agreement) setting forth those additional required activities to be conducted by Blue Tee. Blue Tee has been compliant with that Agreement since it was executed in 2010 and Blue Tee expects that KDHE will honor its covenant.

Despite these legal positions, Blue Tee is willing to discuss with you some limited work to address issues concerning the Bunch property at 1202 N. State Street in Caney, Kansas. Blue Tee suggests that we schedule a conference call to discuss this matter. Blue Tee representatives are generally available the week of July 8. Please let me know your availability for a call.

Sincerely,

Terri Faye

Terrance Gileo Faye
Special Counsel for Blue Tee Corp.

TGF/ega

cc: G. Uphoff, EMS
J. Ripp, Gold Fields Mining, LLC
S. Seigfreid, Gold Fields Mining, LLC

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A PROFESSIONAL CORPORATION

June 7, 2013

TERRANCE GILEO FAYE
Of Counsel

Mrs. Nancy L. Ulrich, Attorney
Kansas Department of Health/Environment
1000 SW Jackson, Suite 560
Topeka, Kansas 66612

COPY

Re: Residential Assessment Findings
Owens Zinc Site, Caney, Kansas (the Site)

Dear Ms. Ulrich:

On May 10, 2013, Blue Tee Corp. (Blue Tee) received your May 7, 2013 letter regarding the above-referenced matter. Blue Tee has also received and preliminarily reviewed your *Integrated Site Evaluation* concerning the property located at 1202 N. State Street, Caney, Kansas.

Blue Tee is carefully and thoughtfully considering your request for additional work at the Site. However, Blue Tee has not had sufficient time to evaluate all of the data provided, nor to evaluate its own relevant data from former investigations at the American Zinc Site in Caney, Kansas remediated under the direction of the U.S. Environmental Protection Agency.

While your letter requested that Blue Tee respond to the request for additional work within 30 days, Blue Tee does not believe it has had enough time to carefully evaluate the issues. While Blue Tee appreciates the need to act quickly, it notes that Mr. Fred Bunch, owner of the property, notified KDHE of his concerns for his property in 2011. Accordingly, Blue Tee respectfully requests a two-week extension to complete its review of the information provided and to respond to your request. Unless notified otherwise, Blue Tee will submit a response on or before June 24, 2013.

Thank you for your consideration of this request.

Sincerely,

Terri Faye

Terrance Gileo Faye

1 North Maple Avenue
Greensburg, Pennsylvania 15601
724 / 837-6221

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AND
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A PROFESSIONAL CORPORATION

July 1, 2013

TERRANCE GILEO FAYE
Of Counsel

Ms. Nancy Ulrich, Esq.
Kansas Department of Health and Environment
1000 SW Jackson, Suite 560
Topeka, Kansas 66612

**Re: Residential Assessment Findings
Owens Zinc Site, Caney, Kansas (the Site)**

Dear Ms. Ulrich:

Blue Tee Corp. (Blue Tee) has carefully and thoughtfully considered the May 7, 2013 request of the Kansas Department of Health and the Environment (KDHE) regarding additional work at the above-referenced Site. Blue Tee disagrees with a number of statements in your letter and herein offers the following preliminary comments in response to your request for additional work:

1. Blue Tee disagrees with KDHE's determination that the identified smelter waste at 1202 N. State Street in Caney, Kansas originated from the former Owen Zinc facility. There is no evidence to support that conclusion.

2. Blue Tee disagrees that KDHE's evaluation of identified smelter waste at the above-identified location requires further response actions, including additional characterization of residential properties in Caney, Kansas to delineate the vertical and lateral extent of impacts in this community. Several investigations of the extent of contamination in the community of Caney, Kansas have been conducted since the early 1990s as part of the investigation of the American Zinc, Lead and Smelting Site. Ecology & Environment investigated residential areas in Caney as part of a site assessment in 1993 and additional residential sampling was conducted in 1995 to further delineate the extent of contamination in Caney. Further, at the direction and oversight of the Environmental Protection Agency, Region VII, Dames & Moore, on behalf of Blue Tee, conducted additional sampling of the Caney residential areas in 1996 as part of the Engineering Evaluation/Cost Analysis for the American Zinc, Lead and Smelting Site. A copy of the Removal Action Work Plan is attached for your review. Please take particular note of Sections 2.3 regarding the prior investigations.

3. Blue Tee disagrees that the residential impacts are part of the Site as defined in Paragraph 10 of the April 2004 Consent Order between KDHE and Blue Tee (the Consent Order).

4. Finally, while Blue Tee appreciates the information you provided on June 14, 2013 regarding the current position of the Environmental Protection Agency with regard to

1 North Maple Avenue
Greensburg, Pennsylvania 15601
724 / 837-6221

liability at lead smelter sites, Blue Tee does not believe that the information is relevant to this matter.

In addition, Blue Tee concurs with your statement that "any [additional] activities that might be conducted at the Site would be outside the scope of the existing Corrective Action Plan (CAP), which is incorporated into the Consent Order…." In fact, Paragraph 58 of the Consent Order expressly provides that "effective upon completion of activities described in the CAP, the KDHE hereby covenants not to take further action against the Respondent for additional requirements in connection with the activities described therein." Consistent with the covenant not to take further action, and in evidence of the fact that the activities described in the CAP were completed, the parties executed a Long-Term Care Agreement (the Agreement) setting forth those additional required activities to be conducted by Blue Tee. Blue Tee has been compliant with that Agreement since it was executed in 2010 and Blue Tee expects that KDHE will honor its covenant.

Despite these legal positions, Blue Tee is willing to discuss with you some limited work to address issues concerning the Bunch property at 1202 N. State Street in Caney, Kansas. Blue Tee suggests that we schedule a conference call to discuss this matter. Blue Tee representatives are generally available the week of July 8. Please let me know your availability for a call.

Sincerely,

Terri Faye

Terrance Gileo Faye
Special Counsel for Blue Tee Corp.

TGF/ega

cc: G. Uphoff, EMS
J. Ripp, Gold Fields Mining, LLC
S. Seigfreid, Gold Fields Mining, LLC

11.4 Integrated Site Evaluation Form

Kansas Department of Health and Environment
Integrated Site Evaluation Form

I. Site Information

Site Name: Caney Residential Yards (includes 1202 S. State Smelter Complaint Site, Roberds Property, and Crowe Property Sites)			
Address or location: 1202 N. State Street, 1180 North State Street, 1101 North Spring Street, 1106 North Wood Street, 1105 North State Street, and 1111 North Wood Street			
City: Caney	County: Montgomery	State: Kansas	ZIP: 67333
Telephone:	Fax:		
Directions to Site: Located in northern Caney, Kansas.			
Map attached? ☒ Yes - see Integrated Site Evaluation (ISE) Report			

Requested by: Leo Henning	Agency/Office: Remedial Section Chief, KDHE/BER	
Address: 1000 SW Jackson, Ste. 410		Date of Request: 02/26/2015
City: Topeka	State: Kansas	ZIP: 66612
Phone:785.296.1662	E-mail: LHenning@kdheks.gov	Fax: 785.296.7030

Site Contact: Randy Brown/KDHE		
Address: 1000 SW. Jackson, Suite 410		
City: Topeka	State: Kansas	ZIP: 66612-1367
Phone: 785-296-8065	E-mail: rbrown@kdheks.gov	Fax: 785-296-7030

II. CERCLA Site Screening Response Criteria (see Section V for definitions)

A. Is there a release or threat of release as defined by the NCP? Yes ☒ No ☐

Explain: Lead, cadmium, zinc, and arsenic have been detected at the site above residential Tier 2 Risk-based Standards for Kansas (RSKs).

B. Is the source a facility or vessel as defined by the NCP? Yes ☒ No ☐

Explain: The site is located near two former lead and zinc smelters.

C. Does the release or threat of release involve a hazardous substance, pollutant, or contaminant as defined by the NCP? Yes ☒ No ☐

Explain: Lead, cadmium, zinc, and arsenic are hazardous substance as defined by the NCP.

D. Is the release subject to the limitations on response? Yes ☐ No ☒

Explain: No release limitations appear to exist.

E. Does the quantity or concentration warrant response? Yes ☒ No ☐

Explain: Lead, cadmium, zinc and arsenic are elevated above residential RSK levels in one or more residential yards.

F. Has a PRP been identified? Yes ☒ No ☐

Name: Blue Tee Corporation		Telephone:	
Address: See report	City:	State:	Zip:

G. Document operational and regulatory history: see attached report ☒

H. What is the current land use around the facility? Check all that apply:
Residential ☒ Industrial ☒ Commercial ☒ Agricultural ☒ Recreational ☐

I. Is there an actual or potential exposure to hazardous substances, pollutants or contaminants:

<u>Ground Water</u>: Yes ☐ No ☐ Potential ☒ Receptor: Private water systems
Explain: Groundwater is not used near the site for drinking water purposes.

<u>Surface Water</u>: Yes ☒ No ☐ Potential ☐ Receptor: Environmental targets
Explain: Sediment results indicate a tributary of Cheyenne Creek may be impacted above threshold effect levels (TECs).

<u>Soil:</u> Yes ☒ No ☐ Potential ☐ Receptor:
Explain: Soil contamination is present with high levels of lead and associated elevated levels of cadmium, zinc and arsenic as documented from analytical results.

<u>Waste</u>: Yes ☒ No ☐ Potential ☐ Receptor: workers
Explain: Visible smelter slag is present at the site.

<u>Air</u>: Yes ☐ No ☐ Potential ☒ Receptor: Residents (fugitive dust)
Explain: Fugitive dust from contaminated areas may impact off-site areas.

Kansas Department of Health and Environment

Integrated Site Evaluation Form

J. Is there an actual or a potential for contamination of a drinking water well? Yes ☐ No ☒ Potential ☐
Explain: No drinking water wells are located at or near the site.

K. Are there hazardous substances, pollutants, or contaminants in drums, barrels, bulk storage containers, or tanks? Yes ☐ No ☒
Explain:

L. Are there high levels of hazardous substances in:

Near-surface soils (< 2 feet below surface)?	Yes ☒	No ☐	Unknown ☐
Subsurface soils (> 2 feet below surface)?	Yes ☒	No ☐	Unknown ☐
Surficial Waste present?	Yes ☒	No ☐	Unknown ☐

Site Accessibility: Secure ☐ Access limited ☐ Readily accessible ☒ Worker population: 5-10
Further explanation: High concentrations of lead, cadmium, zinc, and arsenic are present in residential areas.

M. Are there conditions on site that may be susceptible to impact from adverse weather? Yes ☐ No ☒
Explain: There are no apparent conditions susceptible to adverse weather impacts.

N. Is there a threat of fire or explosion? Yes ☐ No ☒
Explain: No threat of fire or explosion was identified.

O. Is there a potential for other federal or state response programs? Yes ☐ No ☒
The site qualifies for additional site evaluation to further delineate lead, cadmium, and arsenic-impacted areas.

P. Are there endangered species habitats, wetlands, or other sensitive environments nearby which may be adversely impacted by the site? Yes ☒ No ☐
Explain: Endangered species, habitats, wetlands, or other sensitive environments may be impacted from runoff of impacted sediments.

Q. Are there other situations or factors that warrant further CERCLA response? Yes ☒ No ☐
Explain: There are no State mechanisms to further evaluate lead-impacted soils at the site.

R. Document economic conditions surrounding the site: The site is situated in a mixed residential-commercial area of Caney, Kansas.

III. CERCLA Site Screening Findings and Recommendations

A. CERCLA Eligible?

☒ Yes – further CERCLA evaluation is recommended. Cite applicable factors from Section III:
- ☒ A release of a hazardous substance, pollutant or contaminant has occurred;
- ☒ CERCLA Limitations on Response provisions do not apply;
- ☒ No responsible parties are willing/capable to respond at this time;
- ☐ Drums, barrels, and/or containers are, or may be present at the site;
- ☐ The site is susceptible to impact from adverse weather;
- ☒ No other federal or state response mechanisms were identified;
- ☒ The source is a facility as defined by the NCP;
- ☒ Contamination may be presenting sufficient quantity and/or concentration;
- ☒ There is an actual or potential exposure threat;
- ☐ There is, or may be, a threat of fire or explosion;
- ☒ There are, or may be, high concentrations of contaminants in surficial soils;
- ☒ There are endangered species, wetlands, or other sensitive environments or receptors that may be impacted by the site.

If necessary, explain:
Lead, cadmium, zinc and arsenic-impacted soils are present in residential areas above RSKs.

Kansas Department of Health and Environment
Integrated Site Evaluation Form

☐ No - further CERCLA evaluation is not recommended. Cite appropriate factors from Section III:
- ☐ No release has occurred;
- ☐ Not a hazardous substance, pollutant or contaminant;
- ☐ Insufficient quantity or concentration:
- ☐ No actual or potential exposure threats;
- ☐ No high levels of contaminants in surficial soils:
- ☐ Not a facility or vessel;
- ☐ Subject to response limitations;
- ☐ Willing/capable responsible party response;
- ☐ Drums, barrels, and/or containers are not present at the site;
- ☐ Site not susceptible to adverse weather:
- ☐ No threat of fire or explosion;
- ☐ Referred to another program.

If necessary, explain:

IV. Removal Considerations and Recommended Response Actions

If yes, check recommended or potential removal actions from § 300.415(d) of the NCP to warrant further removal site evaluation below:

☒ Release or threat of release is present.
- ☒ Site security
- ☒ Drainage control
- ☒ Stabilization or removal of surface impoundments
- ☒ Capping of contaminated soil
- ☒ Use of chemicals to retard or control spread of contaminants
- ☒ Excavation of contaminated soils
- ☐ Removal of drums, barrels, tanks or other bulk storage containers
- ☒ Containment, treatment, disposal or incineration of hazardous substances, pollutants or contaminants
- ☐ Provide alternate water supplies
- ☐ Other (specify and explain):

Briefly explain the rationale for checked alternatives: Lead, cadmium, zinc, and arsenic-impacted soil are present in residential areas.

V. Remedial Considerations

The Integrated Assessment includes evaluation of remedial considerations and an initial evaluation of Hazard Ranking System (HRS) scoring potential.

VI. Final Comments/Recommendations

A release of lead, cadmium, zinc, and arsenic to soil above residential Tier 2 RSK levels was documented during several ISEs and a responsible party investigation. Multiple residential yards are impacted above KDHE residential Tier 2 RSK levels. The full vertical and horizontal extent was not delineated during the previous investigations and site assessments. Additional removal site evaluation is necessary to better delineate lead, cadmium, zinc, and arsenic-impacted areas. The site may qualify for further evaluation of removal action options after additional site evaluation. Additional residential yard sampling is recommended according to the protocol established in EPA's Lead-Contaminated Residential Sites Handbook.

V. Definitions

I. **CERCLA** is the Comprehensive Environmental Response Compensation and Liabilities Act, 42 USC §9601 *et seq.* (as amended).

A **FACILITY** is defined as any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly-owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel.

A **HAZARDOUS SUBSTANCE** means any substance, element, compound, mixture, solution, hazardous waste, toxic pollutant, hazardous air pollutant, or imminently hazardous chemical substance or mixture designated pursuant to the Clean Water Act (CWA), CERCLA, Safe Drinking Water Act (SDWA), Clean Air Act (CAA) or Toxic Substances Control Act (TSCA). The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas.

The LIMITATIONS ON RESPONSE provisions of the NCP [40 CFR 300.400(b)] states that removals shall not be undertaken in response to a release: of a naturally occurring substance in its unaltered or natural form; from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures; or into public or private drinking water supplies due to deterioration of the system through ordinary use.

NCP is the National Oil and Hazardous Substances Pollution Contingency Plan 40 CFR §300-302.

OPA is the Oil Pollution Act, 33 **U.S.C.** §2702 *et seq.,* 40 CFR §300.300- 300.335.

POLLUTANT or CONTAMINANT includes, but is not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions or physical deformations, in such organisms or their offspring. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas. [40 CFR 300.5]

RCRA is the Resource Conservation and Recovery Act, 42 USC§ 6901 *et. seq.;* 40 CFR §260-273.

A **RELEASE** is defined as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment of barrels, containers, and other closed receptacles containing any hazardous substances or pollutant or contaminant), but excludes: workplace exposures; engine exhaust emissions; nuclear releases otherwise regulated; and the normal application of fertilizer. For purposes of the NCP, release also means threat of release. [40 CFR 300.5]

A **VESSEL** is defined as every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel. [40 CFR 300.5]

11.5 1202 North State Integrated Site Evaluation

Curtis State Office Building
1000 SW Jackson, Suite 410
Topeka, Kansas 66612-1367

Kansas Department of Health and Environment

Integrated Site Evaluation

1202 N. State Smelter Complaint Site, Caney, Kansas

Bureau of Environmental Remediation

Our Mission: To protect and improve the health and environment of all Kansans

SITE EVALUATION

1202 N. State Smelter Complaint Site

Caney, Kansas

Prepared by:
Kansas Department of Health and Environment
Bureau of Environmental Remediation
Remedial Section
Site Assessment Program

Date: February 2013

State ID: C3-063-72925

Project Manager: Randolph L. Brown, P.G., Site Assessment Unit Chief

Field Team Members:
Jon Vopata, Environmental Scientist
Nicholas Schneider, Environmental Scientist

TABLE OF CONTENTS

1.0 Introduction

This document presents the findings of a Pre-CERCLIS Integrated Site Evaluation (ISE) conducted by the Kansas Department of Health and Environment (KDHE) to verify if a release of hazardous substances, pollutants or contaminants has occurred at the 1202 N. State Smelter Complaint site in Caney, Montgomery County, Kansas. This assessment was conducted as part of continuing cooperative agreement with the U.S. Environmental Protection Agency (EPA) to perform investigations of selected sites to evaluate potential or actual releases of hazardous substances, pollutants, or contaminants in Kansas. These investigations are performed under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR § 300. The purpose of this ISE is to collect additional data to support a site disposition for the 1202 N. State Smelter Complaint site.

2.0 Site Description and Location

The 1202 N. State Smelter Complaint site is located on a residential property at the same address in Caney, Kansas 67333 (see Figure 1). The site includes a residential property owned by Mr. Fred Bunch who resides at this site. The site has center global positioning system coordinates of 37.02341 north latitude and -095.93681 west longitude. The site is located in the northern portion of Caney in Section 12, Township 35 South, Range 13 East. Figures 1 and 2 indicate the site location.

3.0 Site Background

3.1 History

Mr. Fred Bunch, contacted KDHE in 2011 regarding concerns of potential smelter waste present on his property. This site was referred to KDHE's Site Assessment Program in June 2012, and sampling was conducted on the property on June 19, 2012. The property immediately north of the Bunch property contains the former Owen Zinc site (KDHE identification number C306300193, EPA identification number KSD984971911). Mr. Bunch has resided at this address for several years, and had noticed slag present in the yard while gardening and also noticed some plants and trees appearing to be stressed due to slag present in soil within his property.

The Owen Zinc site was originally the location of the Caney Brick Company which operated between 1902 and 1915. Charles Owen and a partner constructed the Owen Zinc Smelter Works over the site of the former Caney Brick Company. In August 1915, the American Zinc, Lead and Smelting Company leased the facility from the Owen Zinc Company and operated the smelter works until 1918, when the facility was sold to the

Weir Smelting Company. A review of Sanborn Fire Insurance Maps for Caney indicates that in 1912 the only facility on the site was the Caney Brick Company. The 1917 Sanborn Map for Caney indicates the presence of the Owen Zinc Company at the former location of the Caney Brick Company. The Owen Zinc facility had one ore roaster and three furnace buildings. The Weir Smelting Company purchased the land containing the Owen Zinc facility in about 1926 and continued smelter operations until 1931. The 1927 Sanborn Map for Caney describes the Weir Smelter Company facility as "plant being wrecked".

The Sanborn maps do not indicate any smelter works south of what is currently County Road 1600, which at the time of the Sanborn maps was the city limites and currently forms the northern boundary of the Bunch property. The block containing the Bunch property is indicated as the "Harvey's Addition" residential area on the Sanborn Maps through the final available Sanborn Map (1936). The rail spur from the Owen Zinc smelter did, however, cross what is currently the northeastern portion of the Bunch property extending from the former Owen Zinc smelter southward into Caney. The railroad spur was not evaluated during the Owen Zinc investigations.

The Weir Smelting Company trustee, Dallas W. Knapp, of Coffeyville, began to sell lots parted from the original Owen Zinc facility to Wilford Cavaness in 1931. The Weir Smelting Company was apparently bankrupt at that time and trustees were therefore selling assets. The Weir Smelting Company also purchased the American Zinc, Lead, and Smelting Company works located ½ mile to the east of the Owen Zinc site. This site has been assessed separately as the American Zinc, Lead and Smelting Company Site, EPA I.D. Number (CERCLIS) KSD984971986. Greater detail on the Owen Zinc and American Zinc, Lead and Smelting Company sites can be found in several reports for each site and will not be duplicated here (Reference 1).

3.2 Previous Investigations

Laboratory analysis of soil, sediment, and surface water samples collected from the Owen Zinc site has indicated the presence of elevated levels of Resource Conservation and Recovery Act (RCRA) heavy metals, primarily lead, cadmium and zinc. In 1991 KDHE/BER conducted a Preliminary Assessment (PA) at the Owen Zinc site which was followed by a Screening Site Inspection (SSI) also in 1991 followed by additional supplemental sampling in 1992. In 2001 KDHE conducted an Expanded Site Inspection (ESI) at the site. During all phases of investigation, cadmium was detected at a maximum concentration of 1,099 milligrams per kilogram (mg/Kg), above its residential Tier 2 Risk-based Standards for Kansas (RSK) level of 39 mg/Kg during the 1992 sampling.

Lead was detected at a maximum concentration of 4,845 mg/Kg during the 1991 PA, elevated above its residential Tier 2 RSK level of 400 mg/Kg. Zinc was detected at a maximum concentration of 32,210 mg/Kg, above its residential RSK level of 23,000 mg/Kg in the 1991 PA/SSI sampling. Cadmium was detected in surface water at a maximum concentration of 1.147 milligrams per liter (mg/L), above KDHE's Surface

Water Quality Standard (SWQS) for domestic water supply of 0.005 mg/L. Lead was detected in surface water at a concentration of 0.011 mg/L, above its domestic water supply SWQS of 0.015 mg/L. Zinc was detected at a maximum concentration of 22.754 mg/L, above its domestic water supply SWQS of 7.4 mg/L.

During the ESI, KDHE collected samples from 76 locations for X-ray fluorescence (XRF) analysis with selected samples being submitted for laboratory confirmation. The maximum detection of lead during the ESI was at sample location 400,300 with an XRF lead value of 2,200 mg/Kg and a laboratory lead value of 4,102.7 mg/Kg. Cadmium was detected at maximum concentrations by XRF analysis at 997.0 mg/Kg at sample location 500,65, and 954.0 mg/Kg at sample location 700,100. Cadmium was detected at a maximum concentration of 748.8 mg/Kg by laboratory analysis at location 600,200. These maximum detections were identified adjacent to or immediately down slope of the former Owen Zinc works. The ESI verified elevated lead and cadmium levels in soil on the property containing the Owen Zinc site, the adjacent Torres residential property, and in sediment downstream from these properties (Reference 1). The Blue Tee Corporation was identified as a responsible party for the Owen Zinc site in the 2001 KDHE ESI. A responsible party notification was sent to the Blue Tee Corporation by KDHE in 2002 for the Owen Zinc site.

The Blue Tee Corporation was also identified as a successor corporation to the American Zinc, Lead and Smelting Company in the Administrative Order on Consent (AOC) for the American Zinc, Lead and Smelting Company site, EPA I.D. # KSD984971986, Docket Number VII 95 F-0031 (Reference 1). The Blue Tee Corporation entered into a Consent Agreement with KDHE in 2004, and conducted a corrective action consisting of consolidating the smelter waste on the former Owen Zinc smelter within the Moore property, and contaminated soil into an on-site consolidation cell which was capped.

Additional sampling was apparently not conducted by the responsible party south of County Road 1600 where the Bunch property is located. In 2011 an Environmental Use Control (EUC) was placed on the property containing the former Owen Zinc smelter, at that time owned by Dr. Robert and Betty Moore (Reference 2).

4.0 Physical Setting

4.1 Land Use

The land use is residential at the site. The site contains the Fred Bunch residence and surrounding areas. The nearest residences are approximately 200 feet north, south and northwest of the Bunch property.

4.2 Soils and Geology

Soils at the site consist of Bates-Collinsville loam formed in sandstone residuum and the Dennis silt loam formed in shale or siltstone. Permeability is variable and can range from low to moderate based on relative silt contents (Reference 3). Bedrock along the northern and northeastern portions of the Bunch property is very shallow and less than three feet from ground surface. Very limited amounts of water are present within shallow sandstone and siltstones in the site area. Bedrock at the site consists of the Pennsylvanian Lansing and Douglas Groups (Reference 4).

4.3 Hydrogeology

Groundwater in the site area has historically not been widely used because of its highly localized yield and quality as well as contamination from oil field activity (Reference 4). Bedrock refusal was encountered at depths between two and five feet below ground surface in borings drilled for the Owen Zinc ESI (Reference 1).

5.0 Receptors

5.1 Groundwater Pathway

There are no public water supply (PWS) wells at or within a four mile radius of the site (Reference 4). The area is supplied with water from the City of Caney PWS which relies on a surface water intake on the Little Caney River (Reference 1). A search of the Kansas Geological Survey WWC-5 database identified 14 domestic wells within a four-mile radius of the site but none within one mile of the site (Reference 4).

5.2 Soil and Air Pathways

The site area is mostly residential. Approximately 2,389 persons live within one mile of the site (Reference 5). Since the Bunch residential yard was determined to be impacted with elevated levels of lead, cadmium, and arsenic, adjacent yards may also be impacted. The Bunch yard contains a garden used for food procurement, a pool and is used by Mr. Bunch's grandchild for recreation and thus sensitive receptors are present at the site.

5.3 Surface Water Pathway

The surface water pathway was not assessed during the ISE. Drainage from the site is to the west towards Cheyenne Creek which is present approximately ½ mile from the site. Cheyenne Creek enters the Little Caney River approximately 1 mile southwest of the site.

With the elevated levels of lead, cadmium, and arsenic identified on the Bunch property, additional sediment sampling between the Bunch residence and Cheyenne Creek should be considered in future assessment activities. The City of Caney PWS receives its water supply from the Little Caney River upstream of the confluence of Cheyenne Creek and the Little Caney River (Reference 1).

6.0 Assessment Activities

6.1 Description of Field Activities

On June 19, 2012, Randolph L. Brown, P.G., inspected the site and sampled surface soils from 35 locations using stainless steel trowels. Samples were collected into one-quart freezer bags for analysis with KDHE's Innov-X Delta XRF unit and homogenized in the field. Samples were collected from discrete locations at approximately 50 foot spacing.

All samples were analyzed with KDHE's Innov-X Delta XRF unit consistent with EPA Method 6200 by analyzing each sample three times with a 30 second analysis time. Of the XRF analyses, 14 samples were submitted to KDHE's Health and Environment Laboratories (KHEL) for metals analysis by EPA Method 6010. Four samples were also submitted to KHEL for Toxicity Characteristic Leachate Procedure (TCLP) analysis by EPA Method 1311.

6.2 Sampling Plan Deviations

Approximately 12-15 samples were originally proposed for collection, however additional samples were collected to determine a preliminary areal extent of heavy metals contamination within the Bunch residential yard and adjacent areas. TCLP analysis was originally only proposed for the highest sample, but was extended to four samples.

6.3 Quality Assurance and Quality Control

Samples were collected in accordance with KDHE's Standard Operating Procedures, Generic Quality Assurance Project Plan and the Site Specific Quality Assurance Project Plan Addendum. No holding times were exceeded.

A linear regression was calculated for the XRF vs. laboratory lead and cadmium data obtained at the 1202 N. State Smelter Complaint site. A coefficient of determination (the square of the coefficient of correlation) of $r^2 = 0.9967$ was calculated for lead. According to EPA Method 6200, an r^2 value of 0.9 or higher can be considered *quantitative definitive level data*. An r^2 value of 0.7 to 0.9 can be considered *quantitative screening level data*. The coefficient of correlation for lead calculated for this site indicates that the XRF data obtained from the *in situ* XRF analysis of surficial soil samples can be considered quantitative definitive level data.

The linear regression calculated for the XRF vs. laboratory for cadmium data indicated a relatively poor correlation. The r^2 value was calculated to be 0.0318. The XRF cadmium detections were usually significantly higher than the laboratory detections. The two maximum cadmium laboratory detections (and the only two laboratory cadmium detections above residential RSK levels) are collocated with the two highest lead detections. The cadmium correlation may not be significant as elevated lead is the primary indicator parameter. The cadmium correlation also indicated that cadmium

XRF detections can only considered to be of qualitative value and are generally biased high relative to laboratory data.

The average relative standard deviation (RSD) was calculated to be 4.9 % for the field duplicate analyses during this ISE, well within the EPA Method 6200 acceptable RSD value of 20 %. The percent difference (PD) between the National Institute of Standards and Testing certified lead standards used during the ISE and the XRF analyzed value indicated a maximum PD of 6.9 %, also well within the acceptable PD value established by Method 6200 of 20 % (Reference 6). Table 5 includes the data comparison between XRF and laboratory data.

7.0 Assessment Results

The maximum XRF and laboratory lead detections of 3,751 mg/Kg and 5,100 mg/Kg, respectively, were encountered in sample S-32, located near the northern edge of the Bunch residential garden. A total of 11 XRF or laboratory analyses of the 35 surface soil samples exceeded KDHE's residential Tier 2 RSK for lead of lead of 400 mg/Kg (see Figure 3).

Cadmium was detected at a maximum of 93 mg/Kg at location S-3 with a corresponding lead detection of 1,500 mg/Kg by laboratory and 1,186 mg/Kg by XRF analysis. The only other cadmium detection above residential Tier 2 RSK levels was also at S-32 with a cadmium detection of 50 mg/Kg (see Figure 4). The cadmium XRF correlation was poor and cadmium XRF detections can only be considered qualitative and generally biased high.

Arsenic was detected by laboratory analysis above its residential Tier 2 RSK of 18.9 mg/Kg in samples S-2 and S-36, and both were also above the three times background concentration for arsenic of 20.7 mg/Kg calculated for the Owen Zinc ESI. The arsenic detection in both of these samples was 24 mg/Kg, and each of these locations had a corresponding lead concentration over 400 mg/Kg. Figure 5 includes all arsenic detections above 18.9 mg/Kg.

Zinc was detected in S-32 by laboratory analysis at 55,000 mg/Kg, above the residential Tier 2 RSK level of 23,000 mg/Kg. No other zinc laboratory detection was above residential Tier 2 levels. Samples S-32 and S-3 indicated zinc above residential Tier 2 RSK levels in XRF analysis, and both locations are associated with laboratory and/or XRF lead detections above 400 mg/Kg.

TCLP analysis was also performed on several samples based on XRF results. The maximum TCLP detection for lead was 1.5 mg/L in sample S-32. This level is below the TCLP threshold for lead of 5 mg/L which characterizes lead as a hazardous waste according to the RCRA. The maximum cadmium TCLP result was 0.57 mg/L in S-3, also below its TCLP threshold of 1 mg/L. Arsenic was not detected in any of the TCLP analyses. Table 1 provides a summary of XRF and laboratory results for samples collected during the ISE. Laboratory analytical data are included in Appendix 11.3 and XRF data in Appendix 11.4. Table 2 includes TCLP results.

8.0 Removal Considerations

Multiple samples collected from the Bunch residential yard indicated lead concentrations in surface soil above KDHE's residential Tier 2 RSK of 400 mg/Kg. The Bunch yard is used for recreation by at least one child, and sensitive receptors are thus present. An Integrated Assessment consistent with the NCP using EPA's residential yard guidance is recommended for collecting additional samples on this and adjacent yards to determine if a removal action is appropriate (Reference 7). From the preliminary data collected for this ISE, and review of previous data, a significant area of soil contamination may be present south of the former Owen Zinc site potentially impacting several residential yards. Additional sampling may also be appropriate west of the former Owen Zinc site near the Torres residential yard.

9.0 Conclusions

Lead is present in the Bunch residential yard at levels exceeding KDHE's residential Tier 2 RSK level of 400 mg/Kg for lead. Cadmium and arsenic were also identified in some samples above residential Tier 2 RSKs. These releases appear to be related to the former Owen Zinc lead smelter. The Blue Tee Corporation was identified as a responsible party for the Owen Zinc site in the 2001 KDHE ESI. A responsible party notification was sent to the Blue Tee Corporation by KDHE in 2002 for the Owen Zinc site. The Blue Tee Corporation was also identified as a successor corporation to the American Zinc, Lead and Smelting Company in the Administrative Order on Consent (AOC) for the American Zinc, Lead and Smelting Company site, EPA I.D. # KSD984971986, Docket Number VII 95 F-0031 (Reference 1).

An Integrated Assessment consistent with the NCP is recommended to sample the Bunch residential yard and adjacent areas in greater detail consistent with EPA residential lead guidance if a potentially responsible party does not conduct additional site evaluation through a KDHE program. Pending additional site evaluation, this site may be a removal action candidate consistent with the NCP.

10.0 References

1) *Expanded Site Inspection for the Owen Zinc Site,* KDHE, 2001.

2) KDHE files for Owen Zinc Site, C306300193.

3) U.S. Department of Agriculture, *Soil Survey of Montgomery County, Kansas,* 1980.

4) Kansas Geological Survey, geology and water well database, available at: http://www.kgs.ku.edu/, accessed September 17, 2012.

5) U.S. Census Bureau State and County Quick Facts available at: http://quickfacts.census.gov/qfd/, accessed September 17, 2012.

6) U.S. EPA, Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment,* first edition January 1998 and U.S. Environmental Protection Agency (EPA), Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment,* revised February 2007.

7) U.S. EPA, *Superfund Lead-Contaminated Residential Sites Handbook, Final,* August 2003.

8) Kansas Department of Health and Environment, *Risk-based Standards for Kansas (RSK) Manual,* 2010.

9) U.S. Environmental Protection Agency, *Guidance for Performing Preliminary Assessments under CERCLA,* EPA 540/G-91/013, 1991.

10) U.S. Environmental Protection Agency, *Quality Assurance/Quality Control Guidance for Removal Activities under CERCLA*, EPA 540/G-90/004, April, 1990.

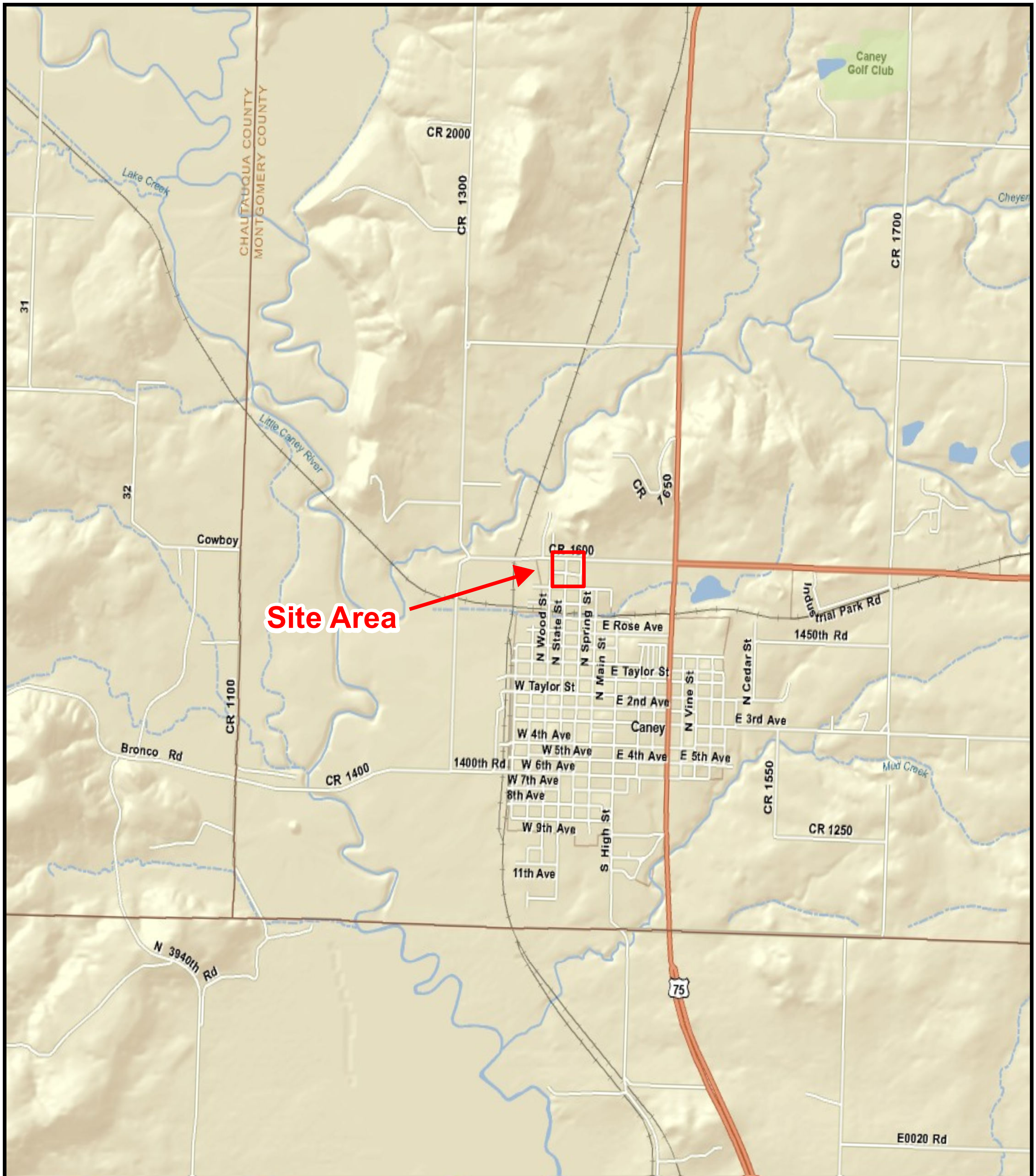
11) U.S. Environmental Protection Agency, *Guidance for Performing Site Inspections under CERCLA,* OSWER Directive 9345.1-05, 1992.

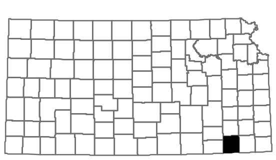
12) U.S. Environmental Protection Agency, *Hazard Evaluation Manual: A Guide to Removal Actions*, EPA Region III, 1993.

13) Kansas Surface Water Quality Standards, December, 2004

11.0 Appendices

11.1 Figures and Tables



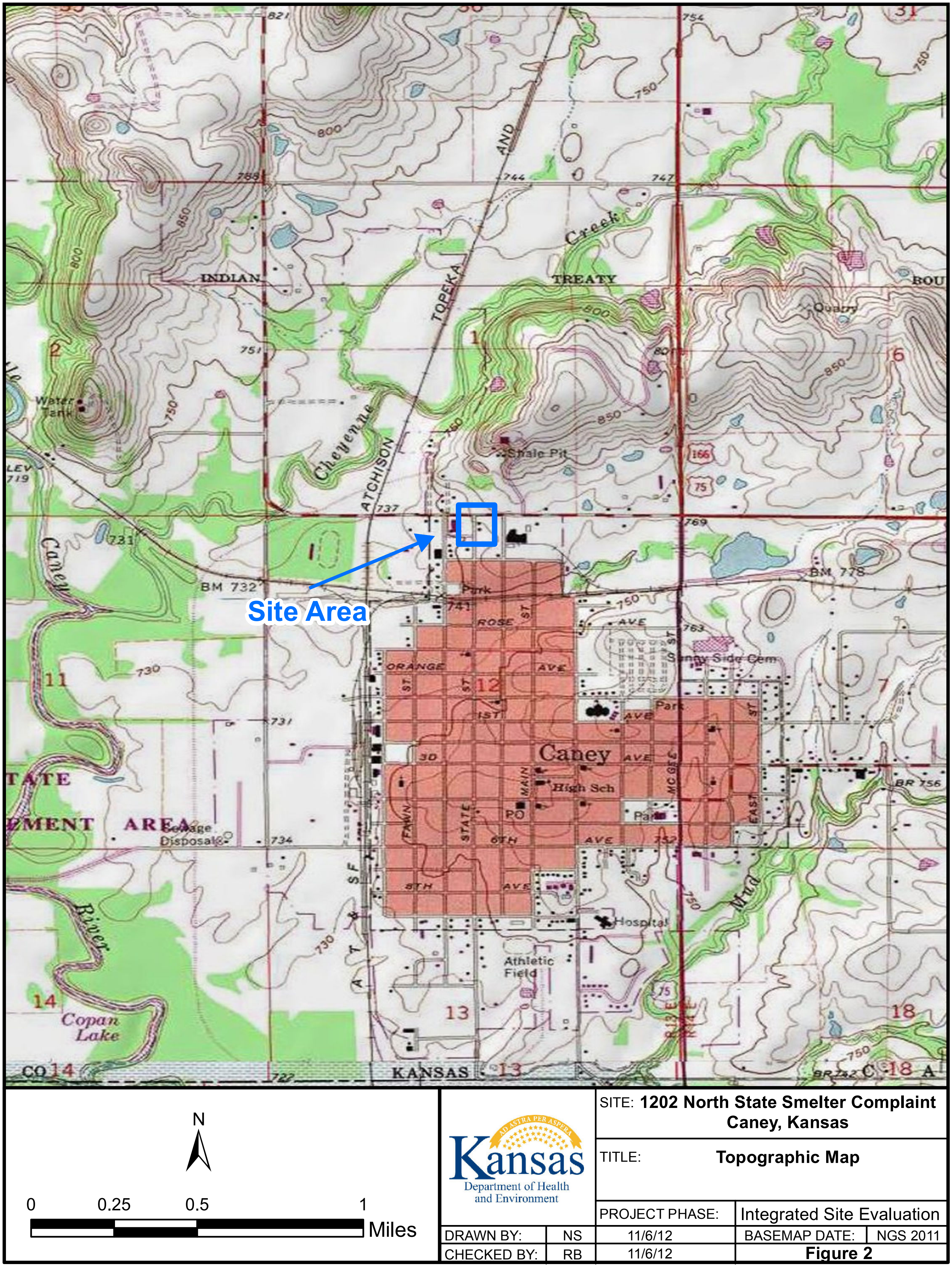


N

0 0.25 0.5 1 Miles

Kansas Department of Health and Environment

SITE: **1202 North State Smelter Complaint Caney, Kansas**			
TITLE: **Area Map**			
		PROJECT PHASE:	Integrated Site Evaluation
DRAWN BY:	NS	11/6/12	BASEMAP DATE: 2008
CHECKED BY:	RB	11/6/12	**Figure 1**



SITE: **1202 North State Smelter Complaint Caney, Kansas**	
TITLE: **Topographic Map**	
PROJECT PHASE:	Integrated Site Evaluation
DRAWN BY: NS 11/6/12	BASEMAP DATE: NGS 2011
CHECKED BY: RB 11/6/12	**Figure 2**

Kansas Department of Health and Environment

LEGEND

Lead

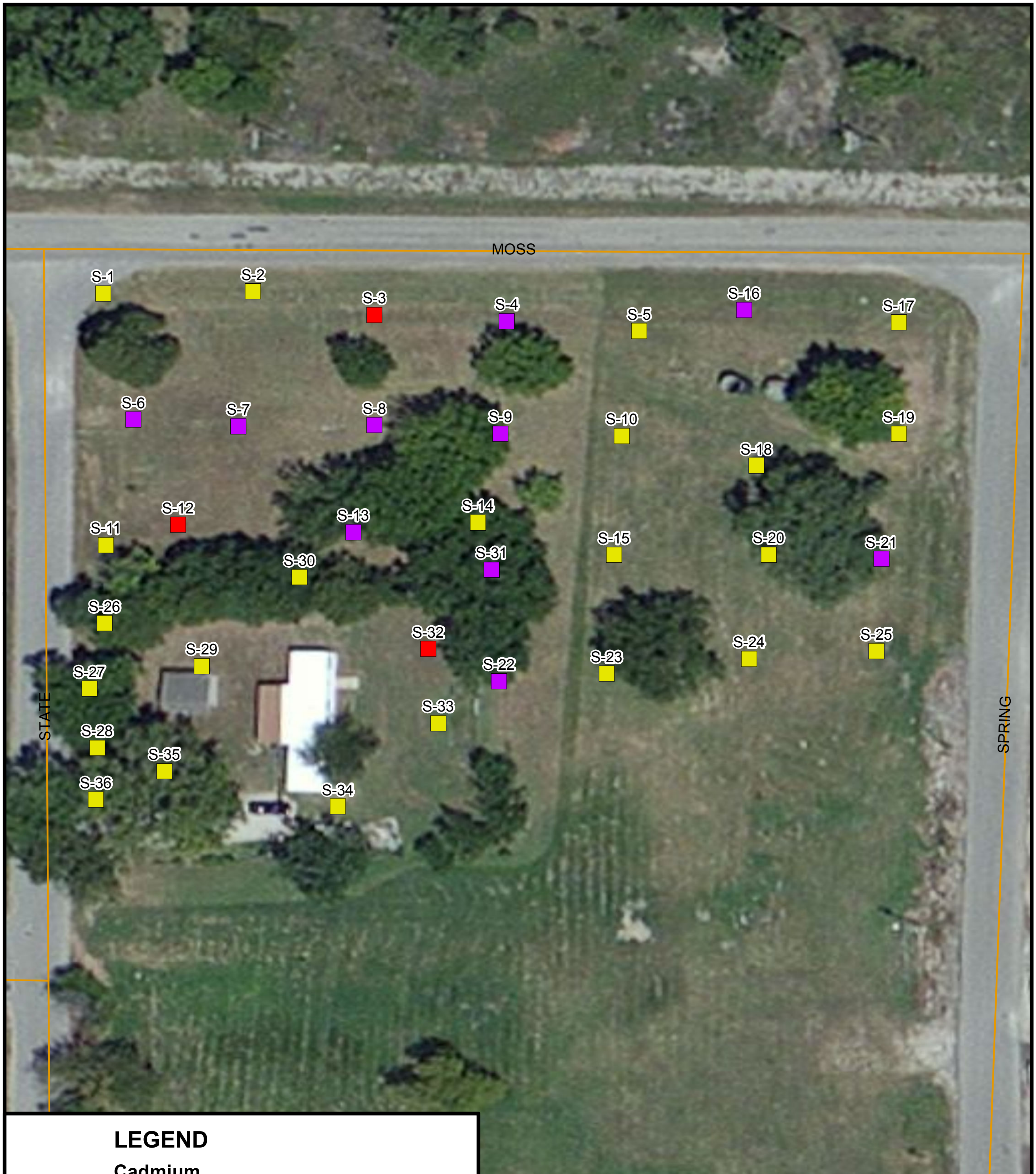
- <400 mg/kg
- >400 mg/kg (XRF or Laboratory)

N

0 25 50 100 Feet

Kansas Department of Health and Environment

SITE: **1202 North State Smelter Complaint Caney, Kansas**			
TITLE: **Lead Concentrations in Soil Samples**			
PROJECT PHASE:		Integrated Site Evaluation	
DRAWN BY: NS	11/6/12	BASEMAP DATE:	Bing 2012
CHECKED BY: RB	11/6/12	**Figure 3**	



LEGEND

Cadmium

- <39 mg/kg
- >39 mg/kg (Laboratory)
- >39 mg/kg (XRF only)

N

0 25 50 100 Feet

SITE:	**1202 North State Smelter Complaint Caney, Kansas**
TITLE:	**Cadmium Concentrations in Soil Samples**
PROJECT PHASE:	Integrated Site Evaluation

Kansas Department of Health and Environment

DRAWN BY:	NS	11/6/12	BASEMAP DATE:	Bing 2012
CHECKED BY:	RB	11/6/12	**Figure 4**	

LEGEND

Arsenic

- <18.9 mg/kg
- >18.9 mg/kg

N

0 25 50 100 Feet

Kansas Department of Health and Environment

SITE: **1202 North State Smelter Complaint Caney, Kansas**			
TITLE: **Arsenic Concentrations in Soil Samples**			
		PROJECT PHASE:	Integrated Site Evaluation
DRAWN BY: NS	11/6/12	BASEMAP DATE:	Bing 2012
CHECKED BY: RB	11/6/12	**Figure 5**	

Table 1: Selected Metals Results by XRF and Laboratory Analysis in milligrams per kilogram (mg/Kg):

Sample I.D.	Lead XRF:	Lead Laboratory:	Cadmium XRF:	Cadmium Laboratory:	Arsenic Laboratory:	Zinc XRF (mg/Kg):	Zinc Laboratory:
Tier 2 Residential RSK:	400	400	39	39	18.9	23,000	23,000
S-1	234	NA	<42	NA	NA	1,830	NA
S-2	**508**	**550**	<55	31	**24**	6,273	NA
S-3	**1,186**	**1,500**	**91**	**93**	15	**23,900**	21,000
S-4	398	**440**	**51**	34	14	7,280	NA
S-5	316	NA	<47	NA	NA	5,082	NA
S-6	**500**	**520**	**71**	36	14	6,392	NA
S-7	371	390	**62**	27	15	6,547	NA
S-8	344	350	**121**	27	12	5,672	NA
S-9	281	320	**65**	34	11	7,252	NA
S-10	172	NA	<41	NA	NA	2,138	NA
S-11	**551**	**450**	<44	14	11	3,658	NA
S-12	345	**460**	**50**	**52**	9.7	6,969	NA
S-13	296	NA	**75**	NA	NA	4,295	NA
S-14	190	NA	<47	NA	NA	2,503	NA
S-15	164	NA	<46	NA	NA	1,901	NA
S-16	234	NA	**51**	NA	NA	4,764	NA
S-17	205	NA	<48	NA	NA	3,478	NA
S-18	229	NA	<44	NA	NA	3,087	NA
S-19	293	NA	<42	NA	NA	6,554	NA
S-20	133	NA	<43	NA	NA	2,952	NA
S-21	203	NA	**51**	NA	NA	3,955	NA
S-22	**518**	**540**	**54**	25	9.9	6,147	NA
S-23	112	NA	<43	NA	NA	2,314	NA
S-24	139	NA	<45	NA	NA	3,331	NA
S-25	71	NA	<49	NA	NA	8,853	NA
S-26	**400**	**410**	<48	20	11	5,217	NA
S-27	**578**	**610**	<47	17	11	13,823	5,800
S-28	**452**	380	<48	15	11	5,126	NA
S-29	97	NA	<47	NA	NA	567	NA
S-30	307	NA	<46	NA	NA	3,402	NA
S-31	180	NA	**49**	NA	NA	2,456	NA
S-32	**3,751**	**5,100**	<56	**50**	**24**	**>100,000**	**55,000**
S-33	302	NA	<45	NA	NA	2,930	NA
S-34	246	NA	<41	NA	NA	2,008	NA
S-35	193	NA	<46	NA	NA	2,236	NA
S-36	349	NA	<48	NA	NA	4,398	NA

Abbreviations:

XRF- Maximum of three separate analyses by KDHE Innov-X X-ray fluorescence unit using EPA Method 6200;
Laboratory – analysis by KDHE's Health and Environment Laboratories using EPA Method 6010;
RSK – Residential Risk-based Standards for Kansas (2010 edition); **Bold** concentrations exceed the Tier 2 Risk-based Standards for Kansas;
NA – not analyzed

Table 2: Summary of Laboratory Lead, Arsenic and Cadmium Toxicity Characteristic Leachate Procedure (TCLP) Results in milligrams per liter (mg/L):

Sample I.D.:	Lead TCLP:	Arsenic TCLP:	Cadmium TCLP:
TCLP Limit:	5	5	1
S-3	0.21	ND (0.05)	0.57
S-11	ND (0.05)	ND (0.05)	0.17
S-27	0.20	ND (0.05)	0.25
S-32	1.5	ND (0.05)	0.44

Abbreviations:

NA – not analyzed
ND – not detected with indicated detection limit;
Laboratory analysis by KDHE's Health and Environment Laboratories using EPA Method 6010 for total lead and arsenic and Method 1311 for TCLP analysis.

Table 3: XRF Quality Control Results

Sample I.D.	Lead XRF (mg/Kg):	Certified NIST Lead Value (mg/Kg):	Percent Difference:
NIST 2781	203	202.1	0.4%
NIST 2781	198	202.1	2.0%
NIST 2781	216	202.1	6.9%
NIST 2781	197	202.1	2.5%
NIST 2781	213	202.1	5.4%
Sample I.D.	Lead XRF (mg/Kg):	Standard Deviation:	Relative Standard Deviation:
S-5	215	11.6	4.9%
S-5	226		
S-5	246		
S-5	242		
S-5	232		
S-5	247		
S-5	237		
Mean	237		

Abbreviations:

XRF- KDHE Innov-X X-ray fluorescence unit using EPA Method 6200;
NIST – National Institute of Standards and Technology reference materials and certified concentrations.

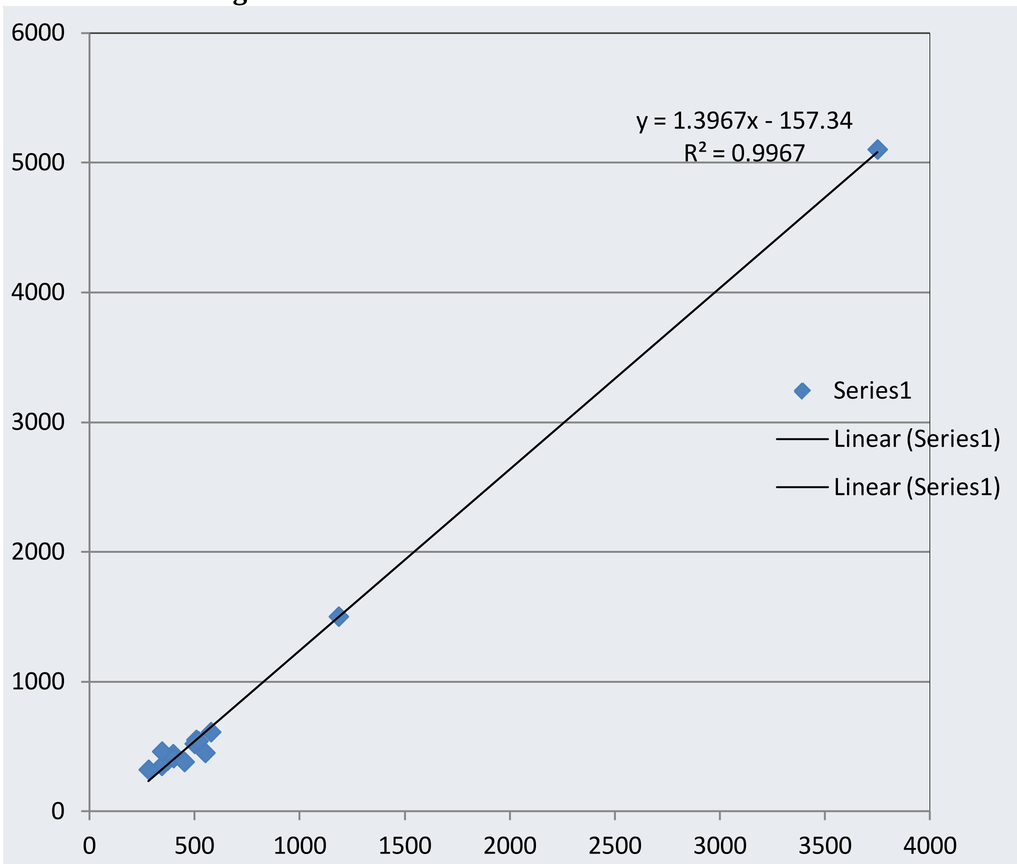
Note: EPA Method 6200 was used for methodology in calculating percent difference and relative standard deviation.

Table 4: Global Positioning Satellite Coordinates:

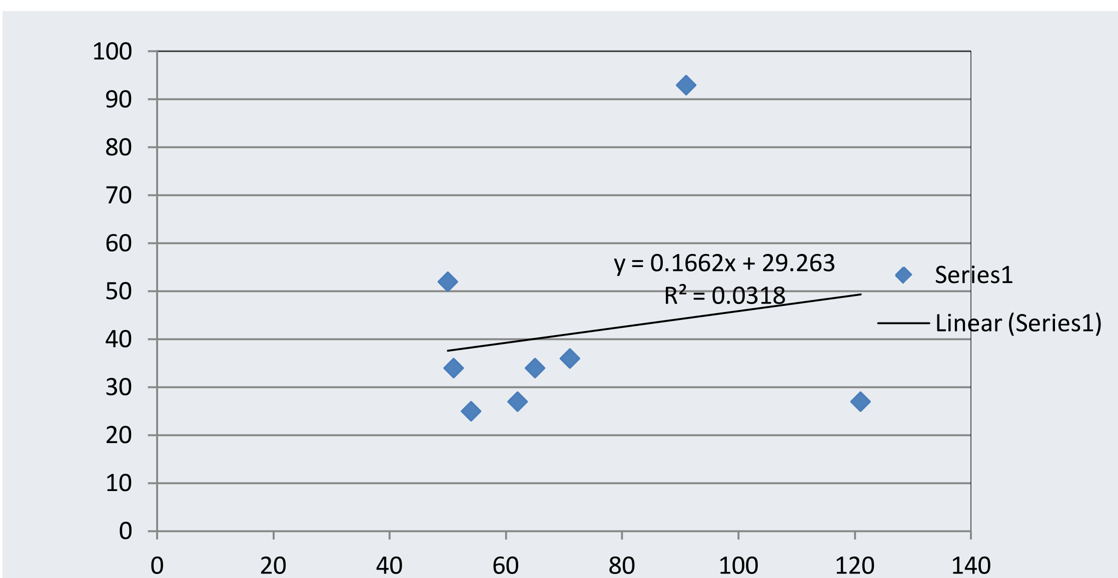
Sample I.D.:	Latitude:	Longitude:
S-1	37.02388	-095.93729
S-2	37.02388	-095.93709
S-3	37.02385	-095.93693
S-4	37.02384	-095.93675
S-5	37.02383	-095.93658
S-6	37.02371	-095.93725
S-7	37.02370	-095.93711
S-8	37.02370	-095.93693
S-9	37.02369	-095.93676
S-10	37.02369	-095.93660
S-11	37.02354	-095.93729
S-12	37.02357	-095.93719
S-13	37.02356	-095.93696
S-14	37.02357	-095.93679
S-15	37.02353	-095.93661
S-16	37.02394	-095.93644
S-17	37.02384	-095.93623
S-18	37.02365	-095.93642
S-19	37.02369	-095.93623
S-20	37.02353	-095.93640
S-21	37.02352	-095.93625
S-22	37.02336	-095.93676
S-23	37.02337	-095.93662
S-24	37.02339	-095.93643
S-25	37.02340	-095.93626
S-26	37.02344	-095.93729
S-27	37.02335	-095.93731
S-28	37.02331	-095.93730
S-29	37.02338	-095.93716
S-30	37.02350	-095.93703
S-31	37.02351	-095.93677
S-32	37.02341	-095.93681
S-33	37.02335	-095.93683
S-34	37.02320	-095.93698
S-35	37.02324	-095.93721
S-36	37.02327	-095.93730

Data collected June 19, 2012; Instrument: Garmin III

Table 5: Regression Parameters for Lead and Cadmium Detections:



Laboratory Lead Concentrations (Y Axis) vs. XRF Lead Detections (X Axis) in mg/Kg



Laboratory Cadmium Concentrations (Y Axis) vs. XRF Cadmium Detections (X Axis) in mg/Kg

11.2 Photographic Documentation

1202 N. State Smelter Complaint Site

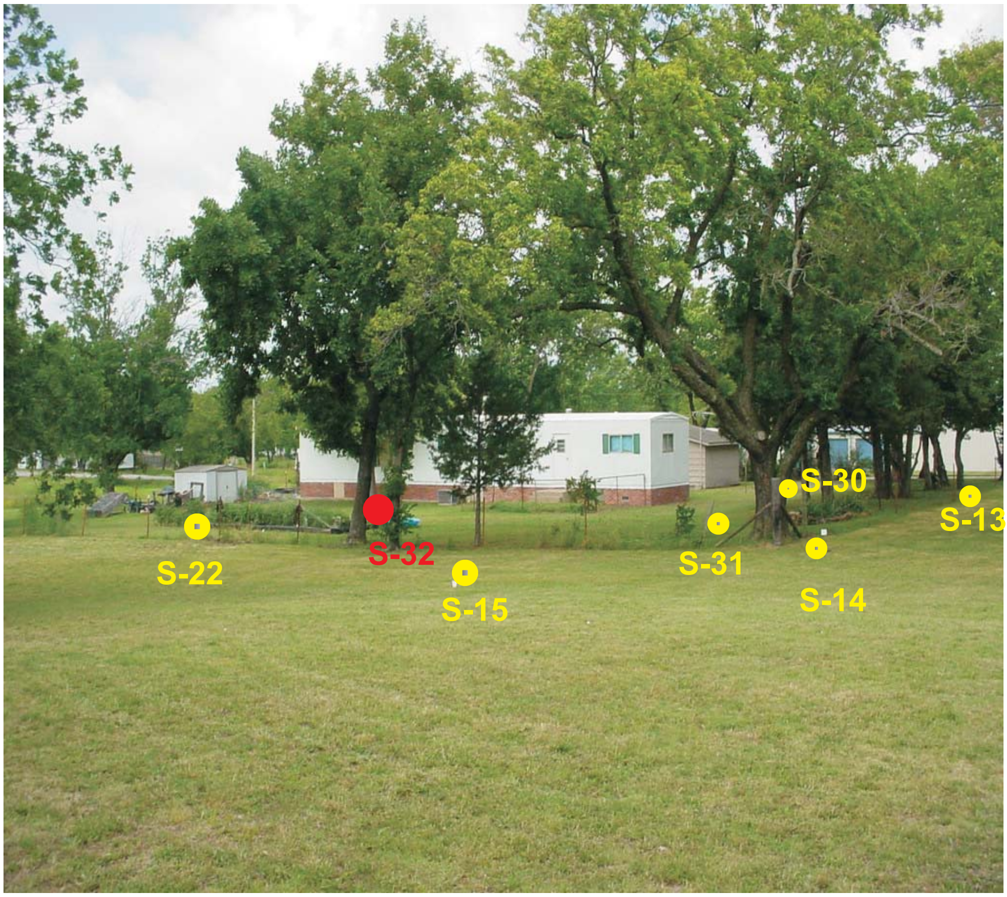


Photo 1
View: Southwest
Date: 06/19/2012
Photo by: Randy Brown
Comments: Bunch residence at 1202 N. State Street. S-32 location with maximum detection of lead is indicated on figure.

Photo 2
View: West
Date: 06/19/2012
Photo by: Randy Brown
Comments: S-32 location adjacent to child's pool and garden area. Slag was visible in this area.

1202 N. State Smelter Complaint Site

Photo 3
View: Northeast
Date: 06/19/2012
Photo by: Randy Brown
Comments: Additional sample locations in Bunch residential yard.

Photo 4
View: East
Date: 06/19/2012
Photo by: Randy Brown
Comments: Additional sample locations in Bunch residential yard.

1202 N. State Smelter Complaint Site

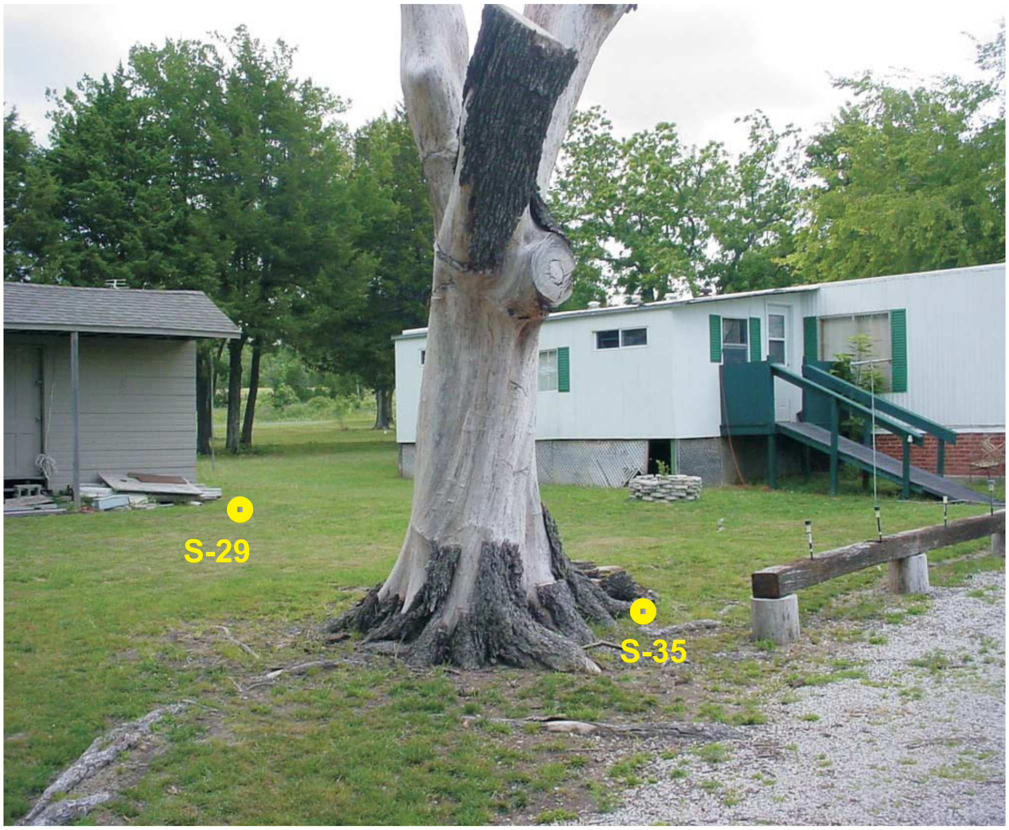


Photo 5
View: Northeast
Date: 06/19/2012
Photo by: Randy Brown
Comments: Dead tree in Bunch residential yard. Smelter slag is visible at the base of this and other trees on the property.

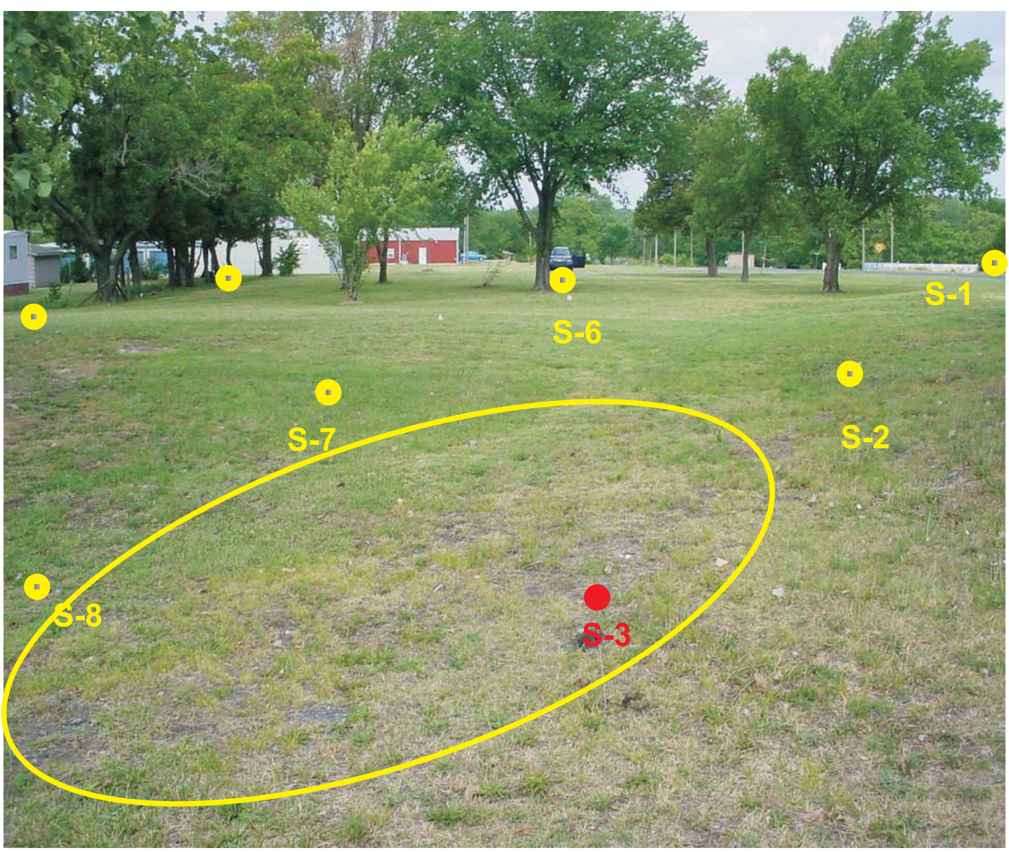


Photo 4
View: West
Date: 06/19/2012
Photo by: Randy Brown
Comments: Western portion of soil sampling grid with location of S-3 which indicated the second highest lead detection. Slag is present in the barren areas in this portion of the yard.

11.3 Laboratory Analytical Data

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

Kansas
Department of Health and Environment

REPORT OF ANALYSIS

C3·063·72925

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT
Lab Number: 580780
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-32
Collector: RANDY BROWN
Matrix: Soil
Collect Depth:
Date/Time Collected: 06/19/12 10:05
Date/Time Received: 07/05/12 09:30

Sample Comments:

Parameter	Analytical Result		Units	Analysis Date	Analytical Method
Arsenic (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Arsenic (Total)	24		mg/Kg	07/13/12	EPA 6010
Barium (TCLP)	0.63		mg/L	07/16/12	EPA 1311
Barium (Total)	110		mg/Kg	07/13/12	EPA 6010
Cadmium (TCLP)	0.44		mg/L	07/16/12	EPA 1311
Cadmium (Total)	50		mg/Kg	07/13/12	EPA 6010
Chromium (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Chromium (Total)	28		mg/Kg	07/13/12	EPA 6010
Lead (TCLP)	1.5		mg/L	07/16/12	EPA 1311
Lead (Total)	5100		mg/Kg	07/13/12	EPA 6010
Mercury (TCLP)	< 0.00050	*	mg/L	07/18/12	EPA 1311
Mercury (Total)	< 0.050		mg/Kg	07/09/12	EPA 245.1
Percent Solids	82		Percent	07/09/12	EPA 1311
Selenium (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Selenium (Total)	< 5.0		mg/Kg	07/13/12	EPA 6010
Silver (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Silver (Total)	3.4		mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB
Date Reported: 07/19/12 MDB
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

BER SCANNED
JUL 20 2012

RECEIVED
JUL 20 2012
ENVIRONMENTAL REMEDIATION

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

Kansas Department of Health and Environment

REPORT OF ANALYSIS

C3-063-72925

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580781
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-27
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 09:40   Date/Time Received: 07/05/12 09:30

Sample Comments:

Parameter	Analytical Result		Units	Analysis Date	Analytical Method
Arsenic (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Arsenic (Total)	11		mg/Kg	07/13/12	EPA 6010
Barium (TCLP)	1.1		mg/L	07/16/12	EPA 1311
Barium (Total)	220		mg/Kg	07/13/12	EPA 6010
Cadmium (TCLP)	0.25		mg/L	07/16/12	EPA 1311
Cadmium (Total)	17		mg/Kg	07/13/12	EPA 6010
Chromium (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Chromium (Total)	35		mg/Kg	07/13/12	EPA 6010
Lead (TCLP)	0.20		mg/L	07/16/12	EPA 1311
Lead (Total)	610		mg/Kg	07/13/12	EPA 6010
Mercury (TCLP)	< 0.00050	*	mg/L	07/18/12	EPA 1311
Percent Solids	88		Percent	07/09/12	EPA 1311
Selenium (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Selenium (Total)	< 5.0		mg/Kg	07/13/12	EPA 6010
Silver (TCLP)	0.011		mg/L	07/16/12	EPA 1311
Silver (Total)	< 1.0		mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
Date Reported: 07/19/12
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REPORT OF ANALYSIS

C3·063·72925

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 580782
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-28
Collector: RANDY BROWN
Matrix: Soil
Collect Depth:
Date/Time Collected: 06/19/12 09:45
Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	11	mg/Kg	07/13/12	EPA 6010
Barium (Total)	200	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	15	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	32	mg/Kg	07/13/12	EPA 6010
Lead (Total)	380	mg/Kg	07/13/12	EPA 6010
Percent Solids	92	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	1.5	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB
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REPORT OF ANALYSIS

C3.063.72925

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580783
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-26
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 09:35   Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	11	mg/Kg	07/13/12	EPA 6010
Barium (Total)	300	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	20	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	33	mg/Kg	07/13/12	EPA 6010
Lead (Total)	410	mg/Kg	07/13/12	EPA 6010
Percent Solids	91	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	11	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
Date Reported: 07/19/12
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REPORT OF ANALYSIS

C3·063·72925

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580784
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-9
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:40   Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	11	mg/Kg	07/13/12	EPA 6010
Barium (Total)	270	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	34	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	35	mg/Kg	07/13/12	EPA 6010
Lead (Total)	320	mg/Kg	07/13/12	EPA 6010
Percent Solids	89	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580785
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-4
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:15   Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	14	mg/Kg	07/13/12	EPA 6010
Barium (Total)	210	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	34	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	37	mg/Kg	07/13/12	EPA 6010
Lead (Total)	440	mg/Kg	07/13/12	EPA 6010
Mercury (Total)	0.075	mg/Kg	07/09/12	EPA 245.1
Percent Solids	87	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580786
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-22
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 09:15   Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	9.9	mg/Kg	07/13/12	EPA 6010
Barium (Total)	230	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	25	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	36	mg/Kg	07/13/12	EPA 6010
Lead (Total)	540	mg/Kg	07/13/12	EPA 6010
Mercury (Total)	< 0.050	mg/Kg	07/09/12	EPA 245.1
Percent Solids	89	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580787
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-11
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:50   Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result		Units	Analysis Date	Analytical Method
Arsenic (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Arsenic (Total)	11		mg/Kg	07/13/12	EPA 6010
Barium (TCLP)	1.2		mg/L	07/16/12	EPA 1311
Barium (Total)	190		mg/Kg	07/13/12	EPA 6010
Cadmium (TCLP)	0.17		mg/L	07/16/12	EPA 1311
Cadmium (Total)	14		mg/Kg	07/13/12	EPA 6010
Chromium (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Chromium (Total)	32		mg/Kg	07/13/12	EPA 6010
Lead (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Lead (Total)	450		mg/Kg	07/13/12	EPA 6010
Mercury (TCLP)	< 0.00050	*	mg/L	07/18/12	EPA 1311
Mercury (Total)	< 0.050		mg/Kg	07/09/12	EPA 245.1
Percent Solids	89		Percent	07/09/12	EPA 1311
Selenium (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Selenium (Total)	< 5.0		mg/Kg	07/13/12	EPA 6010
Silver (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Silver (Total)	< 1.0		mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 580788
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-12
Collector: RANDY BROWN
Matrix: Soil
Collect Depth:
Date/Time Collected: 06/19/12 07:55
Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	9.7	mg/Kg	07/13/12	EPA 6010
Barium (Total)	180	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	52	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	31	mg/Kg	07/13/12	EPA 6010
Lead (Total)	460	mg/Kg	07/13/12	EPA 6010
Percent Solids	85	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580789
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-7
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:30   Date/Time Received: 07/05/12 09:31

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	15	mg/Kg	07/13/12	EPA 6010
Barium (Total)	260	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	27	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	32	mg/Kg	07/13/12	EPA 6010
Lead (Total)	390	mg/Kg	07/13/12	EPA 6010
Percent Solids	90	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580790
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-8
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:35   Date/Time Received: 07/05/12 09:32

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	12	mg/Kg	07/13/12	EPA 6010
Barium (Total)	330	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	27	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	46	mg/Kg	07/13/12	EPA 6010
Lead (Total)	350	mg/Kg	07/13/12	EPA 6010
Percent Solids	88	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
Date Reported: 07/19/12
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580791
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-2
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:05   Date/Time Received: 07/05/12 09:32

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	24	mg/Kg	07/13/12	EPA 6010
Barium (Total)	250	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	31	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	66	mg/Kg	07/13/12	EPA 6010
Lead (Total)	550	mg/Kg	07/13/12	EPA 6010
Percent Solids	87	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
Date Reported: 07/19/12
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580792
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-6
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:25   Date/Time Received: 07/05/12 09:32

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	14	mg/Kg	07/13/12	EPA 6010
Barium (Total)	220	mg/Kg	07/13/12	EPA 6010
Cadmium (Total)	36	mg/Kg	07/13/12	EPA 6010
Chromium (Total)	34	mg/Kg	07/13/12	EPA 6010
Lead (Total)	520	mg/Kg	07/13/12	EPA 6010
Percent Solids	92	Percent	07/09/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (Total)	< 1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 580793
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-3
Collector: RANDY BROWN
Matrix: Soil
Collect Depth:
Date/Time Collected: 06/19/12 07:10
Date/Time Received: 07/05/12 09:32

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (TCLP)	< 0.050	mg/L	07/16/12	EPA 1311
Arsenic (Total)	15	mg/Kg	07/13/12	EPA 6010
Barium (TCLP)	0.96	mg/L	07/16/12	EPA 1311
Barium (Total)	210	mg/Kg	07/13/12	EPA 6010
Cadmium (TCLP)	0.57	mg/L	07/16/12	EPA 1311
Cadmium (Total)	93	mg/Kg	07/13/12	EPA 6010
Chromium (TCLP)	< 0.010	mg/L	07/16/12	EPA 1311
Chromium (Total)	32	mg/Kg	07/13/12	EPA 6010
Lead (TCLP)	0.21	mg/L	07/16/12	EPA 1311
Lead (Total)	1500	mg/Kg	07/13/12	EPA 6010
Mercury (TCLP)	< 0.00050 *	mg/L	07/18/12	EPA 1311
Mercury (Total)	< 0.050	mg/Kg	07/09/12	EPA 245.1
Percent Solids	84	Percent	07/09/12	EPA 1311
Selenium (TCLP)	< 0.050	mg/L	07/16/12	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	07/13/12	EPA 6010
Silver (TCLP)	< 0.010	mg/L	07/16/12	EPA 1311
Silver (Total)	1.0	mg/Kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

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Kansas Department of Health and Environment

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580781

4EM80

Site ID:
Account Code: EP

Collection Location: C306372925 S-27
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 09:40   Date/Time Received: 07/05/12 09:30

Sample Comments: Zn added 08/06/12 per Randy Brown. EAP 08/06/12

Parameter	Analytical Result		Units	Analysis Date	Analytical Method
Arsenic (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Arsenic (Total)	11		mg/Kg	07/13/12	EPA 6010
Barium (TCLP)	1.1		mg/L	07/16/12	EPA 1311
Barium (Total)	220		mg/Kg	07/13/12	EPA 6010
Cadmium (TCLP)	0.25		mg/L	07/16/12	EPA 1311
Cadmium (Total)	17		mg/Kg	07/13/12	EPA 6010
Chromium (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Chromium (Total)	35		mg/Kg	07/13/12	EPA 6010
Lead (TCLP)	0.20		mg/L	07/16/12	EPA 1311
Lead (Total)	610		mg/Kg	07/13/12	EPA 6010
Mercury (TCLP)	< 0.00050	*	mg/L	07/18/12	EPA 1311
Percent Solids	88		Percent	07/09/12	EPA 1311
Selenium (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Selenium (Total)	< 5.0		mg/Kg	07/13/12	EPA 6010
Silver (TCLP)	0.011		mg/L	07/16/12	EPA 1311
Silver (Total)	< 1.0		mg/Kg	07/13/12	EPA 6010
Zinc (Total)	5800		mg/kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
Date Reported: 07/19/12
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

C3-063-72925

Kansas Department of Health and Environment

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 580793
4EM80
Site ID:
Account Code: EP

Collection Location: C306372925 S-3
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 06/19/12 07:10   Date/Time Received: 07/05/12 09:32

Sample Comments: Zn added 08/06/12 per Randy Brown. EAP 08/06/12

Parameter	Analytical Result		Units	Analysis Date	Analytical Method
Arsenic (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Arsenic (Total)	15		mg/Kg	07/13/12	EPA 6010
Barium (TCLP)	0.96		mg/L	07/16/12	EPA 1311
Barium (Total)	210		mg/Kg	07/13/12	EPA 6010
Cadmium (TCLP)	0.57		mg/L	07/16/12	EPA 1311
Cadmium (Total)	93		mg/Kg	07/13/12	EPA 6010
Chromium (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Chromium (Total)	32		mg/Kg	07/13/12	EPA 6010
Lead (TCLP)	0.21		mg/L	07/16/12	EPA 1311
Lead (Total)	1500		mg/Kg	07/13/12	EPA 6010
Mercury (TCLP)	< 0.00050	*	mg/L	07/18/12	EPA 1311
Mercury (Total)	< 0.050		mg/Kg	07/09/12	EPA 245.1
Percent Solids	84		Percent	07/09/12	EPA 1311
Selenium (TCLP)	< 0.050		mg/L	07/16/12	EPA 1311
Selenium (Total)	< 5.0		mg/Kg	07/13/12	EPA 6010
Silver (TCLP)	< 0.010		mg/L	07/16/12	EPA 1311
Silver (Total)	1.0		mg/Kg	07/13/12	EPA 6010
Zinc (Total)	21000		mg/kg	07/13/12	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: MDB MDB
Date Reported: 07/19/12
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

BER SCANNED
AUG 07 2012

RECEIVED
AUG 7
BUREAU OF
ENVIRONMENTAL RE...

11.4 X-Ray Fluorescence Analytical Results

XRF Analysis 1202 N State Samples
06/14/2012 Cal check OK

Sample	Pb mg/kg	Zn mg/kg	Cd mg/kg	As mg/kg
NIST 2781	203			NIST 2021
NIST 2781	221			" "
S-35	~~184~~ 190	1,751	<46	<19
"	188	1,771	<46	<19
"	193	2,236	<46	<20
S-31	180	2,456	<47	<20
"	142	1,880	<47	<18
"	177	2,104	<49	<18
* S-32	3,751	>100,000	<74	<131
	3,543	77,100	<70	<115
	2,624	36,800	<51	<81
S-33	226	2,331	<45	<19
"	185	2,536	<45	<19
"	302	2,930	<46	<22
S-34	215	1,842	<42	<18
"	148	1,606	<42	<16
"	246	2,008	<41	<20
* S-27	456	4,386	<49	<29
"	356	13,823	<47	<25
"	578	6,196	<50	<34
S-30	293	3,402	<47	<23
"	307	2,630	<46	<23
"	234	2,319	<48	<21
S-36	295	3,267	<48	<24
"	295	3,420	<48	<23
"	349	4,398	<48	<25
S-24	139	3,336	<46	<16
"	101	3,048	<45	<13
"	77	13,195	<45	<13
* S-28	309	3,972	<48	<25
"	371	5,128	<49	<22
"	~~452~~ 452	4,618	<48	<30
S-29	105	362	<47	<13
"	76	375	<47	<13
"	97	564	<47	<15

1202 N State (Continued) RBrown

07/02/2012 Brown analyzed samples

~~Sample~~ ~~Pb~~ with Delta XRF 0930 start 30sec runs

Sample	Pb mg/kg	Zn mg/kg	Cd mg/kg	As mg/kg
NIST2781	198			
S-20	122	2,052	<44	<15
"	133	2,613	<43	<14
"	96	2,613	<43	<14
S-25	~~71~~	8,853	<52	<17
"	54	1,981	<49	<13
"	<26	1,142	<57	27
* S-26	349	4,078	<49	<27
"	400	5,217	<49	<29
"	368	3,546	<48	<26
S-23	112	2,314	<43	<14
"	100	2,060	<45	<14
"	104	2,077	<45	<13
S-21	203	3,955	51	<18
"	95	2,026	<49	<16
"	112	2,735	<46	<17
S-18	165	2,830	<45	<18
"	210	2,972	<45	<20
"	229	3,087	<44	<20
S-19	239	5,043	<47	<22
"	334	6,330	<45	<24
"	293	6,354	<48	<24
* S-16	234	4,638	51	<22
"	219	4,355	<49	<22
"	216	4,764	<49	<22
* S-9	281	7,232	<49	<25
"	262	6,274	65	<22
"	274	6,180	<49	<23
S-17	168	3,478	<49	<19
"	196	3,947	<49	<20
"	205	3,474	<48	<20
* S-4	304	6,201	<51	<27
"	398	7,280	51	<20
"	343	6,546	<48	<26

1202 N. State (Continued)
07/02/2012 XRF Analysis by R. Brown

Sample	Pb mg/Kg	Cd mg/Kg	As mg/Kg	Zn mg/Kg
NIST 2781	216			
A S-22	464	<47	<29	4,212
"	471	<46	<29	14,000
"	518	54	<30	6,147
S-22 RSD	502			
"	518			
"	488			
"	498			
"	498			
"	521			
"	513			
S-15	103	<46	<15	1,447
"	154	<50	<20	1,886
"	164	<48	<18	1,401
S-10	172	<44	<18	1,566
"	129	<47	<18	2,138
"	99	<41	<13	1,117
A S-11	454	<47	<28	3,658
"	350	<44	<24	3,248
"	551	<46	<31	
A S-12	345	<45	<25	6,969
"	320	50	<23	5,876
"	303	<46	<23	5,986
S-14	174	<47	<18	2,405
"	190	<50	<21	2,503
"	130	<50	<19	2,330
A S-7	371	62	<28	6,043
"	368	<50	<28	6,547
"	356	<49	<27	5,004
A S-8	324	<47	<24	4,042
"	280	121	<25	5,672
"	344	<51	<27	5,031
S-1	234	<44	<19	1,830
"	194	<43	<17	1,775
"	163	<42	<16	1,564

Hg 34

Hg 27

1202 N. State XRF Analysis (continued)

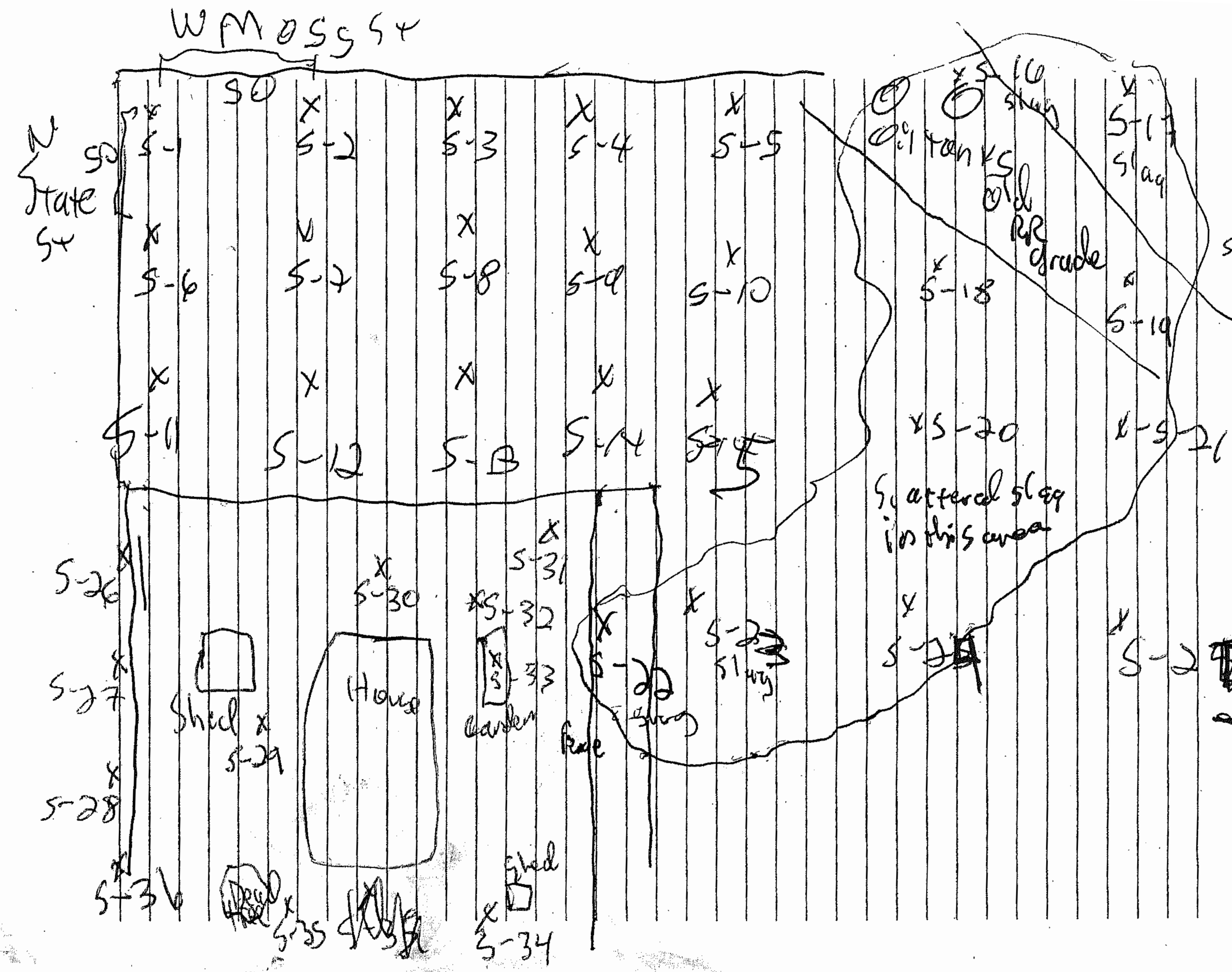
RB

Sample	Lead mg/kg	Zn mg/kg	Cd mg/kg	As mg/kg
NIST2781	197			
* S-2	435	5,775	<54	<34
"	411	5,044	<55	<33
"	508	6,273	<51	<34
* S-6	467	5,805	71	<29
"	500	6,392	<48	<30
"	406	5,264	<46	<27
S5	223	4,355	<48	<21
"	316	4,383	<47	<24
"	266	5,082	<49	<23
RSDS-5	215			
"	226			
"	246			
"	242			
"	232			
"	247			
"	237			
* S-3	1,186	23900	91	<52
"	948	17,100	<50	<44
"	1,027	17,100	78	<46
S-13	296	4,645	75	<24
"	249	4,128	<46	<22
"	243	4,161	<47	<22
NIST 2781	213			
	206			

Hg bl

11.5 Field Notes

09/19/12 RBrown



1202 N. State Caney

06/19/12 Brown onsite 0630
met w/ Mr. Fred Burch, landowner, showns slag & retort bricks in yard! Access OK 620-306-1437

sample	Time	Lat	Long	+/
S-1	0700	37.02388	-095.93729	6
S-2	0705	37.02388	-095.93704	5
S-3	0710	37.02385	-095.93693	2
S-4	0715	37.02384	-095.93675	3
S-5	0720	37.02383	-095.93658	4
S-6	0725	37.02371	-095.93725	2
S-7	0730	37.02370	-095.93711	2
S-8	0735	37.02370	-095.93693	4
S-9	0740	37.02369	-095.93676	2
S-10	0745	37.02369	-095.93660	6
S-11	0750	37.02354	-095.93724	6
S-12	0755	37.0235[illegible]	-095.93719	4
S-13	0800	37.02356	-095.93696	4
S-14	0805	37.02357	-095.93679	2
S-15	0810	37.02353	-095.93661	8
S-16	0845	37.02394	-095.93644	11
S-17	0850	37.02384	-095.93623	2
S-18	0855	37.0236[illegible]	-095.936[illegible]	5
S-19	0900	37.0236[illegible]	-095.936[illegible]3	4
S-20	0905	37.02353	-095.936[illegible]0	2
S-21	0910	37.02352	-095.93625	4
S-22	0915	37.02336	-095.93676	6
S-23	0920	37.02337	-095.93667	5
S-24	0925	37.02334	-095.93643	3
S-25	0930	37.02340	-095.93626	4
S-36	1025	37.02327	-095.93730	3
S-26	0935	37.02344	-095.93429	13
S-27	0940	37.02335	-095.93731	9
S-28	0945	37.02331	-095.93730	3
S-29	0950	37.02330	-095.93716	4
S-30	0955	37.02350	-095.93703	6
S-31	1000	37.02351	-095.93677	4
S-32	1005	37.02341	-095.93681	5
S-33	1010	37.02335	-095.9368[illegible]	3 4
S-34	1015	37.02320	-095.93698	4
S-35	1020	37.02324	-095.93721	6

06/10/12 RB

Soil grid at 50' E-W and N-S.
Soil to 6" taken w/ stainless steel trowel into labelled zip lock bag.

Mr. Bunch showed several trees that were stressed and slag in yard.

Decontamination with alconox + DI water, triple rinse + airdry

06/19/2012 RP

samples for laboratory analysis:

Sample	Time	Date		
S-32	1005	06/19/2012	Hg	TCLP
S-27	0940	06/19/2012		TCLP
~~S-2~~				
S-28	0945	06/19/2012		
S-26	0935	~~0935~~ 06/19/2012		
~~S-21~~				
~~S-19~~				
~~S-10~~				
S-9	0740	06/19/2012		
~~S-14~~				
S-4	0715	06/19/2012	Hg	
S-22	0915	06/19/2012	Hg	
S-11	0750	06/19/2012	Hg	TCLP
S-12	0755	06/19/2012		
S-7	0730	06/19/2012		
S-8	0735	06/19/2012		
S-2	0705	06/19/2012		
S-6	0725	06/19/2012		
S-3	0710	06/19/2012	Hg	TCLP

11.6 Site Evaluation Form

Kansas Department of Health and Environment
Integrated Site Evaluation Form

I. Site Information

Site Name: 1202 S. State Smelter Complaint Site

Address or location: 1202 N. State Street

City: Caney	County: Montgomery	State: Kansas	ZIP: 67333
Telephone:	Fax:		

Directions to Site: Located on north end of N. State Street, Caney, Kansas.

Map attached? ☒ Yes - see Integrated Site Evaluation (ISE) Report

Requested by: Rick Bean	Agency/Office: Remedial Section Chief, KDHE/BER	
Address: 1000 SW Jackson, Ste. 410		Date of Request: 06/15/2012
City: Topeka	State: Kansas	ZIP: 66612
Phone:785.296.1673	E-mail: rbean@kdheks.gov	Fax: 785.296.7030

Site Contact: Randy Brown/KDHE

Address: 1000 SW. Jackson, Suite 410

City: Topeka	State: Kansas	ZIP: 66612-1367
Phone: 785-296-8065	E-mail: rbrown@kdheks.gov	Fax: 785-296-7030

II. CERCLA Site Screening Response Criteria (see Section V for definitions)

A. Is there a release or threat of release as defined by the NCP? Yes ☒ No ☐

Explain: Lead, cadmium, zinc, and arsenic have been detected at the site above residential Tier 2 Risk-based Standards for Kansas (RSKs).

B. Is the source a facility or vessel as defined by the NCP? Yes ☒ No ☐

Explain: The site is adjacent to a former lead and zinc smelter.

C. Does the release or threat of release involve a hazardous substance, pollutant, or contaminant as defined by the NCP? Yes ☒ No ☐

Explain: Lead, cadmium, zinc, and arsenic are hazardous substance as defined by the NCP.

D. Is the release subject to the limitations on response? Yes ☐ No ☒

Explain: No release limitations appear to exist.

E. Does the quantity or concentration warrant response? Yes ☒ No ☐

Explain: Lead, cadmium, zinc and arsenic are elevated above residential RSK levels in a residential yard.

F. Has a PRP been identified? Yes ☒ No ☐

Name: Blue Tee Corporation		Telephone:	
Address:	City:	State:	Zip:

G. Document operational and regulatory history: see attached report ☒

H. What is the current land use around the facility? Check all that apply:
Residential ☒ Industrial ☒ Commercial ☒ Agricultural ☒ Recreational ☐

I. Is there an actual or potential exposure to hazardous substances, pollutants or contaminants:

Ground Water: Yes ☐ No ☐ Potential ☒ Receptor: Private water systems
Explain: Groundwater is not used near the site for drinking water purposes.

Surface Water: Yes ☒ No ☐ Potential ☐ Receptor: Environmental targets
Explain: Sediment results indicate a tributary of Cheyenne Creek may be impacted above threshold effect levels (TECs).

Soil: Yes ☒ No ☐ Potential ☐ Receptor:
Explain: Soil contamination is present with high levels of lead and associated elevated levels of cadmium, zinc and arsenic as documented from analytical results.

Waste: Yes ☒ No ☐ Potential ☐ Receptor: workers
Explain: Visible smelter slag is present at the site, although no individual samples failed Toxicity Characteristic Leachate Procedure (TCLP) results.

Air: Yes ☐ No ☐ Potential ☒ Receptor: Residents (fugitive dust)
Explain: Fugitive dust from contaminated areas may impact off-site areas.

J. Is there an actual or a potential for contamination of a drinking water well? Yes ☐ No ☒ Potential ☐
Explain: No drinking water wells are located at or near the site.

K. Are there hazardous substances, pollutants, or contaminants in drums, barrels, bulk storage containers, or tanks? Yes ☐ No ☒
Explain:

L. Are there high levels of hazardous substances in:

Near-surface soils (< 2 feet below surface)?	Yes ☒	No ☐	Unknown ☐
Subsurface soils (> 2 feet below surface)?	Yes ☒	No ☐	Unknown ☐
Surficial Waste present?	Yes ☒	No ☐	Unknown ☐

Site Accessibility: Secure ☐ Access limited ☐ Readily accessible ☒ Worker population: 5-10
Further explanation: High concentrations of lead, cadmium, zinc, and arsenic are present in residential areas.

M. Are there conditions on site that may be susceptible to impact from adverse weather? Yes ☐ No ☒
Explain: There are no apparent conditions susceptible to adverse weather impacts.

N. Is there a threat of fire or explosion? Yes ☐ No ☒
Explain: No threat of fire or explosion was identified.

O. Is there a potential for other federal or state response programs? Yes ☐ No ☒
The site qualifies for additional site evaluation to further delineate lead, cadmium, and arsenic-impacted areas.

P. Are there endangered species habitats, wetlands, or other sensitive environments nearby which may be adversely impacted by the site? Yes ☒ No ☐
Explain: Endangered species, habitats, wetlands, or other sensitive environments may be impacted from runoff of impacted sediments.

Q. Are there other situations or factors that warrant further CERCLA response? Yes ☒ No ☐
Explain: There are no State mechanisms to further evaluate lead-impacted soils at the site.

R. Document economic conditions surrounding the site: The site is situated in a mixed residential-commercial area of Caney, Kansas.

III. CERCLA Site Screening Findings and Recommendations

A. CERCLA Eligible?

☒ Yes – further CERCLA evaluation is recommended. Cite applicable factors from Section III:

- ☒ A release of a hazardous substance, pollutant or contaminant has occurred;
- ☒ CERCLA Limitations on Response provisions do not apply;
- ☒ No responsible parties are willing/capable to respond at this time;
- ☐ Drums, barrels, and/or containers are, or may be present at the site;
- ☐ The site is susceptible to impact from adverse weather;
- ☒ No other federal or state response mechanisms were identified;
- ☒ The source is a facility as defined by the NCP;
- ☒ Contamination may be presenting sufficient quantity and/or concentration;
- ☒ There is an actual or potential exposure threat;
- ☐ There is, or may be, a threat of fire or explosion;
- ☒ There are, or may be, high concentrations of contaminants in surficial soils;
- ☒ There are endangered species, wetlands, or other sensitive environments or receptors that may be impacted by the site.

If necessary, explain:
Lead, cadmium, zinc and arsenic-impacted soils are present in residential areas.

Kansas Department of Health and Environment
Integrated Site Evaluation Form

☐ No - further CERCLA evaluation is not recommended. Cite appropriate factors from Section III:

- ☐ No release has occurred;
- ☐ Not a hazardous substance, pollutant or contaminant;
- ☐ Insufficient quantity or concentration:
- ☐ No actual or potential exposure threats;
- ☐ No high levels of contaminants in surficial soils:
- ☐ Not a facility or vessel;
- ☐ Subject to response limitations;
- ☐ Willing/capable responsible party response;
- ☐ Drums, barrels, and/or containers are not present at the site;
- ☐ Site not susceptible to adverse weather:
- ☐ No threat of fire or explosion;
- ☐ Referred to another program.

If necessary, explain:

IV. Removal Considerations and Recommended Response Actions

If yes, check recommended or potential removal actions from § 300.415(d) of the NCP to warrant further removal site evaluation below:

☒ Release or threat of release is present.

- ☒ Site security
- ☒ Drainage control
- ☒ Stabilization or removal of surface impoundments
- ☒ Capping of contaminated soil
- ☒ Use of chemicals to retard or control spread of contaminants
- ☒ Excavation of contaminated soils
- ☐ Removal of drums, barrels, tanks or other bulk storage containers
- ☒ Containment, treatment, disposal or incineration of hazardous substances, pollutants or contaminants
- ☐ Provide alternate water supplies
- ☐ Other (specify and explain):

Briefly explain the rationale for checked alternatives: Lead, cadmium, zinc, and arsenic-impacted soil are present in residential areas.

V. Remedial Considerations

The Integrated Assessment includes evaluation of remedial considerations and an initial evaluation of Hazard Ranking System (HRS) scoring potential.

VI. Final Comments/Recommendations

A release of lead, cadmium, zinc, and arsenic to soil above residential Tier 2 RSK levels was documented during the ISE. At least one residential yard is impacted above KDHE residential Tier 2 RSK levels. The full vertical and horizontal extent was not delineated during the ISE. Additional site evaluation is necessary to better delineate lead, cadmium, zinc, and arsenic-impacted areas. The site may qualify for further evaluation of removal action options after additional site evaluation. Additional residential yard sampling is recommended according to the protocol established in EPA's Lead-Contaminated Residential Sites Handbook.

V. Definitions

I. **CERCLA** is the Comprehensive Environmental Response Compensation and Liabilities Act, 42 USC §9601 *et seq.* (as amended).

A **FACILITY** is defined as any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly-owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel.

A **HAZARDOUS SUBSTANCE** means any substance, element, compound, mixture, solution, hazardous waste, toxic pollutant, hazardous air pollutant, or imminently hazardous chemical substance or mixture designated pursuant to the Clean Water Act (CWA), CERCLA, Safe Drinking Water Act (SDWA), Clean Air Act (CAA) or Toxic Substances Control Act (TSCA). The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas.

The LIMITATIONS ON RESPONSE provisions of the NCP [40 CFR 300.400(b)] states that removals shall not be undertaken in response to a release: of a naturally occurring substance in its unaltered or natural form; from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures; or into public or private drinking water supplies due to deterioration of the system through ordinary use.

NCP is the National Oil and Hazardous Substances Pollution Contingency Plan 40 CFR §300-302.

OPA is the Oil Pollution Act, 33 **U.S.C.** §2702 *et seq.,* 40 CFR §300.300- 300.335.

POLLUTANT or CONTAMINANT includes, but is not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions or physical deformations, in such organisms or their offspring. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas. [40 CFR 300.5]

RCRA is the Resource Conservation and Recovery Act, 42 USC§ 6901 *et. seq.;* 40 CFR §260-273.

A **RELEASE** is defined as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment of barrels, containers, and other closed receptacles containing any hazardous substances or pollutant or contaminant), but excludes: workplace exposures; engine exhaust emissions; nuclear releases otherwise regulated; and the normal application of fertilizer. For purposes of the NCP, release also means threat of release. [40 CFR 300.5]

A **VESSEL** is defined as every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel. [40 CFR 300.5]

11.7 Hazardous Substance Information

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ARSENIC

CAS # 7440-38-2

Division of Toxicology and Environmental Medicine ToxFAQs™ August 2007

This fact sheet answers the most frequently asked health questions (FAQs) about arsenic. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to higher than average levels of arsenic occur mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. At high levels, inorganic arsenic can cause death. Exposure to lower levels for a long time can cause a discoloration of the skin and the appearance of small corns or warts. Arsenic has been found in at least 1,149 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is arsenic?

Arsenic is a naturally occurring element widely distributed in the earth's crust. In the environment, arsenic is combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds.

Inorganic arsenic compounds are mainly used to preserve wood. Copper chromated arsenate (CCA) is used to make "pressure-treated" lumber. CCA is no longer used in the U.S. for residential uses; it is still used in industrial applications. Organic arsenic compounds are used as pesticides, primarily on cotton fields and orchards.

What happens to arsenic when it enters the environment?

- Arsenic occurs naturally in soil and minerals and may enter the air, water, and land from wind-blown dust and may get into water from runoff and leaching.
- Arsenic cannot be destroyed in the environment. It can only change its form.
- Rain and snow remove arsenic dust particles from the air.
- Many common arsenic compounds can dissolve in water. Most of the arsenic in water will ultimately end up in soil or sediment.
- Fish and shellfish can accumulate arsenic; most of this arsenic is in an organic form called arsenobetaine that is much less harmful.

How might I be exposed to arsenic?

- Ingesting small amounts present in your food and water or breathing air containing arsenic.
- Breathing sawdust or burning smoke from wood treated with arsenic.
- Living in areas with unusually high natural levels of arsenic in rock.
- Working in a job that involves arsenic production or use, such as copper or lead smelting, wood treating, or pesticide application.

How can arsenic affect my health?

Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs.

Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet.

Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso.

Skin contact with inorganic arsenic may cause redness and swelling.

Almost nothing is known regarding health effects of organic arsenic compounds in humans. Studies in animals show that some simple organic arsenic compounds are less toxic than inorganic forms. Ingestion of methyl and dimethyl compounds can cause diarrhea and damage to the kidneys

How likely is arsenic to cause cancer?

Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. Inhalation of inorganic arsenic can cause increased risk of lung cancer. The Department of Health and Human Services (DHHS) and the EPA have determined that inorganic arsenic is a known human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic arsenic is carcinogenic to humans.

How can arsenic affect children?

There is some evidence that long-term exposure to arsenic in children may result in lower IQ scores. There is also some evidence that exposure to arsenic in the womb and early childhood may increase mortality in young adults.

There is some evidence that inhaled or ingested arsenic can injure pregnant women or their unborn babies, although the studies are not definitive. Studies in animals show that large doses of arsenic that cause illness in pregnant females, can also cause low birth weight, fetal malformations, and even fetal death. Arsenic can cross the placenta and has been found in fetal tissues. Arsenic is found at low levels in breast milk.

How can families reduce the risks of exposure to arsenic?

- ❑ If you use arsenic-treated wood in home projects, you should wear dust masks, gloves, and protective clothing to decrease exposure to sawdust.
- ❑ If you live in an area with high levels of arsenic in water or soil, you should use cleaner sources of water and limit contact with soil.
- ❑ If you work in a job that may expose you to arsenic, be aware that you may carry arsenic home on your clothing, skin, hair, or tools. Be sure to shower and change clothes before going home.

Is there a medical test to determine whether I've been exposed to arsenic?

There are tests available to measure arsenic in your blood, urine, hair, and fingernails. The urine test is the most reliable test for arsenic exposure within the last few days. Tests on hair and fingernails can measure exposure to high levels of arsenic over the past 6-12 months. These tests can determine if you have been exposed to above-average levels of arsenic. They cannot predict whether the arsenic levels in your body will affect your health.

Has the federal government made recommendations to protect human health?

The EPA has set limits on the amount of arsenic that industrial sources can release to the environment and has restricted or cancelled many of the uses of arsenic in pesticides. EPA has set a limit of 0.01 parts per million (ppm) for arsenic in drinking water.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit (PEL) of 10 micrograms of arsenic per cubic meter of workplace air (10 $\mu g/m^3$) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Arsenic (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR

AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CADMIUM

CAS # 7440-43-9

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2008

This fact sheet answers the most frequently asked health questions (FAQs) about cadmium. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to cadmium happens mostly in the workplace where cadmium products are made. The general population is exposed from breathing cigarette smoke or eating cadmium contaminated foods. Cadmium damages the kidneys, lungs, and bones. Cadmium has been found in at least 1,014 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is cadmium?

Cadmium is a natural element in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide).

All soils and rocks, including coal and mineral fertilizers, contain some cadmium. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium does not corrode easily and has many uses, including batteries, pigments, metal coatings, and plastics.

What happens to cadmium when it enters the environment?

- ❑ Cadmium enters soil, water, and air from mining, industry, and burning coal and household wastes.
- ❑ Cadmium does not break down in the environment, but can change forms.
- ❑ Cadmium particles in air can travel long distances before falling to the ground or water.
- ❑ Some forms of cadmium dissolve in water.
- ❑ Cadmium binds strongly to soil particles.
- ❑ Fish, plants, and animals take up cadmium from the environment.

How might I be exposed to cadmium?

- ❑ Eating foods containing cadmium; low levels are found in all foods (highest levels are found in shellfish, liver, and kidney meats).
- ❑ Smoking cigarettes or breathing cigarette smoke.
- ❑ Breathing contaminated workplace air.
- ❑ Drinking contaminated water.
- ❑ Living near industrial facilities which release cadmium into the air.

How can cadmium affect my health?

Breathing high levels of cadmium can severely damage the lungs. Eating food or drinking water with very high levels severely irritates the stomach, leading to vomiting and diarrhea.

Long-term exposure to lower levels of cadmium in air, food, or water leads to a buildup of cadmium in the kidneys and possible kidney disease. Other long-term effects are lung damage and fragile bones.

How likely is cadmium to cause cancer?

The Department of Health and Human Services (DHHS) has determined that cadmium and cadmium compounds are known human carcinogens.

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

How can cadmium affect children?

The health effects in children are expected to be similar to the effects seen in adults (kidney, lung, and bone damage depending on the route of exposure).

A few studies in animals indicate that younger animals absorb more cadmium than adults. Animal studies also indicate that the young are more susceptible than adults to a loss of bone and decreased bone strength from exposure to cadmium.

We don't know if cadmium causes birth defects in people. The babies of animals exposed to high levels of cadmium during pregnancy had changes in behavior and learning ability. There is also some information from animal studies that high enough exposures to cadmium before birth can reduce body weights and affect the skeleton in the developing young.

How can families reduce the risks of exposure to cadmium?

- In the home, store substances that contain cadmium safely, and keep nickel-cadmium batteries out of reach of young children.
- Cadmium is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.
- If you work with cadmium, use all safety precautions to avoid carrying cadmium-containing dust home from work on your clothing, skin, hair, or tools.
- A balanced diet can reduce the amount of cadmium taken into the body from food and drink.

Is there a medical test to determine whether I've been exposed to cadmium?

Cadmium can be measured in blood, urine, hair, or nails. Urinary cadmium has been shown to accurately reflect the amount of cadmium in the body.

The amount of cadmium in your blood shows your recent exposure to cadmium. The amount of cadmium in your urine shows both your recent and your past exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to cadmium in drinking water at concentrations of 0.04 ppm for up to 10 days is not expected to cause any adverse effects in a child.

The EPA has determined that lifetime exposure to 0.005 ppm cadmium is not expected to cause any adverse effects.

The FDA has determined that the cadmium concentration in bottled drinking water should not exceed 0.005 ppm.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 5 $\mu g/m^3$ for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Cadmium (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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AGENCY FOR TOXIC SUBSTANCES
AND DISEASE REGISTRY

LEAD

CAS # 7439-92-1

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2005

This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,280 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is lead?

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?

- Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- When lead is released to the air, it may travel long distances before settling to the ground.
- Once lead falls onto soil, it usually sticks to soil particles.
- Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.

How might I be exposed to lead?

- Eating food or drinking water that contains lead. Water pipes in some older homes may contain lead solder. Lead can leach out into the water.
- Spending time in areas where lead-based paints have been used and are deteriorating. Deteriorating lead paint can contribute to lead dust.
- Working in a job where lead is used or engaging in certain hobbies in which lead is used, such stained glass.
- Using health-care products or folk remedies that contain lead.

How can lead affect my health?

The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

How likely is lead to cause cancer?

We have no conclusive proof that lead causes cancer in humans. Kidney tumors have developed in rats and mice that had been given large doses of some kind of lead compounds. The Department of Health and Human Services (DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on

Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house dust or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood.

How can families reduce the risks of exposure to lead?

- ❑ Avoid exposure to sources of lead.
- ❑ Do not allow children to chew or mouth painted surfaces that may have been painted with lead-based paint.
- ❑ If you have a water lead problem, run or flush water that has been standing overnight before drinking or cooking with it.
- ❑ Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children
- ❑ If your home contains lead-based paint or you live in an area contaminated with lead, wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

Is there a medical test to determine whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your recent exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth or bones can be measured by X-ray techniques, but these methods are not widely available. Exposure to lead also can be evaluated by measuring erythrocyte protoporphyrin (EP) in blood samples. EP is a part of red blood cells known to increase when the amount of lead in the blood is high. However, the EP level is not sensitive enough to identify children with elevated blood lead levels below about 25 micrograms per deciliter (µg/dL). These tests usually require special analytical equipment that is not available in a doctor's office. However, your doctor can draw blood samples and send them to appropriate laboratories for analysis.

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that states test children at ages 1 and 2 years. Children should be tested at ages 3-6 years if they have never been tested for lead, if they receive services from public assistance programs for the poor such as Medicaid or the Supplemental Food Program for Women, Infants, and Children, if they live in a building or frequently visit a house built before 1950; if they visit a home (house or apartment) built before 1978 that has been recently remodeled; and/or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers a lead level of 10 µg/dL to be a level of concern for children.

EPA limits lead in drinking water to 15 µg per liter.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for lead (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

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ATSDR

AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ZINC

CAS # 7440-66-6

This fact sheet answers the most frequently asked health questions (FAQs) about zinc. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Zinc is a naturally occurring element. Exposure to high levels of zinc occurs mostly from eating food, drinking water, or breathing workplace air that is contaminated. Low levels of zinc are essential for maintaining good health. Exposure to large amounts of zinc can be harmful. It can cause stomach cramps, anemia, and changes in cholesterol levels. Zinc has been found in at least 985 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is zinc?

Zinc is one of the most common elements in the earth's crust. It is found in air, soil, and water, and is present in all foods. Pure zinc is a bluish-white shiny metal.

Zinc has many commercial uses as coatings to prevent rust, in dry cell batteries, and mixed with other metals to make alloys like brass, and bronze. A zinc and copper alloy is used to make pennies in the United States.

Zinc combines with other elements to form zinc compounds. Common zinc compounds found at hazardous waste sites include zinc chloride, zinc oxide, zinc sulfate, and zinc sulfide. Zinc compounds are widely used in industry to make paint, rubber, dyes, wood preservatives, and ointments.

What happens to zinc when it enters the environment?

- Some is released into the environment by natural processes, but most comes from human activities like mining, steel production, coal burning, and burning of waste.
- It attaches to soil, sediments, and dust particles in the air.
- Rain and snow remove zinc dust particles from the air.
- Depending on the type of soil, some zinc compounds can move into the groundwater and into lakes, streams, and rivers.
- Most of the zinc in soil stays bound to soil particles and does not dissolve in water.
- It builds up in fish and other organisms, but it does not build up in plants.

How might I be exposed to zinc?

- Ingesting small amounts present in your food and water.
- Drinking contaminated water or a beverage that has been stored in metal containers or flows through pipes that have been coated with zinc to resist rust.
- Eating too many dietary supplements that contain zinc.
- Working on any of the following jobs: construction, painting, automobile mechanics, mining, smelting, and welding; manufacture of brass, bronze, or other zinc-containing alloys; manufacture of galvanized metals; and manufacture of machine parts, rubber, paint, linoleum, oilcloths, batteries, some kind of glass, ceramics, and dyes.

How can zinc affect my health?

Zinc is an essential element in our diet. Too little zinc can cause problems, but too much zinc is also harmful.

Harmful effects generally begin at levels 10-15 times higher than the amount needed for good health. Large doses taken by mouth even for a short time can cause stomach cramps, nausea, and vomiting. Taken longer, it can cause anemia and decrease the levels of your good cholesterol. We do not know if high levels of zinc affect reproduction in humans. Rats that were fed large amounts of zinc became infertile.

Inhaling large amounts of zinc (as dusts or fumes) can cause a specific short-term disease called metal fume fever. We do not know the long-term effects of breathing high levels of zinc.

Putting low levels of zinc acetate and zinc chloride on the skin of rabbits, guinea pigs, and mice caused skin irritation. Skin irritation will probably occur in people.

How likely is zinc to cause cancer?

The Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified zinc for carcinogenicity. Based on incomplete information from human and animal studies, the EPA has determined that zinc is not classifiable as to its human carcinogenicity.

How can zinc affect children?

Zinc is essential for proper growth and development of young children. It is likely that children exposed to very high levels of zinc will have similar effects as adults. We do not know whether children are more susceptible to the effects of excessive intake of zinc than the adults.

We do not know if excess zinc can cause developmental effects in humans. Animal studies have found decreased weight in the offspring of animals that ingested very high amounts of zinc.

How can families reduce the risks of exposure to zinc?

❑ Children living near waste sites that contain zinc may be exposed to higher levels of zinc through breathing contaminated air, drinking contaminated drinking water, touching or eating contaminated soil.
❑ Discourage your children from eating soil or putting their hands in their mouths and teach them to wash their hands frequently and before eating.
❑ If you use medicines or vitamin supplements containing zinc, make sure you use them appropriately and keep them out of the reach of children.

Is there a medical test to determine whether I've been exposed to zinc?

There are tests available to measure zinc in your blood, urine, hair, saliva, and feces. These tests are not usually done in the doctor's office because they require special equipment. High levels of zinc in the feces can mean high recent zinc exposure. High levels of zinc in the blood can mean high zinc consumption and/or high exposure. Tests to measure zinc in hair may provide information on long-term zinc exposure; however, the relationship between levels in your hair and the amount of zinc you were exposed to is not clear.

Has the federal government made recommendations to protect human health?

The EPA recommends that drinking water should contain no more than 5 milligrams per liter of water (5 mg/L) because of taste. The EPA requires that any release of 1,000 pounds (or in some cases 5,000 pounds) into the environment be reported to the agency.

To protect workers, the Occupational Safety and Health Administration (OSHA) has set an average limit of 1 mg/m^3 for zinc chloride fumes and 5 mg/m^3 for zinc oxide (dusts and fumes) in workplace air during an 8-hour workday, 40-hour workweek.

Similarly, the National Institute for Occupational Safety and Health (NIOSH) has set the same standards for up to a 10-hour workday over a 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for Zinc (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

11.6 Crowe Property Integrated Site Evaluation

Curtis State Office Building
1000 SW Jackson, Suite 410
Topeka, Kansas 66612-1367

Kansas Department of Health and Environment

Integrated Site Evaluation

Crowe Property, Caney, Kansas

Bureau of Environmental Remediation

Our Mission: To protect and improve the health and environment of all Kansans

SITE EVALUATION

Crowe Property

Caney, Kansas

Prepared by:
Kansas Department of Health and Environment
Bureau of Environmental Remediation
Remedial Section
Site Assessment Program

Date: September 2013

State ID: C3-063-73036

Project Manager: Randolph L. Brown, P.G., Site Assessment Unit Chief

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TABLE OF CONTENTS

1.0 Introduction

This document presents the findings of a Pre-CERCLIS Integrated Site Evaluation (ISE) conducted by the Kansas Department of Health and Environment (KDHE) to verify if a release of hazardous substances, pollutants or contaminants has occurred at the Crowe Property site in Caney, Montgomery County, Kansas. This assessment was conducted as part of continuing cooperative agreement with the U.S. Environmental Protection Agency (EPA) to perform investigations of selected sites to evaluate potential or actual releases of hazardous substances, pollutants, or contaminants in Kansas. These investigations are performed under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR § 300. The purpose of this ISE is to collect additional data to support a site disposition for the Crowe Property site.

2.0 Site Description and Location

The Crowe Property site is located at 1101North Spring Street, Caney, Kansas 67333 (see Figure 1). The site includes the residential property owned by Mr. Larry Crowe, Sr. who resides on this property. The site has center global positioning system coordinates of 37.02250 north latitude and -095.93642 west longitude. The site is located in the northern portion of Caney in Section 12, Township 35 South, Range 13 East. Figures 1 and 2 indicate the site location.

3.0 Site Background

3.1 History

A property owner to the north, Mr. Fred Bunch, contacted KDHE in 2011 regarding concerns of potential smelter waste present on his property. This site was referred to KDHE's Site Assessment Program in June 2012, and sampling was conducted on the property on June 19, 2012. The property immediately north of the Bunch property contains the former Owen Zinc site (KDHE identification number C306300193, EPA identification number KSD984971911).

Based on the elevated detections in the Bunch residential yard, and concerns about potential lead impacts to his property, the property owner south of the Bunch property, Mr. Derek Roberds, contacted KDHE in June 2013 to request sampling on his property. During sampling of the Roberds property, Mr. Larry Crowe also petitioned KDHE to sample his residential property in a separate investigation.

The Owen Zinc site was originally the location of the Caney Brick Company which operated between 1902 and 1915. Charles Owen and a partner constructed the Owen Zinc Smelter Works over the site of the former Caney Brick Company. In August 1915, the American Zinc, Lead and Smelting Company leased the facility from the Owen Zinc Company until 1918, when the facility was sold to the Weir Smelting Company. A review of Sanborn Fire Insurance Maps for Caney indicates that in 1912 the only facility on the site was the Caney Brick Company. The 1917 Sanborn Map for Caney indicates the presence of the Owen Zinc Company at the former location of the Caney Brick Company. The Owen Zinc facility had one ore roaster and three furnace buildings. The Weir Smelting Company purchased the land containing the Owen Zinc facility in about 1926 and continued smelter operations until 1931. The 1927 Sanborn Map for Caney describes the Weir Smelter Company facility as “plant being wrecked”.

The Sanborn maps do not indicate any smelter works south of what is currently County Road 1600, which at the time of the Sanborn maps was the city limits and currently forms the northern boundary of the Bunch property. The block containing the Bunch property is indicated as the “Harvey’s Addition” residential area on the Sanborn Maps through the final available Sanborn Map (1936). The rail spur from the Owen Zinc smelter did, however, cross what is currently the northeastern portion of the Bunch property extending from the former Owen Zinc smelter southward into Caney. The railroad spur was not evaluated during the Owen Zinc investigations. The Sanborn Maps indicate it to be a Missouri Pacific siding (References 1 and 2).

The Weir Smelting Company trustee, Dallas W. Knapp, of Coffeyville, began to sell lots parted from the original Owen Zinc facility to Wilford Cavaness in 1931. The Weir Smelting Company was apparently bankrupt at that time and trustees were therefore selling assets. The Weir Smelting Company also purchased the American Zinc, Lead, and Smelting Company works located ½ mile to the east of the Owen Zinc site. This site has been assessed separately as the American Zinc, Lead and Smelting Company Site, EPA I.D. Number (CERCLIS) KSD984971986. Greater detail on the Owen Zinc and American Zinc, Lead and Smelting Company sites can be found in several reports for each site and will not be duplicated here (References 1 and 2).

3.2 Previous Investigations

Laboratory analysis of soil, sediment, and surface water samples collected from the Owen Zinc site has indicated the presence of elevated levels of Resource Conservation and Recovery Act (RCRA) heavy metals, primarily lead, cadmium and zinc. In 1991 KDHE/BER conducted a Preliminary Assessment (PA) at the Owen Zinc site which was followed by a Screening Site Inspection (SSI) also in 1991 followed by additional supplemental sampling in 1992. In 2001 KDHE conducted an Expanded Site Inspection (ESI) at the site. During all phases of investigation, cadmium was detected at a maximum concentration of 1,099 milligrams per kilogram (mg/kg), above its residential Tier 2 Risk-based Standards for Kansas (RSK) of 39 mg/kg during the 1992 sampling.

Lead was detected at a maximum concentration of 4,845 mg/kg during the 1991 PA, elevated above its residential Tier 2 RSK of 400 mg/kg. Zinc was detected at a maximum concentration of 32,210 mg/kg, above its residential RSK level of 23,000 mg/kg in the 1991 PA/SSI sampling. Cadmium was detected in surface water in an on-site seep at a maximum concentration of 1.147 milligrams per liter (mg/L), above KDHE's Surface Water Quality Standard (SWQS) for domestic water supply of 0.005 mg/L. Lead was detected in surface water at a concentration of 0.011 mg/L, above its domestic water supply SWQS of 0.015 mg/L. Zinc was detected at a maximum concentration of 22.754 mg/L, above its domestic water supply SWQS of 7.4 mg/L.

During the ESI, KDHE collected samples from 76 locations for X-ray fluorescence (XRF) analysis with selected samples being submitted for laboratory confirmation. The maximum detection of lead during the ESI was at sample location 400,300 with an XRF lead value of 2,200 mg/kg and a laboratory lead value of 4,102.7 mg/kg. Cadmium was detected at maximum concentrations by XRF analysis at 997.0 mg/kg at sample location 500,65, and 954.0 mg/kg at sample location 700,100. Cadmium was detected at a maximum concentration of 748.8 mg/kg by laboratory analysis at location 600,200. These maximum detections were identified adjacent to or immediately down slope of the former Owen Zinc works. The ESI verified elevated lead and cadmium levels in soil on the property containing the Owen Zinc site, the adjacent Torres residential property, and in sediment downstream from these properties (Reference 1). The Blue Tee Corporation was identified as a successor to the American Zinc, Lead and Smelting Company after completion of the 2001 KDHE ESI. A responsible party notification was sent to the Blue Tee Corporation by KDHE in 2002 for the Owen Zinc site.

The Blue Tee Corporation was also identified as a successor corporation to the American Zinc, Lead and Smelting Company in the Administrative Order on Consent (AOC) for the American Zinc, Lead and Smelting Company site, EPA I.D. # KSD984971986, Docket Number VII 95 F-0031 (Reference 1). The Blue Tee Corporation entered into a Consent Agreement with KDHE in 2004, and conducted a corrective action consisting of consolidating the smelter waste on the former Owen Zinc smelter within the Moore property, and contaminated soil into an on-site consolidation cell which was capped. Additional sampling was apparently not conducted by the responsible party south of County Road 1600 where the Bunch property is located. In 2011 an Environmental Use Control (EUC) was placed on the property containing the former Owen Zinc smelter, at that time owned by Dr. Robert and Betty Moore (Reference 2).

The ISE for the 1202 N. State site was completed in February 2013. The maximum XRF and laboratory lead detections of 3,751 mg/kg and 5,100 mg/kg, respectively, were encountered in sample S-32, located near the northern edge of the Bunch residential garden. A total of 11 XRF or laboratory analyses of the 35 surface soil samples exceeded KDHE's residential Tier 2 RSK for lead of 400 mg/kg. Cadmium was detected at a maximum of 93 mg/kg at location S-3 with a corresponding lead detection of 1,500 mg/kg by laboratory and 1,186 mg/kg by XRF analysis. Arsenic was detected by laboratory analysis above its residential Tier 2 RSK of 18.9 mg/kg in samples S-2 and S-36, and both were also above the three times background concentration for arsenic of

20.7 mg/kg calculated for the Owen Zinc ESI. The arsenic detections in both of these samples was 24 mg/kg, and each of these locations had a corresponding lead concentration over 400 mg/kg. Zinc was detected in S-32 by laboratory analysis at 55,000 mg/kg, above the residential Tier 2 RSK of 23,000 mg/kg. Samples S-32 and S-3 indicated zinc above residential Tier 2 RSKs in XRF analysis, and both locations are associated with laboratory and/or XRF lead detections above 400 mg/kg (Reference 14).

The ISE for the Roberds property, immediately north and adjacent to the Crowe property, was completed in August 2013. Lead was detected at a maximum of 529 mg/kg XRF and 500 mg/kg by laboratory analysis. Arsenic was detected at a maximum of 176 mg/kg XRF and 140 mg/kg by laboratory analysis (Reference 15). During the field activities for the Roberds Property ISE, Mr. Crowe made a citizen's petition requesting KDHE sample his residential yard through a separate investigation.

4.0 Physical Setting

4.1 Land Use

The land use is residential at the site. The site contains the Crowe residence, a garage, and several sheds. The Roberds residential lot is located to the north of the Crowe property and West Myrtle Avenue forms the southern boundary. Most of the surrounding properties are residential. The nearest residence is the Crowe residence located on the site. Mr. Crowe has resided on the property for many years.

4.2 Soils and Geology

Soils at the site consist of Bates-Collinsville loam formed in sandstone residuum and the Dennis silt loam formed in shale or siltstone. Permeability is variable and can range from low to moderate based on relative silt contents (Reference 3). Bedrock is very shallow and generally less than three to five feet below ground surface. Very limited amounts of water are present within shallow sandstone and siltstones in the site area. Bedrock at the site consists of the Pennsylvanian Lansing and Douglas Groups (Reference 4).

4.3 Hydrogeology

Groundwater in the site area has historically not been widely used because of its highly localized yield and quality as well as contamination from oil field activity (Reference 4). Bedrock refusal was encountered at depths between two and five feet below ground surface in borings drilled for the Owen Zinc ESI and groundwater was not encountered (Reference 1).

5.0 Receptors

5.1 Groundwater Pathway

There are no public water supply (PWS) wells at or within a four mile radius of the site (Reference 4). The area is supplied with water from the City of Caney PWS which relies on a surface water intake on the Little Caney River (Reference 1). A search of the Kansas Geological Survey WWC-5 database identified 14 domestic wells within a four-mile radius of the site but none within one mile of the site (Reference 4).

5.2 Soil and Air Pathways

The site area is mostly residential. Approximately 2,389 persons live within one mile of the site (Reference 5). The Crowe property is residential with a home, a garage, and several sheds on the property.

5.3 Surface Water Pathway

The surface water pathway was not assessed during the ISE. Drainage from the site is to the west towards Cheyenne Creek which is present approximately ½ mile from the site. Cheyenne Creek enters the Little Caney River approximately 1 mile southwest of the site. The City of Caney PWS receives its water supply from the Little Caney River upstream of the confluence of Cheyenne Creek and the Little Caney River (Reference 1).

6.0 Assessment Activities

6.1 Description of Field Activities

On July 17, 2013, Randolph L. Brown, P.G., inspected the site and sampled surface soils from six locations using stainless steel trowels. Samples were collected into one-quart freezer bags for analysis with KDHE’s Innov-X Delta XRF unit and homogenized in the field. Samples were collected from biased locations in areas with frequent use. Based on the on-site XRF analysis, no additional sample locations were added.

All samples were analyzed on-site with KDHE’s Innov-X Delta XRF unit consistent with EPA Method 6200 by analyzing each sample three times with a 30 second analysis time. Of the XRF analyses, ten samples were submitted to KDHE’s Health and Environment Laboratories (KHEL) for metals analysis by EPA Method 6010. Since no individual analysis exceeded residential Tier 2 RSKs for lead, no samples were submitted for Toxicity Characteristic Leachate Procedure (TCLP) analysis.

6.2 Sampling Plan Deviations

Initially five samples were proposed for collection in the areas of the property with more frequent use and exposure potential. Based on the adjacent Roberds Property sampling, one additional sample (C-1) was collected in the northwestern portion of the Crowe property to verify no residual contamination was present from the southern edge of the adjacent Roberds property. Since no individual discrete sample exceeded residential Tier 2 RSKs for lead, the composite sampling approach recommended by EPA's *Superfund Lead-Contaminated Residential Sites Handbook* was not initiated.

6.3 Quality Assurance and Quality Control

Samples were collected in accordance with KDHE's Standard Operating Procedures, Generic Quality Assurance Project Plan and the Site Specific Quality Assurance Project Plan Addendum. No holding times were exceeded.

A linear regression was calculated for the XRF vs. laboratory lead data collected at the Roberds and Crowe Property sites. Because of the small population size for laboratory data at the adjacent Crowe Property site (three samples), the Crowe Property results were aggregated with the Roberds Property results for the lead regression calculations. A coefficient of correlation of $r = 0.9487$ and a coefficient of determination (the square of the coefficient of correlation) of $r^2 = 0.9001$ were calculated for lead. According to EPA Method 6200, an r^2 value of 0.9 or higher can be considered *quantitative definitive level data*. An r^2 value of 0.7 to 0.9 can be considered *quantitative screening level data*. The coefficients of correlation and determination for lead calculated for this site indicates that the XRF data obtained from the *in situ* XRF analysis of surficial soil samples can be considered quantitative definitive level data.

A linear regression was also calculated for arsenic. To increase the population size for the regression, if the XRF or laboratory value was not detected with a corresponding detection from the XRF or laboratory analysis, a pseudo-value of 0 was used for the non-detection in the regression calculation. Values of $r = 0.9820$ and $r^{2\,=}$ 0.9644 were calculated for arsenic.

The average relative standard deviation (RSD) was calculated to be 5.5 % for the field duplicate analyses during this ISE, well within the EPA Method 6200 acceptable RSD value of 20 %. The percent difference (PD) between the National Institute of Standards and Testing certified lead standards used during the ISE and the XRF analyzed value indicated a maximum PD of 4.5 %, well within the acceptable PD value established by Method 6200 of 20 % (Reference 6). Table 5 includes the data comparison between XRF and laboratory data. Since enough clean trowels were available for the six soil samples, no rinsate sample was collected.

7.0 Assessment Results

The maximum XRF and laboratory lead detections of 336 mg/kg and 320 mg/kg respectively, were encountered in sample C-2. All other laboratory or XRF results were below 300 mg/kg. All results are below the residential Tier 2 RSK for lead of 400 mg/kg.

Arsenic was not detected above 11 mg/kg by XRF analysis, and was detected at a maximum of 9.4 mg/kg in C-2. All arsenic detections were below the residential Tier 2 RSK of 18.9 mg/kg.

8.0 Removal Considerations

Since no discrete sample was detected above 400 mg/kg, composite samples were not taken to determine if further removal consideration is necessary consistent with the *Superfund Lead-Contaminated Residential Sites Handbook.* From the ISE data the Crowe property does not qualify for further removal site evaluation consistent with the NCP

9.0 Conclusions

Based on the limited sampling conducted for the ISE, lead and arsenic are not present in the Crowe residential lot at levels exceeding KDHE's residential Tier 2 RSK levels of 400 mg/kg for lead and 18.9 mg/kg for arsenic. Further site evaluation consistent with the NCP including evaluation of removal action eligibility is not recommended for the Crowe property.

10.0 References

1) *Expanded Site Inspection for the Owen Zinc Site*, KDHE, 2001.

2) KDHE files for Owen Zinc Site, C3-063-00193 (including *Consent Agreement and Final Order*) and American Lead, Zinc and Smelting Company Site, C3-063-00190 (including *Administrative Order on Consent*).

3) U.S. Department of Agriculture, *Soil Survey of Montgomery County, Kansas*, 1980.

4) Kansas Geological Survey, geology and water well database, available at: http://www.kgs.ku.edu/, accessed July 17, 2013.

5) U.S. Census Bureau State and County Quick Facts available at: http://quickfacts.census.gov/qfd/, accessed July 17, 2013.

6) U.S. EPA, Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, first edition January 1998 and U.S. Environmental Protection Agency (EPA), Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, revised February 2007.

7) U.S. EPA, *Superfund Lead-Contaminated Residential Sites Handbook, Final,* August 2003.

8) Kansas Department of Health and Environment, *Risk-based Standards for Kansas (RSK) Manual*, 2010.

9) U.S. Environmental Protection Agency, *Guidance for Performing Preliminary Assessments under CERCLA*, EPA 540/G-91/013, 1991.

10) U.S. Environmental Protection Agency, *Quality Assurance/Quality Control Guidance for Removal Activities under CERCLA*, EPA 540/G-90/004, April, 1990.

11) U.S. Environmental Protection Agency, *Guidance for Performing Site Inspections under CERCLA*, OSWER Directive 9345.1-05, 1992.

12) U.S. Environmental Protection Agency, *Hazard Evaluation Manual: A Guide to Removal Actions*, EPA Region III, 1993.

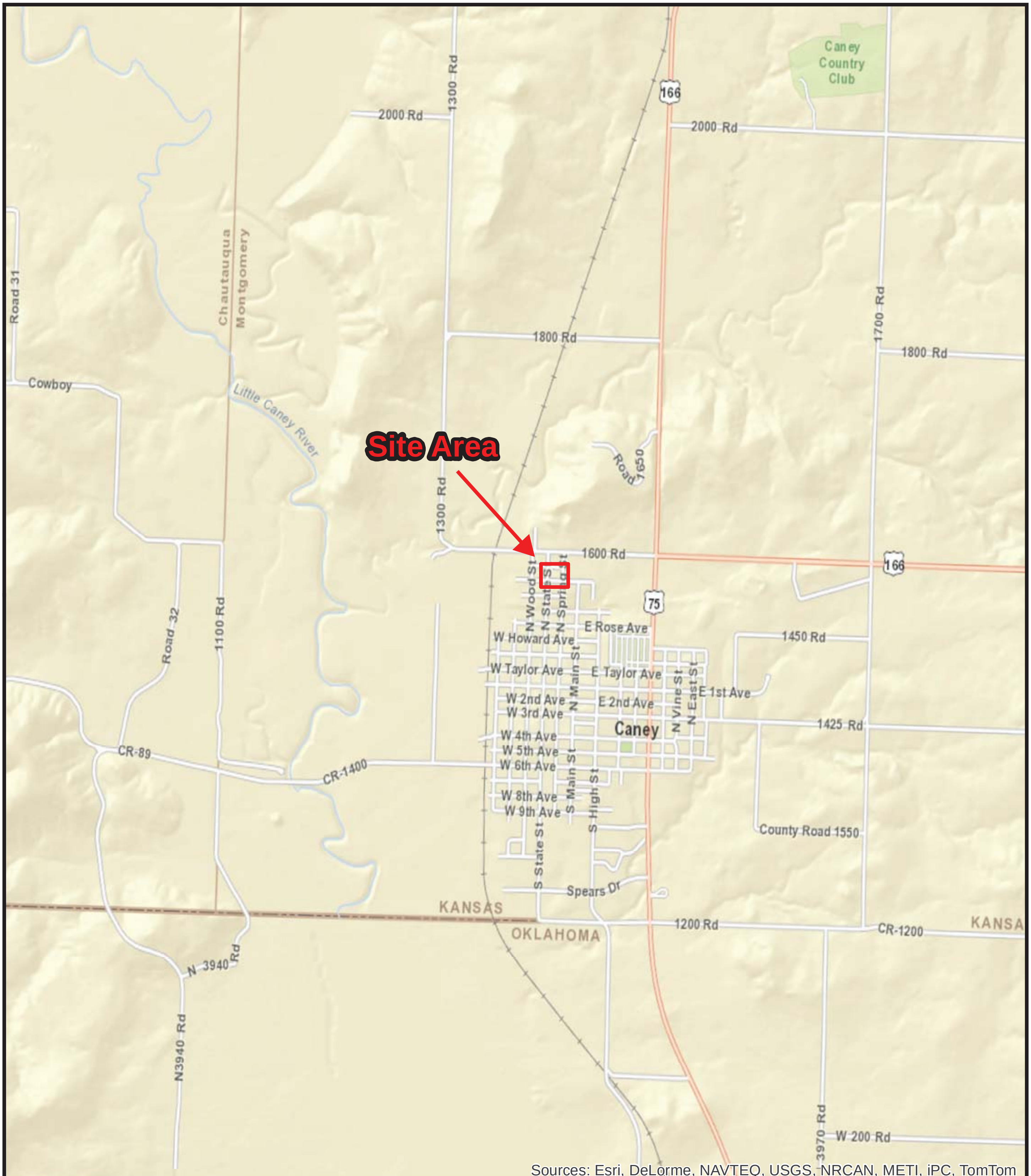
13) Kansas Surface Water Quality Standards, December, 2004.

14) *Integrated Site Evaluation for the 1202 N. State Smelter Complaint*, C3-063-72925, KDHE, 2013.

15) *Integrated Site Evaluation for the Roberds Property*, C3-063-73037, KDHE 2013.

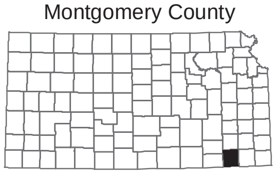
11.0 Appendices

11.1 Figures and Tables



N

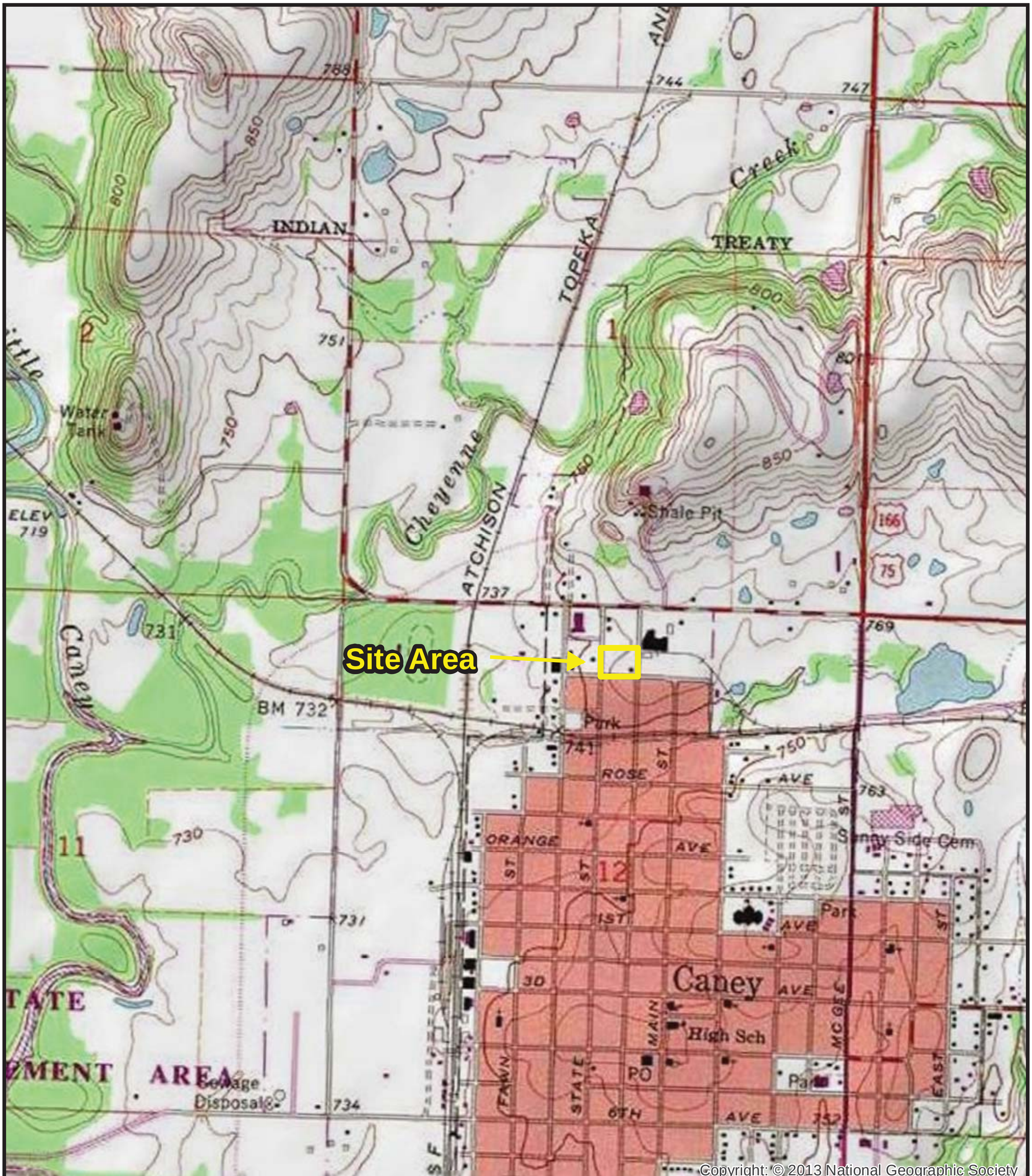
Montgomery County



0 0.25 0.5 1 Miles

Kansas Department of Health and Environment

SITE:	Crowe Property Caney, Kansas		
TITLE:	Area Map		
PROJECT PHASE:	Integrated Site Evaluation		
DRAWN BY: NS	9/19/13	BASEMAP DATE:	2013
CHECKED BY: RB	9/19/13	**Figure 1**	



N

0 0.125 0.25 0.5 Miles

Kansas
Department of Health and Environment

SITE:	Crowe Property Caney, Kansas		
TITLE:	Topographic Map		
PROJECT PHASE:	Integrated Site Evaluation		
DRAWN BY: NS	7/19/13	BASEMAP DATE:	2013
CHECKED BY: RB	7/19/13	Figure 2	

LEGEND

Surface Soil Sample

Property Boundary

N

All values in mg/kg
Results- XRF value (KHEL value)
ND- Not detected at 11 mg/kg detection limit
NA- Not analyzed

0 25 50 100 Feet

Kansas Department of Health and Environment

SITE:			**Crowe Property Caney, Kansas**		
TITLE:			**Analytical Results for Surface Soil Samples**		
PROJECT PHASE:			Integrated Site Evaluation		
DRAWN BY:	NS	9/23/13	BASEMAP DATE:	2013	
CHECKED BY:	RB	9/23/13	**Figure 3**		

11.2 Photographic Documentation

Crowe Property Site

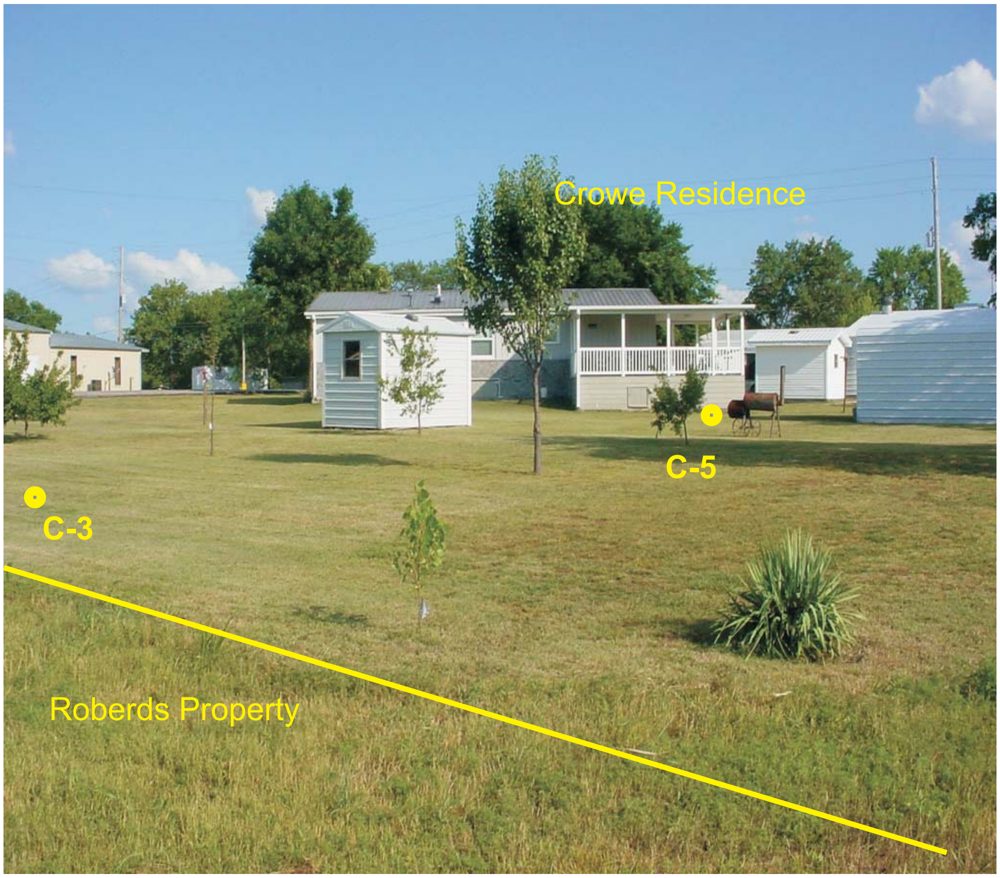


Photo 1
View: Southeast
Date: 07/17/2013
Photo by: Randy Brown
Comments: Crowe residence at 1101 N. Spring Street and sample locations C-3 and C-5.

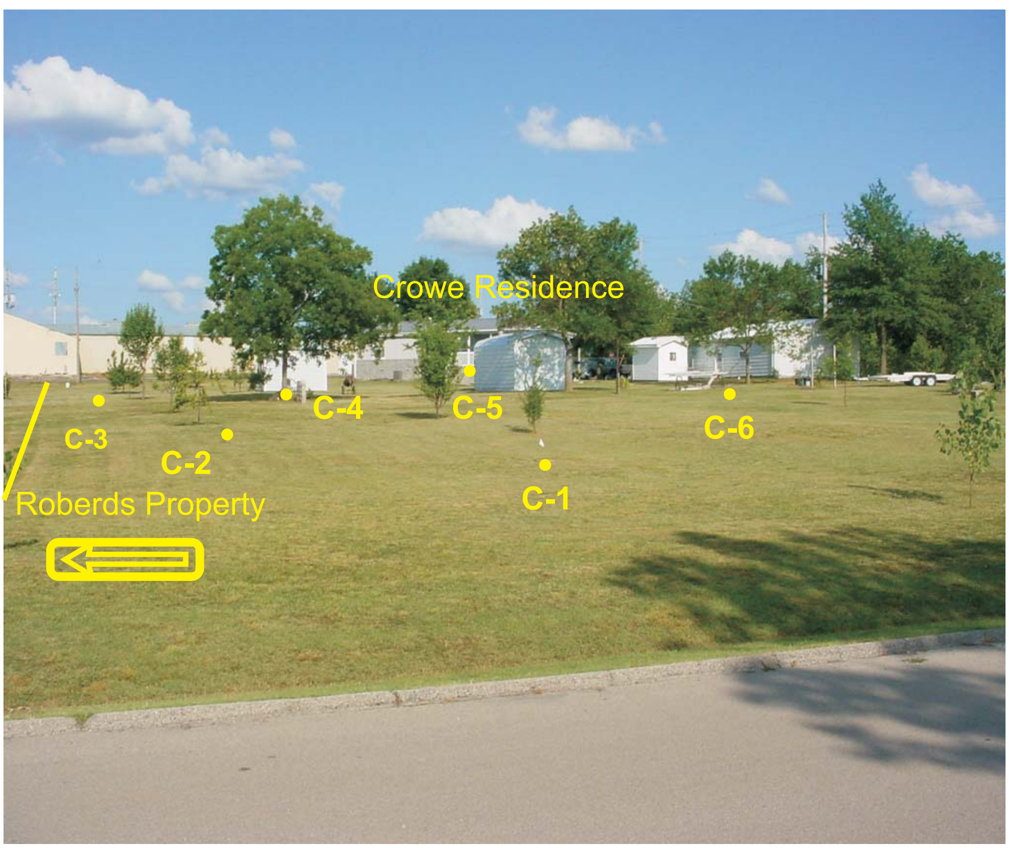


Photo 2
View: Southeast
Date: 07/17/2013
Photo by: Randy Brown
Comments: Sampling locations in Crowe residential yard. No visible slag or waste was observed.

11.3 Laboratory Analytical Data

C3-063-73036

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES

Kansas Department of Health and Environment
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 598943
4EM80
Site ID:
Account Code: EP

Collection Location: CROWE PROPERTY/CANEY C3-063-73036 C-2
Collector: RANDY BROWN Matrix: Soil Collect Depth:
Date/Time Collected: 07/17/13 18:05 Date/Time Received: 07/19/13 09:01

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	9.4	mg/Kg	08/02/13	EPA 6010
Barium (Total)	190	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	7.8	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	35	mg/Kg	08/02/13	EPA 6010
Lead (Total)	320	mg/Kg	08/02/13	EPA 6010
Percent Solids	86	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM FWM
Date Reported: 08/06/13
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

BER SCANNED
AUG 15 2013

RECEIVED
AUG 14 2013
BUREAU OF
ENVIRONMENTAL REMEDIATION

Kansas Department of Health and Environment

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 598944
4EM80
Site ID:
Account Code: EP

Collection Location: CROWE PROPERTY/CANEY C3-063-73036 C-4
Collector: RANDY BROWN Matrix: Soil Collect Depth:
Date/Time Collected: 07/17/13 00:00 Date/Time Received: 07/19/13 09:02

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	9.0	mg/Kg	08/02/13	EPA 6010
Barium (Total)	190	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	9.1	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	39	mg/Kg	08/02/13	EPA 6010
Lead (Total)	230	mg/Kg	08/02/13	EPA 6010
Percent Solids	90	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM FWM
Date Reported: 08/06/13
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

BER SCANNED
AUG 15 2013

RECEIVED
AUG 14 2013
BUREAU OF
ENVIRONMENTAL REMEDIATION

Kansas Department of Health and Environment

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 598945
4EM80
Site ID:
Account Code: EP

Collection Location: CROWE PROPERTY/CANEY C3-063-73036 C-6
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 07/17/13 18:25   Date/Time Received: 07/19/13 09:02

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	7.3	mg/Kg	08/02/13	EPA 6010
Barium (Total)	170	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	7.4	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	33	mg/Kg	08/02/13	EPA 6010
Lead (Total)	200	mg/Kg	08/02/13	EPA 6010
Percent Solids	88	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM FWM
Date Reported: 08/06/13
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

BER SCANNED
AUG 15 2013

RECEIVED
AUG 14 2013
BUREAU OF
ENVIRONMENTAL REMEDIATION

11.4 X-Ray Fluorescence Analytical Results

Crowe property Met w/ Larry Crowe Sr. 1650 - locations
OK to sample.
XRF Analysis 07/17/2013 Cal check passed 1815
Mr. Crowe left site 1845

Sample	Pb	As	Cd	Zn
R-22 RSD	221	—	—	—
	223	—	—	—
	235	—	—	—
	243	—	—	—
	250	—	—	—
	261	—	—	—
	246	—	—	—
	244			
C-1	138±7	<11		
	132±7	<11		
	119±6	<11		
*C-2	294±10	<11		
	336±10	<11		
	205±8	<11		
*C-4	240±9	<11		
	238±9	<11		
	184±8	<11		
C-5	162±8	<11		
	150±7	<11		
	129±7	<11		
*C-6	196±8	<11		
	241±9	<11		
	181±7	<11		
NIST 2781	205±9			
C-3	168±7	<11		
	122±7	<11		
	137±7	<11		
NIST 2711	1158±25	—		

11.5 Field Notes

RR 07/17/03

Crowe Property and Roberds Property Sampling

07/17/13 On site 1000 General notes:

(A) Roberds Property - 50 ft grid marked in 3 rows. R-1 through R-21. R-22 added ~~then~~ after XRF analysis.

(A) Crowe Property - ~~Re~~ 6 biased samples taken across yard. None added after XRF analysis.

All samples taken w/ stainless steel trowels at 0-6", homogenized by hand in bag, coarse fractions rejected. Decon by Alconox water solution, D.I. water triple rinse, air dry.

Samples taken into 1-qt freezer bags marked w/ time & date, double bagged.

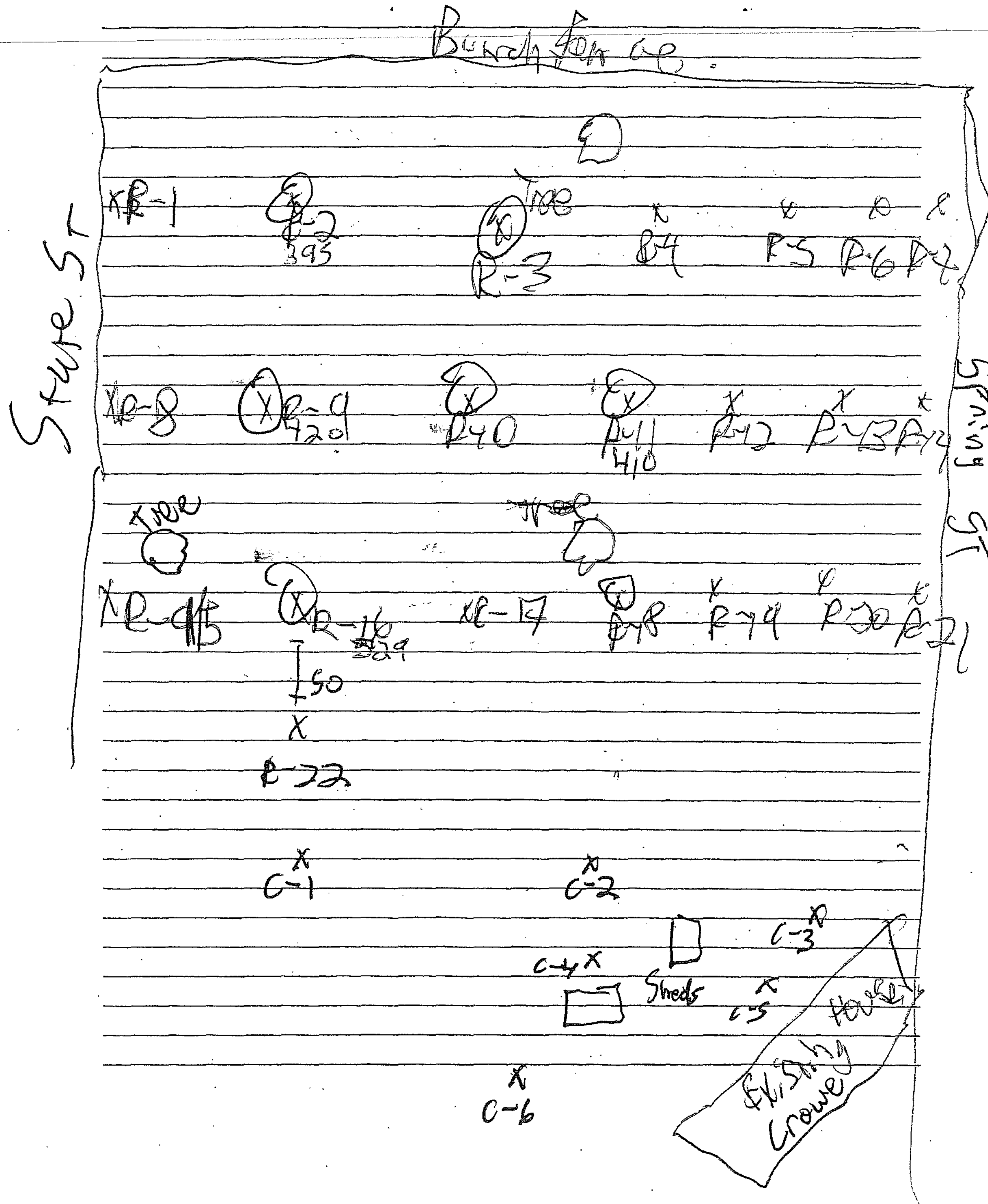
XRF analysis of 30 sec. per analysis, three analyses per bag. Inner bag removed for XRF analysis.
Rinsate 1325, lunch 1330.
Completed Roberds sampling at ~~[illegible]~~ 1425. Ran XRF analysis of collected samples. Based on XRF results R-22 added 50' south of R-9. R-22 below 400 mg/kg Pb by XRF, no additional locations added. R-22 collected 1640 and analyzed immediately after.
Mr. Larry Crowe Sr. came at 1650. Selected locations with him. Began Crowe sampling 1800. Completed 1825.
No Crowe samples above 400 mg/kg lead.

GPS all locations with Etrex

Left site 1915

Very little slag on either Roberds or Crowe properties.

07/17/13


Burchfield ave.
Stupe St
Spring St
R-1
R-2
395
Tree
R-3
R-4
R-5
R-6
R-7
R-8
R-9
420
R-10
R-11
410
R-12
R-13
R-14
Tree
Tree
R-15
R-16
329
50
R-17
R-18
R-19
R-20
R-21
R-22
C-1
C-2
C-3
C-4
Sheds
C-5
C-6
Existing house Crowe

Brown on-site 1000, begin marking locations.

07/17/13

R-1 Sample time 1215
37.02311 -095.93734

R-2 Sample time 1220
37.02309 -095.93719

R-3 Sample time 1225
37.02314 -095.93702

R-4 Sample time 1230
37.02314 -095.93683

R-5 Sample time 1235
37.02314 -095.93664

R-6 Sample time 1240
37.02314 -095.93664

R-7 Sample time 1245
37.02313 -095.93630

R-8 Sample time 1250
37.02292 -095.93736

R-9 Sample time 1255
37.02293 -095.93716

R-10 Sample time 1300
3702295 -095.93697

R-11 Sample time 1305
37.02294 -095.93678

R-12 Sample time 1310
37.02296 -095.93665

R-13 Sample time 1315
37.02298 -095.93645

R-14 Sample time 1320
37.02298 -095.93627

R-15 Sample time 1355
37.02282 -095.93732

R-16 Sample time 1400
37.02278 -09593713

R-17 Sample time 1405
37.02277 -09593697

R-18 Sample time 1410
37.02279 -095.93682

R-19 Sample time 1415
37.02282 -095.93664

R-

07/17/13

Page 2

R-20 Sample time 1420
37.02283 -095.93646
R-21 Sample time 1425
37.02281 -095.93629
R-22 Sample time 1640
37.02265 -095.93713
Derek Robards visited site 1530, pleased with progress

Rinsate 1325

Stop for Lunch 1230

Larry Crowe Property Samples:
C-1 Sample time 1800
37.02246 -095.93713
C-2 Sample time 1805
37.02242 -095.93684
C-3 Sample time 1810
37.02250 -095.93642
C-4 Sample time 1815
37.02235 -095.93673
C-5 Sample Time 1820
37.02236 -095.93645
C-6 Sample Time 1825
37.02224 -095.93668

Larry Crowe stopped by site at 1650 gave verbal permission to sample property, requested sampling. Began Sampling Crowe property 1730.

Leave site 1915

11.6 Site Evaluation Form

Kansas Department of Health and Environment
Integrated Site Evaluation Form

I. Site Information			
Site Name: Crowe Property Site			
Address or location: 1101 N. Spring Street			
City: Caney	County: Montgomery	State: Kansas	ZIP: 67333
Telephone:	Fax:		
Directions to Site: Located south of 1202 N. State Street, Caney, Kansas.			
Map attached? ☒ Yes - see Integrated Site Evaluation (ISE) Report			

Requested by: Larry Crowe, Sr.	Agency/Office: Remedial Section Chief, KDHE/BER	
Address: 1101 N. Spring Street		Date of Request: 07/17/2013
City: Caney	State: Kansas	ZIP: 67333
Phone:	E-mail:	Fax:

Site Contact: Randy Brown/KDHE		
Address: 1000 SW. Jackson, Suite 410		
City: Topeka	State: Kansas	ZIP: 66612-1367
Phone: 785-296-8065	E-mail: rbrown@kdheks.gov	Fax: 785-296-7030

II. CERCLA Site Screening Response Criteria (see Section V for definitions)

A. Is there a release or threat of release as defined by the NCP? Yes ☒ No ☐

Explain: Lead, arsenic and cadmium have been detected near the site above residential Tier 2 RSKs.

B. Is the source a facility or vessel as defined by the NCP? Yes ☒ No ☐

Explain: The site is near a former lead and zinc smelter.

C. Does the release or threat of release involve a hazardous substance, pollutant, or contaminant as defined by the NCP? Yes ☒ No ☐

Explain: Lead cadmium and arsenic are hazardous substance as defined by the NCP.

D. Is the release subject to the limitations on response? Yes ☐ No ☒

Explain: No release limitations appear to exist.

E. Does the quantity or concentration warrant response? Yes ☐ No ☒

Explain: Lead and arsenic were not elevated above residential RSK levels.

F. Has a PRP been identified? Yes ☐ No ☒

Name:		Telephone:	
Address:	City:	State:	Zip:

G. Document operational and regulatory history: see attached report ☒

H. What is the current land use around the facility? Check all that apply:
Residential ☒ Industrial ☐ Commercial ☐ Agricultural ☐ Recreational ☐

I. Is there an actual or potential exposure to hazardous substances, pollutants or contaminants:

Ground Water: Yes ☐ No ☐ Potential ☒ Receptor: Private water systems
Explain: Groundwater is not used near the site for drinking water purposes.

Surface Water: Yes ☐ No ☒ Potential ☐ Receptor: Environmental targets
Explain: No surface water bodies are present at this site.

Soil: Yes ☐ No ☒ Potential ☐ Receptor:
Explain: No individual XRF or laboratory detection for lead or arsenic was above Tier 2 residential RSKs.

Waste: Yes ☐ No ☒ Potential ☐ Receptor: workers
Explain: Visible smelter slag was not observed.

Air: Yes ☐ No ☐ Potential ☒ Receptor: Residents (fugitive dust)
Explain: Fugitive dust from contaminated areas to the north may impact off-site areas.

J. Is there an actual or a potential for contamination of a drinking water well? Yes ☐ No ☒ Potential ☐
Explain: No drinking water wells are located at or near the site.

K. Are there hazardous substances, pollutants, or contaminants in drums, barrels, bulk storage containers, or tanks? Yes ☐ No ☒
Explain:

Kansas Department of Health and Environment
Integrated Site Evaluation Form

L. Are there high levels of hazardous substances in:

Near-surface soils (< 2 feet below surface)?	Yes ☐	No ☒	Unknown ☐
Subsurface soils (> 2 feet below surface)?	Yes ☐	No ☒	Unknown ☐
Surficial Waste present?	Yes ☐	No ☒	Unknown ☐

Site Accessibility: Secure ☐ Access limited ☐ Readily accessible ☒ Worker population: 5-10

Further explanation: No detections above residential RSKs were identified.

M. Are there conditions on site that may be susceptible to impact from adverse weather? Yes ☐ No ☒

Explain: There are no apparent conditions susceptible to adverse weather impacts.

N. Is there a threat of fire or explosion? Yes ☐ No ☒

Explain: No threat of fire or explosion was identified.

O. Is there a potential for other federal or state response programs? Yes ☐ No ☒

Explain:

P. Are there endangered species habitats, wetlands, or other sensitive environments nearby which may be adversely impacted by the site? Yes ☐ No ☒

Explain:

Q. Are there other situations or factors that warrant further CERCLA response? Yes ☐ No ☒

Explain:

R. Document economic conditions surrounding the site: The site is situated in a residential area of Caney, Kansas.

III. CERCLA Site Screening Findings and Recommendations

A. CERCLA Eligible?

☐ Yes – further CERCLA evaluation is recommended. Cite applicable factors from Section III:

- ☐ A release of a hazardous substance, pollutant or contaminant has occurred;
- ☐ CERCLA Limitations on Response provisions do not apply;
- ☐ No responsible parties are willing/capable to respond at this time;
- ☐ Drums, barrels, and/or containers are, or may be present at the site;
- ☐ The site is susceptible to impact from adverse weather;
- ☐ No other federal or state response mechanisms were identified;
- ☐ The source is a facility as defined by the NCP;
- ☐ Contamination may be presenting sufficient quantity and/or concentration;
- ☐ There is an actual or potential exposure threat;
- ☐ There is, or may be, a threat of fire or explosion;
- ☐ There are, or may be, high concentrations of contaminants in surficial soils;
- ☐ There are endangered species, wetlands, or other sensitive environments or receptors that may be impacted by the site.

If necessary, explain:

Kansas Department of Health and Environment
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☒No - further CERCLA evaluation is not recommended. Cite appropriate factors from Section III:

- ☐ No release has occurred;
- ☐ Not a hazardous substance, pollutant or contaminant;
- ☒ Insufficient quantity or concentration:
- ☐ No actual or potential exposure threats;
- ☒ No high levels of contaminants in surficial soils:
- ☐ Not a facility or vessel;
- ☐ Subject to response limitations;
- ☐ Willing/capable responsible party response;
- ☒ Drums, barrels, and/or containers are not present at the site;
- ☒ Site not susceptible to adverse weather:
- ☐ No threat of fire or explosion;
- ☐ Referred to another program.

If necessary, explain:

No lead or arsenic detections were above Tier 2 residential RSKs.

IV. Removal Considerations and Recommended Response Actions

If yes, check recommended or potential removal actions from § 300.415(d) of the NCP to warrant further removal site evaluation below:

☐ Release or threat of release is present.

- ☐ Site security
- ☐ Drainage control
- ☐ Stabilization or removal of surface impoundments
- ☐ Capping of contaminated soil
- ☐ Use of chemicals to retard or control spread of contaminants
- ☐ Excavation of contaminated soils
- ☐ Removal of drums, barrels, tanks or other bulk storage containers
- ☐ Containment, treatment, disposal or incineration of hazardous substances, pollutants or contaminants
- ☐ Provide alternate water supplies
- ☐ Other (specify and explain):

Briefly explain the rationale for checked alternatives:

V. Remedial Considerations

Evaluation of remedial considerations are not recommended for the Crowe Property site.

VI. Final Comments/Recommendations

A release of lead and arsenic to soil above residential Tier 2 RSK levels was not observed during the ISE. No further action is recommended for the Crowe Property site.

Kansas Department of Health and Environment

Pre-CERCLIS Site Reconnaissance and Evaluation Form

V. Definitions

I. **CERCLA** is the Comprehensive Environmental Response Compensation and Liabilities Act, 42 USC §9601 *et seq.* (as amended).

A **FACILITY** is defined as any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly-owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel.

A **HAZARDOUS SUBSTANCE** means any substance, element, compound, mixture, solution, hazardous waste, toxic pollutant, hazardous air pollutant, or imminently hazardous chemical substance or mixture designated pursuant to the Clean Water Act (CWA), CERCLA, Safe Drinking Water Act (SDWA), Clean Air Act (CAA) or Toxic Substances Control Act (TSCA). The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas.

The LIMITATIONS ON RESPONSE provisions of the NCP [40 CFR 300.400(b)] states that removals shall not be undertaken in response to a release: of a naturally occurring substance in its unaltered or natural form; from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures; or into public or private drinking water supplies due to deterioration of the system through ordinary use.

NCP is the National Oil and Hazardous Substances Pollution Contingency Plan 40 CFR §300-302.

OPA is the Oil Pollution Act, 33 **U.S.C.** §2702 *et seq.,* 40 CFR §300.300- 300.335.

POLLUTANT or CONTAMINANT includes, but is not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions or physical deformations, in such organisms or their offspring. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas. [40 CFR 300.5]

RCRA is the Resource Conservation and Recovery Act, 42 USC§ 6901 *et. seq.;* 40 CFR §260-273.

A **RELEASE** is defined as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment of barrels, containers, and other closed receptacles containing any hazardous substances or pollutant or contaminant), but excludes: workplace exposures; engine exhaust emissions; nuclear releases otherwise regulated; and the normal application of fertilizer. For purposes of the NCP, release also means threat of release. [40 CFR 300.5]

A **VESSEL** is defined as every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel. [40 CFR 300.5]

11.7 Hazardous Substance Information

11.7 Roberds Property Integrated Site Evaluation

Curtis State Office Building
1000 SW Jackson, Suite 410
Topeka, Kansas 66612-1367

Kansas Department of Health and Environment

Integrated Site Evaluation

Roberds Property,
Caney, Kansas

Bureau of Environmental Remediation

Our Mission: To protect and improve the health and environment of all Kansans

SITE EVALUATION

Roberds Property

Caney, Kansas

Prepared by:
Kansas Department of Health and Environment
Bureau of Environmental Remediation
Remedial Section
Site Assessment Program

Date: August 2013

State ID: C3-063-73037

Project Manager: Randolph L. Brown, P.G., Site Assessment Unit Chief

Project Team Members:
Jon Vopata, Environmental Scientist
Nicholas Schneider, Environmental Scientist

TABLE OF CONTENTS

1.0 Introduction

This document presents the findings of a Pre-CERCLIS Integrated Site Evaluation (ISE) conducted by the Kansas Department of Health and Environment (KDHE) to verify if a release of hazardous substances, pollutants or contaminants has occurred at the Roberds Property site in Caney, Montgomery County, Kansas. This assessment was conducted as part of continuing cooperative agreement with the U.S. Environmental Protection Agency (EPA) to perform investigations of selected sites to evaluate potential or actual releases of hazardous substances, pollutants, or contaminants in Kansas. These investigations are performed under the authority of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR § 300. The purpose of this ISE is to collect additional data to support a site disposition for the Roberds Property site.

2.0 Site Description and Location

The Roberds Property site is located between North State and North Spring Streets. Although the lot is vacant, the approximate address is 1180 North State Street, Caney, Kansas 67333 (see Figure 1). The site includes the vacant residential property owned by Mr. Derek Roberds. The site has center global positioning system coordinates of 37.02293 north latitude and -095.93716 west longitude. The site is located in the northern portion of Caney in Section 12, Township 35 South, Range 13 East. Figures 1 and 2 indicate the site location.

3.0 Site Background

3.1 History

The adjacent property owner to the north, Mr. Fred Bunch, contacted KDHE in 2011 regarding concerns of potential smelter waste present on his property. This site was referred to KDHE's Site Assessment Program in June 2012, and sampling was conducted on the property on June 19, 2012. The property immediately north of the Bunch property contains the former Owen Zinc site (KDHE identification number C306300193, EPA identification number KSD984971911). Based on the elevated detections in the Bunch residential yard, and concerns about potential lead impacts to his property, Mr. Roberds contacted KDHE in June 2013 to request sampling on his property.

The Owen Zinc site was originally the location of the Caney Brick Company which operated between 1902 and 1915. Charles Owen and a partner constructed the Owen Zinc Smelter Works over the site of the former Caney Brick Company. In August 1915, the American Zinc, Lead and Smelting Company leased the facility from the Owen Zinc

Company until 1918, when the facility was sold to the Weir Smelting Company. A review of Sanborn Fire Insurance Maps for Caney indicates that in 1912 the only facility on the site was the Caney Brick Company. The 1917 Sanborn Map for Caney indicates the presence of the Owen Zinc Company at the former location of the Caney Brick Company. The Owen Zinc facility had one ore roaster and three furnace buildings. The Weir Smelting Company purchased the land containing the Owen Zinc facility in about 1926 and continued smelter operations until 1931. The 1927 Sanborn Map for Caney describes the Weir Smelter Company facility as "plant being wrecked".

The Sanborn maps do not indicate any smelter works south of what is currently County Road 1600, which at the time of the Sanborn maps was the city limits and currently forms the northern boundary of the Bunch property. The block containing the Bunch property is indicated as the "Harvey's Addition" residential area on the Sanborn Maps through the final available Sanborn Map (1936). The rail spur from the Owen Zinc smelter did, however, cross what is currently the northeastern portion of the Bunch property extending from the former Owen Zinc smelter southward into Caney. The railroad spur was not evaluated during the Owen Zinc investigations. The Sanborn Maps indicate it to be a Missouri Pacific siding (References 1 and 2).

The Weir Smelting Company trustee, Dallas W. Knapp, of Coffeyville, began to sell lots parted from the original Owen Zinc facility to Wilford Cavaness in 1931. The Weir Smelting Company was apparently bankrupt at that time and trustees were therefore selling assets. The Weir Smelting Company also purchased the American Zinc, Lead, and Smelting Company works located ½ mile to the east of the Owen Zinc site. This site has been assessed separately as the American Zinc, Lead and Smelting Company Site, EPA I.D. Number (CERCLIS) KSD984971986. Greater detail on the Owen Zinc and American Zinc, Lead and Smelting Company sites can be found in several reports for each site and will not be duplicated here (References 1 and 2).

3.2 Previous Investigations

Laboratory analysis of soil, sediment, and surface water samples collected from the Owen Zinc site has indicated the presence of elevated levels of Resource Conservation and Recovery Act (RCRA) heavy metals, primarily lead, cadmium and zinc. In 1991 KDHE/BER conducted a Preliminary Assessment (PA) at the Owen Zinc site which was followed by a Screening Site Inspection (SSI) also in 1991 followed by additional supplemental sampling in 1992. In 2001 KDHE conducted an Expanded Site Inspection (ESI) at the site. During all phases of investigation, cadmium was detected at a maximum concentration of 1,099 milligrams per kilogram (mg/kg), above its residential Tier 2 Risk-based Standards for Kansas (RSK) of 39 mg/kg during the 1992 sampling.

Lead was detected at a maximum concentration of 4,845 mg/kg during the 1991 PA, elevated above its residential Tier 2 RSK of 400 mg/kg. Zinc was detected at a maximum concentration of 32,210 mg/kg, above its residential RSK level of 23,000 mg/kg in the 1991 PA/SSI sampling. Cadmium was detected in surface water in an on-site seep at a maximum concentration of 1.147 milligrams per liter (mg/L), above

KDHE’s Surface Water Quality Standard (SWQS) for domestic water supply of 0.005 mg/L. Lead was detected in surface water at a concentration of 0.011 mg/L, above its domestic water supply SWQS of 0.015 mg/L. Zinc was detected at a maximum concentration of 22.754 mg/L, above its domestic water supply SWQS of 7.4 mg/L.

During the ESI, KDHE collected samples from 76 locations for X-ray fluorescence (XRF) analysis with selected samples being submitted for laboratory confirmation. The maximum detection of lead during the ESI was at sample location 400,300 with an XRF lead value of 2,200 mg/kg and a laboratory lead value of 4,102.7 mg/kg. Cadmium was detected at maximum concentrations by XRF analysis at 997.0 mg/kg at sample location 500,65, and 954.0 mg/kg at sample location 700,100. Cadmium was detected at a maximum concentration of 748.8 mg/kg by laboratory analysis at location 600,200. These maximum detections were identified adjacent to or immediately down slope of the former Owen Zinc works. The ESI verified elevated lead and cadmium levels in soil on the property containing the Owen Zinc site, the adjacent Torres residential property, and in sediment downstream from these properties (Reference 1). The Blue Tee Corporation was identified as a successor to the American Zinc, Lead and Smelting Company after completion of the 2001 KDHE ESI. A responsible party notification was sent to the Blue Tee Corporation by KDHE in 2002 for the Owen Zinc site.

The Blue Tee Corporation was also identified as a successor corporation to the American Zinc, Lead and Smelting Company in the Administrative Order on Consent (AOC) for the American Zinc, Lead and Smelting Company site, EPA I.D. # KSD984971986, Docket Number VII 95 F-0031 (Reference 1). The Blue Tee Corporation entered into a Consent Agreement with KDHE in 2004, and conducted a corrective action consisting of consolidating the smelter waste on the former Owen Zinc smelter within the Moore property, and contaminated soil into an on-site consolidation cell which was capped. Additional sampling was apparently not conducted by the responsible party south of County Road 1600 where the Bunch property is located. In 2011 an Environmental Use Control (EUC) was placed on the property containing the former Owen Zinc smelter, at that time owned by Dr. Robert and Betty Moore (Reference 2).

The ISE for the 1202 N. State site was completed in February 2013. The maximum XRF and laboratory lead detections of 3,751 mg/kg and 5,100 mg/kg, respectively, were encountered in sample S-32, located near the northern edge of the Bunch residential garden. A total of 11 XRF or laboratory analyses of the 35 surface soil samples exceeded KDHE’s residential Tier 2 RSK for lead of 400 mg/kg. Cadmium was detected at a maximum of 93 mg/kg at location S-3 with a corresponding lead detection of 1,500 mg/kg by laboratory and 1,186 mg/kg by XRF analysis. Arsenic was detected by laboratory analysis above its residential Tier 2 RSK of 18.9 mg/kg in samples S-2 and S-36, and both were also above the three times background concentration for arsenic of 20.7 mg/kg calculated for the Owen Zinc ESI. The arsenic detections in both of these samples was 24 mg/kg, and each of these locations had a corresponding lead concentration over 400 mg/kg. Zinc was detected in S-32 by laboratory analysis at 55,000 mg/kg, above the residential Tier 2 RSK of 23,000 mg/kg. Samples S-32 and S-3 indicated zinc above residential Tier 2 RSKs in XRF analysis, and both locations are associated with laboratory and/or XRF lead detections above 400 mg/kg (Reference 14).

4.0 Physical Setting

4.1 Land Use

The land use is residential at the site. The site contains a vacant lot. The Fred Bunch residence is located to the north and the Larry Crowe residence immediately to the south. Most of the surrounding properties are residential. The nearest residences are approximately 200 feet north and south of the Roberds property. Mr. Roberds indicated he would potentially develop the lot for a primary residence.

4.2 Soils and Geology

Soils at the site consist of Bates-Collinsville loam formed in sandstone residuum and the Dennis silt loam formed in shale or siltstone. Permeability is variable and can range from low to moderate based on relative silt contents (Reference 3). Bedrock is very shallow and generally less than three to five feet below ground surface. Very limited amounts of water are present within shallow sandstone and siltstones in the site area. Bedrock at the site consists of the Pennsylvanian Lansing and Douglas Groups (Reference 4).

4.3 Hydrogeology

Groundwater in the site area has historically not been widely used because of its highly localized yield and quality as well as contamination from oil field activity (Reference 4). Bedrock refusal was encountered at depths between two and five feet below ground surface in borings drilled for the Owen Zinc ESI and groundwater was not encountered (Reference 1).

5.0 Receptors

5.1 Groundwater Pathway

There are no public water supply (PWS) wells at or within a four mile radius of the site (Reference 4). The area is supplied with water from the City of Caney PWS which relies on a surface water intake on the Little Caney River (Reference 1). A search of the Kansas Geological Survey WWC-5 database identified 14 domestic wells within a four-mile radius of the site but none within one mile of the site (Reference 4).

5.2 Soil and Air Pathways

The site area is mostly residential. Approximately 2,389 persons live within one mile of the site (Reference 5). The Roberds property is currently not developed.

5.3 Surface Water Pathway

The surface water pathway was not assessed during the ISE. Drainage from the site is to the west towards Cheyenne Creek which is present approximately ½ mile from the site. Cheyenne Creek enters the Little Caney River approximately 1 mile southwest of the site.

With the elevated levels of lead, cadmium, and arsenic identified on the adjacent Bunch property, additional sediment sampling between the Bunch residence and Cheyenne Creek should be considered in future assessment activities. The City of Caney PWS receives its water supply from the Little Caney River upstream of the confluence of Cheyenne Creek and the Little Caney River (Reference 1).

6.0 Assessment Activities

6.1 Description of Field Activities

On July 17, 2013, Randolph L. Brown, P.G., inspected the site and sampled surface soils from 22 locations using stainless steel trowels. Samples were collected into one-quart freezer bags for analysis with KDHE’s Innov-X Delta XRF unit and homogenized in the field. Samples were collected from discrete locations using an unbiased grid at approximately 50 foot spacing. Based on the on-site XRF analysis, an additional sample location was established 50 feet north of R-16 approximately 25 feet south of the Crowe property line.

All samples were analyzed on-site with KDHE’s Innov-X Delta XRF unit consistent with EPA Method 6200 by analyzing each sample three times with a 30 second analysis time. Of the XRF analyses, ten samples were submitted to KDHE’s Health and Environment Laboratories (KHEL) for metals analysis by EPA Method 6010. The sample with the maximum XRF lead detection was also submitted to KHEL for Toxicity Characteristic Leachate Procedure (TCLP) analysis by EPA Method 1311.

6.2 Sampling Plan Deviations

Approximately 12 samples were originally proposed for collection, however additional samples were collected to determine a preliminary areal extent of heavy metals contamination on the Roberds residential lot and adjacent areas.

6.3 Quality Assurance and Quality Control

Samples were collected in accordance with KDHE’s Standard Operating Procedures, Generic Quality Assurance Project Plan and the Site Specific Quality Assurance Project Plan Addendum. No holding times were exceeded.

A linear regression was calculated for the XRF vs. laboratory lead data collected at the Roberds Property site. Because of the small population size for laboratory data at the adjacent Crowe Property site (three samples), the Crowe Property results were also included for the regression calculations (refer to *Site Evaluation, Crowe Property*, C3-063-73036 for sampling locations and additional information, Reference 15). A coefficient of correlation of r = 0.9487 and a coefficient of determination (the square of the coefficient of correlation) of r^2 = 0.9001 were calculated for lead. According to EPA Method 6200, an r^2 value of 0.9 or higher can be considered *quantitative definitive level data*. An r^2 value of 0.7 to 0.9 can be considered *quantitative screening level data*. The coefficients of correlation and determination for lead calculated for this site indicates that the XRF data obtained from the *in situ* XRF analysis of surficial soil samples can be considered quantitative definitive level data.

A linear regression was also calculated for arsenic, however only five samples were available with both XRF and laboratory detections. Values of r = 0.9801 and $r^{2\,=}$ 0.9605 were calculated for arsenic. A regression for cadmium could not be calculated since only two samples had both laboratory and XRF detections. The XRF cadmium detections appear to be highly elevated compared to the laboratory values.

The average relative standard deviation (RSD) was calculated to be 5.5 % for the field duplicate analyses during this ISE, well within the EPA Method 6200 acceptable RSD value of 20 %. The percent difference (PD) between the National Institute of Standards and Testing certified lead standards used during the ISE and the XRF analyzed value indicated a maximum PD of 4.5 %, well within the acceptable PD value established by Method 6200 of 20 % (Reference 6). Table 5 includes the data comparison between XRF and laboratory data. A rinsate sample was collected during decontamination of trowels used for soil sampling. No detections of metals were observed in the rinsate sample.

7.0 Assessment Results

The maximum XRF and laboratory lead detections of 529 mg/kg and 500 mg/kg respectively, were encountered in sample R-16, located in the southwestern portion of the soil sampling grid. This area is approximately bounded from the Bunch property north to approximately 25 feet south of the Crowe property, and from approximately 25 feet east of North State Street to approximately 200 feet east of North State Street. Sample locations with one or more XRF analysis above 400 mg/kg include R-9, R-11, and R-16. R-2 indicated lead by XRF at 395 mg/kg.

Arsenic was detected above its residential Tier 2 RSK of 18.9 mg/kg in locations R-4, R-9, R-10, R-11, and R-16. Sample R-5 indicated arsenic by XRF at 29 mg/kg but was not confirmed by laboratory analysis. The maximum arsenic detection was 176 mg/kg by XRF analysis and 140 mg/kg by laboratory analysis in R-10. Cadmium was detected at 67 mg/kg by XRF in R-2 but only 16 mg/kg by laboratory analysis. Cadmium was also detected at 49 mg/kg in R-4 but only 27 mg/kg by laboratory analysis. Zinc was not detected above residential Tier 2 RSKs in any samples by XRF analysis. TCLP analysis was also performed on R-16 based on XRF results, and no TCLP detection for lead was observed.

8.0 Removal Considerations

From the XRF and laboratory data an area approximately 150 feet square was identified with detections above 400 mg/kg for lead and/or 18.9 mg/kg for arsenic. Cadmium was detected above its residential Tier 2 RSK by XRF analysis but was not confirmed in laboratory analysis and does not appear to be consistently elevated across the Roberds property. Sample locations with this area with either lead detections at or near (within 5 mg/kg) of 400 mg/kg and/or arsenic detections above 20 mg/kg include R-2, R-4, R-5, R-9, R-10, R-11, and R-16. Assuming a six-inch excavation depth an estimated 420 yards of soil may require excavation using KDHE's Tier 2 residential RSKs as boundary values. Based on the TCLP result, none of the soil removed from the Roberds property would likely be RCRA characteristic hazardous waste.

9.0 Conclusions

Lead and arsenic are present in the Roberds residential lot at levels exceeding KDHE's residential Tier 2 RSK levels of 400 mg/kg for lead and 18.9 mg/kg for arsenic. These releases appear to be related to former smelter activities in Caney. The Blue Tee Corporation was identified as a responsible party for the Owen Zinc site in the 2001 KDHE ESI. A responsible party notification was sent to the Blue Tee Corporation by KDHE in 2002 for the Owen Zinc site. The Blue Tee Corporation was also identified as a successor corporation to the American Zinc, Lead and Smelting Company in the Administrative Order on Consent (AOC) for the American Zinc, Lead and Smelting Company site, EPA I.D. # KSD984971986, Docket Number VII 95 F-0031 (Reference 1). The American Zinc, Lead and Smelting Company was a lessor of the Owens Zinc facility. The Missouri Pacific Railroad appears to have operated rail spurs between the two smelters in Caney.

This site may be a removal action candidate consistent with the NCP if a responsible party does not conduct additional response actions. Since residential yards are impacted in the area, this site may also be a candidate for evaluation through the Hazard Ranking System consistent with the NCP. The Crowe residence to the south will be investigated separately by KDHE.

10.0 References

1) *Expanded Site Inspection for the Owen Zinc Site*, KDHE, 2001.

2) KDHE files for Owen Zinc Site, C3-063-00193 (including *Consent Agreement and Final Order*) and American Lead, Zinc and Smelting Company Site, C3-063-00190 (including *Administrative Order on Consent*).

3) U.S. Department of Agriculture, *Soil Survey of Montgomery County, Kansas*, 1980.

4) Kansas Geological Survey, geology and water well database, available at: http://www.kgs.ku.edu/, accessed July 17, 2013.

5) U.S. Census Bureau State and County Quick Facts available at: http://quickfacts.census.gov/qfd/, accessed July 17, 2013.

6) U.S. EPA, Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, first edition January 1998 and U.S. Environmental Protection Agency (EPA), Solid Waste SW-846 Methods: Method 6200, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, revised February 2007.

7) U.S. EPA, *Superfund Lead-Contaminated Residential Sites Handbook, Final*, August 2003.

8) Kansas Department of Health and Environment, *Risk-based Standards for Kansas (RSK) Manual*, 2010.

9) U.S. Environmental Protection Agency, *Guidance for Performing Preliminary Assessments under CERCLA*, EPA 540/G-91/013, 1991.

10) U.S. Environmental Protection Agency, *Quality Assurance/Quality Control Guidance for Removal Activities under CERCLA*, EPA 540/G-90/004, April, 1990.

11) U.S. Environmental Protection Agency, *Guidance for Performing Site Inspections under CERCLA*, OSWER Directive 9345.1-05, 1992.

12) U.S. Environmental Protection Agency, *Hazard Evaluation Manual: A Guide to Removal Actions*, EPA Region III, 1993.

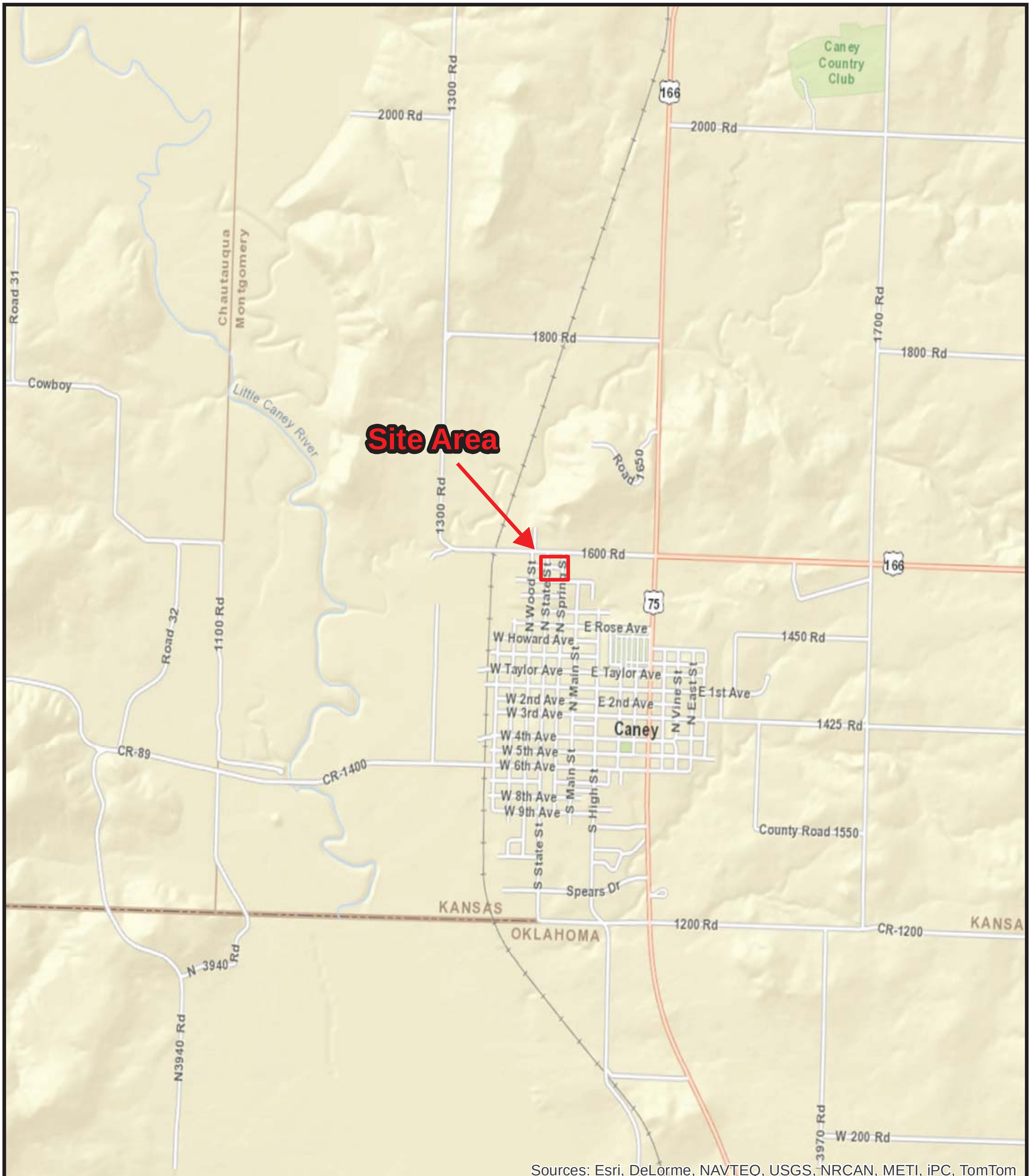
13) Kansas Surface Water Quality Standards, December, 2004.

14) *Integrated Site Evaluation for the 1202 N. State Smelter Complaint*, C3-063-72925, KDHE, 2013.

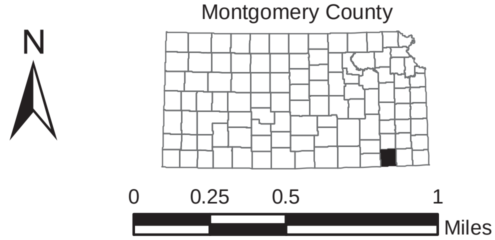
15) *Integrated Site Evaluation for the Crowe Property*, C3-063-73036, KDHE 2013 (draft in preparation).

11.0 Appendices

11.1 Figures and Tables

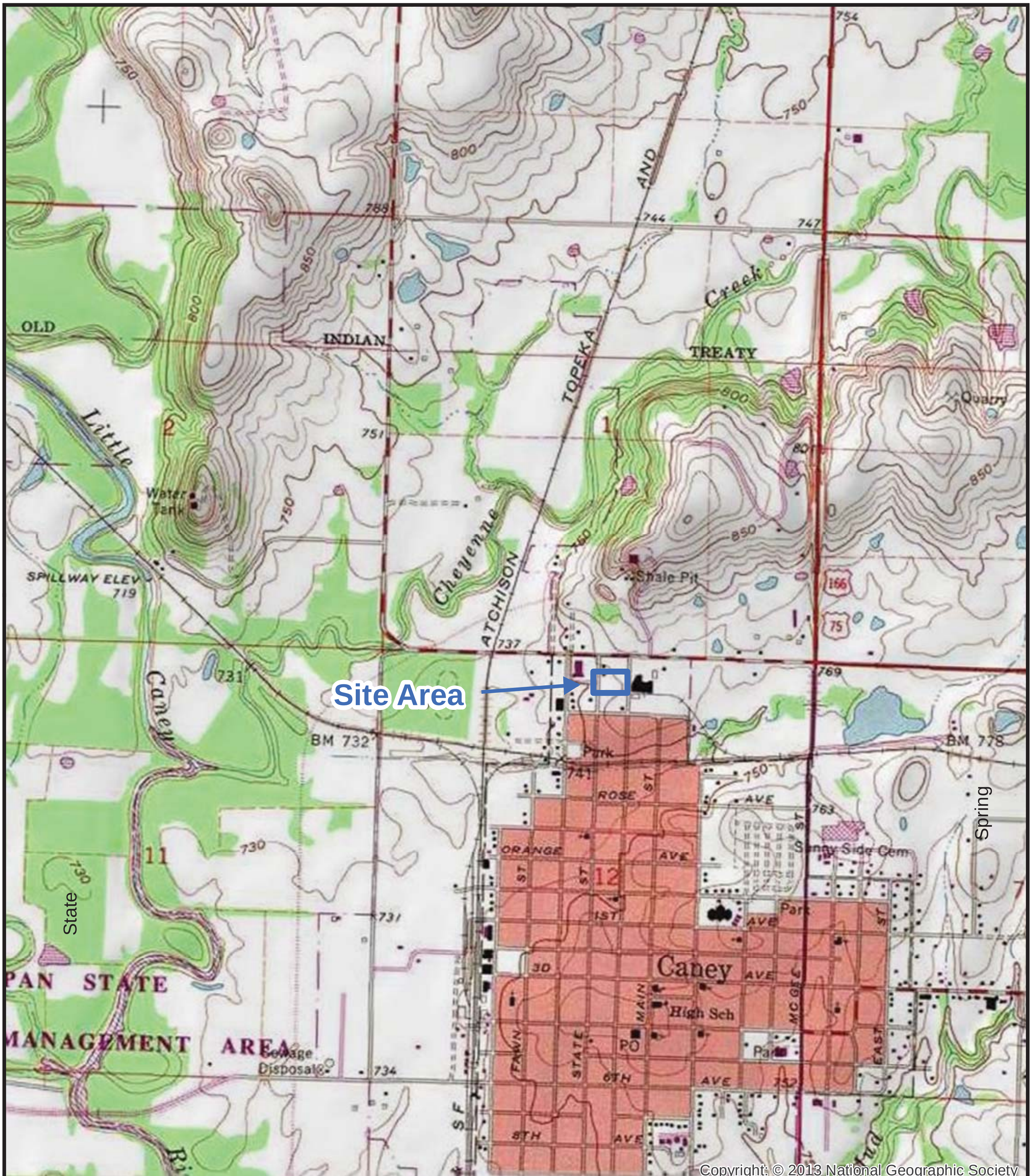


Montgomery County



Kansas Department of Health and Environment

SITE:	Roberds Property Caney, Kansas		
TITLE:	Area Map		
PROJECT PHASE:		Integrated Site Evaluation	
DRAWN BY: NS	9/18/13	BASEMAP DATE:	2013
CHECKED BY: RB	9/18/13	Figure 1	



N

0 0.125 0.25 0.5 Miles

Kansas Department of Health and Environment

SITE:	Roberds Property Caney, Kansas		
TITLE:	Topographic Map		
PROJECT PHASE:	Integrated Site Evaluation		

DRAWN BY:	NS	9/18/13	BASEMAP DATE:	2013
CHECKED BY:	RB	9/18/13	Figure 2	

Table 1: Selected Metals Results by XRF and Laboratory Analysis in milligrams per kilogram (mg/kg)

Sample I.D.	Lead XRF (Maximum):	Lead Laboratory:	Cadmium XRF (Maximum):	Cadmium Laboratory:	Arsenic XRF (Maximum):	Arsenic Laboratory:	Zinc XRF (Maximum):	Zinc Laboratory:
Tier 2 Residential RSK:	400	400	39	39	18.9	18.9	23,000	23,000
R-1	145	NA	<42	NA	**27**	NA	1,889	NA
R-2	395	300	**67**	16	<27	9.9	3,764	NA
R-3	333	300	<49	19	<26	13	3,044	NA
R-4	232	210	**49**	27	**39**	**32**	3,477	NA
R-5	170	NA	<48	NA	**29**	NA	1,344	NA
R-6	47	NA	<49	NA	<13	NA	1,010	NA
R-7	131	NA	<50	NA	<17	NA	1,005	NA
R-8	156	NA	<49	NA	**22**	NA	2,697	NA
R-9	**420**	**420**	<49	21	<28	**30**	3,771	NA
R-10	347	330	<55	16	**176**	**140**	3,246	NA
R-11	**410**	**450**	<49	25	**50**	**46**	3,978	NA
R-12	162	NA	<50	NA	<19	NA	1,686	NA
R-13	108	NA	<52	NA	<17	NA	774	NA
R-14	170	NA	<49	NA	<19	NA	1,215	NA
R-15	118	NA	<46	NA	<15	NA	996	NA
R-16	**529**	**500**	<49	21	**30**	**40**	4,611	NA
R-17	296	290	<46	10	<22	8.8	2,725	NA
R-18	261	210	<48	11	<24	8.7	2,555	NA
R-19	46	NA	<48	NA	<11	NA	172	NA
R-20	50	NA	<47	NA	<11	NA	681	NA
R-21	<15	NA	<52	NA	<11	NA	350	NA
R-22	233	220	NA	9.6	NA	7.1	NA	NA
C-2	336	320	NA	NA	NA	NA	NA	NA
C-4	240	230	NA	NA	NA	NA	NA	NA
C-6	241	200	NA	NA	NA	NA	NA	NA

Abbreviations:

XRF- Maximum of three separate analyses by KDHE Innov-X X-ray fluorescence unit using EPA Method 6200;
Laboratory – analysis by KDHE's Health and Environment Laboratories using EPA Method 6010;
RSK – Residential Risk-based Standards for Kansas (2010 edition); **Bold** concentrations exceed the Tier 2 Risk-based Standards for Kansas;
NA – not analyzed
C – samples from Crowe residential yard sampling used for lead correlation determination for Roberds sampling

Table 2: Summary of Laboratory Lead, Arsenic and Cadmium Toxicity Characteristic Leachate Procedure (TCLP) Results in milligrams per liter (mg/L)

Sample I.D.:	Lead TCLP:	Arsenic TCLP:	Cadmium TCLP:
TCLP Limit:	5	5	1
R-16	ND (0.05)	ND (0.05)	0.18

Abbreviations:

NA – not analyzed
ND – not detected with indicated detection limit;
Laboratory analysis by KDHE's Health and Environment Laboratories using EPA Method 6010 for total lead and arsenic and Method 1311 for TCLP analysis.

Table 3: XRF Quality Control Results

Sample I.D.	Lead XRF (mg/Kg):	Certified NIST Lead Value (mg/Kg):	Percent Difference:
NIST 2781	200	202.1	1.0%
NIST 2781	193	202.1	4.5%
NIST 2711	1,187	1,162	2.2%
Blank	<9	<10	-------
Sample I.D.	Lead XRF (mg/Kg):	Standard Deviation:	Relative Standard Deviation:
R-22	221	13.2	5.5%
	223		
	255		
	243		
	250		
	261		
	246		
	244		
Mean	242.9		

Abbreviations:

XRF- KDHE Innov-X X-ray fluorescence unit using EPA Method 6200;
NIST – National Institute of Standards and Technology reference materials and certified concentrations.

Note: EPA Method 6200 was used for methodology in calculating percent difference and relative standard deviation.

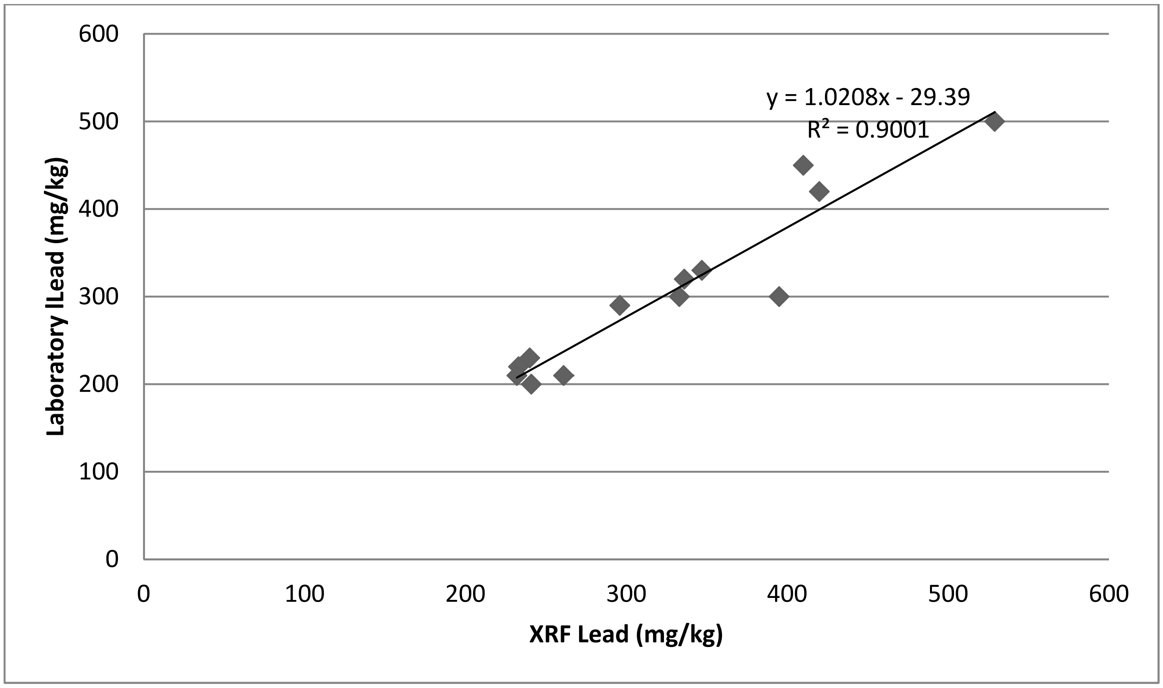
Table 4: Global Positioning Satellite Coordinates

Sample I.D.:	Latitude:	Longitude:
R-1	37.02311	-095.93734
R-2	37.02309	-095.93719
R-3	37.02314	-095.93702
R-4	37.02314	-095.93683
R-5	37.02314	-095.93674
R-6	37.02314	-095.93664
R-7	37.02313	-095.93630
R-8	37.02292	-095.93736
R-9	37.02293	-095.93716
R-10	37.02295	-095.93697
R-11	37.02294	-095.93678
R-12	37.02296	-095.93665
R-13	37.02298	-095.93645
R-14	37.02298	-095.93627
R-15	37.02282	-095.93732
R-16	37.02278	-095.93713
R-17	37.02277	-095.93697
R-18	37.02279	-095.93682
R-19	37.02282	-095.93664
R-20	37.02283	-095.93646
R-21	37.02281	-095.93629
R-22	37.02265	-095.93713

Data collected July 17, 2013; Instrument: Garmin Etrex

Table 5: Regression Plots for Lead and Arsenic Detections

Laboratory Lead Concentrations (Y Axis) vs. XRF Lead Detections (X Axis) in mg/kg



Laboratory Arsenic Concentrations (Y Axis) vs. XRF Arsenic Detections (X Axis) in mg/kg

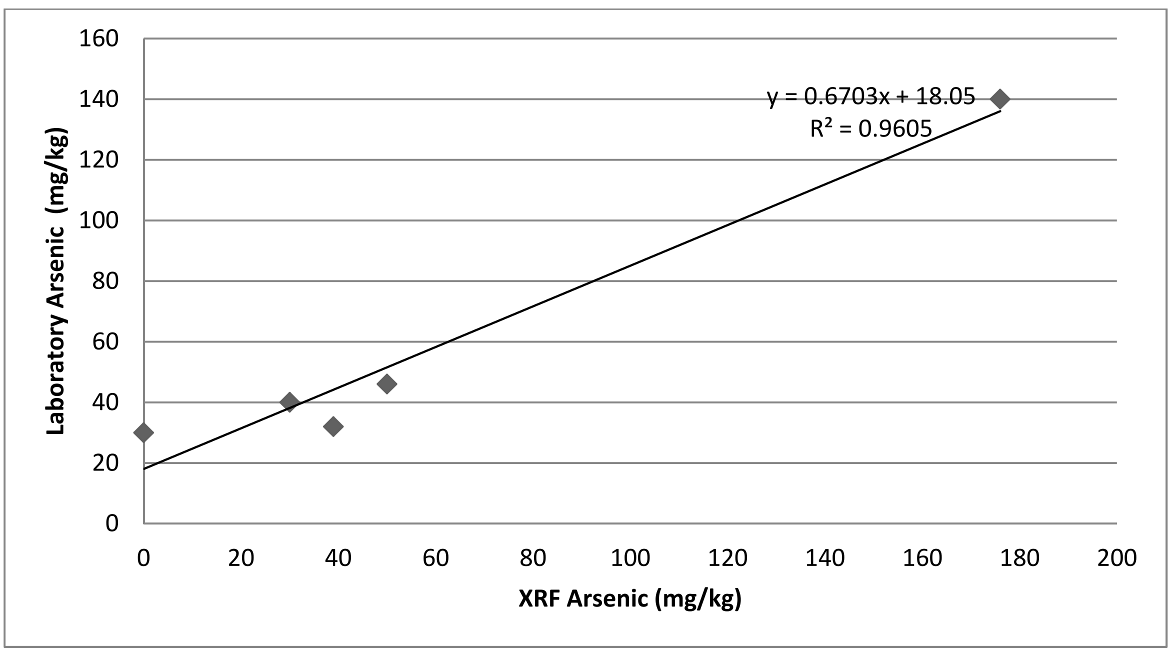


Table 6: Rinsate Sample Results in milligrams per liter (mg/L)

Lead:	Arsenic:	Cadmium:	Zinc:
ND (0.05)	ND (0.05)	ND (0.005)	NA
Abbreviations: NA – not analyzed ND – not detected with indicated detection limit			

11.2 Photographic Documentation

Roberds Property Site

Photo 1
View: Northeast
Date: 07/17/2013
Photo by: Randy Brown
Comments: Bunch residence at 1202 N. State Street and sample locations R-1 through R-7.

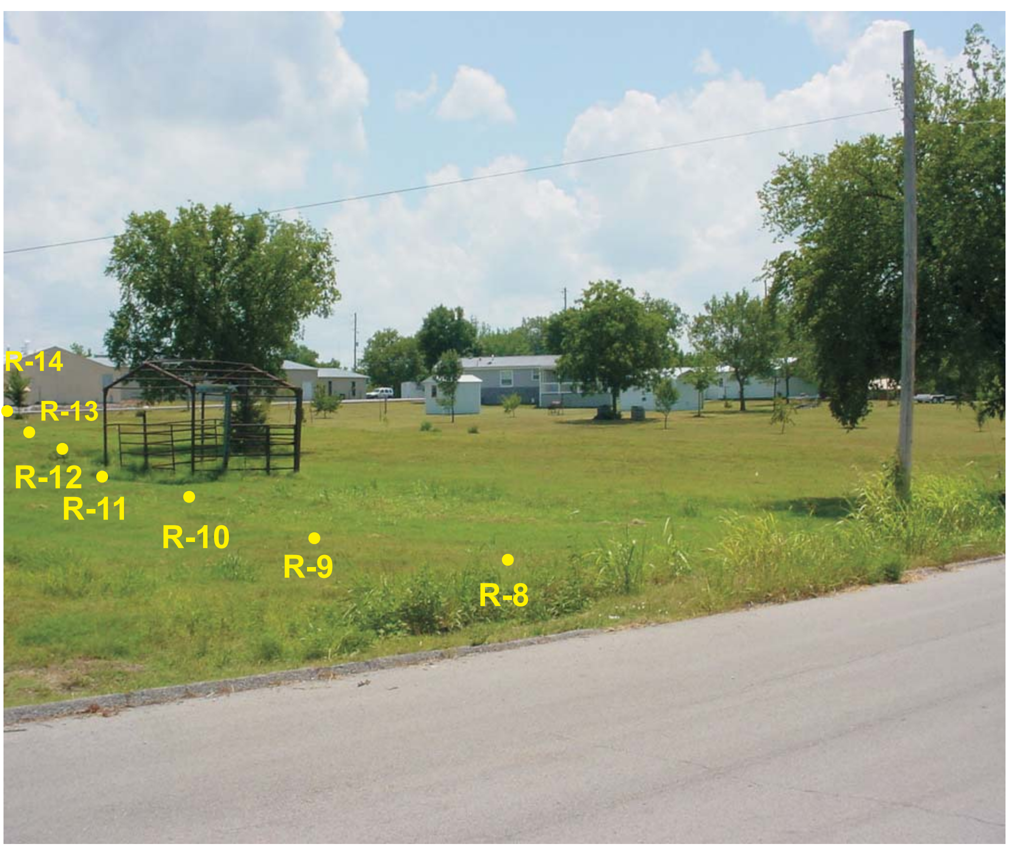


Photo 2
View: Southeast
Date: 07/17/2013
Photo by: Randy Brown
Comments: R-8 - R-14 locations.

Roberds Property Site

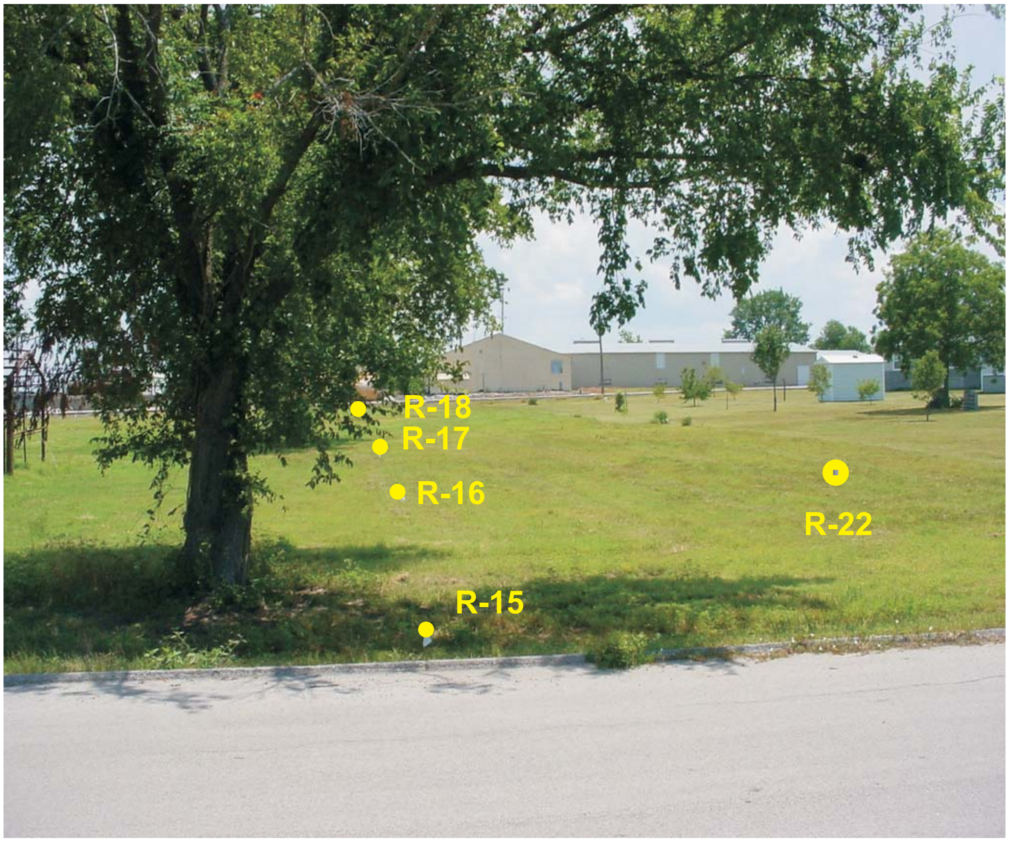


Photo 3
View: Southeast
Date: 07/17/2013
Photo by: Randy Brown
Comments: R-15 - R-18 and R-22 locations.

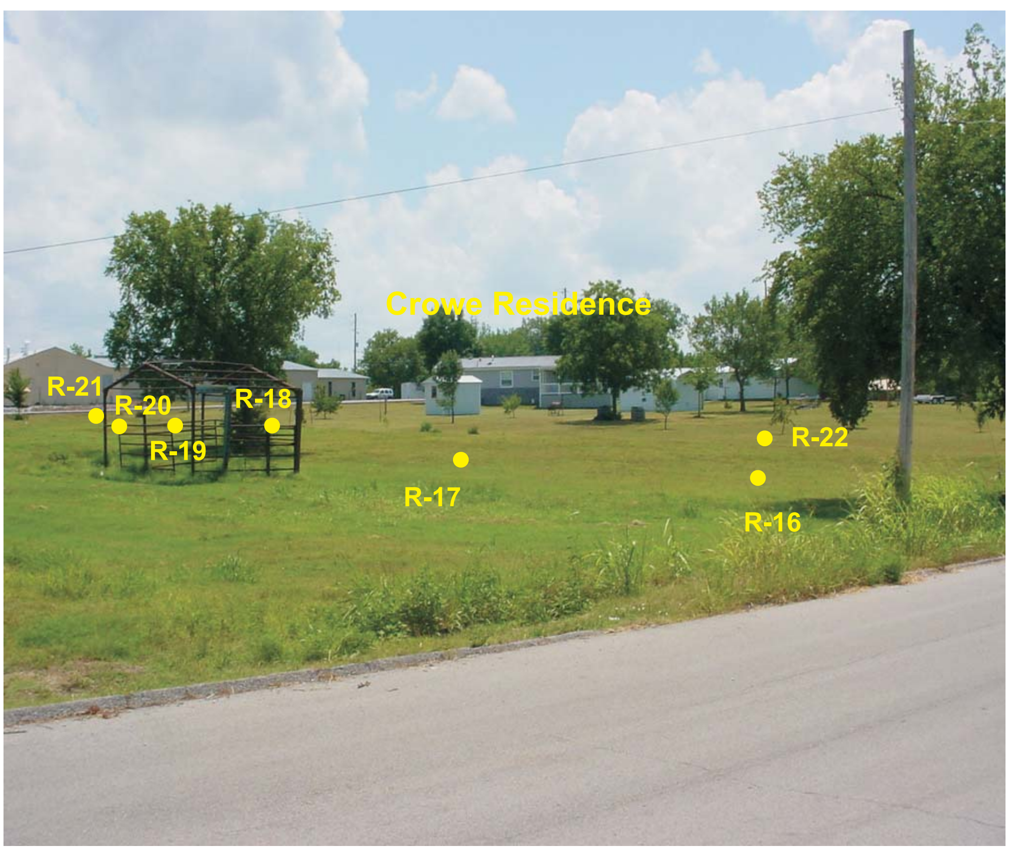


Photo 4
View: East
Date: 07/17/2013
Photo by: Randy Brown
Comments: R-16 - R-22 locations.

11.3 Laboratory Analytical Data

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

Kansas Department of Health and Environment

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION   Analysis Code: PT   Lab Number: 598942
RANDY BROWN
CURTIS SOB, SUITE 410   4EM80
TOPEKA KS 66612   Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-2
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 07/17/13 12:20   Date/Time Received: 07/19/13 09:01

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	9.9	mg/Kg	08/02/13	EPA 6010
Barium (Total)	130	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	16	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	24	mg/Kg	08/02/13	EPA 6010
Lead (Total)	300	mg/Kg	08/02/13	EPA 6010
Percent Solids	88	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM   FWM
Date Reported: 08/06/13
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

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KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION   Analysis Code: PT   Lab Number: 598940
RANDY BROWN
CURTIS SOB, SUITE 410   4EM80
TOPEKA KS 66612   Site ID:
                                                                Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-3
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 07/17/13 12:25   Date/Time Received: 07/19/13 08:59

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	13	mg/Kg	08/02/13	EPA 6010
Barium (Total)	200	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	19	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	37	mg/Kg	08/02/13	EPA 6010
Lead (Total)	300	mg/Kg	08/02/13	EPA 6010
Percent Solids	84	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM FWM
Date Reported: 08/06/13
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 598941
4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-4
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 07/17/13 12:30   Date/Time Received: 07/19/13 09:00

Sample Comments:

Parameter	*Analytical Result*	*Units*	*Analysis Date*	*Analytical Method*
Arsenic (Total)	32	mg/Kg	08/02/13	EPA 6010
Barium (Total)	230	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	27	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	48	mg/Kg	08/02/13	EPA 6010
Lead (Total)	210	mg/Kg	08/02/13	EPA 6010
Percent Solids	84	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM
Date Reported: 08/06/13   FWM
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Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT
Lab Number: 598932
4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-9
Collector: RANDY BROWN
Matrix: Soil
Collect Depth:
Date/Time Collected: 07/17/13 12:55
Date/Time Received: 07/19/13 08:55

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	30	mg/Kg	08/02/13	EPA 6010
Barium (Total)	160	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	21	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	28	mg/Kg	08/02/13	EPA 6010
Lead (Total)	420	mg/Kg	08/02/13	EPA 6010
Percent Solids	89	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

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Reporting Analyst: FWM
Date Reported: 08/06/13
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Kansas Department of Health and Environment

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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 598933

4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-10
Collector: RANDY BROWN Matrix: Soil Collect Depth:
Date/Time Collected: 07/17/13 13:00 Date/Time Received: 07/19/13 08:56

Sample Comments:

Parameter	*Analytical Result*	*Units*	*Analysis Date*	*Analytical Method*
Arsenic (Total)	140	mg/Kg	08/02/13	EPA 6010
Barium (Total)	520	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	16	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	27	mg/Kg	08/02/13	EPA 6010
Lead (Total)	330	mg/Kg	08/02/13	EPA 6010
Percent Solids	82	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM fwm
Date Reported: 08/06/13
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 598934
4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-11
Collector: RANDY BROWN Matrix: Soil Collect Depth:
Date/Time Collected: 07/17/13 13:05 Date/Time Received: 07/19/13 08:56

Sample Comments:

Parameter	*Analytical Result*	*Units*	*Analysis Date*	*Analytical Method*
Arsenic (Total)	46	mg/Kg	08/02/13	EPA 6010
Barium (Total)	250	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	25	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	28	mg/Kg	08/02/13	EPA 6010
Lead (Total)	450	mg/Kg	08/02/13	EPA 6010
Percent Solids	81	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM Fwm
Date Reported: 08/06/13
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INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 598938
4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-16
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 07/17/13 14:00   Date/Time Received: 07/19/13 08:58

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (TCLP)	< 0.050	mg/L	08/02/13	EPA 1311
Arsenic (Total)	40	mg/Kg	08/02/13	EPA 6010
Barium (TCLP)	1.6	mg/L	08/02/13	EPA 1311
Barium (Total)	170	mg/Kg	08/02/13	EPA 6010
Cadmium (TCLP)	0.18	mg/L	08/02/13	EPA 1311
Cadmium (Total)	21	mg/Kg	08/02/13	EPA 6010
Chromium (TCLP)	< 0.010	mg/L	08/02/13	EPA 1311
Chromium (Total)	37	mg/Kg	08/02/13	EPA 6010
Lead (TCLP)	< 0.050	mg/L	08/02/13	EPA 1311
Lead (Total)	500	mg/Kg	08/02/13	EPA 6010
Mercury (TCLP)	< 0.00050	mg/L	08/05/13	EPA 1311
Percent Solids	86	Percent	07/23/13	EPA 1311
Selenium (TCLP)	< 0.050	mg/L	08/02/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (TCLP)	< 0.010	mg/L	08/02/13	EPA 1311
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM   fwm
Date Reported: 08/06/13
Copies To: File

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Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT Lab Number: 598939
4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-17
Collector: RANDY BROWN Matrix: Soil Collect Depth:
Date/Time Collected: 07/17/13 14:05 Date/Time Received: 07/19/13 08:58

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	8.8	mg/Kg	08/02/13	EPA 6010
Barium (Total)	170	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	10	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	29	mg/Kg	08/02/13	EPA 6010
Lead (Total)	290	mg/Kg	08/02/13	EPA 6010
Percent Solids	85	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM
Date Reported: 08/06/13
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Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT   Lab Number: 598937
4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-18
Collector: RANDY BROWN   Matrix: Soil   Collect Depth:
Date/Time Collected: 07/17/13 14:10   Date/Time Received: 07/19/13 08:58

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic (Total)	8.7	mg/Kg	08/02/13	EPA 6010
Barium (Total)	180	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	11	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	34	mg/Kg	08/02/13	EPA 6010
Lead (Total)	210	mg/Kg	08/02/13	EPA 6010
Percent Solids	86	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM   FWM
Date Reported: 08/06/13
Copies To: File

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REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION
RANDY BROWN
CURTIS SOB, SUITE 410
TOPEKA KS 66612

Analysis Code: PT
Lab Number: 598935
4EM80
Site ID:
Account Code: EP

Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 R-22
Collector: RANDY BROWN
Matrix: Soil
Collect Depth:
Date/Time Collected: 07/17/13 16:40
Date/Time Received: 07/19/13 08:56

Sample Comments:

Parameter	*Analytical Result*	*Units*	*Analysis Date*	*Analytical Method*
Arsenic (Total)	7.1	mg/Kg	08/02/13	EPA 6010
Barium (Total)	170	mg/Kg	08/02/13	EPA 6010
Cadmium (Total)	9.6	mg/Kg	08/02/13	EPA 6010
Chromium (Total)	31	mg/Kg	08/02/13	EPA 6010
Lead (Total)	220	mg/Kg	08/02/13	EPA 6010
Percent Solids	89	Percent	07/23/13	EPA 1311
Selenium (Total)	< 5.0	mg/Kg	08/02/13	EPA 6010
Silver (Total)	< 1.0	mg/Kg	08/02/13	EPA 6010

Analytical Comments:
Results for total metals are expressed on a dry weight basis.

Reporting Analyst: FWM
fwm
Date Reported: 08/06/13
Copies To: File

< - Not Detected at Indicated Level
* - Holding Time Exceeded

BER SCANNED
AUG 15 2013

RECEIVED
AUG 14 2013
BUREAU OF
ENVIRONMENTAL REMEDIATION

Kansas
Department of Health
and Environment

KANSAS HEALTH AND ENVIRONMENTAL LABORATORIES
Forbes Field, Bldg. 740, Topeka, Kansas 66620-0001

REPORT OF ANALYSIS

INORGANIC CHEMISTRY

Report To: BUREAU OF ENV. REMEDIATION   Analysis Code: PT   Lab Number: 598936
RANDY BROWN
CURTIS SOB, SUITE 410   4EM80
TOPEKA KS 66612   Site ID:
                                                                        Account Code: EP
Collection Location: ROBERDS PROPERTY/CANEY C3-063-73037 RINSATE
Collector: RANDY BROWN   Matrix: Water   Collect Depth:
Date/Time Collected: 07/17/13 13:25   Date/Time Received: 07/19/13 08:57

Sample Comments:

Parameter	Analytical Result	Units	Analysis Date	Analytical Method
Arsenic	< 0.050	mg/L	07/31/13	EPA 200.7
Barium	< 0.020	mg/L	07/31/13	EPA 200.7
Cadmium	< 0.0050	mg/L	07/31/13	EPA 200.7
Chromium	< 0.010	mg/L	07/31/13	EPA 200.7
Lead	< 0.050	mg/L	07/31/13	EPA 200.7
Selenium	< 0.050	mg/L	07/31/13	EPA 200.7
Silver	< 0.010	mg/L	07/31/13	EPA 200.7

Reporting Analyst: FWM   < - Not Detected at Indicated Level
Date Reported: 08/06/13   * - Holding Time Exceeded
Copies To: File

FWM

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11.4 X-Ray Fluorescence Analytical Results

Roberts XRF Analysis 07/17/13 CAL check OK 0730

Sample	Pb	As	Cd	Zn
NIST 2701	200±9	—	—	—
Blank	<9	—	—	—
R-19	46±5	<11	<47	192±10
	30±5	<11	<48	170±10
	40±5	<11	<48	149±9
R-21	<14	<11	<48	350±15
	<15	<11	<52	238±12
	<15	<11	<51	205±11
R-20	37±5	<11	<47	627±19
	35±4	<9	<45	430±15
	50±5	<10	<47	445±15
* R-18	249±9	<21	<48	2284±100
	220±8	<19	<44	2093±36
	261±11	<24	<45	2556±43
* R-16	434±13	30±10	<49	4542±70
	529±14	<32	<49	4611±70
	474±13	<30	<48	3877±60
R-15	118±6	<14	<44	950±22
	98±6	<14	<46	894±21
	113±6	<15	<45	996±22
* R-17	296±10	<22	<46	2725±45
	251±9	<20	<44	2391±39
	263±9	<21	<41	2567±42
R-5	120±6	29±7	<48	1341±29
	97±7	27±5	<48	1152±27
	113±7	25±6	<47	1146±26
* R-3	239±9	<20	<44	2604±41
	316±10	<23	<45	3018±47
	333±11	<26	<49	3044±51
~~R-4~~ R-4	227±9	39±7	<47	3141±50
	232±9	<21	49±16	3477±54
	211±8	<19	<43	2800±46
	178±8	<20	<50	3044±52
~~R-4A~~	129±7	<17	<49	1348±29
R-12	162±8	<19	<50	1686±34

PR 07/17/13

Raheel's XRF analysis continued

Sample	Pb	As	Cd	Zn
* R-2	395±11	<25	<44	3611±54
	392±17	<27	64	3464±59
	294±10	<21	<45	3548±53
R-1	85±8	27±7	<45	1829±40
	34±6	<19	<50	1081±27
	145±8	<18	<48	1810±35
R-6	47±6	<13	<49	477±16
	15±5	<10	<48	242±12
	34±6	<12	<51	409±15
R-7	34±7	<15	<50	1010±25
	131±8	<17	<48	1005±25
	80±6	<15	<50	851±23
R-13	108±7	<17	<52	774±22
	40±5	<12	<50	502±17
	30±5	<12	<47	388±14
R-8	147±8	22±6	<49	2417±44
	90±6	<15	<49	1276±30
	156±8	<19	<47	2697±47
* R-9	326±11	<24	<46	3515±54
	420±13	<28	<49	3771±60
	321±11	<25	<46	3042±50
* R10	347±12	82±10	<49	3246±54
	292±11	142±19	<50	3125±54
	211±11	136±19	<55	3098±59
R-14	164±8	<19	<49	1215±29
	163±8	<19	<49	1182±28
	170±8	<19	<49	1138±27
*R-11	324±10	26±8	<46	2743±46
	410±12	34±9	<47	3978±61
	314±11	50±9	<49	3187±54
*R-22	233±10			
	219±9			
	166±8			
NIST 2709	193±9			
NIST 2711	1187±26			

11.5 Field Notes

PR 07/17/13

Crowe Property and Roberds Property Sampling

07/17/13 On Site 1000 General notes:

(A) Roberds Property - 50 ft grid marked in 3 rows. R-1 through R-21. R-22 added ~~when~~ after XRF analysis.

(A) Crowe Property - R86 biased samples taken across yard. None added after XRF analysis.

All samples taken w/ stainless steel trowels at 0-6", homogenized by hand in bag, coarse fractions rejected. Decon by Alconox water solution, D.I. water / triple rinse, air dry.

Samples taken into 1-qt freezer bags marked w/ time & date, double bagged.

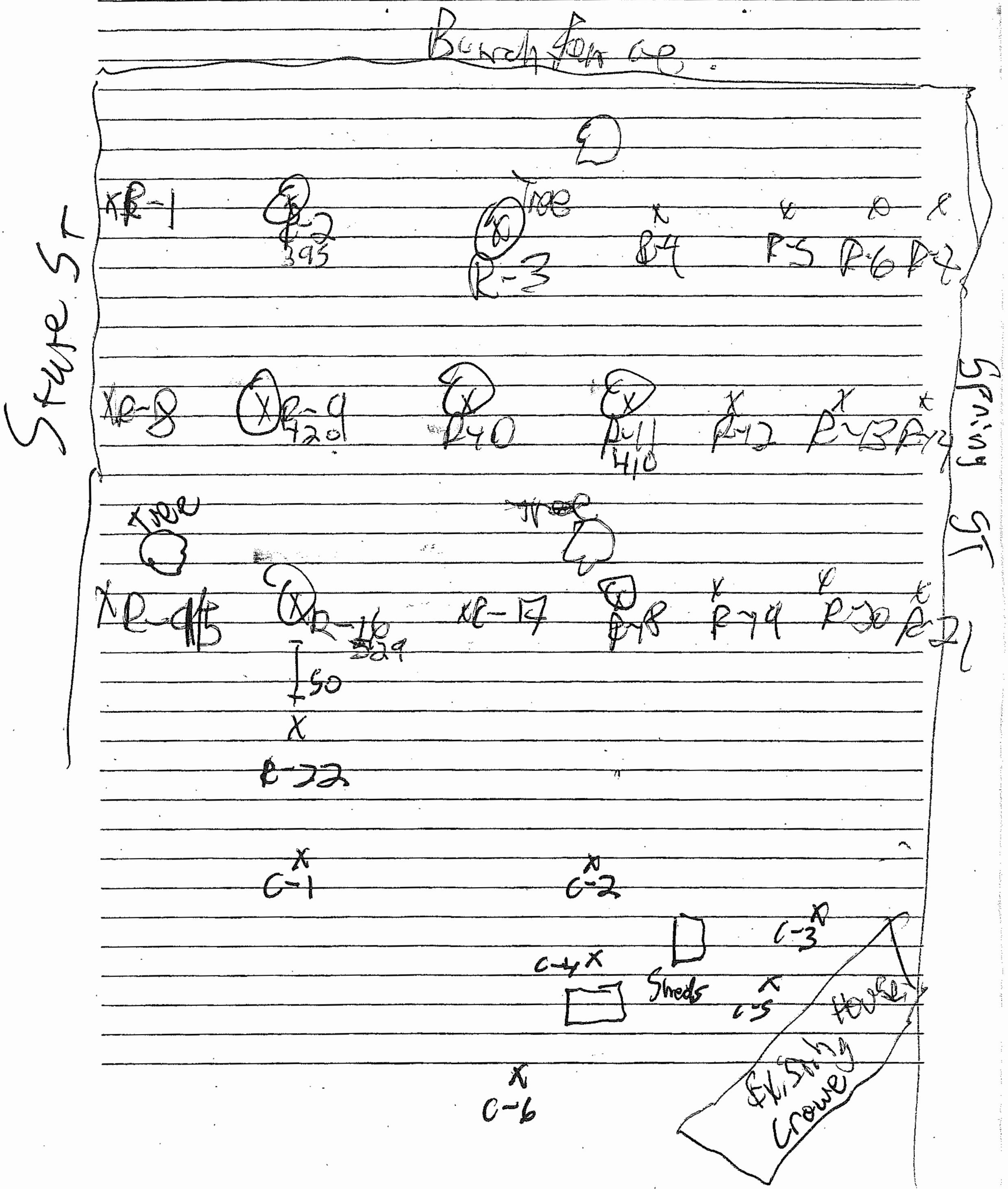
XRF analysis of 30 sec. per analysis, three analyses per bag. Inner bag removed for XRF analysis.
Rinsate 1325, lunch 1330.
Completed Roberds sampling at [illegible] 1425.
Ran XRF analysis of collected samples. Based on XRF results R-22 added 50' south of R-9. R-22 below 400 mg/kg Pb by XRF, no additional locations added. R-22 collected 1640 and analyzed immediately after.
Mr. Larry Crowe Sr. came at 1650. Selected locations with him. Began Crowe sampling 1800 completed 1825.
No Crowe samples above 400 mg/kg lead.

GPS all locations with Etrex

Left site 1915

Very little slag on either Roberds or Crowe properties.

07/17/13


Tree
R-1
R-2
395
R-3
R-4
R-5
R-6
R-7
Spring St
R-8
R-9
420
R-10
R-11
410
R-12
R-13
R-14
Tree
Tree
R-15
R-16
329
50
R-17
R-18
R-19
R-20
R-21
R-22
C-1
C-2
C-3
C-4
Sheds
C-5
House
Existing
Crowe
C-6

Brown on-site 1000, begin marking locations.

07/17/13

R-1 Sample time 1215
37.02311 -095.93734
R-2 Sample time 1220
37.02309 -095.93719
R-3 Sample time 1225
37.02314 -095.93702
R-4 Sample time 1230
37.02314 -095.93683
R-5 Sample time 1235
37.02314 -095.93664
R-6 Sample time 1240
37.02314 -095.93664
R-7 Sample time 1245
37.02313 -095.93630
R-8 Sample time 1250
37.02292 -095.93736
R-9 Sample time 1255
37.02293 -095.93716
R-10 Sample time 1300
37.02295 -095.93697
R-11 Sample time 1305
37.02294 -095.93678
R-12 Sample time 1310
37.02296 -095.93665
R-13 Sample time 1315
37.02298 -095.93645
R-14 Sample time 1320
37.02298 -095.93627
R-15 Sample time 1355
37.02282 -095.93732
R-16 Sample time 1400
37.02278 -095.93713
R-17 Sample time 1405
37.02277 -095.93697
R-18 Sample time 1410
37.02279 -095.93682
R-19 Sample time 1415
37.02282 -095.93664
R-

R-20 Sample time 1420
37.02283 -095.93646
R-21 Sample time 1425
37.02281 -095.93629
R-22 Sample time 1640
37.02265 -095.93713
Derek Robards visited site 1530, pleased with progress

Rinsate 1325

Stop for Lunch 1230

Larry Crowe Property Samples:
C-1 Sample time 1800
37.02246 -095.93713
C-2 Sample time 1805
37.02242 -095.93684
C-3 Sample time 1810
37.02250 -095.93642
C-4 Sample time 1815
34.02235 -095.93673
C-5 Sample time 1820
37.02236 -095.93645
C-6 Sample Time 1825
37.02224 -095.93668

Larry Crowe stopped by site at 1650 gave verbal permission to sample property, requested sampling. Began Sampling Crowe property 1730.

Leave site 1915

11.6 Site Evaluation Form

Kansas Department of Health and Environment
Integrated Site Evaluation Form

I. Site Information

Site Name: Roberds Property Site

Address or location: 1180 N. State Street

City: Caney	County: Montgomery	State: Kansas	ZIP: 67333
Telephone:	Fax:		

Directions to Site: Located south of 1202 N. State Street, Caney, Kansas.

Map attached? ☒ Yes - see Integrated Site Evaluation (ISE) Report

Requested by: Rick Bean	Agency/Office: Remedial Section Chief, KDHE/BER	
Address: 1000 SW Jackson, Ste. 410		Date of Request: 06/15/2013
City: Topeka	State: Kansas	ZIP: 66612
Phone:785.296.1673	E-mail: rbean@kdheks.gov	Fax: 785.296.7030

Site Contact: Randy Brown/KDHE

Address: 1000 SW. Jackson, Suite 410

City: Topeka	State: Kansas	ZIP: 66612-1367
Phone: 785-296-8065	E-mail: rbrown@kdheks.gov	Fax: 785-296-7030

II. CERCLA Site Screening Response Criteria (see Section V for definitions)

A. Is there a release or threat of release as defined by the NCP? Yes ☒ No ☐

Explain: Lead, cadmium, and arsenic have been detected at the site above residential Tier 2 Risk-based Standards for Kansas (RSKs).

B. Is the source a facility or vessel as defined by the NCP? Yes ☒ No ☐

Explain: The site is adjacent to a former lead and zinc smelter.

C. Does the release or threat of release involve a hazardous substance, pollutant, or contaminant as defined by the NCP? Yes ☒ No ☐

Explain: Lead, cadmium, zinc, and arsenic are hazardous substance as defined by the NCP.

D. Is the release subject to the limitations on response? Yes ☐ No ☒

Explain: No release limitations appear to exist.

E. Does the quantity or concentration warrant response? Yes ☒ No ☐

Explain: Lead, cadmium, and arsenic are elevated above residential RSK levels in a residential yard.

F. Has a PRP been identified? Yes ☒ No ☐

Name: Blue Tee Corporation		Telephone:	
Address:	City:	State:	Zip:

G. Document operational and regulatory history: see attached report ☒

H. What is the current land use around the facility? Check all that apply:
Residential ☒ Industrial ☒ Commercial ☒ Agricultural ☒ Recreational ☐

I. Is there an actual or potential exposure to hazardous substances, pollutants or contaminants:

Ground Water: Yes ☐ No ☐ Potential ☒ Receptor: Private water systems
Explain: Groundwater is not used near the site for drinking water purposes.

Surface Water: Yes ☒ No ☐ Potential ☐ Receptor: Environmental targets
Explain: Sediment results indicate a tributary of Cheyenne Creek may be impacted above threshold effect levels (TECs).

Soil: Yes ☒ No ☐ Potential ☐ Receptor:
Explain: Soil contamination is present with high levels of lead and associated elevated levels of cadmium, zinc and arsenic as documented from analytical results.

Waste: Yes ☐ No ☐ Potential ☒ Receptor: workers
Explain: Visible smelter slag was not observed but is present on the adjacent property at 1202 North State Street. No samples failed Toxicity Characteristic Leachate Procedure (TCLP) results.

Air: Yes ☐ No ☐ Potential ☒ Receptor: Residents (fugitive dust)
Explain: Fugitive dust from contaminated areas may impact off-site areas.

J. Is there an actual or a potential for contamination of a drinking water well? Yes ☐ No ☒ Potential ☐
Explain: No drinking water wells are located at or near the site.

Kansas Department of Health and Environment **Integrated Site Evaluation Form**
K. Are there hazardous substances, pollutants, or contaminants in drums, barrels, bulk storage containers, or tanks? Yes ☐ No ☒ Explain:
L. Are there high levels of hazardous substances in: Near-surface soils (< 2 feet below surface)? Yes ☒ No ☐ Unknown ☐ Subsurface soils (> 2 feet below surface)? Yes ☒ No ☐ Unknown ☐ Surficial Waste present? Yes ☒ No ☐ Unknown ☐ Site Accessibility: Secure ☐ Access limited ☐ Readily accessible ☒ Worker population: 5-10 Further explanation: High concentrations of lead, cadmium, and arsenic are present in a residential lot.
M. Are there conditions on site that may be susceptible to impact from adverse weather? Yes ☐ No ☒
Explain: There are no apparent conditions susceptible to adverse weather impacts.
N. Is there a threat of fire or explosion? Yes ☐ No ☒
Explain: No threat of fire or explosion was identified.
O. Is there a potential for other federal or state response programs? Yes ☐ No ☒
The site qualifies for additional site evaluation to further delineate lead, cadmium, and arsenic-impacted areas.
P. Are there endangered species habitats, wetlands, or other sensitive environments nearby which may be adversely impacted by the site? Yes ☒ No ☐
Explain: Endangered species, habitats, wetlands, or other sensitive environments may be impacted from runoff of impacted sediments.
Q. Are there other situations or factors that warrant further CERCLA response? Yes ☒ No ☐
Explain: There are no State mechanisms to further evaluate lead-impacted soils at the site.
R. Document economic conditions surrounding the site: The site is situated in a mixed residential-commercial area of Caney, Kansas.
III. CERCLA Site Screening Findings and Recommendations
A. CERCLA Eligible?
☒ Yes – further CERCLA evaluation is recommended. Cite applicable factors from Section III: ☒ A release of a hazardous substance, pollutant or contaminant has occurred; ☒ CERCLA Limitations on Response provisions do not apply; ☒ No responsible parties are willing/capable to respond at this time; ☐ Drums, barrels, and/or containers are, or may be present at the site; ☐ The site is susceptible to impact from adverse weather; ☒ No other federal or state response mechanisms were identified; ☒ The source is a facility as defined by the NCP; ☒ Contamination may be presenting sufficient quantity and/or concentration; ☒ There is an actual or potential exposure threat; ☐ There is, or may be, a threat of fire or explosion; ☒ There are, or may be, high concentrations of contaminants in surficial soils; ☒ There are endangered species, wetlands, or other sensitive environments or receptors that may be impacted by the site. If necessary, explain: Lead, cadmium, and arsenic-impacted soils are present in a residential lot above Tier 2 residential RSKs.

Kansas Department of Health and Environment

Integrated Site Evaluation Form

☐ No - further CERCLA evaluation is not recommended. Cite appropriate factors from Section III:

- ☐ No release has occurred;
- ☐ Not a hazardous substance, pollutant or contaminant;
- ☐ Insufficient quantity or concentration:
- ☐ No actual or potential exposure threats;
- ☐ No high levels of contaminants in surficial soils:
- ☐ Not a facility or vessel;
- ☐ Subject to response limitations;
- ☐ Willing/capable responsible party response;
- ☐ Drums, barrels, and/or containers are not present at the site;
- ☐ Site not susceptible to adverse weather:
- ☐ No threat of fire or explosion;
- ☐ Referred to another program.

If necessary, explain:

IV. Removal Considerations and Recommended Response Actions

If yes, check recommended or potential removal actions from § 300.415(d) of the NCP to warrant further removal site evaluation below:

☒ Release or threat of release is present.

- ☒ Site security
- ☒ Drainage control
- ☒ Stabilization or removal of surface impoundments
- ☒ Capping of contaminated soil
- ☒ Use of chemicals to retard or control spread of contaminants
- ☒ Excavation of contaminated soils
- ☐ Removal of drums, barrels, tanks or other bulk storage containers
- ☒ Containment, treatment, disposal or incineration of hazardous substances, pollutants or contaminants
- ☐ Provide alternate water supplies
- ☐ Other (specify and explain):

Briefly explain the rationale for checked alternatives:

Lead, cadmium, zinc, and arsenic-impacted soil are present in residential areas.

V. Remedial Considerations

Evaluation of remedial considerations and an initial evaluation of Hazard Ranking System (HRS) scoring potential is recommended if a responsible party is not identified to conduct response actions..

VI. Final Comments/Recommendations

A release of lead, cadmium, and arsenic to soil above residential Tier 2 RSK levels was documented during the ISE. At least one residential yard is impacted above KDHE residential Tier 2 RSK levels. The site may qualify for further evaluation of a removal action if a responsible party does not conduct response actions at the site.

Kansas Department of Health and Environment

Pre-CERCLIS Site Reconnaissance and Evaluation Form

V. Definitions

I. **CERCLA** is the Comprehensive Environmental Response Compensation and Liabilities Act, 42 USC §9601 *et seq.* (as amended).

A **FACILITY** is defined as any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly-owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or any site or area, where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel.

A **HAZARDOUS SUBSTANCE** means any substance, element, compound, mixture, solution, hazardous waste, toxic pollutant, hazardous air pollutant, or imminently hazardous chemical substance or mixture designated pursuant to the Clean Water Act (CWA), CERCLA, Safe Drinking Water Act (SDWA), Clean Air Act (CAA) or Toxic Substances Control Act (TSCA). The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas.

The LIMITATIONS ON RESPONSE provisions of the NCP [40 CFR 300.400(b)] states that removals shall not be undertaken in response to a release: of a naturally occurring substance in its unaltered or natural form; from products that are a part of the structure of, and result in exposure within, residential buildings or business or community structures; or into public or private drinking water supplies due to deterioration of the system through ordinary use.

NCP is the National Oil and Hazardous Substances Pollution Contingency Plan 40 CFR §300-302.

OPA is the Oil Pollution Act, 33 **U.S.C.** §2702 *et seq.,* 40 CFR §300.300- 300.335.

POLLUTANT or CONTAMINANT includes, but is not limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions or physical deformations, in such organisms or their offspring. The term does not include petroleum products, natural gas, natural gas liquids, liquefied natural gas, synthetic gas or mixtures of natural and synthetic gas. [40 CFR 300.5]

RCRA is the Resource Conservation and Recovery Act, 42 USC§ 6901 *et. seq.;* 40 CFR §260-273.

A **RELEASE** is defined as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment of barrels, containers, and other closed receptacles containing any hazardous substances or pollutant or contaminant), but excludes: workplace exposures; engine exhaust emissions; nuclear releases otherwise regulated; and the normal application of fertilizer. For purposes of the NCP, release also means threat of release. [40 CFR 300.5]

A **VESSEL** is defined as every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water other than a public vessel. [40 CFR 300.5]

11.7 Hazardous Substance Information

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

LEAD
CAS # 7439-92-1

Division of Toxicology and Environmental Medicine ToxFAQs™ September 2005

This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,280 of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is lead?
Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?
❑ Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
❑ When lead is released to the air, it may travel long distances before settling to the ground.
❑ Once lead falls onto soil, it usually sticks to soil particles.
❑ Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.

How might I be exposed to lead?
❑ Eating food or drinking water that contains lead. Water pipes in some older homes may contain lead solder. Lead can leach out into the water.
❑ Spending time in areas where lead-based paints have been used and are deteriorating. Deteriorating lead paint can contribute to lead dust.
❑ Working in a job where lead is used or engaging in certain hobbies in which lead is used, such stained glass.
❑ Using health-care products or folk remedies that contain lead.

How can lead affect my health?
The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

How likely is lead to cause cancer?
We have no conclusive proof that lead causes cancer in humans. Kidney tumors have developed in rats and mice that had been given large doses of some kind of lead compounds. The Department of Health and Human Services (DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on

Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house dust or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood.

How can families reduce the risks of exposure to lead?

- ❑ Avoid exposure to sources of lead.
- ❑ Do not allow children to chew or mouth painted surfaces that may have been painted with lead-based paint.
- ❑ If you have a water lead problem, run or flush water that has been standing overnight before drinking or cooking with it.
- ❑ Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children
- ❑ If your home contains lead-based paint or you live in an area contaminated with lead, wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

Is there a medical test to determine whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your recent exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth or bones can be measured by X-ray techniques, but these methods are not widely available. Exposure to lead also can be evaluated by measuring erythrocyte protoporphyrin (EP) in blood samples. EP is a part of red blood cells known to increase when the amount of lead in the blood is high. However, the EP level is not sensitive enough to identify children with elevated blood lead levels below about 25 micrograms per deciliter (µg/dL). These tests usually require special analytical equipment that is not available in a doctor's office. However, your doctor can draw blood samples and send them to appropriate laboratories for analysis.

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that states test children at ages 1 and 2 years. Children should be tested at ages 3-6 years if they have never been tested for lead, if they receive services from public assistance programs for the poor such as Medicaid or the Supplemental Food Program for Women, Infants, and Children, if they live in a building or frequently visit a house built before 1950; if they visit a home (house or apartment) built before 1978 that has been recently remodeled; and/or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers a lead level of 10 µg/dL to be a level of concern for children.

EPA limits lead in drinking water to 15 µg per liter.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for lead (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES
AND DISEASE REGISTRY

ARSENIC

CAS # 7440-38-2

Division of Toxicology and Environmental Medicine ToxFAQs™ August 2007

This fact sheet answers the most frequently asked health questions (FAQs) about arsenic. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to higher than average levels of arsenic occur mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. At high levels, inorganic arsenic can cause death. Exposure to lower levels for a long time can cause a discoloration of the skin and the appearance of small corns or warts. Arsenic has been found in at least 1,149 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is arsenic?

Arsenic is a naturally occurring element widely distributed in the earth's crust. In the environment, arsenic is combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds.

Inorganic arsenic compounds are mainly used to preserve wood. Copper chromated arsenate (CCA) is used to make "pressure-treated" lumber. CCA is no longer used in the U.S. for residential uses; it is still used in industrial applications. Organic arsenic compounds are used as pesticides, primarily on cotton fields and orchards.

What happens to arsenic when it enters the environment?

- Arsenic occurs naturally in soil and minerals and may enter the air, water, and land from wind-blown dust and may get into water from runoff and leaching.
- Arsenic cannot be destroyed in the environment. It can only change its form.
- Rain and snow remove arsenic dust particles from the air.
- Many common arsenic compounds can dissolve in water. Most of the arsenic in water will ultimately end up in soil or sediment.
- Fish and shellfish can accumulate arsenic; most of this arsenic is in an organic form called arsenobetaine that is much less harmful.

How might I be exposed to arsenic?

- Ingesting small amounts present in your food and water or breathing air containing arsenic.
- Breathing sawdust or burning smoke from wood treated with arsenic.
- Living in areas with unusually high natural levels of arsenic in rock.
- Working in a job that involves arsenic production or use, such as copper or lead smelting, wood treating, or pesticide application.

How can arsenic affect my health?

Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs.

Ingesting very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet.

Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso.

Skin contact with inorganic arsenic may cause redness and swelling.

Almost nothing is known regarding health effects of organic arsenic compounds in humans. Studies in animals show that some simple organic arsenic compounds are less toxic than inorganic forms. Ingestion of methyl and dimethyl compounds can cause diarrhea and damage to the kidneys

How likely is arsenic to cause cancer?

Several studies have shown that ingestion of inorganic arsenic can increase the risk of skin cancer and cancer in the liver, bladder, and lungs. Inhalation of inorganic arsenic can cause increased risk of lung cancer. The Department of Health and Human Services (DHHS) and the EPA have determined that inorganic arsenic is a known human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic arsenic is carcinogenic to humans.

How can arsenic affect children?

There is some evidence that long-term exposure to arsenic in children may result in lower IQ scores. There is also some evidence that exposure to arsenic in the womb and early childhood may increase mortality in young adults.

There is some evidence that inhaled or ingested arsenic can injure pregnant women or their unborn babies, although the studies are not definitive. Studies in animals show that large doses of arsenic that cause illness in pregnant females, can also cause low birth weight, fetal malformations, and even fetal death. Arsenic can cross the placenta and has been found in fetal tissues. Arsenic is found at low levels in breast milk.

How can families reduce the risks of exposure to arsenic?

- If you use arsenic-treated wood in home projects, you should wear dust masks, gloves, and protective clothing to decrease exposure to sawdust.
- If you live in an area with high levels of arsenic in water or soil, you should use cleaner sources of water and limit contact with soil.
- If you work in a job that may expose you to arsenic, be aware that you may carry arsenic home on your clothing, skin, hair, or tools. Be sure to shower and change clothes before going home.

Is there a medical test to determine whether I've been exposed to arsenic?

There are tests available to measure arsenic in your blood, urine, hair, and fingernails. The urine test is the most reliable test for arsenic exposure within the last few days. Tests on hair and fingernails can measure exposure to high levels of arsenic over the past 6-12 months. These tests can determine if you have been exposed to above-average levels of arsenic. They cannot predict whether the arsenic levels in your body will affect your health.

Has the federal government made recommendations to protect human health?

The EPA has set limits on the amount of arsenic that industrial sources can release to the environment and has restricted or cancelled many of the uses of arsenic in pesticides. EPA has set a limit of 0.01 parts per million (ppm) for arsenic in drinking water.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit (PEL) of 10 micrograms of arsenic per cubic meter of workplace air (10 $\mu g/m^3$) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Arsenic (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR

AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

CADMIUM

CAS # 7440-43-9

This fact sheet answers the most frequently asked health questions (FAQs) about cadmium. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to cadmium happens mostly in the workplace where cadmium products are made. The general population is exposed from breathing cigarette smoke or eating cadmium contaminated foods. Cadmium damages the kidneys, lungs, and bones. Cadmium has been found in at least 1,014 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is cadmium?

Cadmium is a natural element in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide).

All soils and rocks, including coal and mineral fertilizers, contain some cadmium. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium does not corrode easily and has many uses, including batteries, pigments, metal coatings, and plastics.

What happens to cadmium when it enters the environment?

- ❑ Cadmium enters soil, water, and air from mining, industry, and burning coal and household wastes.
- ❑ Cadmium does not break down in the environment, but can change forms.
- ❑ Cadmium particles in air can travel long distances before falling to the ground or water.
- ❑ Some forms of cadmium dissolve in water.
- ❑ Cadmium binds strongly to soil particles.
- ❑ Fish, plants, and animals take up cadmium from the environment.

How might I be exposed to cadmium?

- ❑ Eating foods containing cadmium; low levels are found in all foods (highest levels are found in shellfish, liver, and kidney meats).
- ❑ Smoking cigarettes or breathing cigarette smoke.
- ❑ Breathing contaminated workplace air.
- ❑ Drinking contaminated water.
- ❑ Living near industrial facilities which release cadmium into the air.

How can cadmium affect my health?

Breathing high levels of cadmium can severely damage the lungs. Eating food or drinking water with very high levels severely irritates the stomach, leading to vomiting and diarrhea.

Long-term exposure to lower levels of cadmium in air, food, or water leads to a buildup of cadmium in the kidneys and possible kidney disease. Other long-term effects are lung damage and fragile bones.

How likely is cadmium to cause cancer?

The Department of Health and Human Services (DHHS) has determined that cadmium and cadmium compounds are known human carcinogens.

How can cadmium affect children?

The health effects in children are expected to be similar to the effects seen in adults (kidney, lung, and bone damage depending on the route of exposure).

A few studies in animals indicate that younger animals absorb more cadmium than adults. Animal studies also indicate that the young are more susceptible than adults to a loss of bone and decreased bone strength from exposure to cadmium.

We don't know if cadmium causes birth defects in people. The babies of animals exposed to high levels of cadmium during pregnancy had changes in behavior and learning ability. There is also some information from animal studies that high enough exposures to cadmium before birth can reduce body weights and affect the skeleton in the developing young.

How can families reduce the risks of exposure to cadmium?

- In the home, store substances that contain cadmium safely, and keep nickel-cadmium batteries out of reach of young children.
- Cadmium is a component of tobacco smoke. Avoid smoking in enclosed spaces like inside the home or car in order to limit exposure to children and other family members.
- If you work with cadmium, use all safety precautions to avoid carrying cadmium-containing dust home from work on your clothing, skin, hair, or tools.
- A balanced diet can reduce the amount of cadmium taken into the body from food and drink.

Is there a medical test to determine whether I've been exposed to cadmium?

Cadmium can be measured in blood, urine, hair, or nails. Urinary cadmium has been shown to accurately reflect the amount of cadmium in the body.

The amount of cadmium in your blood shows your recent exposure to cadmium. The amount of cadmium in your urine shows both your recent and your past exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to cadmium in drinking water at concentrations of 0.04 ppm for up to 10 days is not expected to cause any adverse effects in a child.

The EPA has determined that lifetime exposure to 0.005 ppm cadmium is not expected to cause any adverse effects.

The FDA has determined that the cadmium concentration in bottled drinking water should not exceed 0.005 ppm.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 5 $\mu g/m^3$ for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Cadmium (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

11.8 Final Owen Investigative Work Plan, April 2014

FINAL OWEN INVESTIGATIVE WORK PLAN

Residential Soil Investigation in Vicinity of the Former Owen Zinc Smelter Site

Caney, Kansas

Revision 0

April 2014

Final Owen Investigative Work Plan
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1.0 INTRODUCTION

On behalf of Blue Tee Corp. (Blue Tee), this Investigative Work Plan (Work Plan) has been prepared by ENTACT LLC, (ENTACT) for the Kansas Department of Health and Environment (KDHE) to describe the proposed residential soil sampling activities at an estimated 15 residential or vacant properties located within a KDHE-defined investigation area adjacent to, and south of, the Former Owens Smelter Site in Caney Kansas. The initial investigation area defined by the KDHE is shown in Figure 1. The purpose of the investigation is to determine if, and to what extent, the soils at these properties may have been potentially impacted by historic smelting activities.

This Work Plan has been developed concurrently with negotiations between Blue Tee and the KDHE for an Amended Consent Order [Case No. 03-E-0022 BER] (the Order) and is Exhibit 1 to that Order. The Work Plan has been prepared in accordance with the guidelines outlined in the USEPA August 2003 OSWER 9285.7-50 *Final Superfund Lead-Contaminated Residential Sites Handbook* and the USEPA Region VII *Generic Quality Assurance Project Plan (QAPP) for Lead-Contaminated Sites* (June 2007).

The Work Plan has been organized as follows:

Section 1: Provides background information including a summary of the former smelter operations and previous regulatory and corrective actions, post-corrective action regulatory activities and a description of the investigation area that is the focus of this Work Plan.

Section 2: Describes the general project organization

Section 3: Presents the proposed scope of work including the defined contaminants of concern and the preliminary soil screening criteria and the proposed planning and field investigative tasks.

Section 4: Presents the Sampling and Analysis Plan (SAP) detailing methodology of sampling activities.

Section 5: Presents the QAPP which complies with the USEPA Region VII Generic QAPP for Lead-Contaminated Sites (June 2007).

Section 6: Provides the submittals and project schedule for implementation of the work.

1.1 FORMER OWEN SMELTER SITE BACKGROUND

The former Owen Smelter Site (Site) is located east of Wood Street and north of Moss Road (US166) in Caney, Montgomery County, Kansas, as illustrated in Figure 1. The Site was originally the location of the Caney Brick Company which operated between 1902 and 1915. Charles Owen and a partner constructed the former Owen Zinc Smelter Facility (the Facility) on a portion of the property of the former Caney Brick Company. In August 1915 the American Zinc, Lead and Smelting Company (American Zinc) leased the Facility from the Owen Zinc Company and held the lease until 1918. The smelter facility was small compared to other smelters in the area, having a single ore roaster and three furnace buildings (KDHE, 2001 In 1918 the smelter works was sold to Weir Smelting Company which operated the Owens Zinc Facility until 1931. At that time there was a significant decline in smelter production in Kansas. The Weir Smelting Company went bankrupt, and the smelter was demolished and the property subsequently sold (KDHE, 2001).

Between 1990 and 2000, several investigations were conducted by the USEPA or the KDHE that entailed the collection of soil, road ditch soil (referred to as sediment in these reports) and surface water samples at the former Owen Zinc Site and surrounding properties. The results of these investigations have been documented in a September 1990 Preliminary Assessment for the Former Owens Zinc Company (KDHE, 1990), a 1991 Screening Site Inspection (SSI) Report for the Former Owens Company (USEPA, 1991), a 1992 post--SSI investigation memorandum (KDHE, 1992) and the January 2001 Expanded Site Inspection/Preliminary Assessment (ESI/PA) (KDHE, 2001). The results of the ESI/PA indicated that lead, cadmium and/or zinc (considered the Constituents of Concern (COCs) at the Site) were present in soils above the applicable screening criteria in the southeast portion of the Site, the road ditch bordering the north side of US 166 (Moss Street) and on the eastern side of an adjacent residential property and restaurant (the Torres Property) located immediately west and downgradient of the Site.

On October 1 and 2, 2003, ENTACT, on behalf of Blue Tee, performed an additional field investigation at the Site to further delineate the extent of COCs that exceeded the applicable Tier 2 Risk-Based Standards for Kansas (RSK) criteria within the three areas of concern defined by the KDHE: the southeast portion of the Site, the road ditch, and the Torres property. The purpose of this supplemental investigation was to obtain sufficient data in these areas of concern in order to develop the corrective action plan (CAP) to address levels of COCs (particularly lead and cadmium) that exceeded the applicable Tier 2 RSK standards for the intended land use for the three areas of concern. The Final CAP was approved by the KDHE in February 2004 and included as Exhibit 1 to the finalized Consent Order, Case No. 03-E-0022, entered into by the KDHE and Blue Tee on April 23, 2004.

The Corrective Action (CA) described in the CAP was implemented between May 24, 2004 and August 19, 2004. The major components of the CA consisted of:

- Excavation and consolidation of smelter residues and soil with lead and cadmium concentrations greater than 1000 mg/kg in an on-Site Consolidation Cell;
- Excavation of road ditch soil containing COCs in excess of residential RSK criteria on the north side of Moss Street for placement within the Consolidation Cell or for use on Site as fill; and
- Excavation of soils with COCs in excess of residential RSK criteria from the Torres property either for placement within the Consolidation Cell or as fill in excavated areas on Site.

After all excavated material was consolidated into the Consolidation Cell, the cell was capped with soil, vegetated, and surrounded with a split-rail fence. Environmental Use Controls (EUCs) were placed on the Site to maintain nonresidential land use and on the Consolidation Cell to prohibit disturbance of the capped area.

With the submittal of the Corrective Action Completion Report (CACR) documenting the work, and the confirmation sampling results verifying that the cleanup objectives had been met, all tasks detailed in the Final CAP were completed, as required by the 2004 Consent Order.

1.2 POST-CA REGULATORY ACTION

In response to a resident's complaint, KDHE conducted an Integrated Site Evaluation (ISE) in February 2013 at 1202 N. State Street in Caney, Kansas located south of the Site (the Bunch Property). The purpose of the ISE was to determine if COCs associated with former smelting activities were present in soils above residential RSK criteria. During the ISE, KDHE collected surface soil samples from thirty-five locations for XRF analysis of lead, arsenic, cadmium and zinc using an Innov-X Delta x-ray fluorescence (XRF) unit, and submitted fourteen samples to KDHE's laboratory for analysis of metals.

The results of the KDHE soil sampling showed eleven samples exceeded KDHE's residential Tier 2 RSK levels for lead (400 mg/Kg), two samples exceeded Tier 2 RSK levels for arsenic (18.9 mg/Kg); two samples exceeded Tier 2 RSK levels for zinc (23,000 mg/Kg); and two samples exceeded Tier 2 RSK levels for cadmium [39 mg/Kg]. While lead, cadmium and zinc were determined to be associated with historic smelting waste based on previous investigations, arsenic was not found at levels above RSL standards in previous investigations. While the KDHE attributed the metal exceedences on the Bunch Property to the historic smelting operations at the Owen Smelter, it is Blue Tee's position that there is no evidence that smelting operations were ever conducted on this property and that the exceedences reported on the Bunch Property are the result of mechanically redistributed smelter residues or other non-smelter related sources. KDHE requested that Blue Tee remediate the Bunch Property at 1202 N. State Street, conduct additional characterization of residential properties in the vicinity of the Site, and subsequently conduct soil removal activities at additional properties found to contain elevated metals concentrations.

As discussed during a July 23, 2013 teleconference call between KDHE, Blue Tee and Environmental Management Services (EMS), residential properties located adjacent to, or near, the Site were to be sampled within an area initially defined by the KDHE. Since it was unknown how many residential properties were located within this investigation area, KDHE and Blue Tee agreed to conduct a reconnaissance of the initial investigation area to more clearly define the investigation boundary and the number of residential properties to be sampled.

1.3 AREA RECONNAISSANCE AND KDHE-DEFINED INVESTIGATION AREA

The reconnaissance was conducted on August 6, 2013 by Chris Carey and Pamela Green of KDHE and Gary Uphoff of EMS. For purposes of discussion, KDHE prepared a working draft drawing of the general investigative area (See Figure 1.). During the reconnaissance KDHE agreed that the area east of the Bunch Property was industrial, except for one residential property located west of Caney Casting on Spring Street. As this one property on Spring Street was previously sampled by the KDHE and found to be unaffected, the entire area east of Spring Street has been eliminated from the revised investigative area. Likewise, the area west of Wood Street, that comprised approximately one-third of the initial, general investigative area, was determined to be primarily undeveloped and zoned commercial/industrial with the exception of two residential properties observed in this area.

Based on the field reconnaissance, a total of 12 residential and 6 vacant lots were initially identified. Two of these properties to the immediate south of the Bunch property have been previously sampled by the KDHE. Of the remaining 10 residential properties, 3 were old, in poor condition and possibly vacant. Of the 6 vacant lots, KDHE reported that two are zoned commercial/industrial (which did not require sampling) with the other four zoned residential. Therefore, the revised investigative area consists of the 10 residential properties and 4 vacant lots which are, or potentially could be, used for residential purposes. The locations and approximate sampling boundaries of the properties to be sampled are shown in the aerial photograph provided in Figure 2. If other residential properties within the investigative area that could be occupied are identified during the investigation, these properties will also be sampled.

2.0 PROJECT ORGANIZATION

The project organization that will be followed during the implementation of the field investigation includes the following team members:

KDHE Project Manager (PM), *Pamela Green*

The KDHE Project Manager has the overall authority of oversight for all phases of the work related to implementation of residential sampling activities.

Blue Tee Special Counsel, *Terrance Gileo Faye, Babst, Calland, Clements & Zomnir, P.C.*

Ms. Faye is the Blue Tee Representative for the work and oversees all facets of the work on Blue Tee's behalf.

Project Coordinator, *Gary Uphoff, Environmental Management Services, Inc***.**

The EMS Project Coordinator for Blue Tee is responsible for overseeing and tracking the investigative activities, submittals and schedule and serves as the liaison between ENTACT and the KDHE.

Technical Project Manager, Patricia Thomson P.G., ENTACT

The Technical Project Manager will have overall responsibility for all technical aspects of the project, data evaluation, risk assessment and report generation. The Technical Project Manager will ensure that all required tasks are completed in accordance with the Amended Consent Order, the approved Work Plan and federal, state and local regulations.

Quality Control (QC) Officer, Jennifer Self, P.G., ENTACT

The QC Officer will ensure that all field activities conform to sampling protocol outlined in the Quality Assurance Project Plan (QAPP) and Sampling & Analysis Plan (SAP) including the completion of all required sampling and shipment documentation. The QC Officer will have the authority to correct and implement additional measures to assure compliance with the approved Work Plan including the QAPP.

Corporate Health and Safety (H&S) Officer, Rick MacIntyre, ENTACT

The Corporate H&S Officer will coordinate and provide oversight for the health and safety issues at the Site.

3.0 SCOPE OF WORK

The field investigation will include residential sampling of the 14 properties identified within the revised investigation area shown on Figure 2, as discussed in Section 1.3 and detailed below. If a property at the boundary of the investigation area is found to have concentrations of COC in yard soil above the residential Tier 2 RSK levels, then the area of investigation would be extended to delineate the extent of contamination. The work will be conducted in accordance with the SAP (Section 4.0) and QAPP (Section 5.0) that govern the implementation of the work. The intent of the field investigation is to determine whether or not the soils contain the identified COC in excess of the RSK residential criteria, and if so, to adequately assess the lateral and vertical extent of COCs for purposes of defining the appropriate removal action.

3.1 CONTAMINANTS OF CONCERN AND PRELIMINARY SCREENING GOALS

Previous sampling results from investigations conducted at the Site have identified lead, cadmium and zinc as the COC associated with historic smelting operations, with lead considered the primary metal of concern in terms of frequency of detection and magnitude. Therefore the analysis of samples collected as part of this investigation will be limited to these three metals.

The preliminary screening goals for the soil pathway are summarized below:

Constituent of Concern	**RSK Residential Standards (mg/Kg)**
Lead	400
Cadmium	39
Zinc	23,500

3.2 PROJECT PLANS

The project planning portion of the residential sampling consists of preparation of the Residential Work Plan including the SAP and QAPP and the Health and Safety Plan (HASP) to address all project-specific tasks, methodology, and health and safety procedures to be followed during the duration of the work.

3.2.1 Residential Work Plan

This Work Plan defines all activities to be performed during the residential sampling investigation. It provides the scope of work, project organization, and details on each specific task included in the investigation.

3.2.2 Sampling and Analysis Plan

The SAP contained within the Work Plan, includes sampling procedures and documentation to be performed during the sampling investigation. All fieldwork will conform to the requirements specified in the SAP presented in Section 4.0.

3.2.3 Quality Assurance Project Plan

The QAPP summarizes the primary QA/QC procedures to be implemented in the field to ensure the data is usable and valid. The QAPP will comply with USEPA Region 7 *Quality Assurance Plans for Lead Contaminated Sites.* The QAPP is presented in Section 5.0.

3.2.4 Health & Safety Plan

ENTACT will revise and update the KDHE-approved HASP used during the Site CA that was designed to protect on-Site personnel from any physical or chemical hazards that may be posed by the sampling activities. The HASP includes information about health and safety training, medical surveillance, first aid and emergency information, ambient air monitoring, personal protective equipment, decontamination procedures and documentation. The HASP will conform to applicable Occupational Safety and Health Administration (OSHA) standards including 29 Code of Federal Regulations (CFR) 1910.120 and corporate guidelines. The HASP will be submitted under separate cover prior to the initiation of field activities.

3.2 FIELD INVESTIGATION

The KDHE will be notified at least one week prior to conducting any sampling activities. The sampling investigation will be conducted in accordance with the approved Work Plan and will follow all safety, sampling and quality control protocol outlined in the HASP, SAP and QAPP. Any personal protective equipment (PPE) or general waste generated during the field investigation will be placed in drawstring trash bags and disposed of in a municipal waste receptacle.

All other necessary community notification, mobilization of equipment and personnel, field operations set-up and utility clearance will be done prior to implementing the work.

3.2.1 Access Agreements

Prior to conducting any sampling of a property, a signed access agreement will be obtained from the landowner. A blank access agreement to be used for the investigation is provided in Appendix A. An access agreement with a cover letter explaining the purpose and need for access will initially be mailed to the owners of all properties to be sampled. A follow-up visit will then be made to any property owners that do not respond to the mailing, with an initial focus on the properties that have been identified for soil sampling.

Prior to the start of sampling activities, ENTACT will contact the Montgomery County Tax Assessor's office to identify the current property owners and plat property boundaries within the investigative area. The KDHE will be notified of any property owner that denies access, along with efforts made to obtain access.

3.2.2 Residential Soil Sampling

Residential soil samples will be collected following the guidelines outlined in the USEPA August 2003 OSWER 9285.7-50 *Final Superfund Lead-Contaminated Residential Sites Handbook*.

Under this guidance, five-point composite samples will be collected from the front and back yards, and if applicable, the side yard, from all properties encompassing a total surface area less than or equal to 5,000 square feet. Properties with a total surface area exceeding 5,000 square feet will be divided into four equal quadrants: two in the front yard and two in the back yard, and five-point composite samples will be collected from each of the quadrants.

The discrete aliquots comprising the five-point composite samples will be equally spaced and located away from the drip zone of the house or other structures present. Per the USEPA guidance, samples will also be collected separately from any vegetable gardens or children's play areas that are observed on the property.

Discrete sample aliquots for each of the above areas will be collected using a two-inch diameter, stainless-steel hand auger or small remote-controlled Geoprobe at the following six-inch depth intervals: 0 to 6 inches, 6 to 12 inches, 12 to 18 inches, and 18 to 24 inches. For each interval, each sample aliquot will be placed into a clean Zip-loc bag and screened by the XRF to obtain lead, cadmium and zinc concentrations prior to combining the 5 aliquots into a stainless-steel bowl for homogenization. Once homogenized, the composite sample will be transferred to a clean zip-loc bag for XRF analysis. Sample collection methodology is further described in Section 4.3.

XRF analysis, both for aliquots and composite samples, will be done on as-collected samples unless the samples are excessively wet. If samples are excessively wet, the sample will be dried before analysis.

Samples selected for laboratory analysis (one of every 10 samples analyzed by the XRF) will be transferred to a clean laboratory-supplied jar and submitted for laboratory analysis of lead, cadmium and zinc.

For each property, a sketch will made of the property identifying the major features (i.e any observed slag, house and/or garage locations, driveway, garden, etc.), adjacent ditches or streets, and the locations where each sample aliquot was collected. The physical properties of the soils will also be recorded in the field logbook. The property sketches, XRF journal and field logbooks documenting the sampling activities will remain part of the permanent file and copies will be included in the investigative report.

4.0 SAMPLING AND ANALYSIS PLAN

This SAP describes the procedures to be used for collection of residential soil samples and all required quality control samples. The sampling to be conducted, and the use of the data collected from each sample type, is summarized below:

SUMMARY OF CORRECTIVE ACTION SAMPLING ACTIVITIES		
Sample Type	Data Collected	Data Use
XRF analysis of soil samples	Total lead, cadmium and zinc concentration	Identification and/or delineation of the lateral and vertical extent of lead, cadmium and zinc exceedences of residential RSK criteria. Sample data of any affected properties will be used in developing an appropriate removal action.
Off-Site laboratory analysis of 10% of XRF samples	Total lead, cadmium, and zinc concentrations	To verify accuracy of XRF analysis.

4.1 SAMPLE IDENTIFICATION SYSTEM

A sample identification system will be implemented to properly track sampling activities. The sampling activities and examples of the identification coding system associated with each type are listed in the following table:

SAMPLE TYPES	IDENTIFICATION SYSTEM
Soil Samples	
X-Ray Fluorescence Analysis:	Designated by the instrument
Laboratory Residential Soil Samples [RS-Assigned Property ID-Yard location (i.e. FY, BY, SY)-Depth (inch-inch)	RS-13-FY-6-12'
Quality Control Samples	
Field Duplicate Samples [Sample ID / FD]	SSB-1-NE-1.0' FD
Rinsate Field Blanks	FB-001

For the XRF samples, no separate ID is listed, since the unit assigns a number ID and date to each analysis and records the data in memory for download to a computer at a later date. The numerical ID increases by one with each measurement. The sampler will record the property address and sample location, the assigned XRF instrument ID, and the XRF results in the XRF field journal in the event the data is lost or the file corrupted.

A unique property ID will be assigned to each residential property or vacant lot to allow for tracking samples to the associated property.

All numbering sequences shown above with "001" will begin with the number "001" and will continue sequentially (i.e., FB-001, FB-002, etc.; FD-001, FD-002), until the final samples for the removal action are collected.

4.2 SAMPLING DOCUMENTATION

Field logs will be used to record sampling activities on a daily basis. Each logbook will be bound and have consecutively numbered pages. Entries in the field logbook will be made in waterproof ink and will include:

Name of author;
Date and time of entry;
Location of activity (include diagram or map);
Names and affiliations of sampling personnel;
Calibration records;
Sample collection or measurement methods;
Number of samples collected;
Parameters analyzed and XRF results;
Sample identification numbers;
Field observations and comments;
Any deviations from the sampling plan; and
Signature of individual(s) performing sampling

All logbooks will be maintained in the document control center in the field office when not in use. Upon project completion, the logbooks will become part of the file records.

4.3 RESIDENTIAL SOIL SAMPLING PROCEDURES

The following soil sampling procedures describe the overall sampling methodology for residential soil samples collected during the investigation. Designated sampling locations will be identified prior to sample collection. Clean, plastic holding containers will be placed adjacent to the areas to be sampled during sample collection.

1. The following tools and supplies will be prepared for use:

- XRF instrument;
- XRF journal;
- Field logbook;
- Property sketch form;
- Plastic or glass laboratory-supplied sample containers;
- Stainless steel trowels;
- Stainless steel bowls;
- Ziploc bag or equivalent sample bags;

- Measuring tape;
- Permanent markers;
- Cooler with ice;
- Distilled water, low-phosphate detergent, and brushes;
- Disposable gloves;
- Trash bags; and
- Clean 5-gallon buckets to carry equipment and for decontamination liquids.

2. The five sample aliquots collected from each yard section (front yard, back yard, side yard) or quadrant will be placed into a clean Ziploc bag and mixed to achieve a homogeneous sample. Intervals collected include the upper 0-6 inches, 6-12 inches, 12-18 inches and 18-24 inches for lead, cadmium and zinc analysis.

3. If gardens are present, additional soil samples will be collected in one location per each discrete garden area at intervals of 0-6 inches, 6-12 inches, 12-18 inches and 18-24 inches. The samples will be identified with "G" if only one garden is present on the property or G1, G2, etc. if more than one discrete garden area is present.

4. The sample material will be analyzed with the XRF according to the procedures outlined in Appendix B. The field screening result will be entered into the XRF field journal.

5. Soil samples designated for laboratory analysis (one of every 10 composite samples analyzed with the XRF) will be transferred into the clean laboratory-supplied sample containers with a spoon in an attempt to eliminate voids in the container. Excess soil will be removed from the container so that the lid will properly seal. These samples will be submitted to Test America for laboratory analysis of lead, cadmium and zinc.

6. Field notes will be completed and will include identification of the soil sample number, color, and brief description.

7. Chain of Custody (CoC) documents will be prepared according to procedures outlined in Section 4.4. Sample containers will be labeled in accordance with the predetermined sample numbering system, sealed in a plastic bag for shipment to the laboratory for analysis and placed on ice in the sample cooler.

8. If reusable sampling equipment is used, the equipment will be decontaminated between samples by washing with an Alconox solution followed by a triple-rinse with distilled water.

Soil samples submitted for off-Site analyses will be analyzed for total lead, cadmium and zinc analysis by EPA Method 6010B. Analytical parameters and test methods are presented on Table 1.

4.3 DATA QUALITY OBJECTIVES

Field equipment blank, trip blank, duplicate, matrix spike/matrix spike duplicate (MS/MSD), and method blank samples will be analyzed to assess the quality of data resulting from the field sampling and analytical programs.

4.3.1 Field Data

For field XRF soil analyses, a sample will be sent to the laboratory for confirmatory analysis of lead, cadmium, and zinc for 10 percent of the field XRF samples.

One field duplicate will also be prepared for every 10 investigative samples submitted for laboratory analysis.

One field equipment blank will be prepared for every 10 investigative samples or each day of sampling if reusable sampling equipment is used.

4.3.2 Laboratory Data

Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures. Field duplicate samples are analyzed to check for sampling and analytical reproducibility. MS samples provide information about the effect of the sample matrix on the digestion and measurement methodology. All MS are performed in duplicate and are referred to as MS/MSD samples. One MS/MSD will be analyzed for every 20 or fewer soil samples submitted to the laboratory.

4.3.3 Detection Limit Requirements

The level of concern for each parameter directly affects the data quality requirements. Therefore, the sampling and analysis methods must be accurate at the level of concern.

The detection limits for the XRF instrument varies according to the concentrations found in the sample. For lead, cadmium, and zinc the detection limits are generally a minimum of one order of magnitude below the RSK nonresidential criteria, which is acceptable.

For select soil samples that are submitted for laboratory analysis, the method detection limits and reporting limits for the sample analyses are presented in Table 2.

4.4 CHAIN-OF-CUSTODY RECORDS

A CoC form will be completed to record the custody of each sample collected. A CoC form will accompany every shipment of samples to the analytical laboratory in order to establish the documentation necessary to trace sample possession from the time of sample collection through sample analysis.

The sample portion of the CoC form will include the following:

- Project number, name and location;
- Sample identification;
- Name of Project Manager, Sampler and Recorder;
- Sampling information (sampling area, depth, media type, type of sample, date and time of collection, etc.)
- Analysis to be performed;
- Preservatives used, if any; and
- Signatures of persons involved in the CoC possession, including dates.

When a CoC form is filled out, one page of the three-part form will be retained and placed in a file in the permanent file. The other two parts of the form will accompany the sample to the laboratory. One of those pages will be retained by the laboratory and the other will be returned with the sample result report. When the sample report is received, it will be crosschecked with the CoC file record and both CoC pages and the laboratory report will be placed in the permanent project file. The analytical result will also be entered into a computer database consisting of a comprehensive list of all samples collected at the Site and the analytical results.

4.5 SAMPLE SHIPPING

For shipping, all laboratory samples will be packaged in such a manner as to prevent damage or breakage during shipment or transport. Samples for analyses of parameters other than metals will be stored on ice. Samples will be shipped through an overnight parcel service by sampling personnel. Samples will be placed into suitable containers, labeled and sealed in such a manner that tampering with the seal would be obvious. All sample holding times will be tracked and a copy of the CoC form will accompany the samples in a sealed plastic bag.

4.6 XRF INSTRUMENT MAINTENANCE AND CALIBRATION

The Niton XL 700 Series XRF analyzer or the Innov-X Systems Alpha Series XRF Spectrometer will be the instrument utilized for screening total metals concentrations in soil. The Niton XRF instrument utilizes two radioisotope sources; whereas, the Innov-X XRF instrument utilizes an x-ray tube source. Each source emits a different energy (wavelength) of radiation, which provides efficient analysis of specific ranges of elements. An approximate 60-second scan time will be utilized to field screen samples for the duration of the RI. Only qualified analysts trained in the proper use, theory and safety of XRF analysis will operate these systems.

The principle of XRF analysis is based on electron excitation. Elemental atoms in a soil sample are irradiated with a beam of x-rays. Electrons in the atoms at lower lying energy levels are excited to higher energy levels. The vacancies left in the inner electron orbital make the atom unstable. Relaxation to the ground state occurs, resulting in the emission of x-rays characteristic of the excited elements. Thus, by examining the energies of the x-rays emitted by the irradiated soil sample, identification of elements present in the sample is possible. Comparing the intensities of the x-rays emitted from a given sample to those emitted from reference standards with known analyte concentrations allows quantification of the elements present in the samples.

Prior to any sampling activities, the XRF instrument will be properly calibrated. A calibration specific response factor/calibration study will be done to verify the concentrations of metals in soils as discussed in the XRF SOP in Appendix A. During sampling activities, the XRF will be standardized daily utilizing referenced standards for QA/QC.

The detection limit for the XRF for some metals (such as cadmium) may be above the corresponding screening levels. However, the XRF instrument provides measurements that can be related to laboratory analytical results using the calibration standards, site-specific standards and the calculated calibration curve. Therefore, field analysis using the XRF instrument will be augmented with laboratory verification on 10 percent of all soil data collected to determine the concentrations of those metals which may be present in samples at lesser quantities.

4.7 FIELD DOCUMENTATION

4.7.1 Field Log Books

Field log books will be used to record sampling activities. These books will be bound and have consecutively numbered pages. Entries in the field logbook will be made in ink and will include: the name of the author, date and time of entry, location of activity, names and affiliations of sampling personnel, sample collection or measurement methods, number of samples collected, daily weather report, sample identification numbers, field observations and comments, sampling depth increment for soils, field measurements, locations of photographs, and any deviations from the sampling plan. The field logbook will be stored in the document control center at the job site when it is not in use. Upon project completion, all logbooks will become part of the file records.

4.7.2 XRF Sampling Journal and Electronic Data Logs

An XRF Sampling Journal will be used to record the XRF field screening results.. A dedicated XRF Sampling Journal will be assigned to each XRF unit operated at the Site during the project. This journal will be bound and have consecutively numbered pages. Entries in each XRF Sampling Journal will be made in ink and will include the name of the screener, date and time of entry, location of activity, XRF results and corresponding sample identification numbers, and XRF instrument reading numbers. The XRF Sampling Journal will be stored in the document control center at the job site when it is not in use. The electronic files on the XRF unit will also be downloaded on a daily basis and saved to CD. Upon project completion, all journals and CDs will become part of the file records.

4.8 INVESTIGATIVE-DERIVED WASTE DISPOSAL

Personal protective equipment (PPE) including Tyvek, disposable gloves and/or booties, will be collected in trash bags and disposed of in accordance with applicable regulations at the conclusion of the investigation. Excess aliquot soils and any Alconox/rinse water will remain on the property.

5.0 QUALITY ASSURANCE PROJECT PLAN

The USEPA Region 7 Generic QAPP requires that sampling activities be under the control of a QA program to ensure data generated during the residential sampling investigation are accurate, precise, comparable and complete and therefore, representative of Site conditions.

The following Kansas-certified analytical laboratory will perform the off-Site chemical analyses for the sampling activities:

Test America Laboratories (TA)
2417 Bond Street
University Park, Illinois 60484
Phone: (708) 534-5200

TA may contract with other laboratories in the TA laboratory network to perform some analyses. A complete list of analytical parameters, methods, matrices, holding times and preservation requirements are included in Table 1.

5.1 LEVEL OF QUALITY CONTROL EFFORT

Field blank, duplicate, and matrix spike samples will be analyzed to assess the quality of data resulting from the field sampling and analytical programs. Field blanks will consist of distilled water that is poured over or through the decontaminated sampling equipment into the sample containers. Field blank samples are analyzed to check for procedural contamination at the facility that may cause sample contamination. One field blank will be prepared for every 10 investigative soil samples if reusable sampling equipment is used.

Field duplicate samples are analyzed to check for sampling and analytical reproducibility. The general level of the QC effort will be one field duplicate for every 10 or fewer investigative samples submitted for laboratory analysis. Sampling procedures are specified in Section 4.0 of this Work Plan.

Method blank samples are generated within the laboratory and used to assess contamination resulting from laboratory procedures. Matrix spikes provide information about the effect of the sample matrix on the digestion and measurement methodology. One MS/MSD will be analyzed for every 20 or fewer investigative samples per sample matrix. Separate MS/MSD samples are not necessary for metals as the laboratory will perform this with the original sample volume.

5.2 ANALYTICAL AND MEASUREMENT PROCEDURES

5.2.1 Field Analytical Procedures

Field analytical and test procedures include the following:

XRF instrument – total cadmium, lead and zinc

The user's guide for the XRF is included in Appendix B.

5.2.2 Laboratory Analytical Procedures

Laboratory analytical procedures for residential soil samples collected during the investigation include the following:

Total cadmium, lead and zinc per USEPA Test Methods for Evaluating Solid Wastes 1986 (USEPA SW-846) Method 6010B.

EPA SW-846 methods will be used for chemical analysis. Analytical methods for soil, sediment and groundwater are provided in Table 2 of this report.

5.3 INTERNAL QUALITY CONTROL CHECKS

Internal QC procedures are designed to ensure and document the overall quality of data. The QC checks represent the system checks and controlled samples introduced into the sample analysis stream that are used to validate the data and calculate the accuracy and precision of the chemical analysis program.

Project QC checks are accomplished by submitting controlled samples into the laboratory from the field. Two external types of QC samples will be used: - field blanks (FB) and field duplicates (FD). Field blanks of rinsate water used in decontamination will be collected if non-disposable sampling equipment is used. If it is necessary to collect field samples, then one field blank sample will be collected for every ten samples. The samples will be identified with an "FB" that precedes a number. Duplicate field samples will be collected at a rate of one sample for every 10 samples per matrix, or one duplicate per day, whichever is greater. Any samples submitted as "FD" samples will be noted in the field logbook and given the sample number described in Section 4.1.

5.3.1 Laboratory Quality Control Checks

Laboratory QC checks are accomplished through the use of system checks and QA/QC samples that are introduced into the same analysis stream. Laboratory QA/QC checks will be performed and samples will be analyzed at a frequency established by appropriate SW-846 protocols.

5.3.2 Field Quality Control Checks

For field analyses, the XRF instrument will be calibrated routinely in accordance with the SOP and manufacturer's instructions using known standards with the results within the following range:

PARAMETER	METHOD REFERENCE	PRECISION (1)	ACCURACY (2)	COMPLETENESS
XRF	Per ENTACT SOP	±20 percent from calibration standard	N/A	90%

NOTES:
1. *Expressed as the acceptable deviation from the Scale.*
2. *Expected based on equipment manufacturer specifications.*

5.4 DATA REDUCTION, VALIDATION AND REPORTING

All data collected will be managed, distributed, and preserved to substantiate and document that data are of known quality and are properly maintained. Technical data will be tracked and validated to monitor the performance of the tasks. An outline of the QC data handling process for data collection, transfer, validation, reduction, reporting, and storage for both field and laboratory QC data is described below.

5.4.1 Laboratory Data Reduction

Data quality and utility depends on many factors, including sampling methods, sampling preparation, analytical methods, quality control, and documentation. Once all physical and chemical data are validated and assembled, these data are further evaluated with respect to precision, accuracy, representativeness, completeness, and comparability parameters. Satisfaction of these criteria will be documented as listed below. Chemical data must meet criteria of (1) quantitative statistical significance, (2) custody and document control, and (3) sample representativeness. Physical data must meet criteria of: (1) sampling location, time, and personnel; (2) documentation; and (3) methodologies.

As part of data reduction the following items will be documented by the laboratory as appropriate:

1. Laboratory/field instrumentation, including calibration data, standard methods, and references;
2. Laboratory analysis detection limits;
3. Analysis of laboratory (reagent) blanks at a frequency of at least one per 20 samples per matrix;
4. Analysis of laboratory spikes and replicates at a frequency of at least 1 per 20 samples or one per analytical batch;
5. Analysis of field replicates (duplicates or splits) at a frequency of at least 1 per 10 samples for each matrix or one per day, whichever is greater;
6. Presentation of tabulated QC data;
7. QA/QC certification of the laboratory and/or participation in round-robin testing by and/or with EPA accredited agencies.

8. Laboratory custody documented by chain-of-custody documentation from either field personnel or shipper;
9. Laboratory custody documented through designated laboratory sample custodian with secured sample storage area;
10. Sample designation number(s) traceable through entire laboratory monitoring system;
11. Field notebooks and all custody documents stored in secure repository or under the control of a document custodian;
12. All forms filled out completely in indelible ink without alterations except as initials;
13. Identity of sampler;
14. Date of sample collection, shipping, and laboratory analysis;
15. Compatibility between appropriate field and laboratory measurements or suitable explanation of discrepancy;
16. Analysis within holding time limits suitable for the preservation and analysis methods used;
17. Sample storage within suitable temperature, light, and moisture conditions;
18. Proper sample containers used;
19. Proper sample collection equipment used and properly decontaminated;
20. Proper sample preservation;
21. Proper laboratory preparation techniques used;
22. An evaluation of factors to determine bias screening; and
23. Sample site selection criteria to provide representativeness.

5.4.2 Field Data Reduction Procedures

Field instrument data will be generated from direct readout instruments and will be recorded on field documents and the field log book. The field XRF values will be entered into the field logbook in addition to downloading to a computer so data transcription errors can be discerned easily upon validation. The information will be entered into the field logbook and checked for transcription errors by the sampling team.

To evaluate the field physical data that support the laboratory analytical data, the following items will be documented:

1. Sampling date and time;
2. Sampling personnel;
3. Sampling location;
4. Physical description of sampling location;
5. Sample collection technique;
6. Field preparation techniques;
7. Visual classification of sample using an accepted classification system;
8. A thorough description of the methodology used and a rationale for the use of that methodology;
9. Complete documentation of record-keeping practices;
10. Field notebook and all custody documents stored in a secure repository or under the control of a document custodian; and
11. All forms filled out in indelible ink without alterations except as initialed.

5.5 DATA REVIEW

Results of laboratory sample analyses will be reviewed to monitor the performance of the investigative sampling. Under the direction of the Laboratory QA Manager, lab data will be reviewed to ensure that results for samples meet all method-specified criteria. The requirements to be checked in validation are:

1. Sample Holding Times
2. Calibration
3. Blanks
4. Matrix Spike/Matrix Spike Duplicate
5. Field Duplicate
6. Target Compound Identification
7. Spectral Interference Check Sample Analysis
8. Compound Quantitation and Reported Detection Limits
9. System Performance
10. Overall Assessment of Data
11. Interference Check Sample Analysis
12. Laboratory Control Sample Analysis

The laboratory QA Manager will be responsible for assessing data quality and advising appropriate laboratory section supervisors of any data that are "unacceptable" or have notations that would caution the data user to possible unreliability. The laboratory data will be reviewed for potential data quality problems, including:

1. Unexpected results;
2. Common laboratory contaminants;
3. Samples in which dilution was necessary;
4. Time and date of sample collection.

A sample data summary will be prepared to assess precision, accuracy, and completeness of the analytical data. Laboratory records and data package requirements will be checked to assess completeness of the data package. The validation effort will be done by personnel qualified and experienced in the field of laboratory data validation.

Despite all efforts to achieve the objectives of the project, the potential for error exists in laboratory chemical analyses and in the data reporting process. Every reasonable effort will be made to compare and double-check data reported from the laboratory with data entered into the data base management system.

6.0 RECORD KEEPING, REPORTING AND SCHEDULE

6.1 AGENCY ACCESS AND NOTIFICATION

In accordance with K.A.R. 28-71-6 (d), prior to the initiation of fieldwork, ENTACT will provide the KDHE PM a minimum of 7 days notice of field activities to be conducted in order to allow the Agency the opportunity to be on Site for any portion of the field work.

6.2 RESIDENTIAL SAMPLING INVESTIGATION REPORT and RESIDENTIAL REMEDIATION WORK PLAN

Within 60 days following receipt of analytical results from the field investigation, ENTACT will submit a Residential Sampling Investigation Report summarizing the analytical results and identifying those properties where COCs were found in soils at levels in excess of the RSK soil screening criteria that are potentially associated with historic smelting activities. The report will also include a Soil Remediation Work Plan to address those properties with levels of COCs in excess of the applicable RSK standards and to dispose of the excavated soils at the repository on the American Zinc Lead and Smelting Company Site in Caney, KS.

6.3 PHOTOGRAPHIC DOCUMENTATION

Photographs will be taken in order to serve as a written and pictorial record of the sample locations and activities. Photographic documentation will also be included in the Site Investigation Report.

6.4 PROJECT SCHEDULE

The project schedule will follow the requirements in the finalized Amended Consent Order and Scope of Work. The estimated schedule for the required submittals is as follows:

Task	Duration
Residential Sampling Field Investigation.[1]	Work to be initiated within 60 days from receipt of executed Amended Consent Order.
Submit Draft Residential Sampling Report and Residential Remediation Work Plan.	60 days following receipt of analytical results from field investigation.
Conduct Remedial Work outlined in the Residential Remediation Work Plan.	60 days after KDHE approval of Final Residential Sampling Report and Residential Remediation Work Plan.

1. The proposed schedule for implementation of the approved field investigation will be subject to weather conditions.

7.0 REFERENCES

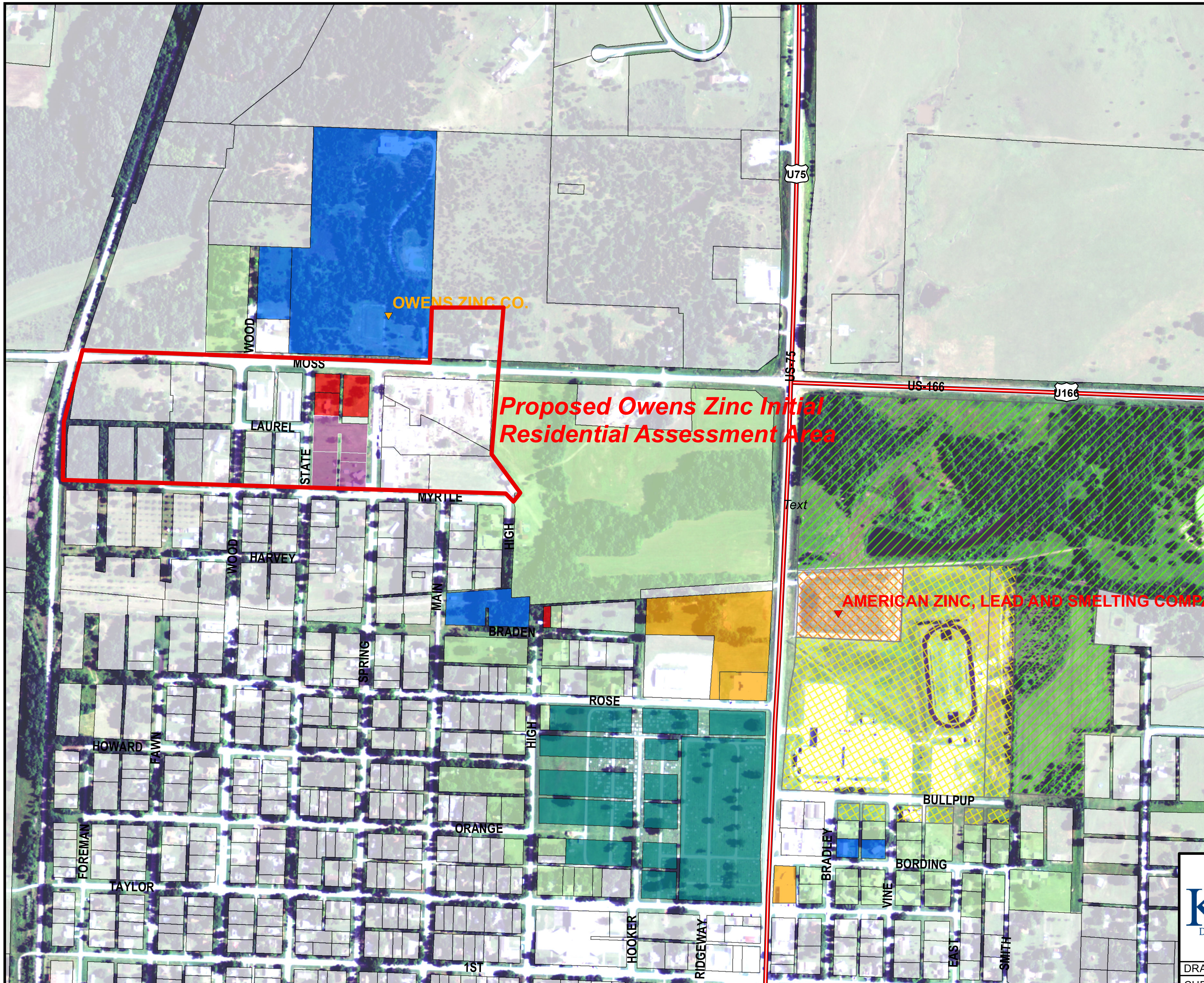
KDHE, January 2001. *Expanded Site Inspection (ESI) and Preliminary Removal Evaluation/Removal Preliminary Assessment for the Owens Zinc Site, Caney, Montgomery County, Kansas.* EPA ID: KSD984971911. Prepared by the KDHE, Topeka, Kansas.

KDHE, September 1991. *Screening Site Inspection – Former Owens Zinc Company, Caney, Kansas.* Prepared by the KDHE BER, Pre-Remedial Section.

KDHE, November 2, 1992. Memorandum to Larry Knoche, KDHE BER Director from Pamela Chafee, KDHE Environmental Geologist. Re: Former Owens Zinc Company Site, Caney, Kansas. EPA ID: KSD984971911.

USEPA August 2003 *Final Superfund Lead-Contaminated Residential Sites Handbook* [OSWER 9285.7-50].

USEPA Region VII *Generic Quality Assurance Project Plan (QAPP) for Lead-Contaminated Sites*



Legend

US Route Divided

KDHE Identified Sites

SITENAME

- AMERICAN ZINC, LEAD AND SMELTING COMPANY
- OWENS ZINC CO.

Parcels

- Property Not Sampled (450)
- Agricultural Property, Remediated (1)
- AZLS Repository (1)
- Non-Residential Property, >RSK*, No Remediation (3)
- Cemetary, Not Sampled (13)
- Residential Property, <RSK (45)
- Residential Property, > RSK, No Remediation (4)
- Residential Property, Remediated (5)
- Residential Property, KDHE Assessment Ongoing (4)
- School Property (8)

Value in parentheses ( ) indicates the number of properties in each category within the map extent.

**Concentration data screened against KDHE's Risk-Based Standards for Kansas (RSK) Manual Tier 2 Levels for lead of 400 mg/kg for residential properties and 1,000 mg/kg for non-residential properties. The approved cleanup level for the AZLS site was 500 mg/kg for residential properties.*

Working Draft
Subject to Modification

For Discussion Purposes Only

N

0 375 750 1,500 Feet

Map Source: Aerial Photograph 2012 National Agriculture Imagery Program (NAIP)

Kansas Department of Health and Environment

SITE:	Owens Zinc Site Caney, Kansas		
TITLE:	Historical Residential Property Assesment Findings		
PROJECT PHASE:	Residential Assessment		
DRAWN BY: CC	7/23/2013	BASEMAP DATE:	2012
CHECKED BY: PG	7/23/2013	Figure 1	

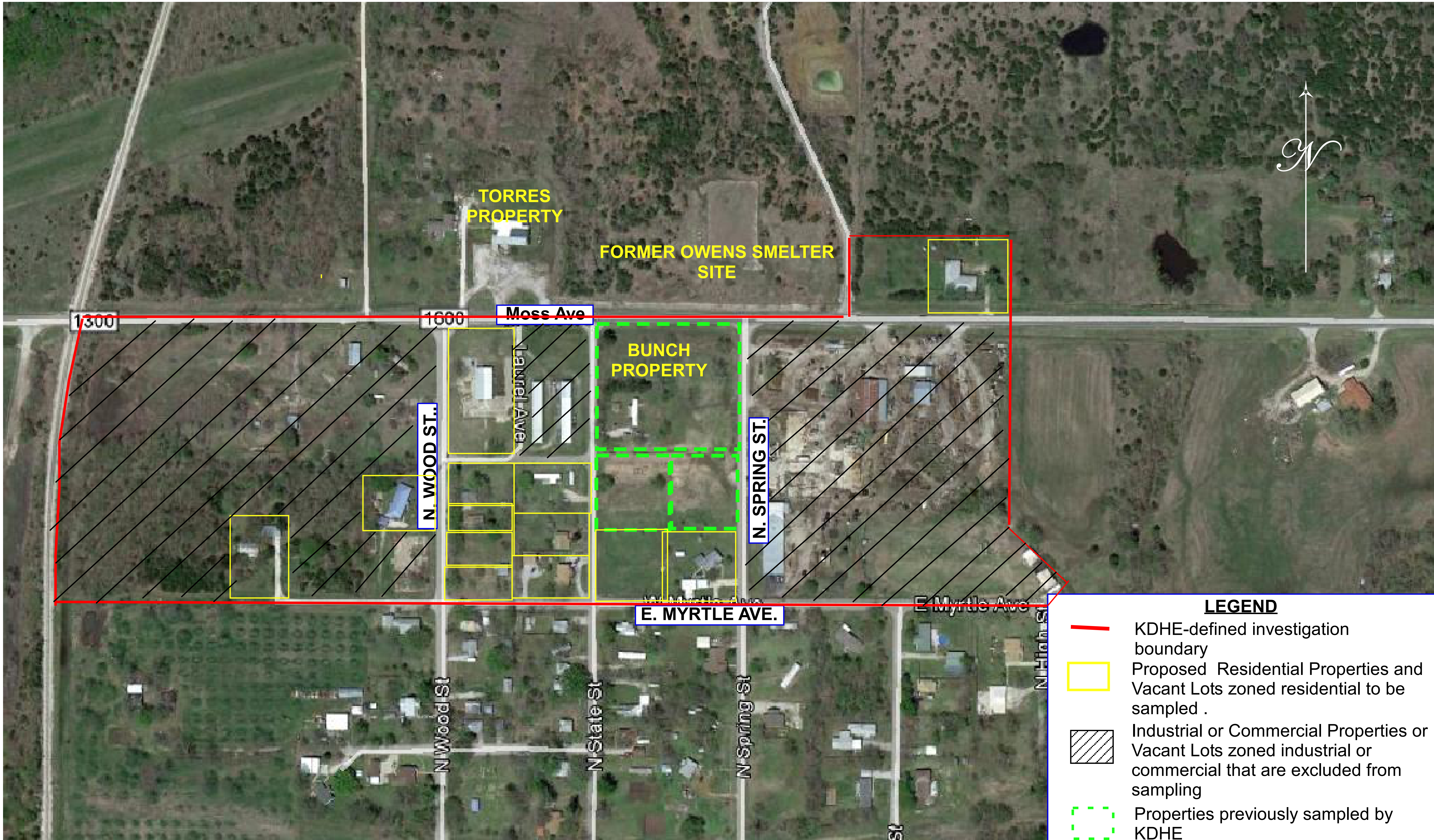


FIGURE 2
PROPOSED PROPERTIES TO BE SAMPLED AND GENERAL AREA FEATURES
OWEN RESIDENTIAL SAMPLING WORK PLAN
CANEY, KANSAS

TABLE 1: LIST OF PARAMETERS AND TEST METHODS FOR RESIDENTIAL SOIL SAMPLES
Owen Investigative Workplan
Caney, Kansas

Test Description	Test Method [1]	Matrix	Frequency	Container	Preservation	Sample Size	Maximum Holding Time
Soil Samples							
Lead Cadmium Zinc	XRF Analysis EPA Method 6200	Solid	Five aliquot samples per yard section or quadrant	Ziploc Bag	Cool	500 ml	6 months
Lead Cadmium Zinc	EPA-6010B/7000	Solid	10 percent of XRF samples	P/G(2)	Cool	500 ml	6 months

Notes:
(1) Sample Test Method designated as SW-xxxx is from EPA SW-846.

TABLE 2
LIST OF TARGET PARAMTER REPORTING LIMITS/
QC CRITERA
Owen Investigative Work Plan, Caney, Kansas

Metal	Matrix	Reporting Limit (ppb)
Cadmium (ICAP)	Soil	1,000
Lead (ICAP)	Soil	1,000
Zinc (ICAP)	Soil	1,000

QC Measure	Analyte	Control Limits
Calibration Curve	ICP	%RSD of three readings < 10.5%
Reanalyze Calibration Standards	ICP	Accuracy 95 - 105%
ICV	ICP,GFAA,CVAA	Accuracy: 90 - 110%
Reagent Blank	ICP,GFAA,CVAA	< Reporting Limit
Method Blank	ICP,GFAA,CVAA	< Reporting Limit
CCV	ICP,GFAA	Accuracy: 90 - 110%
CCV	CVAA	Accuracy: 80 - 120%
LCS	ICP	Accuracy: 85 -115%
LCS	GFAA	Accuracy: 80 -120%
MS/MSD	ICP,GFAA,CVAA	Accuracy: 75 - 125%; Precision 20% RPD
Reporting Limit Verification	ICP	Accuracy: 70 - 130%
ICS	ICP	Accuracy: 80 - 120%

APPENDIX A

EXAMPLE ACCESS AGREEMENT

EXAMPLE ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this ____ day of ____________, 200__, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

On _______, an Amended Consent Order (ACO) was signed between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the ______________ Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

<u>Identification of Owner</u>:

1.1	Name of Owner:	___________________________________
	Property Address:	___________________________________
	City, State, Zip:	___________________________________
	Parcel ID:	___________________________________
	If Different--	
	Mailing Address:	___________________________________
	City, State, Zip:	___________________________________
	Telephone:	___________________________________
1.2	Name of Tenant:	___________________________________
	Telephone:	___________________________________

<u>Grant of Access</u>. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

<u>Availability of Access</u>. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

<u>Duration of Agreement</u>. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

<u>Indemnification:</u> ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: ______________________________________

ENTACT

By: _____________________________________

APPENDIX B

XRF STANDARD OPERATING PROCEDURES

ENTACT SERVICES, LLC

XRF STANDARD OPERATING PROCEDURES

Niton XL 700 Series XRF

ENTACT & Associates, LLC
1010 Executive Court, Suite 280
Westmont IL 60559
630.986.2900

September 2008

Signature Page

As noted by the signature below, I have reviewed the XRF Standard Operating Procedures containing XRF and Innov-X operation and safety controls. I affirm that I concur with the contents of this SOP and understand my responsibility and my authority for applying this SOP to every use of these units.

Name	Signature	Date
______________	____________________________	____________
______________	____________________________	____________
______________	____________________________	____________
______________	____________________________	____________

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SECTION **PAGE**

1.0 STANDARD OPERATING PROCEDURES FOR NITON XL 700 SERIES XRF ANALYZER

1.1 Radiation Safety

NITON has designed its XRF analyzers so that there is virtually no measurable radiation external to any part of the instrument when the shutter is closed. When NITON instruments are used according to instructions, there is minimal radiation exposure even with the shutter open. NITON XRFs contain sealed cadmium-109 and americium-241 radioactive sources. The source is designed to remain secure even under extreme conditions, so that even if the instrument is broken, crushed or burned, there will be no leakage of radioactive material.

During manufacturing, each sealed source is placed in a solid metal source holder. A plug is screwed into the access hole and secured with a set screw and Locktite. The source is completely secure in its housing because the aperture at the other end of the housing is smaller than the source. The small aperture is sealed with a beryllium metal window that is transparent to the cadmium x-rays and gamma-rays. The source assembly is secured in the NITON's aluminum case. The case has tamper proof screws.

1.2 How To Use Your NITON Safely

The instrument must be operated in accordance with this SOP and manufacturer's recommendations. Each NITON is designed to be safe as possible. However, we strongly recommend that you follow these precautions to insure your safety and the safety of those around you.

- Always be aware of the location of your instrument's radioactive source and the direction of its beam of x-rays. The location of the source and the direction of its beam are both clearly marked on the front and top side of your NITON.
- Open the shutter *only* to do a test.
- During testing, a strong beam of radiation (gamma-rays and x-rays) is continuously emitted through the beryllium window at the bottom of the NITON. There will be some radiation at the front and top-front of the instrument. There is negligible radiation where your hand should be holding the instrument.

Warning: Always treat radiation with respect. Do not put your hand on the top end of the NITON while measuring. Never point the instrument at yourself or anyone else when the shutter is open.

1.2.1 Shutter Safety

Your NITON is designed so you cannot accidentally open the shutter or leave it open accidentally when you lift the instrument from a surface. To open the NITON's shutter and to keep it open, the instrument must be held against a surface. The shutter will close as soon as you cease to hold your NITON against a surface.

- The shutter should be open only during a test.
- Under no circumstances should the shutter be open when the instrument is not in use.
- Your NITON clearly indicates any time the shutter is open. The plunger will stick up through the instrument case whenever the shutter is open.

Warning: In the unlikely event that the plunger gets stuck in the open position, simply push it closed. Then call the NITON Service Department at 401-294-1234.

1.2.2 Monitoring Your Radiation Exposure

There is virtually no measurable radiation from a NITON when its shutter is closed. The maximum dosage to which you may be exposed when properly operating your NITON is 0.1 mR/hr on the fingers of the hand holding the instrument with the shutter open.

As an additional precaution to insure that your radiation exposure is always minimal, NITON strongly recommends that you wear a dosimeter at all times when using the instrument.

Note: Your state may have regulations concerning radiation monitoring.

A dosimeter badge is usually worn close to the parts of your body that are most sensitive to radiation, including your reproductive organs and your eyes.

Warning: Wearing a dosimeter badge does not protect you against current exposure. A dosimeter badge measures your exposure after the fact. If, at any time, you find measurable exposure, call NITON immediately at (401) 294-1234.

Warning: Pregnant female associates may want to take special precautions to reduce their exposure to radiation. Qualified scientists have recommended that the radiation dose to pregnant women should not exceed 500 mR/gestation period.

1.3 Principles of Radiation Safety

Your exposure to radiation is related to three factors: time, distance, and shielding. Human exposure to radiation is typically measured in rems, or in one-thousandths of a rem, called millirems (mR).

The allowable limit in the United States for occupational exposure is 5,000 mR/year for a whole-body and 50,000 mR for shallow penetration of extremities. Exposure from a properly used

NITON will be less than 50 mR per year, even if the instrument is used 2,000 hours per year.

For a given source of radiation three factors will determine the radiation dosage you receive from the source:

1.3.1 Duration of Exposure

The longer you are exposed to a source of radiation the more radiation strikes your body and the greater the dose you receive. Dosage increases in direct proportion to the length of exposure.

1.3.2 Distance From the Source

The closer you are to a source of radiation, the more radiation strikes. The dosage increases in inverse-squared relation to the distance from the source. For example, the radiation dose on inch from a source is *nine* times greater than the dose three inches from the source, and *144* times greater than the dose one foot from the source. Keep your hand away from the source-end of your NITON when the shutter is open to minimize your exposure.

1.3.3 Shielding

Every NITON XRF emits virtually no radiation with the shutter closed because the cadmium-109 source is thoroughly shielded in every direction. This shielding absorbs nearly all of the radiation produced by the source – except when the shutter is open during testing. With the shutter open, the instrument emits a direct radiation beam of about one mR/hr intensity; the direction is clearly indicated by the diagram on the front of the NITON. Always hold your NITON so as to avoid the radiation beam.

1.4 Safe Operation of the Multi-Source Analyzer

The multi-source instruments can have any combination of Cd-109, Am-241, and/or Fe-55. These sources are changed by the operation of a thumb-wheel. This thumb-wheel is located on the front (shutter) end of the instrument. There is a position for each source installed, in addition to a position with no source in place. The two source holder has three positions, and the three source holder has four positions. Position is confirmed by the thumb-wheel "clicking" into place. The Cd-109 is indicated by a blue indicator dot on the thumb-wheel. The Am-241 is indicated by a yellow indicator dot on the thumb-wheel. The Fe-55 is indicated by a red indicator dot on the thumb-wheel. The source that is in position will be displayed on the screen of the instrument.

The operation of the thumb-wheel in no way affects the operation of the instrument shutter. The thumb-wheel must only be operated either with the shutter closed or while the instrument is positioned on a sample. Follow all instructions concerning the operation of the shutter as the single source instrument.

1.5 Niton XL 700 Series User Guide

1.5.1 Components

1.5.1.1 NITON unit

A sealed aluminum enclosure containing a high-resolution detector and one or two x-ray excitation sources (Cd-109 and Am-241). The aluminum enclosure shields the radiation sources until the "ON" mechanism is activated for analysis. The unit provides data acquisition, processing, and display capabilities. The computer contains:

- Math coprocessor for fast calculation;
- Memory to store up to 1,000 bulk mode test results;
- RS-232 port to transfer data to another computer;
- Graphics allows viewing and qualitative analysis of the x-ray spectra; and
- Replaceable and rechargeable battery pack.

The probe contains radioactive material. Before using you must review the radiation safety procedures.

1.5.1.2 Accessories

- Interconnecting cable;
- Battery charger;
- Spare battery;
- RS-232 interface cable;
- Test platform;
- Barcode light pen; and
- Soil test kit, which includes the test guard; sample cup kit; mortar, pestle, and grinding mill; and #10, #60, and #120 mesh sieves.

1.5.2 Use and Storage of the XRF

1.5.2.1 ENTACT Units

ENTACT's XRF units are generally licensed to Dallas. The units are to be permanently stored in Dallas. The XRFs can be transported to and temporarily stored in another state however, that state must be contacted to determine the process involved with registering the XRF. ENTACT has a general license agreement in Texas and reciprocity in several other states.

1.5.2.2 Units and Location

Dallas Office 3129 Bass Pro Drive Grapevine, Texas
U3926KY178
U38707178LY
U38377173LY
U4332MG469
U4331MG464

1.5.2.3 Storage Facilities

All units will be used and stored properly to protect health and minimize danger to life or property. All license material will be the responsibility of the operator while it is being utilized. During transportation and storage the license material will be in a locked, secured case. XRF devices will be physically supervised by an authorized user during utilization of the device and the device will be locked in a secure enclosure when not in use. Residence storage will be in a locked enclosure at the Dallas office. A check-out and return format for all radiation devices units must be utilized. Documentation is maintained at the Dallas office with copies of pertinent information such as the confirmation of the leak test included with the instrument.

If the vehicle is a passenger car, the XRF will be stored in the trunk, blocked and braced to prevent shifting during transport. If stored in an open bed vehicle, the device will be locked in a steel cabinet, bolted to the bed of the truck.

1.5.2.4 Utilization Log

A utilization log will be maintained by the RSO by unit number. The XRF will not be assigned to an operator until this form is completed. When the XRF is returned the operator (responsible person) must return the unit to the RSO who will place in permanent storage area and complete the XRF Tracking and Utilization Log.

1.5.2.5 Leak Testing

All NITON XL 700 Series units will be set up on a six-month interval for leak testing with the manufacturer of the equipment. The leak test will be quantitative using instrumentation sensitive to detect 0.005 microcurie of radiation.

ENTACT will utilize a commercial leak test kit supplied by the SUNTRAC Services, INC.. The

RSO will take the smear and forward it to SUNTRAC Services, INC. who will report the results back to the RSO.

SUNTRAC Services, INC.
1818 East Main Street
League City, TX 77573
(281) 338-2133

1.5.2.6 Maintenance & Inspection

Routine cleaning after each use will be the responsibility of the operator. Proper care and handling of this equipment is the full responsibility of the operator. The operator must verify the condition of the unit when it leaves and document any changes to that condition when the unit is returned. Routine cleaning is included as part of the operator's responsibility. All associates will receive radiation safety training prior to working with any radiation equipment.

In addition, the RSO will complete an equipment inventory, instrument calibration, switch function check and instrument case survey whenever the XRF is sent out or returned from corporate storage. These assessments will occur at a minimum of every six months.

ONLY THE MANUFACTURER WILL PERFORM MAINTENANCE ON THE NITON XL 700 SERIES UNITS.

1.5.2.7 Transportation

All NITON instruments come in waterproof, drop-proof carrying cases with padlocks. Always transport the unit in its carrying case and keep the NITON in its case whenever it is not being used. NITON instruments can be transported within state lines by vehicle locked inside the cab or tool box (truck) or trunk (car). Transportation across state or national boundaries in NOT allowed in a vehicle and must be completed by air (FedEx) following XRF shipping procedure.

1.5.2.8 Operator Responsibilities and Training

- All operators shall have completed required training.
- Make complete entries onto the site utilization log.
- Obtain keys to storage and remove the device. Make sure that the source is in the safe (shielded) position.
- Lock device in its carrying case and lock in transport vehicle.

- Never leave device unattended at the job site unless it is secured in locked storage to which only authorized users have a key.
- Clear area of all unnecessary persons before using the device.
- Work safely with device following manufacturers operating procedures and utilizing the radiation safety principles of time, distance, and shielding. Do not expose yourself or others to the unshielded source. Stand back from the device when possible.
- When the job is finished, make sure the source holder is locked in the "off" or closed position and lock the device in the carrying case. Place the carrying case in locked storage (such as trunk of car), to which only authorized users have a key.
- Return the device to the RSO per XRF shipping instructions for permanent storage, lock up and completion of the utilization log with time-in and signature.
- Report any device malfunctions, unusual occurrences, or difficulties in using a device to the Radiation Safety Officer.
- Proper maintenance of the unit.

1.5.3 Operating Information

1.5.3.1 Sources

Two sources located in the NITON:

<u>Activity</u>		
Cd-109	2.5 years change element	4 mci
Am-241	Never	5 mci

1.5.3.2 Main Power Battery

- Rechargeable Nickel Metal Hydride battery pack.
- Battery will last eight or more hours of continuous use.
- The battery should be run to low condition and then charged with a full 2-1/2 hour charge.
- Auxiliary batteries should not be charged continuously. Overnight recharging is recommended.
- NITON battery packs can be recharged at least 500 times.
- NITONS' Nickel Metal Hydride battery packs discharge at a rate of about 2% per day when not in use.
- Store the charger and battery packs in a cool place away from direct sunlight.
- When a battery pack is not used for a long period of time, it will lose its charge completely. Fully recharge it before use.
- A lithium backup battery inside your NITON will prevent any loss of data should you need to change the battery pack before downloading readings.

1.5.3.3 Parameters to be Measured

All metals on the periodic table of elements ranging from Sulfur to Uranium.

1.5.3.4 Range of Measurement

NITON's XRFs are calibrated to give accurate values for most elements in concentration of 10,000 ppm or less. This is because the linear range of the Compton Normalization Method is from 0 ppm to approximately 10,000 ppm (1%). For actual concentrations of 10,000 ppm to 20,000 ppm (1% to 2%), NITON's XRF may overstate the elemental concentration. For content above 20,000 ppm (2%), readings may exhibit even greater deviation.

1.5.3.5 Detection Limit

The detection limit varies with each analysis. The detection limit for each analysis is three times the XRF calculated standard deviation.

Example:
The XRF calculated standard deviation is 5 ppm.
5 X 3 = 15
The detection limit is 15 ppm.

1.5.4 Interferences and Corrective Actions

1.5.4.1 Moisture

- Interference - High moisture content (approximately 25% moisture) of muds and sludges can cause erroneous results.
- Corrective Action - Soils containing high moisture content should be dried prior to analysis. Dry soil should be placed in a sample cup for testing.

1.5.4.2 Matrix Effects

- Interference - Physical characteristics such as particle size and homogeneity can affect the accuracy of the analysis.
- Corrective Action - Whenever a new matrix is encountered, a sample should be analyzed by both XRF and the laboratory analysis to ensure the NITON accurately analyzes the constituents in the matrix.

1.5.4.3 Placement

- Interference - If the NITON is not placed on a flat uniform soil location, errors can result from the distance between the probe and the soil.
- Corrective Action - Ensure with each measurement that the NITON is placed flat against a uniform flat surface.

1.5.5 Sample Presentation and Preparation

Sample presentation is the positioning of the sample with respect to the source window. Proper and consistent presentation is essential for accurate analytical results.

Ideally, the sample should be flat, larger than 1" in diameter, and should be placed in contact with the source window. For flat metal plates, sheets of plastic and paper, this is easily achieved. Other sample forms such as liquids or powders must be contained for presentation to the source.

Large solid samples are most easily analyzed by placing the NITON unit directly on the sample (in-situ analysis). For small samples, it is usually more convenient to set up the unit on a table.

1.5.5.1 Sample Cups

Liquids, powders, and/or soils should be presented using sample cups. These cups are made up of three pieces: a cup, a ring, and a piece of Mylar film.

To load a sample cup:

- Place a circle of mylar film on top of the sample cup. This film goes on the end of the cup with the indented ring. Secure the film with the collar. The flange inside the collar faces down and snaps into the indented ring of the cup. Inspect the installed film window for continuity and smooth, taut appearance.
- **Note: Wrinkles cause part of the sample to be held away from the face of the probe and can interfere with analysis. For maximum accuracy the film must be taut and free of wrinkles.**
- Set the cup on a flat surface film-window side down. Fill it with at least three grams of the prepared sample (no more than half full). Take care that there are no voids or layering.
- Tamp the sample into the cup.
- Fill the rest of the cup with polyester fiber stuffing to prevent sample movement.
- Fasten the cap on the cup. Using an indelible pen, write an identifying number on the cup.
- Turn the filled and sealed sample cup upside down and, if the sample is powdered, tape the cup on the bench to thoroughly settle and compact the contents.
- The sample is now ready to be placed film side up in the test platform.

- Note: Make certain the sample cup rests in contact with the source window, otherwise significant analysis errors may result.

1.5.5.2 In-situ Analysis

In-situ analysis is appropriate for soils, manufactured items, and large objects. In other words, anytime it's easier to take the analyzer to the sample than it is to bring the sample to the analyzer.

The majority of our samples will be in-situ soil analysis. The best results are obtained on reasonably dry, flat, compacted surfaces of fine-grained soils. Whenever possible, flatten and compact the area to be measured with an appropriate tool. Good results can be obtained at moisture contents up to about 25% (beyond this point the soil is wet mud and must be contained in a sample cup). In-situ analysis of wet mud will grossly contaminate the source window, invalidating all subsequent measurements until the windows are cleaned.

The source window and test guard window can be punctured. Clear the test areas of sharp, hard, or protruding objects (for example, twigs or rocks). Failure to clear the test area can result in damage to the instrument.

Coarse-grained soil conditions may not permit a truly representative sample and may adversely affect the analysis results. Such samples should be prepared before analysis.

1.5.5.3 Sample Preparation

Sample preparation is the treatment given to the "as received" sample to make it suitable for XRF analysis. Most samples require little or no sample preparation. Homogeneous solids, clear solutions and finely ground powders (<200 mesh) can be accurately analyzed with no preparation (other than filling the sample cup).

Samples consisting of material with large particle sizes and variations in particle size can be prepared prior to analysis to yield a more accurate reading. Samples can be ground to break up dirt clods and passed through a #10, #60 and/or #120 mesh sieves to remove large particles which require additional grinding. The sample can be homogenized through mixing and then placed in a sample cup for XRF analysis. (The soil kit includes the equipment required for sample preparation.)

1.5.5.4 Solid or Bagged Bulk Samples

Solid samples (sheets of metal, plastic or paper, for example) can usually be analyzed without preparation. The size of the sample will determine whether you use the test platform or in-situ analysis. The analyzed surface of the sample should be relatively clean, since many element's x-rays will not penetrate a thick layer of dirt. (Of course, if the sample is a thick layer of dirt it should remain, well, dirty.) Soil should not have more than 25% moisture.

Bagged bulk samples can be analyzed without preparation. The shape of the bag of contents should form a continuous uniform layer of at least 1 cm thickness.

Note: The sample should cover the source window or test guard window completely.

1.5.6 Calibration Procedures

The following procedures should be performed at the beginning of each day's analysis. In addition, one NITON standard should be analyzed after the instrument finishes self-calibration. The standard samples should also be analyzed once every 1-2 hours thereafter. Finally, at the end of the day, the self-calibration should be completed and the standard sample analyzed again.

1.5.6.1 Turn On Procedures

1. Depress and slide the On/Off switch on the bottom of the instrument. Each time the NITON is turned on, the Main menu will appear and the screen arrow will be pointed to Calibrate & Test.
2. Allow the NITON to warm-up for at least 15 minutes prior to testing.
3. Use the Setup Menu to check your instrument specification; to set the date and time; to illuminate the screen continuously; or to select a different testing mode. Once set up, the screen will remain the same each time you turn on the NITON until it is reset.
   - Select the Setup menu from the Main Menu with the arrow buttons.
   - Enter the Setup Menu by pressing Clear/Enter.
   - Use the arrow buttons to scroll to Set Time. Press Clear/Enter. The cursor will start at Month and move to the right each time you press Clear/Enter. The NITON will return to the Main Menu after the time and date have been changed.
   - Select Mode from the Setup Menu. Select the mode applicable to your testing (Bulk mode for soil testing). Press Clear/Enter.

1.5.6.2 Calibration

1. At the Main Menu, select Calibrate & Test. Press Clear/Enter to begin self-calibration. When the NITON beeps, self-calibration is complete. Self-calibration generally takes one to two minutes.
2. Test the Bulk Sample standard samples to check the calibration of the instrument.
   - Place the standard sample in the test platform receptacle.
   - Push the safety slide (that locks the shutter release) out from under the shutter release. If the slide is still tucked in, you will not be able to press in the release and the instrument will not fit on the test platform correctly.

- Place the NITON on the test platform so that the standard sample in the receptacle is under the window of the NITON. (The test platform has a latch that is attached by screws underneath for storage. Before using the test platform, unscrew the latch and rescrew it on the end of the platform nearest the receptacle for the sample cup.) The back of the unit must be flush with the test platform. Squeeze the shutter release and firmly press the instrument flat against the surface of the test platform. If you don't squeeze the shutter release, the plunger will not depress. If the plunger is not fully depressed, the window is not fully open and the NITON cannot measure accurately. Ensure that the NITON is secure under the latch of the test platform.
- Follow the precision indicator or seconds timer on the NITON screen to see when the test has reached your desired level of detection and precision (approximately 120 seconds).
- Refer to Appendix J of the Operations Manual to compare the readings with the certified values for each of the metals in the standard.
- Caution: If you try to calibrate the instrument and it does not calibrate successfully, push the Reset button on the bottom of the instrument and recalibrate. If your NITON does not calibrate successfully in three attempts, please call the NITON Service Department at (401) 294-1234.

The XRF is ready to be used when calibration is complete.

1.5.7 Sample Preparations

1.5.7.1 In-situ Samples

- Clear the soil of all vegetation.
- Clear the soil of any debris that may interfere with readings or puncture the aperture window.
- Tamp the soil to ensure it is flat and free of voids.

1.5.7.2 Collected Samples

- Dry the samples in an oven or microwave oven.
- Grind the samples into a find powder, removing any large rocks or debris.
- Homogenize the sample to ensure consistency.
- Place the soil into an XRF soil cup, cover with film and seal.

1.5.8 Analytical Samples

1.5.8.1 Turn On Procedures

1. Depress and slide the On/Off switch on the bottom of the instrument. Each time the

NITON is turned on, the Main menu will appear and the screen arrow will be pointed to Calibrate & Test.

4. Allow the NITON to warm-up for at least 15 minutes prior to testing.
5. Use the Setup Menu to check your instrument specification; to set the date and time; to illuminate the screen continuously; or to select a different testing mode. Once set up, the screen will remain the same each time you turn on the NITON until it is reset.
   - Select the Setup menu from the Main Menu with the arrow buttons.
   - Enter the Setup Menu by pressing Clear/Enter.
   - Use the arrow buttons to scroll to Set Time. Press Clear/Enter. The cursor will start at Month and move to the right each time you press Clear/Enter. The NITON will return to the Main Menu after the time and date have been changed.
   - Select Mode from the Setup Menu. Select the mode applicable to your testing (Bulk mode for soil testing). Press Clear/Enter.
   - Perform the self-calibration and standard sample calibration prior to testing as described above.

1.5.8.2 Field Use

1. Place the test guard on the ground.
2. Push the safety slide (that locks the shutter release) out from under the shutter release. If the slide is still tucked in, you will not be able to press in the release and the instrument will not fit on the test guard correctly.
3. Place the NITON on the test guard so that the rectangular opening on the test guard is under the window of the NITON. The back of the unit must be flush with the test guard. Squeeze the shutter release and firmly press the instrument flat against the surface of the test guard. If you don't squeeze the shutter release, the plunger will not depress. If the plunger is not fully depressed, the window is not fully open and the NITON cannot measure accurately. Note: You do not need to squeeze the shutter release continuously while taking a measurement. Hold the NITON firmly against the test guard surface and it will continue to read. Once you lift the instrument, the plunger will back out of the bottom, the shutter will close, and the test will be finished.
4. Follow the precision indicator or seconds timer on the NITON screen to see when the test has reached your desired level of detection and precision (approximately 60 seconds).
5. Release the shutter release mechanism when the test is complete.

1.5.9 Data Download and Erase Procedures

Your NITON can store data on up to 1,000 measurements in the Bulk Sample mode. You can download this date to a computer to print reports or to insert data into a database. Downloading the data, however, does not erase the readings. To make room for the next set of data, the readings must be erased after verifying that the data was successfully downloaded.

1.5.9.1 Fast Data Dump Download

1. You can download up to 3,000 measurements, their descriptions, and complete x-ray spectra (4-90 keV) in a few minutes, using NITON XTRA Software provided with your instrument. Open the XTRAS Program on your computer and open a file.
2. Connect your NITON to your computer with the standard RS-232 port cable that is provided.
3. From the Main Menu, use the arrow buttons, select Download Data and press Clear/Enter.
4. From the Download Data menu, select Fast Data Dump and press Clear/Enter. Select the first to last readings you wish to download. If you do not specify first and last readings, the default setting will download all readings currently stored in memory.
5. When the instrument finishes downloading, it will return to the Main Menu.

1.5.9.2 Data Erase

1. If you do not erase your data the NITON will continue to record data until the memory is full. The NITON will then start to overwrite older data. Any data that is overwritten this way will be lost.
2. From the Download Data menu, use the arrow buttons to scroll to Erase Readings. Press Clear/Enter.
3. The Erase Readings screen will appear with the following choices:

   ERASE all readings
   CANCEL do not erase
   EXIT to Main Menu

   The screen arrow defaults on CANCEL do not erase, so that if you select it by mistake, you will not erase any readings.
4. To erase readings, use the up-arrow button to go to ERASE all readings. Press Clear/Enter. Press YES when the prompt asks “Are you sure?” and press Enter.
5. When you enter either ERASE all readings or CANCEL do not erase, your instrument will return to the Main Menu, ready to take and store more readings.

For further information, please refer to the XTRAS manual that was included with your NITON.

1.5.10 Data Deliverables

The following documents are available to the client upon request:

1. A summary of initial, ongoing and end-of-analysis calibration results.
2. A log book detailing the following:
   - Weather conditions
   - Sampler(s)
   - Data of analysis
   - Time of each analysis
   - Location of each analysis
   - Sample preparations required
   - Results of each analysis
   - Any problems encountered and corrective actions taken
   - List date of XRF purchase, latest calibration, leak test, and source replacement
   - A printout of all results saved on the XRF and downloaded to a PC. This will be downloaded and formatted in Excel and will include sample number, date taken and value in ppm.
   - A summary of all QC required. This will be determined on a site-specific basis.

1.5.11 Quality Control Measures

The quality control requirements for the use of the NITON are determined on a site-specific basis. These are to be addressed in the site work plan and quality control plan. The exact requirements will vary depending on the use of the NITON on the site. However, all plans should require instrument calibration prior to and after NITON usage.

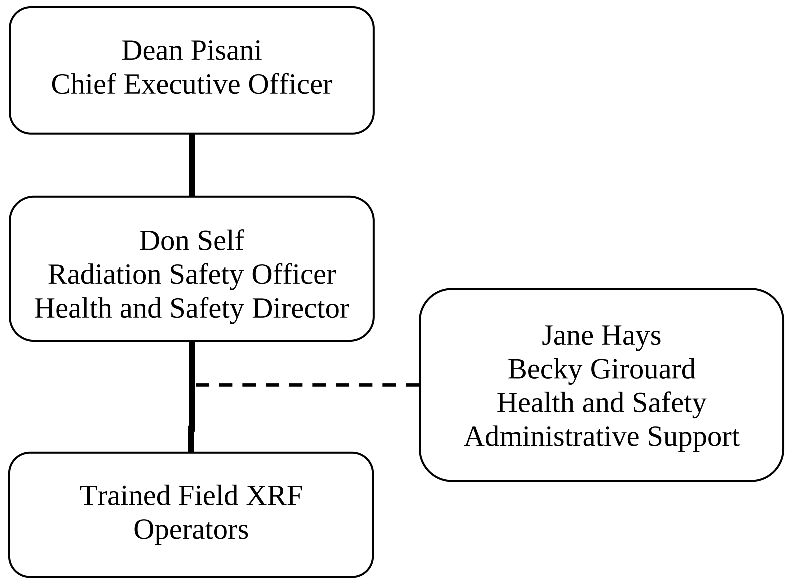
1.5.12 References

- NITON 700 Series User's Guide Version 5.2
  NITON Corporation
  1998
- Quality Assurance Technical Information Bulletin
  US Environmental Protection Agency
  Vol. 1, No. 4
  May 1991

2.0 MANAGEMENT STRUCTURE AND RESPONSIBILITIES

2.1 Management Structure

ENTACT Radiation Safety Management Structure



Responsibility for management of ENTACT Radiation Safety Program is delegated from the CEO to the Radiation Safety Officer. The RSO has executive responsibility, accountability, and authority for the administration of radiation safety operations within ENTACT, and that they are consistent with the Illinois Emergency Management Agency and other State regulations as needed. XRF operators are responsible and accountable for the proper use of the equipment, communication of any damage or faulty equipment, assist with tracking the transport and usage of the equipment to the administrative support staff.

2.2 Radiation Safety Officer Duties

The responsibilities of the RSO include, but are not limited to:

1. establishing and overseeing operating, safety, and emergency procedures, including the Radiation Safety Manual and XRF Standard Operating Procedures contained therein, and reviewing such procedures at least annually to ensure that the procedures are current and conform with the requirements of the Illinois Administrative Code;
2. overseeing and approving all phases of the training program for operations and/or personnel so that appropriate and effective radiation protection practices are taught;

3. ensuring that required radiation surveys and leak tests are performed and documented in accordance with the requirements of the Illinois Administrative Code, including taking any corrective measures when levels of radiation exceed established limits;
4. ensuring individual monitoring devices are used properly by occupationally-exposed personnel, that records are kept of the monitoring results, and that timely notifications are made in accordance with the Illinois Administrative Code;
5. investigating and reporting to the Illinois Emergency Management Agency each known or suspected case of radiation exposure to an individual or radiation level detected in excess of limits established by the Illinois Administrative Code and each theft or loss of source(s) of radiation, to determine the cause(s), and to take steps to prevent a recurrence;
6. investigating and reporting to the Illinois Emergency Management Agency each known or suspected case of release of radioactive material to the environment in excess of limits established by the Illinois Administrative Code;
7. having a thorough knowledge of all relevant ENTACT management policies and administrative procedures;
8. ensuring records are maintained as required by the Illinois Administrative Code;
9. ensuring the proper storing, labeling, transport, use and disposal of sources of radiation storage and transport containers;
10. ensuring inventories are performed in accordance with the activities for which a radiation license application is submitted;
11. ensuring compliance with requirements of the Illinois Administrative Code, conditions of the ENTACT radiation license, and relevant ENTACT operating, safety, and emergency procedures; and
12. serving as the primary contact with the Illinois Emergency Management Agency and any other external regulatory agencies.

2.3 Individual Monitoring Devices (if necessary)

Individual personnel monitoring devices will be supplied to and worn by occupational workers likely to exceed 500 millirem in one year. If personnel monitoring devices are not used, documentation justifying this decision is required.

2.4 Emergency Procedures

ENTACT XRF Emergency Procedures are to be utilized in situations involving the theft of the gauge, loss of control, an accident that damages or destroys the gauge, the loss or damage to the technician’s individual monitoring device, or the accidental exposure of workers.

2.5 Recordkeeping

Records will be maintained at the ENTACT, Westmont, Illinois, location and will include, but is not limited to:

1. receipt, transfer, and disposal records
2. leak tests
3. utilization logs

4. individual monitoring reports (if applicable)
5. training
6. equipment inventory and inspection

2.6 Equipment Maintenance and Inspection Procedures

The SOPs contained in this document for Niton and Innov-X units describe maintenance and inspection requirements for each unit type. See Sections 1.0 and 2.0.

2.7 Training

Only trained personnel may operate XRF units. Each user must successfully complete a radiation safety course. Certificate o

11.9 Draft Residential Sampling Investigative Report, July 2014

DRAFT OWEN RESIDENTIAL SAMPLING INVESTIGATIVE REPORT

Residential Soil Investigation Report in Vicinity of the Former Owen Zinc Smelter Site

Caney, Kansas

Revision 0

July 2014

Prepared for:

Blue Tee Corp.

Prepared by:

ENTACT, LLC
1 East Oak Hill Drive
Westmont IL 60659

Draft Owen Residential Sampling Investigative Report
Caney, Kansas
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1.0 INTRODUCTION

On behalf of Blue Tee Corp. (Blue Tee), this Draft Owen Investigative Report (Report) has been prepared by ENTACT LLC (ENTACT) for the Kansas Department of Health and Environment (KDHE) to describe the residential soil sampling activities conducted at the KDHE-defined investigation area adjacent to, and south of, the Former Owens Smelter Site (Site) in Caney, Kansas, as shown in Figure 1. The sampling was conducted in accordance with an agreement between Blue Tee and KDHE to conduct residential soil sampling in the vicinity of the Site. The contamination with the former smelter located on the Site was remediated by Blue Tee in 2004 in accordance with a KDHE-approved Corrective Action Plan (CAP).

The residential sampling conducted within the KDHE-defined investigation area was limited to the residential properties or vacant properties which could potentially be used for residential purposes in the future. Based on a Site reconnaissance conducted on August 6, 2013 by Chris Carey and Pamela Green of KDHE and Gary Uphoff of Environmental Management Services (EMS), and from subsequent information obtained from the Montgomery County Tax Assessor, a total of 11 residential properties and 2 vacant lots were identified for soil sampling within the KDHE-defined investigation area, as shown in Figure 2.

1.1 Purpose and Objectives

The purpose of the investigation was to determine if, and to what extent, soils at the properties identified for sampling have concentrations of contaminants of concern (COCs) that exceeding the residential Tier 2 Risk-based Standards for Kansas (RSK). In order to accomplish this objective, a nationally consistent decision-making process was used for collecting and analyzing the soil samples at residential sites, as outlined in the USEPA August 2003 OSWER 9285.7-50 *Final Superfund Lead-Contaminated Residential Sites Handbook* and incorporated into the April 2014 Final Owen Investigative Work Plan (Investigative Work Plan) approved by the KDHE on May 7, 2014.

The objective of the sampling was to determine the soil COCs concentrations at multiple locations and depths throughout each of the identified properties and to visually inspect the soil samples for any evidence of smelter-related residues (i.e slag or retorts) to help in determining whether or not elevated COCs concentrations, if found on a property, could be potentially associated with redistributed smelter residues.

1.2 Property Location and Ownership

The property address and owners for each of the 13 residential or vacant properties sampled as part of the residential soil investigation are summarized in Table 1. The property locations are shown in Figure 2.

2.0 FIELD INVESTIGATION METHODOLOGY

Following receipt of KDHE approval of the Investigative Work Plan on May 7, 2014, mobilization of field equipment and personnel occurred on June 1, 2014 and soil sampling was conducted between June 2 to June 5, 2014 in accordance with the approved Investigative Work Plan and the site-specific Health and Safety Plan (HASP). Photographs of the field investigation activities are included in Appendix A.

A field notification form was submitted to the KDHE on May 27, 2014 prior to mobilization to allow for Agency oversight. The KDHE Project Manager, Pamela Green, was present for the sampling activities on June 2 and June 3, 2014 and collected a total of five split soil samples at five separate properties.

The intent of the field investigation was to determine whether or not the soils contain the identified COCs that included lead, cadmium and zinc in excess of the residential RSK, and if so, to adequately assess the lateral and vertical extent of the COCs for purposes of defining the appropriate removal action.

2.1 Sampling Preparation and Documentation Activities

2.1.1 Access Agreements

Prior to mobilization, a signed access agreement was obtained from each of the property owners, with copies provided in Appendix B. The access agreements were hand delivered on May 28 and 29, 2014, and the purpose for requesting access to conduct the soil sampling was discussed with the owners at that time. There were no denials and all properties slated for sampling in the Investigative Work Plan were successfully sampled.

2.1.2 Utility Location

The Kansas utility locate service, Kansas-One Call, was notified prior to mobilization to identify and mark all known utilities on properties to be sampled. Each utility representative was provided with a list of the property addresses. All sample locations were cleared prior to conducting soil sampling.

2.1.3 Property Diagrams

Concurrent with soil sampling activities, ENTACT prepared property diagrams to document property dimensions, sample collection locations, and existing structures such as houses, sheds, garages, concrete, landscaping, etc. Copies of the property sketches are provided in Appendix C.

2.1.4 Field Journals

Daily field journals were kept throughout the field activities including a description of the sampling personnel and field activities conducted that day, weather conditions, the X-Ray Florescence (XRF) calibration measurements, and any issues or concerns found at the properties. The field journals have been archived with all of the original documents for the project and currently stored in the ENTACT Dallas office.

2.2 Residential Soil Sampling

Residential soil samples were collected at the 11 residential properties and two vacant lots in accordance with the approved Investigative Work Plan and followed the guidelines outlined in the USEPA August 2003 OSWER 9285.7-50 *Final Superfund Lead-Contaminated Residential Sites Handbook*. Based on the size of each of the properties (>5,000 square feet), each of the properties was divided into four equal quadrants and five-point composite samples were collected from each of the quadrants at discrete sample intervals of 0-6 inches, 6-12 inches, 12-18 inches and 18-24 inches. Composite soil samples were also collected separately from any garden or play areas present on the properties sampled. A garden area was observed on only one of the properties (Property #9) and no play areas were observed on any of the properties.

The soil borings were advanced to a depth of two foot below ground surface using a small remote-controlled direct-push Geoprobe rig, under the operation of Environmental Priority Service, Inc. (EPS) of Salina, Kansas. Five borings were advanced in each property quadrant at the locations marked on the property diagrams (Appendix C), with the exception of Property #14. At each quadrant boring location, soil samples were collected at depth intervals of 0-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches and were placed in dedicated, labeled plastic bags for compositing by quadrant, i.e. the 5 aliquots from the 0-6" depth interval of the front right quadrant were composited in one plastic bag. At the completion of each boring, the soil cuttings were returned to the boring or property quadrant upon the completion of sampling activities.

Three additional soil borings and three discrete surface samples were also collected from Property #14, which was previously identified by KDHE to have soil concentrations exceeding the residential RSK during an Integrated Site Evaluation (ISE). This property is located at 1202 N. State Street and is owned by Mr. Bunch (the Bunch property).. The three soil borings were advanced in specific areas of the property identified by KDHE to contain elevated concentrations of COCs to determine the vertical extent of contamination. Surface samples (0-6 inches) were also collected from this property in areas immediately adjacent to the house where bare soils were exposed and moss was present.

The bagged samples collected as part of the investigation were taken to the XRF field sampling station where the composite samples were homogenized by physically breaking the soil within the bag. Each bag was analyzed by XRF for the COCs using a Niton XL2 980 GOLDD XRF unit a minimum of three times. The XRF analytical results were hand-recorded in the field XRF journals along with associated instrument reading number, as presented in Appendix D. At the end of the investigation, all XRF data was downloaded from the instrument and saved in the project file as an electronic raw data file.

The field screening threshold criteria for the investigation were set at approximately 70% of the RSK criteria concentrations for zinc (70% of 23,000 mg/kg or 16,100 mg/kg) and lead (70% of 400 mg/kg or 280 mg/kg). Samples with measured XRF concentrations of lead or zinc in excess of the field screening threshold criterion, but below the RSK criterion were submitted for laboratory analysis to verify the XRF results.

Samples were selected for laboratory analysis at a rate of approximately 1 sample per 10 XRF readings for confirmation of the XRF results. Laboratory samples were submitted to TestAmerica Laboratories in University Park, Illinois for analysis of total cadmium, lead and zinc by USEPA Method 6010. The XRF and laboratory analytical results are discussed in Section 3.1. The correlation of the XRF results with the laboratory data is discussed in Section 3.2.

Quality control samples included field duplicate samples, equipment rinsate blank samples and matrix/matrix spike laboratory samples. Duplicate samples for both XRF readings and laboratory analysis were collected at a rate of 1 duplicate sample per 10 investigative samples. Equipment blank samples were collected at a rate of 1 equipment blank per day of sampling with non-disposable equipment. Laboratory QC samples, i.e., matrix spike/matrix spike duplicates (MS/MSD), were collected at a rate of 1 MS/MSD per 20 investigative laboratory samples. The quality control sample results are discussed in Section 3.2.

3.0 FIELD INVESTIGATION RESULTS

Based on the results of the residential soil investigation, lead is considered the primary COC and exhibits concentrations above the residential RSK more frequently than cadmium and zinc. Elevated concentrations of cadmium and zinc were found to be co-located with lead exceedances and were not otherwise detected above the residential RSK. The results of the residential soil investigation are discussed in the following subsections.

3.1 Analytical Results

A total of 247 samples were collected as part of the investigation at 14 residential properties, including characterization soil sampling of the 13 properties identified in the Investigative Work Plan and the additional delineation sampling on the Bunch property that was previously sampled by the KDHE.

The samples were analyzed by the XRF instrument for lead, cadmium and zinc. Twenty-six of these soil samples were also submitted to the analytical laboratory for analysis of total lead, cadmium and zinc for XRF confirmation purposes. The results of the residential soil investigation, including XRF readings and the corresponding laboratory confirmation sample results, are summarized on Tables 2 and 3. Laboratory analytical reports for the confirmation samples are provided in Appendix E. Residential properties that were sampled during the investigation are illustrated on Figure 2.

The XRF results show lead concentrations ranging from non-detect to 2,843 ppm, with the concentration of lead exceeding the residential RSK criteria of 400 mg/kg in approximately 7% of the samples collected. Of the 14 properties sampled, only 5 exhibited lead concentrations in soil exceeding the residential RSK, as summarized below. The results show that these lead exceedances were limited to specific yard sections and were not widely distributed across the entire properties.

Table A: Property Exceedances of Residential RSK for Lead

Property ID No.	Address	Affected Yard Area	Depth (ft)	Lead (ppm or mg/kg) [1]
Kansas Residential RSK				**400**
3	1106 N. Wood	Front left	6-12”	397 / 420
5	N. Wood St.	Front right	0-6” 6-12” 12-18”	1,376 1,082 386 / 480
		Front left	0-6” 6-12”	1,677 743 / 1,000
6	1111 Wood St.	Back right	0-6”	702 / 800
		Back left	0-6” 6-12”	510 2,843
9	1105 N. State	Garden	0-6”	287 / 550
14	1202 N. State	Surface B – adjacent to	0-6”	415 / 470

Property ID No.	Address	Affected Yard Area	Depth (ft)	Lead (ppm or mg/kg) [1]
	(Bunch property)	house near front door ramp		
		SB-1 – along Moss St.	0-6"	990 / 1,000
		SB-3 – along State St.	0-6"	681

Notes:
[1] Presented as XRF results (ppm) / laboratory results (mg/kg)
Red indicates the XRF or laboratory result exceeds the residential RSK.

Cadmium and zinc were found in fewer samples at concentrations above the residential RSK criteria of 39 mg/kg and 23,500 mg/kg, respectively. The cadmium concentrations ranged from non-detect to 43 mg/kg, with only one sample having a concentration above the RSK residential criterion (the lead concentration in this sample also exceeded the residential RSK criterion). Zinc concentrations ranged from 37 ppm to 20,122 ppm with no samples exceeding the residential criterion of 23,500 mg/kg.

A correlation using linear regression was conducted for the XRF and associated laboratory data for lead and zinc, as discussed below in Section 3.2.2. Based on the results of the regression analysis of the data set for each metal, XRF field screening concentration numbers were calculated for lead and zinc using the equation of the trendline for each data set. These numbers were compared to the investigative data set to identify additional properties or yards that may contain soils with metals concentrations that would exceed the applicable RSKs. These additional yards are summarized below.

Table B: Property Exceedances of Calculated XRF Screening No.

Property ID No.	Address	Affected Yard Area	Depth (ft)	Lead (ppm) [1]
XRF Calculated Screening No.				**330**
5	N. Wood St.	Back right	0-6"	334
14	1202 N. State (Bunch property)	Surface C – adjacent to house, SE corner	0-6"	339

Notes:
[1] XRF results presented as ppm
Red indicates concentration exceeds the XRF calculated screening no., which indicates that this concentration may also exceed the residential RSK based on the correlation study.

3.2 Data Quality

3.2.1 Calibration

The Niton XL2 980 Series instruments were calibrated on a daily basis in accordance with manufacturer's instructions. An autocalibration was performed by the unit whenever the unit was activated. Two NIST standards were then field screened to ensure the XRF readings were within the acceptable range of +/- 30%. Calibration using the NIST standards was conducted when the unit was activated and/or throughout the measurement time period for a minimum of one time per day.

3.2.2 Correlation Study

To ensure that the XRF readings will be accurate for the conditions they represent during remediation, a correlation study between XRF field analysis results and laboratory analytical results was conducted during the residential soil investigation. Soil samples collected from the soil borings were selected for use in this correlation study based on lead, cadmium and zinc concentrations around the applicable RSKs. Twenty-six samples were prepared, as described in the Investigative Work Plan, and field analyzed with the XRF instrument a minimum of three times. The XRF sample results for each metal were averaged and the average was used in the correlation study. The results of the correlation study are presented in Tables 4A and 4B for lead and zinc respectively. A correlation for cadmium could not be performed as the majority of the XRF results were non-detect.

The correlation of XRF readings to laboratory results was determined using regression analysis to calculate the regression factor (R^2) and the calculation of the Pearson Product Moment Correlation Coefficient (r). The values r and R^2 provide a measure of linear correlation between sets of paired data. Values of r and R^2 can range between -1.0 where data shows perfect negative linear correlation to +1.0, where data shows perfect positive linear correlation. An r or R^2 value of 0.0 indicates the data shows no correlation. According to USEPA Method 6200, a coefficient of correlation of $0.9 > r^2 > 0.7$ can be considered quantitative screening level data, or consistent with OA2 level data established in EPA's *Quality Assurance/Quality Control Guidance for Removal Activities*, EPA 540/G-90/004 of April 1990. If the correlation coefficient is less than 0.7, the data is characterized as qualitative screening level data.

Outliers in each data set were determined by calculating the relative percent difference (RPD) between the paired data and by evaluating the data set. Those samples with RPDs greater than 90% were determined to be outliers and were excluded from the data set. Tables 4A and 4B identify those samples determined to be outliers within the data set.

The results of the regression analysis show a regression R^2 value of 0.8821 for lead and 0.7846 for zinc. The calculations for the Pearson correlation co-efficient show an r value of 0.9392 for lead and 0.8858 for zinc. Based on the good correlation between the XRF readings and laboratory results for both lead and zinc, the XRF measurements can be considered quantitative screening level data per USEPA Method 6200.

Based on the results of the regression analysis of the data set for each metal, an XRF field screening concentration number can be calculated for each metal using the following equation of the trendline for the data set. These numbers can be used to indicate when soils are assumed to contain metals concentrations which exceed the applicable RSKs.

$$\mathbf{y = mx + b}$$

Where,

y = RAL
m = x variable coefficient

X = unknown XRF value
B = intercept coefficient

Using this equation, the following XRF field screening concentration numbers were calculated for the properties:

- Lead: 330 ppm
- Zinc: 32,156 ppm

These XRF field screening concentration numbers will be used as follows during the Remedial Action (RA):

- If XRF field screening results are below the XRF field screening concentration number, then the area represented by that sample will be considered clean, no additional remediation will be conducted and a confirmatory soil sample will be collected for laboratory analysis; and
- If the XRF field screening results exceed the XRF field screening concentration number, then additional remediation will be conducted on the area represented by that sample.

3.2.3 Equipment Blanks

De-ionized water was used to collect equipment blanks each day that soil sampling activities were conducted with non-disposable equipment. Equipment blanks were obtained by pouring de-ionized water over cleaned stainless steel trowels and spoons. Water was collected directly into the laboratory-supplied bottles. Polyethylene bottles used for the collection of equipment blank samples were preserved with HNO_3.

No equipment blank samples exhibited COC concentrations above reporting limits. All four samples, however, exhibited cadmium and zinc concentrations above the method detection limit with cadmium and/or zinc concentrations also detected in the method blank. Because equipment blank concentrations were below reporting limits and well below detected sample concentrations, the equipment used for sample collection and preparation did not influence XRF or laboratory results of the soil samples. The results of laboratory analysis are summarized in Table 5 and copies of the laboratory analytical reports are included in Appendix E.

3.2.4 Data Validation

The laboratory analytical data collected during the residential soil investigation were validated by the laboratory and reviewed by ENTACT. The data are considered acceptable and useable.

4.0 CONCLUSIONS

Based on the results of the residential soil investigation, lead is considered the primary COC as it exhibits concentrations above the residential RSK more frequently than cadmium and zinc. Elevated concentrations of cadmium and zinc are co-located with lead exceedances and were not otherwise detected above the residential RSK. The XRF results show that occurrences of lead in excess of the residential RSK criterion of 400 mg/kg were found in only 7 percent of the samples collected and localized to specific yard sections rather than widely distributed across the entire properties.

Smelter residues were only observed in one isolated location on one property, the Bunch property (Property 14). All other samples collected during the 2014 investigation did not show any evidence of redistributed slag or retorts. As shown in Figure 3, the majority of the lead exceedences were found on property frontage areas bordering streets and could be associated with other factors such as historic usage of leaded gasoline or the proximity of other industrial operations in the area.

Based on the results of the 2012-2013 KDHE ISEs and the 2014 residential sampling investigation, a total of six properties have one or more localized areas with lead and other co-located COC exceedences. The estimated dimensions and depth of the areas with affected soil and the estimated volume of affected soils are summarized below in Table C.

Table C: Area and Volume of Affected Soils on Properties

ID#	Address	Affected Yard Area	Approximate Affected Soil Area Dimensions (sq ft)	Depth (feet)	Estimated Affected Soil Volume (Cubic Yards)
2012 – 2013 KDHE ISE					
14	1202 N. State (2014 additional sampling)	Area 1 (at Moss)	8,000	0.5	150
		Area 2 (at State)	8,180	0.5	150
		Area 3 (interior)	5,000	0.5	100
		Area 4 (Along House)	200	0.5	10
15	1180 N. State	Area 1	7,500	0.5	480
2014 Investigation					
3	1106 N. Wood	FL	1775	0.5 (6"-12" interval)	35
5	N. Wood St.	FR	2,662	1.5	150
		FL	2,662	1.0	100
		BR	2,662	0.5	50
6	1111 Wood St.	BR	6,280	0.5	120
		BL	6,280	1.0	230
9	1105 N. State	Garden	600	1.0	25

ID#	Address	Affected Yard Area	Approximate Affected Soil Area Dimensions (sq ft)	Depth (feet)	Estimated Affected Soil Volume (Cubic Yards)
				Total Volume (Cubic Yards)	1,650

An estimated volume of 1,650 cubic yards of affected soils at the six identified properties with lead and co-located metal exceedences may be subject to the RA.

Based on the correlation study performed on the paired XRF and laboratory data set for both zinc and lead, the calculated XRF field screening concentration numbers to be used during the RA are as follows:

- Lead: 330 ppm
- Zinc: 32,156 ppm

5.0 REFERENCES

KDHE, February 2013. *Integrated Site Evaluation. 1202 North State Street Complaint Site, Caney, Montgomery County, Kansas.* State ID: C3-063-72925. Prepared by the KDHE, Site Assessment Unit, Topeka, Kansas.

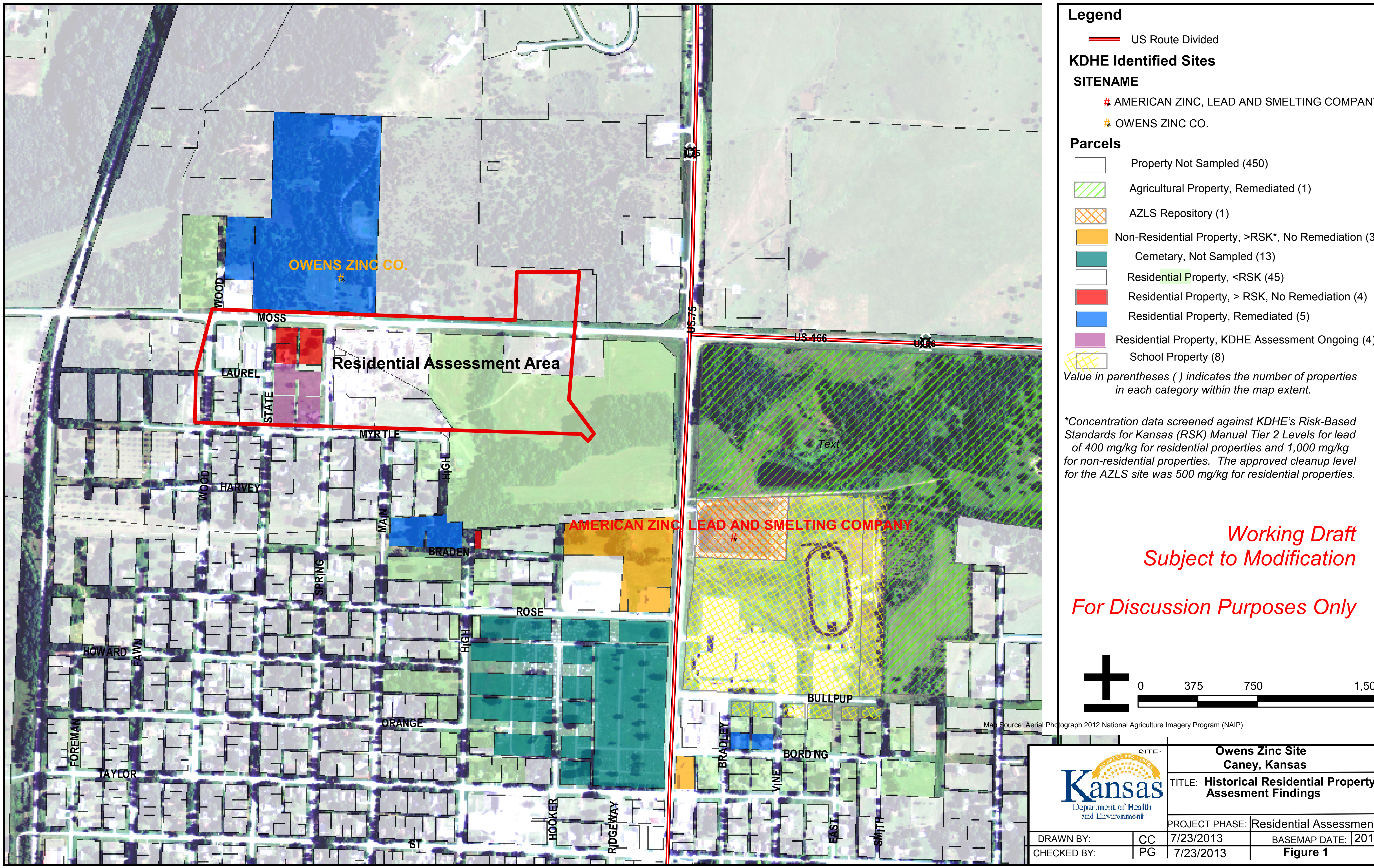
KDHE, August 2013. *Integrated Site Evaluation. Robards Property, Caney, Montgomery County, Kansas.* State ID: C3-063-73037. Prepared by the KDHE, Site Assessment Unit, Topeka, Kansas.

ENTACT, April 2014. Final Owens Investigative Work Plan, Caney, Kansas. Prepared by ENTACT on behalf of Blue Tee for the KDHE.

USEPA August 2003 *Final Superfund Lead-Contaminated Residential Sites Handbook* [OSWER 9285.7-50].

USEPA Region VII *Generic Quality Assurance Project Plan (QAPP) for Lead-Contaminated Sites*

FIGURES


OWENS ZINC CO.
MOSS
Residential Assessment Area
LAUREL
STATE
WOOD
MYRTLE
HIGH
HARVEY
MAIN
AMERICAN ZINC, LEAD AND SMELTING COMPANY
BRADEN
SPRING
ROSE
HOWARD
FAWN
ORANGE
FOREMAN
TAYLOR
HOOKER
RIDGEWAY
ST
US-75
US-166
BULLPUP
BRADLEY
BORDING
VINE
EAST
SMITH
Text
Legend
US Route Divided
KDHE Identified Sites
SITENAME
AMERICAN ZINC, LEAD AND SMELTING COMPANY
OWENS ZINC CO.
Parcels
Property Not Sampled (450)
Agricultural Property, Remediated (1)
AZLS Repository (1)
Non-Residential Property, >RSK*, No Remediation (3)
Cemetary, Not Sampled (13)
Residential Property, <RSK (45)
Residential Property, > RSK, No Remediation (4)
Residential Property, Remediated (5)
Residential Property, KDHE Assessment Ongoing (4)
School Property (8)
Value in parentheses ( ) indicates the number of properties in each category within the map extent.
*Concentration data screened against KDHE's Risk-Based Standards for Kansas (RSK) Manual Tier 2 Levels for lead of 400 mg/kg for residential properties and 1,000 mg/kg for non-residential properties. The approved cleanup level for the AZLS site was 500 mg/kg for residential properties.
Working Draft
Subject to Modification
For Discussion Purposes Only
0
375
750
1,500
Feet
Map Source: Aerial Photograph 2012 National Agriculture Imagery Program (NAIP)
Kansas
Department of Health and Environment
SITE: Owens Zinc Site
Caney, Kansas
TITLE: Historical Residential Property Assesment Findings
PROJECT PHASE: Residential Assessment
DRAWN BY: CC 7/23/2013
BASEMAP DATE: 2012
CHECKED BY: PG 7/23/2013
Figure 1

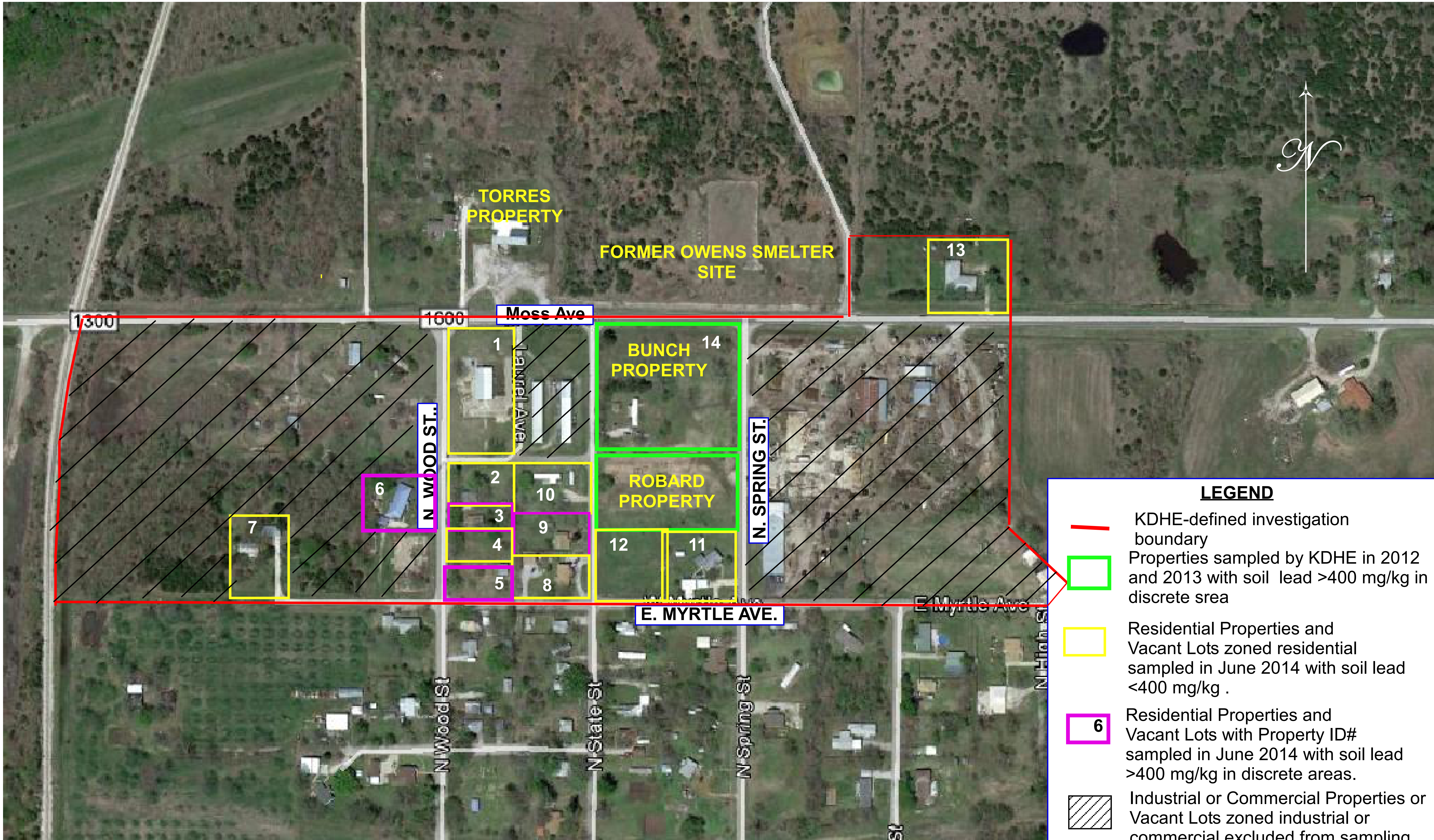


FIGURE 2
RESIDENTIAL SOIL SAMPLING LOCATIONS AND SURROUNDING AREA FEATURES
RESIDENTIAL SOIL REMOVAL ACTION WORK PLAN
CANEY, KANSAS

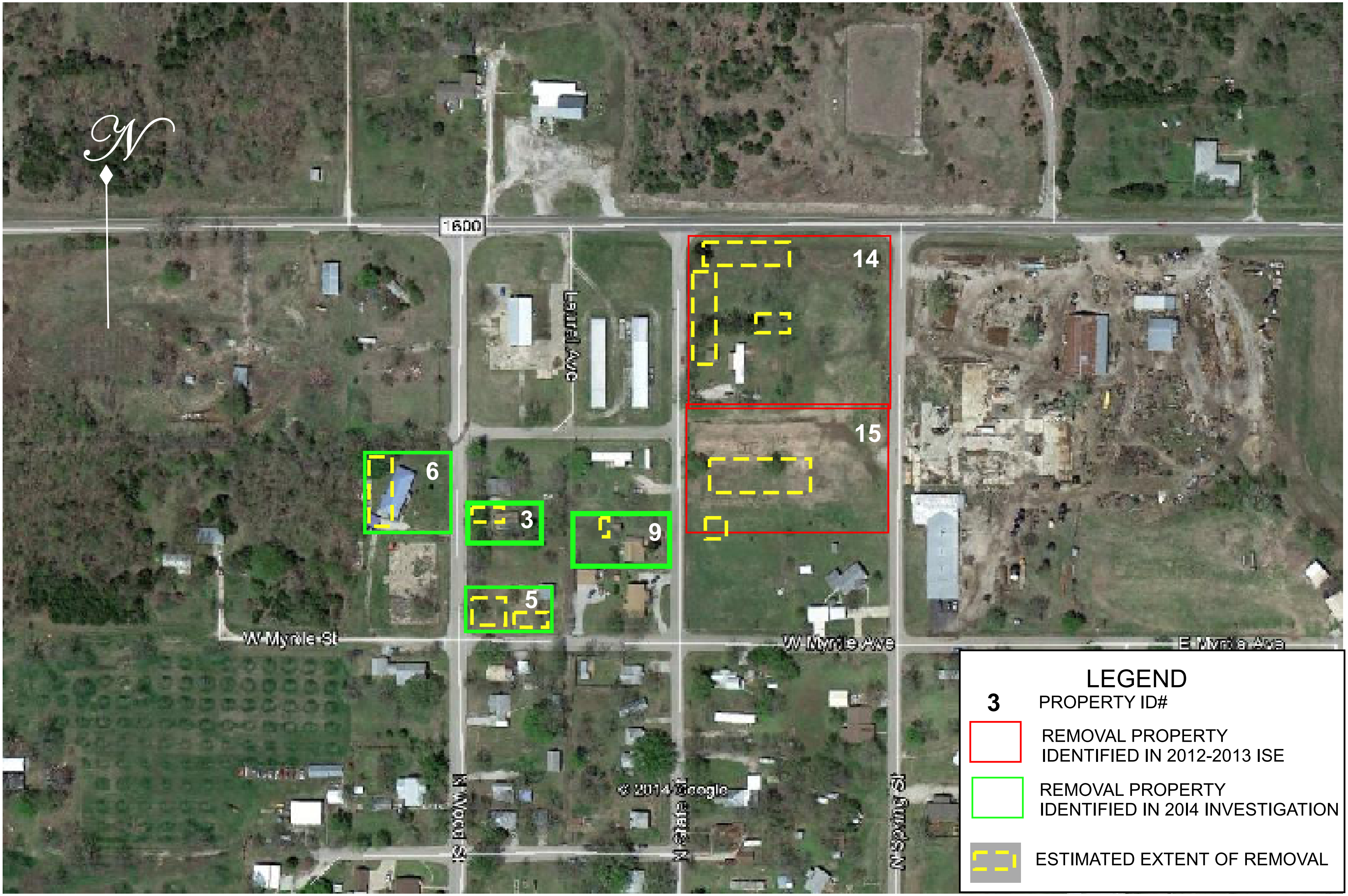


FIGURE 3
PROPERTIES SLATED FOR REMOVAL ACTION
AND PROPOSED EXCAVATION AREAS

TABLES

Table 1: Property List
Residential Sampling Investigation
Former Owens Smelter Site, Caney, Kansas

ENTACT Property ID	Property Owner	Property Address	Montgomery County Parcel ID	Use	Property Size	Access Agreement	Sample Date
14	Fred Eugene Bunch	1202 N. State,		Residence		Yes	KDHE 2012 [1]
15	Derek & Tiffany Robard	1180 N. State		2 adjoining vacant lots		Yes	KDHE 2013
1	Arthur Stark	1202 N. Wood Street	063-251-12-0-20-01-002.00-0	Residence	284' wide x 142' deep	05/28/14	ENTACT, 6/3/2014
2	Earl Lawrence Metcalf	1108 N. Wood Street	063-251-12-0-20-07-002.00-0	Residence	100' wide x 142' deep	05/28/14	ENTACT, 6/2/2014
3	Margaret Metcalf et al.	1106 N. Wood Street	063-251-12-0-20-07-003.00-0	Residence	50' wide x 142' deep	05/28/14	ENTACT, 6/2/2014
4	Everett & Shirley Davis	1104 N. Wood Street	063-251-12-0-20-07-004.00-0	Residence	75' wide x 142' deep	05/28/14	ENTACT, 6/2/2014
5		N. Wood Street	063-251-12-0-20-07-005.00-0	Adjoining vacant lot	75' wide x 142' deep	05/28/14	ENTACT, 6/2/2014
6	Ralph Anthony & Kennen Simmons	1111 N. Wood Street	063-251-12-0-20-06-001.00-0	Residence	1 acre	05/28/14	ENTACT, 6/3/2014
7	Joel & Tammy Gaff	600 West Myrtle	063-251-12-0-20-05-001.00-0	Residence	142' wide x 300' deep	05/28/14	ENTACT, 6/2/2014
8	Jerry and Rose Hocket	1101 N. State Street	063-251-12-0-20-07-006.00-0	Residence	100' wide x 142' deep	05/28/14	ENTACT, 6/3/2014
9	Dale & Margaret Duncan	1105 N. State Street	063-251-12-0-20-07-001.00-0	Residence	100' wide x 142' deep	05/28/14	ENTACT, 6/3/2014
10	Cotton Family Trust	1111 N. State Street	063-251-12-0-20-07-001.01-0	Residence	100' wide x 142' deep	05/28/14	ENTACT, 6/3/2014
11	Larry & Susan Crowe	1101 N. Spring Street	063-251-12-0-10-02-005.00-0 063-251-12-0-10-02-001.02-0	Residence	150' wide x 142' deep 50' wide x 142' deep	05/28/14	ENTACT, 6/4/2014
12		N. State Street	063-251-12-0-10-02-001.01-0	Adjoining vacant lot	200' wide x 142' deep	05/28/14	ENTACT, 6/4/2014
13	Willis D. Wilkerson, BRVCBLE Trust	1360 CR 1600	063-251-01-0-00-00-017	Residence	23.9 acres		ENTACT, 6/4/2014

Notes: Information provided by online Montgomery Tax Assessor at http:// www.mgcountyks.org/appraiser.htm and by Montgomery County Aerial Parcel Search at http://jade.kgs.ku.edu/orka2/CoSelect.aspx

[1]: Additional soil sampling conducted by ENTACT on the Bunch property on June 4, 2014

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
Calculated XRF Values														**330**				**32,000**	
52	1	RS-1-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 12:03	< LOD	10.34	<LOD		48.98	6.45	48		389.08	15.49	430	
53	1	RS-1-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 12:05	< LOD	10.56			62.02	6.94			523.11	18.07		
54	1	RS-1-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 12:06	< LOD	11.22			31.65	6.55			377.09	17.05		
55	1	RS-1-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 12:21	< LOD	10.74	<LOD		46.66	6.83	65		536.46	19.34	668	
56	1	RS-1-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 12:22	< LOD	10.28			64.99	6.91			636.72	19.44		
57	1	RS-1-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 12:24	< LOD	10.07			83.07	7.26			829.89	21.59		
58	1	RS-1-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 12:29	< LOD	9.93	<LOD		27.34	5.53	28		437.36	15.70	430	
59	1	RS-1-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 12:30	< LOD	9.75			13.13	4.97			335.66	13.77		
60	1	RS-1-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 12:31	< LOD	10.54			43.27	6.52			516.67	18.33		
61	1	RS-1-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 12:36	< LOD	8.85	<LOD		20.42	4.74	24		339.93	12.53	379	
62	1	RS-1-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 12:37	< LOD	10.28			25.68	5.72			427.81	16.29		
63	1	RS-1-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 12:38	< LOD	10.91			26.36	6.07			369.02	16.04		
64	1	RS-1-BR-0-6"	0-6	Back right	Composite	R171092	6/3/2014 12:44	< LOD	9.57	<LOD		432.97	13.23	226	210	802.82	20.59	830	1,000
65	1	RS-1-BR-0-6"	0-6	Back right	Composite	R171092	6/3/2014 12:45	< LOD	10.20			107.89	8.28			837.48	22.80		
66	1	RS-1-BR-0-6"	0-6	Back right	Composite	R171092	6/3/2014 12:46	< LOD	10.31			136.20	8.76			849.97	22.45		
67	1	RS-1-BR-6-12"	6-12	Back right	Composite	R171092	6/3/2014 12:52	< LOD	9.91	<LOD		77.53	7.06	87		645.47	19.05	694	
68	1	RS-1-BR-6-12"	6-12	Back right	Composite	R171092	6/3/2014 12:55	< LOD	10.19			94.82	7.72			731.13	20.82		
69	1	RS-1-BR-6-12"	6-12	Back right	Composite	R171092	6/3/2014 12:56	< LOD	10.54			89.04	7.85			704.89	21.18		
70	1	RS-1-BR-12-18"	12-18	Back right	Composite	R171092	6/3/2014 13:01	< LOD	10.22	<LOD		29.95	5.83	32		426.02	16.20	446	
71	1	RS-1-BR-12-18"	12-18	Back right	Composite	R171092	6/3/2014 13:02	< LOD	11.28			45.41	7.09			579.97	20.87		
72	1	RS-1-BR-12-18"	12-18	Back right	Composite	R171092	6/3/2014 13:07	< LOD	8.95			20.19	4.79			332.10	12.62		
73	1	RS-1-BR-18-24"	18-24	Back right	Composite	R171092	6/3/2014 14:16	< LOD	10.07	<LOD		18.98	5.57	18		371.45	15.63	267	
74	1	RS-1-BR-18-24"	18-24	Back right	Composite	R171092	6/3/2014 14:17	< LOD	10.61			< LOD	7.31			186.88	11.81		
75	1	RS-1-BR-18-24"	18-24	Back right	Composite	R171092	6/3/2014 14:18	< LOD	10.89			17.91	5.76			242.97	13.37		
91	1	RS-1-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 15:16	< LOD	9.49	<LOD		81.29	7.04	78		1,136.88	24.67	962	
92	1	RS-1-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 15:17	< LOD	10.43			76.71	7.41			842.94	22.76		
93	1	RS-1-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 15:18	< LOD	10.85			75.69	7.77			905.52	24.76		
94	1	RS-1-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 15:23	< LOD	12.43	<LOD		129.23	10.68	107		1,601.67	37.76	1,447	
95	1	RS-1-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 15:24	< LOD	10.63			77.16	7.67			1,111.95	26.80		
96	1	RS-1-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 15:25	< LOD	11.25			113.72	9.03			1,626.94	33.56		
97	1	RS-1-FL-6-12"-FD	6-12	Front left	Composite	R171092	6/3/2014 15:26	< LOD	10.99	<LOD		80.06	7.99	76		1,379.87	30.66	1,189	
98	1	RS-1-FL-6-12"-FD	6-12	Front left	Composite	R171092	6/3/2014 15:27	< LOD	10.46			69.94	7.33			1,100.72	26.34		
99	1	RS-1-FL-6-12"-FD	6-12	Front left	Composite	R171092	6/3/2014 15:29	< LOD	11.63			79.30	8.30			1,085.57	28.40		
100	1	RS-1-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 16:23	< LOD	11.50	<LOD		32.71	6.54	82		560.06	20.20	935	
101	1	RS-1-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 16:24	< LOD	10.76			132.65	9.21			1,102.44	26.88		
102	1	RS-1-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 16:25	< LOD	12.25			80.86	8.96			1,143.31	31.28		
103	1	RS-1-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 16:31	< LOD	10.65	<LOD		59.06	7.08	62		862.30	23.60	841	
104	1	RS-1-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 16:32	< LOD	10.74			77.79	7.56			977.25	24.73		
105	1	RS-1-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 16:33	< LOD	12.07			48.34	7.44			682.74	23.26		
76	1	RS-1-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 14:28	< LOD	11.13	<LOD	6.6 B	82.22	8.09	67		666.22	21.70	619	
77	1	RS-1-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 14:29	< LOD	10.64			48.33	6.70			465.61	17.58		
78	1	RS-1-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 14:30	< LOD	11.63			70.91	7.93			725.27	23.18		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
79	1	RS-1-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 14:37	< LOD	12.27	<LOD		88.99	9.02	130		1,217.24	31.49	1,496	
80	1	RS-1-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 14:38	< LOD	12.18			149.19	10.43			1,605.69	34.90		
81	1	RS-1-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 14:39	< LOD	11.84			152.55	10.61			1,665.05	35.96		
82	1	RS-1-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 14:49	< LOD	11.60	<LOD		< LOD	8.08	16		250.58	14.67	289	
83	1	RS-1-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 14:50	< LOD	11.59			16.46	6.04			347.49	16.62		
84	1	RS-1-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 14:51	< LOD	10.24			< LOD	7.01			269.22	13.39		
88	1	RS-1-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 15:08	< LOD	13.31	<LOD		< LOD	9.53	<LOD		54.52	9.74	92	
89	1	RS-1-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 15:09	< LOD	11.16			< LOD	7.84			139.35	10.86		
90	1	RS-1-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 15:10	< LOD	10.89			< LOD	6.86			80.68	8.66		
220	2	RS-2-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 9:33	< LOD	8.69	<LOD		134.82	7.96	110		1,172.39	23.90	1,076	
221	2	RS-2-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 9:35	< LOD	9.04			91.80	7.35			1,105.10	24.61		
222	2	RS-2-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 9:37	< LOD	8.35			102.00	6.84			951.00	20.50		
223	2	RS-2-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 9:40	< LOD	8.93	<LOD		109.72	7.59	104		1,236.47	25.19	1,113	
224	2	RS-2-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 9:42	< LOD	8.18			85.92	6.34			942.82	20.03		
225	2	RS-2-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 9:45	< LOD	8.77			115.77	7.54			1,159.65	23.79		
226	2	RS-2-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 9:47	< LOD	8.79	<LOD		95.30	7.04	66		1,469.09	26.57	1,209	
227	2	RS-2-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 9:50	< LOD	8.68			29.48	5.14			957.12	21.33		
228	2	RS-2-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 9:52	< LOD	8.88			71.72	6.48			1,200.05	24.17		
229	2	RS-2-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 9:55	< LOD	8.56	<LOD		33.95	5.29	33		482.95	15.42	456	
230	2	RS-2-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 9:57	< LOD	8.66			43.43	5.52			490.81	15.41		
231	2	RS-2-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 9:59	< LOD	8.68			21.30	4.91			394.99	14.06		
232	2	RS-2-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/3/2014 10:03	< LOD	8.95	<LOD		50.59	6.01	42		586.97	17.53	605	
233	2	RS-2-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/3/2014 10:05	< LOD	9.03			43.01	5.77			633.31	18.06		
234	2	RS-2-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/3/2014 10:08	< LOD	9.39			33.74	5.69			594.57	18.28		
235	2	RS-2-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 10:12	< LOD	7.76	<LOD		116.48	6.68	107		805.93	17.71	834	
236	2	RS-2-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 10:14	< LOD	8.19			112.44	6.98			844.84	19.12		
237	2	RS-2-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 10:17	< LOD	8.46			91.51	6.58			851.03	19.38		
238	2	RS-2-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 10:20	< LOD	8.72	<LOD		107.04	7.16	101		900.27	20.54	904	
239	2	RS-2-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 10:22	< LOD	8.61			94.68	6.85			917.59	20.67		
240	2	RS-2-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 10:25	< LOD	8.93			100.17	7.24			894.62	21.14		
241	2	RS-2-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 10:28	< LOD	8.46	<LOD		35.40	5.19	62		413.27	14.00	632	
242	2	RS-2-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 10:30	< LOD	8.86			86.80	6.77			858.83	20.32		
243	2	RS-2-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 10:32	< LOD	9.07			64.03	6.30			623.05	17.85		
244	2	RS-2-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 10:35	< LOD	8.47	<LOD		75.48	6.31	52		959.32	20.84	579	
245	2	RS-2-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 10:37	< LOD	8.58			10.71	4.49			174.58	9.68		
246	2	RS-2-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 10:39	< LOD	8.40			70.90	6.16			603.63	16.67		
208	2	RS-2-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 9:01	< LOD	8.23	<LOD		83.46	6.31	84		666.43	16.98	763	
209	2	RS-2-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 9:03	< LOD	8.42			96.19	6.70			804.67	18.89		
210	2	RS-2-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 9:06	< LOD	8.76			72.96	6.51			817.91	20.17		
211	2	RS-2-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 9:09	< LOD	8.67	<LOD		33.24	5.26	40		467.79	15.11	502	
212	2	RS-2-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 9:11	< LOD	8.81			68.01	6.31			585.79	16.97		
213	2	RS-2-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 9:13	< LOD	8.27			17.38	4.50			453.06	14.19		

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Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
214	2	RS-2-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 9:15	< LOD	10.69	<LOD		33.45	6.63	19		451.34	18.61	328	
215	2	RS-2-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 9:17	< LOD	8.42			8.31	4.40			222.75	10.84		
216	2	RS-2-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 9:19	< LOD	8.55			15.43	4.66			309.64	12.51		
217	2	RS-2-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 9:23	< LOD	9.44	<LOD		< LOD	6.75	<LOD		66.22	7.36	84	
218	2	RS-2-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 9:25	< LOD	8.69			< LOD	6.41			114.88	8.18		
219	2	RS-2-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 9:28	< LOD	8.88			< LOD	6.36			71.17	7.08		
196	2	RS-2-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 8:18	< LOD	8.00	<LOD		37.88	5.06	44		477.59	14.37	509	
197	2	RS-2-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 8:20	< LOD	8.31			43.29	5.36			511.02	15.26		
198	2	RS-2-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 8:23	< LOD	8.48			50.13	5.60			537.72	15.77		
199	2	RS-2-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 8:26	< LOD	8.90	<LOD		43.40	5.69	45		575.83	17.03	583	
200	2	RS-2-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 8:28	< LOD	8.92			55.50	6.00			623.82	17.56		
201	2	RS-2-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 8:30	< LOD	8.50			36.85	5.27			549.22	16.04		
202	2	RS-2-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 8:32	< LOD	8.45	<LOD		20.44	4.68	17		393.95	13.54	331	
203	2	RS-2-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 8:34	< LOD	8.76			< LOD	6.54			276.86	11.98		
204	2	RS-2-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 8:37	< LOD	8.80			13.39	4.74			323.02	13.17		
205	2	RS-2-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 8:40	< LOD	9.88	<LOD		< LOD	7.29	<LOD		83.90	8.66	107	
206	2	RS-2-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 8:43	< LOD	8.24			< LOD	5.92			137.75	8.79		
207	2	RS-2-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 8:46	< LOD	8.49			< LOD	5.92			100.36	7.69		
10	3	RS-3-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 8:23	< LOD	10.35	<LOD		361.93	12.99	313		4,612.61	51.47	4,352	
11	3	RS-3-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 8:27	< LOD	11.31			330.37	13.52			4,769.08	56.68		
12	3	RS-3-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 8:28	< LOD	10.66			248.12	11.18			3,675.53	46.49		
13	3	RS-3-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 8:31	< LOD	10.58	<LOD		226.67	10.79	253		4,635.20	52.10	4,253	
14	3	RS-3-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 8:32	< LOD	11.62			208.60	11.24			3,326.02	47.62		
15	3	RS-3-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 8:33	< LOD	11.37			324.85	13.49			4,797.27	56.98		
16	3	RS-3-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 8:37	< LOD	10.55	<LOD		162.92	9.28	197		2,582.26	38.15	3,398	
17	3	RS-3-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 8:38	< LOD	10.83			232.72	11.35			4,074.34	50.95		
18	3	RS-3-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 8:39	< LOD	10.14			196.35	9.77			3,538.12	43.67		
19	3	RS-3-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 8:43	< LOD	10.06	<LOD		52.15	6.43	62		1,728.22	31.09	1,548	
20	3	RS-3-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 8:45	< LOD	11.14			101.04	8.47			1,624.25	32.85		
21	3	RS-3-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 8:54	< LOD	10.27			32.03	5.83			1,293.02	27.15		
175	3	RS-3-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 17:13	< LOD	8.09	<LOD	4.4	110.05	6.85	138	150	876.24	19.28	936	1,000 B
176	3	RS-3-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 17:15	< LOD	8.71			152.36	8.16			990.23	21.62		
177	3	RS-3-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 17:16	< LOD	7.83			151.87	7.52			941.85	19.50		
178	3	RS-3-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 17:19	< LOD	7.94	<LOD		88.34	6.23	160		805.26	18.13	947	
179	3	RS-3-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 17:21	< LOD	9.24			232.45	10.13			1,068.28	23.54		
180	3	RS-3-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 17:22	< LOD	8.14			160.58	7.91			967.74	20.30		
181	3	RS-3-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 17:25	< LOD	8.54	<LOD		52.82	5.81	54		626.91	17.28	605	
182	3	RS-3-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 17:26	< LOD	8.74			51.17	5.79			601.69	17.01		
183	3	RS-3-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 17:27	< LOD	8.69			56.90	5.90			586.06	16.65		
184	3	RS-3-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 17:32	< LOD	8.49	<LOD		17.84	4.64	16		409.78	13.90	363	
185	3	RS-3-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 17:33	< LOD	8.23			16.32	4.48			372.73	13.06		
186	3	RS-3-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 17:34	< LOD	8.74			12.37	4.60			305.70	12.59		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
187	3	RS-3-BR-18-24"-FD	18-24	Back right	Composite	R184142	6/2/2014 17:35	< LOD	8.80	<LOD		14.04	4.65	19		309.67	12.63	410	
188	3	RS-3-BR-18-24"-FD	18-24	Back right	Composite	R184142	6/2/2014 17:37	< LOD	8.05			27.54	4.79			402.01	13.37		
189	3	RS-3-BR-18-24"-FD	18-24	Back right	Composite	R184142	6/2/2014 17:38	< LOD	8.27			15.90	4.48			518.41	15.23		
36	3	RS-3-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 10:26	< LOD	9.69	<LOD		241.99	10.69	292		2,378.18	36.23	2,855	
37	3	RS-3-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 10:27	< LOD	11.07			292.69	13.15			2,469.84	41.91		
38	3	RS-3-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 10:28	< LOD	9.75			341.09	12.12			3,715.53	44.26		
39	3	RS-3-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 10:33	< LOD	11.19	<LOD	14 B	368.26	14.15	397	420	5,233.78	59.27	4,822	2,700
40	3	RS-3-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 10:34	< LOD	10.90			311.31	13.02			4,395.14	53.78		
41	3	RS-3-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 10:35	< LOD	10.67			510.32	15.56			4,838.05	54.18		
42	3	RS-3-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 10:40	< LOD	10.00	<LOD		180.99	9.59	176		3,118.90	41.66	2,639	
43	3	RS-3-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 10:41	< LOD	10.54			192.78	10.13			2,395.53	37.58		
44	3	RS-3-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 10:42	< LOD	10.45			154.05	9.17			2,403.21	37.21		
45	3	RS-3-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 10:47	< LOD	10.32	<LOD		121.05	8.27	129		1,716.74	31.00	2,059	
46	3	RS-3-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 10:48	< LOD	11.04			130.67	9.44			2,500.05	41.37		
47	3	RS-3-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 10:49	< LOD	10.30			134.14	8.72			1,959.61	33.63		
48	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:52	< LOD	10.13	<LOD		26.72	5.64	62		880.57	22.37	1,243	
49	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:53	< LOD	10.32			43.84	6.25			1,047.07	24.60		
50	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:54	< LOD	10.45			111.40	8.37			1,716.71	32.26		
51	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:57	< LOD	10.48			66.14	7.14			1,327.00	28.51		
22	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:52	< LOD	10.26	<LOD	4.2 B	175.93	9.85	204	170	1,157.11	26.62	924	910
23	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:54	< LOD	10.45			458.59	14.62			818.35	22.34		
24	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:55	< LOD	9.86			88.30	7.33			845.06	21.66		
25	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:58	< LOD	10.01			91.28	7.49			875.30	22.27		
26	3	RS-3-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 10:02	< LOD	9.89	<LOD		86.13	7.29	75		758.09	20.52	735	
27	3	RS-3-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 10:03	< LOD	11.13			69.92	7.69			715.60	22.41		
28	3	RS-3-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 10:04	< LOD	10.05			67.72	6.94			732.60	20.71		
30	3	RS-3-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 10:10	< LOD	9.93	<LOD		18.92	5.28	17		375.25	14.78	354	
31	3	RS-3-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 10:11	< LOD	9.89			17.25	5.16			356.39	14.38		
32	3	RS-3-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 10:12	< LOD	10.98			15.53	5.62			331.79	15.30		
33	3	RS-3-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 10:17	< LOD	9.95	<LOD		12.40	5.09	14		198.75	11.33	233	
34	3	RS-3-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 10:18	< LOD	10.25			15.58	5.30			234.28	12.43		
35	3	RS-3-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 10:19	< LOD	10.27			13.60	5.28			265.38	13.21		
117	4	RS-4-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 14:39	< LOD	8.90	<LOD		188.40	9.22	201		1,657.21	28.88	1,669	
118	4	RS-4-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 14:41	< LOD	8.08			241.57	9.36			1,811.48	27.75		
119	4	RS-4-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 14:43	< LOD	7.82			171.72	7.98			1,538.88	25.04		
120	4	RS-4-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 14:46	< LOD	8.59	<LOD	8.4	282.22	10.35	239	400	2,460.40	33.39	2,196	2,400 B
121	4	RS-4-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 14:47	< LOD	9.36			145.73	8.52			1,787.44	30.59		
122	4	RS-4-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 14:49	< LOD	8.19			289.01	10.11			2,338.81	31.53		
123	4	RS-4-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 14:52	< LOD	8.08	<LOD		47.55	5.36	54		205.91	9.82	362	
124	4	RS-4-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 14:55	< LOD	9.15			18.80	5.06			197.45	10.84		
125	4	RS-4-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 14:57	< LOD	8.81			96.75	7.13			683.22	18.53		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
126	4	RS-4-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 15:00	< LOD	8.74	<LOD		15.88	4.79	13		150.36	9.37	104	
127	4	RS-4-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 15:02	< LOD	8.65			10.51	4.47			105.78	7.92		
128	4	RS-4-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 15:04	< LOD	8.73			< LOD	6.33			54.83	6.31		
129	4	RS-4-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 15:11	< LOD	9.39	<LOD		118.39	8.23	162		1,108.05	25.13	1,064	
130	4	RS-4-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 15:14	< LOD	8.59			212.23	9.26			850.61	20.03		
131	4	RS-4-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 15:15	< LOD	8.65			155.15	8.33			1,232.11	24.37		
132	4	RS-4-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 15:18	< LOD	8.47	<LOD		53.31	5.82	89		472.68	15.28	750	
133	4	RS-4-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 15:20	< LOD	8.60			87.38	6.73			669.33	17.97		
134	4	RS-4-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 15:21	< LOD	9.04			127.36	7.96			1,109.14	24.08		
135	4	RS-4-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 15:24	< LOD	8.79	<LOD		17.09	4.86	17		132.48	8.97	115	
136	4	RS-4-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 15:26	< LOD	8.94			< LOD	6.76			103.35	8.21		
137	4	RS-4-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 15:28	< LOD	9.83			< LOD	7.48			108.14	9.31		
138	4	RS-4-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 15:30	< LOD	8.93	<LOD		< LOD	6.74	<LOD		71.51	7.29	74	
139	4	RS-4-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 15:32	< LOD	9.97			< LOD	7.45			64.46	7.87		
140	4	RS-4-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 15:34	< LOD	9.67			< LOD	7.41			87.11	8.46		
141	4	RS-4-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 15:42	< LOD	8.54	<LOD	9	276.49	10.13	276	330	2,327.58	32.09	2,252	2,200 B
142	4	RS-4-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 15:44	< LOD	8.63			295.54	10.65			2,247.48	32.27		
143	4	RS-4-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 15:46	< LOD	8.54			255.00	10.01			2,182.26	31.80		
151	4	RS-4-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 16:07	< LOD	9.06	<LOD		273.11	10.62	277		3,133.80	39.12	3,134	
152	4	RS-4-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 16:10	< LOD	9.00			169.82	8.61			3,118.82	38.41		
153	4	RS-4-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 16:12	< LOD	8.77			388.21	12.10			3,148.88	38.41		
154	4	RS-4-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 16:17	< LOD	9.01	<LOD		260.73	10.53	262		2,105.94	32.50	3,135	
155	4	RS-4-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 16:19	< LOD	8.75			356.08	11.73			4,548.10	46.41		
156	4	RS-4-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 16:21	< LOD	9.05			168.45	8.99			2,749.94	37.73		
157	4	RS-4-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 16:24	< LOD	8.62	<LOD		72.77	6.41	81		1,293.76	24.86	984	
158	4	RS-4-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 16:26	< LOD	8.62			94.68	6.92			833.12	19.93		
159	4	RS-4-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 16:28	< LOD	8.50			74.73	6.33			825.84	19.53		
160	4	RS-4-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 16:31	< LOD	8.18	<LOD		< LOD	6.18	12		734.21	18.21	882	
161	4	RS-4-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 16:34	< LOD	8.72			7.70	4.47			697.12	18.66		
162	4	RS-4-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 16:37	< LOD	9.44			15.85	5.15			1,214.81	26.17		
163	4	RS-4-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 16:44	< LOD	8.26	<LOD		165.90	8.09	173		1,124.45	22.09	1,148	
164	4	RS-4-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 16:47	< LOD	8.61			179.67	8.67			1,160.05	23.26		
165	4	RS-4-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 16:49	< LOD	8.25			172.00	8.17			1,160.49	22.32		
166	4	RS-4-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 16:52	< LOD	8.53	<LOD		56.98	5.88	63		518.65	15.76	537	
167	4	RS-4-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 16:56	< LOD	8.67			53.39	5.74			409.07	13.96		
168	4	RS-4-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 16:58	< LOD	9.68			77.90	7.22			684.09	20.10		
169	4	RS-4-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 17:02	< LOD	9.19	<LOD		16.05	4.93	11		175.65	10.21	134	
170	4	RS-4-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 17:04	< LOD	9.07			9.04	4.71			118.50	8.79		
171	4	RS-4-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 17:05	< LOD	8.61			8.11	4.46			107.08	8.08		
172	4	RS-4-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 17:07	< LOD	12.47	<LOD		< LOD	9.63	7		55.05	9.58	64	
173	4	RS-4-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 17:08	< LOD	9.86			< LOD	6.97			65.81	7.67		
174	4	RS-4-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 17:10	< LOD	9.18			7.23	4.72			70.05	7.46		

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Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium XRF Result (ppm)	Cadmium XRF Error (± equals 2 std dev)	Cadmium Average XRF Reading (ppm)	Cadmium Lab Result (mg/kg)	Lead XRF Result (ppm)	Lead XRF Error (± equals 2 std dev)	Lead Average XRF Reading (ppm)	Lead Lab Result (mg/kg)	Zinc XRF Result (ppm)	Zinc XRF Error (± equals 2 std dev)	Zinc Average XRF Reading (ppm)	Zinc Lab Result (mg/kg)
Kansas RSK								39		39	39	400		400	400	23,500		23,500	23,500
58	5	RS-5-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 12:04	< LOD	8.24	<LOD		1,616.44	22.74	1,376		4,350.46	43.50	4,369	
59	5	RS-5-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 12:07	< LOD	8.17			1,311.13	20.38			4,630.61	44.49		
60	5	RS-5-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 12:12	< LOD	8.58			1,198.97	20.20			4,125.37	43.46		
61	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:16	< LOD	9.04	<LOD		1,744.52	24.98	1,082		11,800.07	75.58	9,662	
62	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:18	< LOD	9.62			1,091.27	20.87			10,966.77	76.33		
63	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:20	< LOD	9.83			632.01	16.63			6,874.80	62.31		
64	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:22	< LOD	9.42			860.27	18.55			9,005.44	68.80		
65	5	RS-5-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 12:25	< LOD	8.93	<LOD	9.9	377.32	12.00	386	480	4,785.28	47.43	3,745	3,600 B
66	5	RS-5-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 12:27	< LOD	9.19			530.18	14.40			3,641.56	42.66		
67	5	RS-5-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 12:29	< LOD	10.23			251.31	11.78			2,807.45	42.54		
68	5	RS-5-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 12:31	< LOD	9.06	<LOD		34.09	5.46	73		690.67	18.85	990	
69	5	RS-5-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 12:33	< LOD	11.07			142.76	10.29			1,560.55	34.67		
70	5	RS-5-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 12:35	< LOD	10.89			43.23	7.10			718.06	23.64		
71	5	RS-5-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/2/2014 12:37	< LOD	9.95	<LOD		74.01	7.17	64		1,132.74	25.60	911	
72	5	RS-5-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/2/2014 12:40	< LOD	9.14			75.48	6.77			974.98	22.61		
73	5	RS-5-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/2/2014 12:41	< LOD	10.26			43.28	6.42			626.71	19.91		
89	5	RS-5-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 13:18	< LOD	9.52	<LOD		357.55	12.37	334		6,531.57	58.41	6,067	
90	5	RS-5-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 13:20	< LOD	9.61			361.30	13.01			6,220.00	59.69		
91	5	RS-5-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 13:22	< LOD	9.01			281.77	10.64			5,448.18	50.91		
92	5	RS-5-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 13:24	< LOD	9.23	<LOD		47.91	6.01	45		993.13	22.82	1,032	
93	5	RS-5-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 13:26	< LOD	8.74			44.81	5.57			1,022.10	21.87		
94	5	RS-5-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 13:28	< LOD	9.11			43.37	5.89			1,080.89	23.84		
95	5	RS-5-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 13:30	< LOD	8.61	<LOD		88.56	6.60	50		848.04	19.58	605	
96	5	RS-5-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 13:33	< LOD	9.11			14.60	4.84			370.41	14.11		
97	5	RS-5-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 13:35	< LOD	8.76			45.81	5.73			597.69	17.26		
98	5	RS-5-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 13:45	< LOD	9.22	<LOD		< LOD	6.78	9		147.47	9.51	199	
99	5	RS-5-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 13:47	< LOD	9.62			11.15	4.96			168.38	10.48		
100	5	RS-5-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 13:49	< LOD	10.22			7.70	5.12			280.03	13.86		
74	5	RS-5-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 12:46	< LOD	9.00	<LOD		1,470.53	22.96	1,677		10,025.33	69.59	9,848	
75	5	RS-5-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 12:48	< LOD	9.31			2,080.42	27.68			10,322.80	71.94		
76	5	RS-5-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 12:50	< LOD	9.39			1,481.45	23.76			9,194.38	68.75		
77	5	RS-5-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 12:52	< LOD	9.66	<LOD	26	517.48	15.02	743	1,000	7,260.20	63.28	8,987	9,300 B
78	5	RS-5-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 12:54	< LOD	9.58			724.44	17.22			9,148.11	69.81		
79	5	RS-5-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 12:56	< LOD	9.44			987.28	19.50			10,553.67	73.35		
86	5	RS-5-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 13:09	14.25	6.30	13		630.38	15.68	705		8,603.24	65.77	11,300	
87	5	RS-5-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 13:11	< LOD	8.99			519.69	14.13			7,306.94	59.69		
88	5	RS-5-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 13:13	12.35	6.63			964.27	20.20			17,991.01	100.27		
80	5	RS-5-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 12:58	9.49	5.85	9		61.83	5.94	64		1,719.62	27.65	1,546	
81	5	RS-5-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 13:00	< LOD	9.29			73.94	6.67			1,453.41	27.18		
82	5	RS-5-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 13:02	< LOD	8.61			56.67	5.80			1,466.35	25.61		
83	5	RS-5-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 13:04	< LOD	9.15	<LOD		26.41	5.16	23		1,057.33	22.94	1,107	
84	5	RS-5-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 13:06	< LOD	9.49			16.65	5.07			890.52	22.15		
85	5	RS-5-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 13:07	< LOD	9.15			27.17	5.28			1,373.54	26.50		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
101	5	RS-5-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 13:53	< LOD	9.27	<LOD		221.43	9.91	262		2,851.70	38.00	3,696	
102	5	RS-5-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 13:55	< LOD	9.39			227.73	10.33			3,716.50	44.68		
103	5	RS-5-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 13:58	< LOD	8.70			336.78	11.29			4,519.26	45.69		
104	5	RS-5-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 14:00	< LOD	8.33	<LOD		48.19	5.46	56		911.00	19.94	1,225	
105	5	RS-5-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 14:02	< LOD	10.04			47.26	6.50			1,281.43	28.11		
106	5	RS-5-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 14:04	< LOD	8.53			73.85	6.31			1,482.31	25.94		
107	5	RS-5-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 14:07	< LOD	8.24	<LOD		38.31	5.15	44		507.18	15.00	705	
108	5	RS-5-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 14:09	< LOD	8.72			35.65	5.29			847.39	19.97		
109	5	RS-5-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 14:11	< LOD	8.48			57.75	5.84			760.02	18.61		
110	5	RS-5-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 14:14	< LOD	9.79	<LOD		13.23	5.28	12		387.78	15.95	346	
111	5	RS-5-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 14:16	< LOD	8.90			< LOD	6.70			287.79	12.62		
112	5	RS-5-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 14:18	< LOD	8.93			10.32	4.63			362.47	13.83		
113	5	RS-5-BL-18-24"-FD	18-24	Back left	Composite	R184142	6/2/2014 14:21	< LOD	8.79	<LOD		7.48	4.43	11		220.71	10.96	280	
114	5	RS-5-BL-18-24"-FD	18-24	Back left	Composite	R184142	6/2/2014 14:23	< LOD	8.37			< LOD	6.07			264.21	11.43		
115	5	RS-5-BL-18-24"-FD	18-24	Back left	Composite	R184142	6/2/2014 14:25	< LOD	9.31			13.96	5.02			356.24	14.50		
247	6	RS-6-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 10:55	< LOD	9.79	<LOD		240.81	10.80	203		1,727.85	31.27	1,639	
248	6	RS-6-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 10:58	< LOD	8.74			186.96	9.21			1,708.79	29.38		
249	6	RS-6-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 11:02	< LOD	7.04			180.76	7.16			1,479.29	21.61		
250	6	RS-6-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 11:05	< LOD	8.59	<LOD		40.16	5.39	56		565.21	16.31	647	
251	6	RS-6-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 11:08	< LOD	8.62			65.39	6.16			694.37	18.16		
252	6	RS-6-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 11:10	< LOD	8.81			61.52	6.12			680.56	18.20		
253	6	RS-6-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 11:17	< LOD	8.55	<LOD		< LOD	6.24	<LOD		303.60	12.45	234	
254	6	RS-6-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 11:20	< LOD	8.41			< LOD	6.01			182.12	9.69		
255	6	RS-6-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 11:23	< LOD	8.22			< LOD	6.11			217.66	10.16		
256	6	RS-6-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 11:25	< LOD	8.57	<LOD		< LOD	6.13	<LOD		78.68	7.17	93	
257	6	RS-6-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 11:30	< LOD	8.66			< LOD	6.45			103.64	8.00		
258	6	RS-6-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 11:32	< LOD	8.71			< LOD	6.46			97.78	7.84		
275	6	RS-6-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 14:24	< LOD	8.94	<LOD	6.3	833.96	17.78	702	800	2,216.16	33.43	2,292	2,200 B
276	6	RS-6-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 14:27	< LOD	8.63			476.02	13.38			1,942.10	30.55		
277	6	RS-6-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 14:29	< LOD	8.59			794.61	16.81			2,717.27	35.76		
278	6	RS-6-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 14:33	< LOD	8.87	<LOD		83.96	6.83	105		817.98	20.21	821	
279	6	RS-6-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 14:35	< LOD	9.00			130.97	7.97			722.85	19.10		
280	6	RS-6-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 14:38	< LOD	9.84			99.70	7.90			921.69	23.35		
281	6	RS-6-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 14:41	< LOD	8.64	<LOD		89.37	6.77	52		454.21	14.87	416	
282	6	RS-6-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 14:43	< LOD	8.67			39.58	5.45			376.43	13.70		
283	6	RS-6-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 14:47	< LOD	8.65			27.18	5.04			417.10	14.25		
284	6	RS-6-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 14:52	< LOD	8.45	<LOD		17.37	4.62	148		211.53	10.32	936	
285	6	RS-6-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 14:54	< LOD	8.26			295.44	10.35			1,770.10	27.86		
286	6	RS-6-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 14:57	< LOD	8.22			130.81	7.47			825.87	19.17		
287	6	RS-6-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 15:05	< LOD	8.71	<LOD	13 B	299.84	10.76	266	330	2,213.19	32.15	2,174	3,600
288	6	RS-6-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 15:08	< LOD	8.53		8.6 B	299.65	10.72		360	2,355.11	33.05		2,400
289	6	RS-6-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 15:10	< LOD	7.86			198.03	8.54			1,954.46	28.54		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
290	6	RS-6-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 15:13	< LOD	8.99	<LOD		158.43	8.62	173		953.66	22.07	1,080	
291	6	RS-6-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 15:15	< LOD	8.74			201.28	9.15			1,293.50	24.74		
292	6	RS-6-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 15:17	< LOD	8.52			159.72	8.13			993.44	21.18		
293	6	RS-6-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 15:20	< LOD	8.70	<LOD		26.72	5.09	22		515.21	16.06	457	
294	6	RS-6-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 15:22	< LOD	8.35			27.33	4.93			492.76	15.09		
295	6	RS-6-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 15:25	< LOD	8.49			12.59	4.55			364.21	13.54		
296	6	RS-6-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 15:28	< LOD	8.89	<LOD		< LOD	6.27	<LOD		141.76	9.20	175	
297	6	RS-6-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 15:30	< LOD	8.53			< LOD	6.07			175.47	9.71		
298	6	RS-6-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 15:32	< LOD	8.83			< LOD	6.60			208.47	10.75		
259	6	RS-6-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 11:42	< LOD	8.46	<LOD		605.69	14.65	510		4,871.48	47.27	3,996	
260	6	RS-6-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 11:45	< LOD	8.49			459.96	12.83			3,495.57	39.78		
261	6	RS-6-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 11:48	< LOD	8.72			465.24	13.30			3,619.93	41.73		
262	6	RS-6-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 11:52	26.17	7.24	23		2,942.86	37.06	2,843		22,123.92	118.81	19,955	
263	6	RS-6-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 11:54	19.42	7.52			3,439.12	41.94			21,566.11	122.94		
264	6	RS-6-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 11:57	< LOD	10.14			2,147.79	30.79			16,176.08	98.52		
265	6	RS-6-BL-6-12"-FD	6-12	Back left	Composite	R184142	6/3/2014 12:00	17.78	6.83	11		2,852.73	34.96	2,297		23,173.16	116.45	20,122	
266	6	RS-6-BL-6-12"-FD	6-12	Back left	Composite	R184142	6/3/2014 12:03	18.18	6.97			1,843.98	28.73			17,239.90	102.16		
267	6	RS-6-BL-6-12"-FD	6-12	Back left	Composite	R184142	6/3/2014 12:06	10.65	6.66			2,194.35	30.33			19,951.46	106.56		
268	6	RS-6-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 12:09	< LOD	9.23	<LOD	12 B	589.44	15.04	613	230	11,731.39	75.95	7,145	3,200
269	6	RS-6-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 12:12	< LOD	8.80			130.48	7.81			3,718.69	41.92		
270	6	RS-6-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 12:14	< LOD	8.77			1,117.64	19.67			5,986.18	52.61		
271	6	RS-6-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 13:08	32.25	6.48	32		418.39	13.03	272		4,053.56	45.26	2,472	
272	6	RS-6-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 13:11	< LOD	8.75			193.37	8.99			1,639.73	27.77		
273	6	RS-6-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 13:13	< LOD	9.08			203.87	9.34			1,722.11	28.91		
46	7	RS-7-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 11:32	< LOD	7.79	<LOD		17.10	4.25	22		231.33	9.92	241	
47	7	RS-7-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 11:34	< LOD	8.10			30.17	4.85			282.00	11.30		
48	7	RS-7-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 11:36	< LOD	7.76			17.58	4.29			209.06	9.60		
49	7	RS-7-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 11:39	< LOD	8.12	<LOD		18.79	4.49	16		261.47	10.90	238	
50	7	RS-7-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 11:40	< LOD	8.19			8.74	4.22			158.87	8.96		
51	7	RS-7-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 11:42	< LOD	7.86			20.29	4.45			292.93	11.27		
52	7	RS-7-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 11:45	< LOD	9.21	<LOD		< LOD	6.83	8		85.03	8.02	109	
53	7	RS-7-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 11:47	< LOD	9.40			< LOD	6.95			78.85	7.88		
54	7	RS-7-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 11:49	< LOD	8.50			8.10	4.26			162.80	9.16		
55	7	RS-7-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 11:52	< LOD	8.37	<LOD		< LOD	6.20	<LOD		152.38	9.06	114	
56	7	RS-7-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 11:55	< LOD	10.17			< LOD	7.14			72.66	8.29		
57	7	RS-7-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 11:57	< LOD	8.46			< LOD	6.30			115.75	8.28		
7	7	RS-7-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 9:38	< LOD	8.02	<LOD		21.36	4.51	26		215.48	9.93	216	
8	7	RS-7-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 9:41	< LOD	8.49			20.37	4.74			190.81	9.93		
9	7	RS-7-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 9:46	< LOD	8.34			25.60	4.83			242.04	10.85		
10	7	RS-7-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 9:49	< LOD	8.88	<LOD		< LOD	6.59	12		142.32	9.05	171	
11	7	RS-7-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 9:51	< LOD	8.45			12.21	4.43			198.75	10.00		
12	7	RS-7-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 9:59	< LOD	8.90			11.40	4.58			171.23	9.79		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
13	7	RS-7-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 10:02	< LOD	8.15	<LOD		< LOD	5.68	<LOD		53.57	5.93	65	
14	7	RS-7-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 10:05	< LOD	8.82			< LOD	6.19			71.15	7.03		
15	7	RS-7-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 10:07	< LOD	8.69			< LOD	6.05			69.78	6.84		
16	7	RS-7-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 10:10	< LOD	8.78	<LOD		< LOD	6.12	<LOD		46.59	6.01	40	
17	7	RS-7-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 10:12	< LOD	8.83			< LOD	6.29			38.73	5.88		
18	7	RS-7-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 10:14	< LOD	8.90			< LOD	6.22			34.28	5.66		
31	7	RS-7-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 10:47	< LOD	8.05	<LOD		20.07	4.45	13		207.27	9.70	184	
32	7	RS-7-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 10:49	< LOD	8.52			8.26	4.37			161.33	9.39		
33	7	RS-7-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 10:51	< LOD	7.79			11.06	4.07			184.18	9.04		
34	7	RS-7-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 10:55	< LOD	8.38	<LOD		7.67	4.23	8		125.50	8.20	124	
35	7	RS-7-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 10:57	< LOD	8.25			< LOD	6.06			119.16	7.98		
36	7	RS-7-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 11:00	< LOD	8.34			< LOD	6.28			128.56	8.41		
37	7	RS-7-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 11:04	< LOD	8.01	<LOD		11.29	4.23	12		191.29	9.49	158	
38	7	RS-7-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 11:06	< LOD	8.69			< LOD	5.93			101.16	7.82		
39	7	RS-7-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 11:08	< LOD	8.24			12.24	4.36			182.18	9.51		
40	7	RS-7-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 11:11	< LOD	8.58	<LOD		< LOD	5.82	<LOD		39.23	5.71	39	
41	7	RS-7-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 11:16	< LOD	8.49			< LOD	6.17			47.65	5.92		
42	7	RS-7-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 11:18	< LOD	8.96			< LOD	6.18			31.00	5.54		
43	7	RS-7-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 11:22	< LOD	9.61	<LOD		< LOD	6.55	<LOD		39.56	6.22	40	
44	7	RS-7-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 11:25	< LOD	8.87			< LOD	6.20			40.28	5.99		
45	7	RS-7-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 11:27	< LOD	8.93			< LOD	6.17			40.49	5.95		
19	7	RS-7-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 10:18	< LOD	8.13	<LOD	3.3 B	23.15	4.59	25	58	250.68	10.61	271	470
20	7	RS-7-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 10:20	< LOD	8.47			26.19	4.91			307.26	12.23		
21	7	RS-7-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 10:23	< LOD	8.69			24.23	4.91			255.06	11.32		
22	7	RS-7-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 10:26	< LOD	8.48	<LOD		16.51	4.59	19		267.43	11.48	264	
23	7	RS-7-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 10:28	< LOD	8.63			24.49	5.01			266.19	11.79		
24	7	RS-7-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 10:30	< LOD	8.75			16.18	4.68			258.26	11.51		
25	7	RS-7-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 10:32	< LOD	8.63	<LOD		< LOD	6.13	<LOD		99.40	7.70	117	
26	7	RS-7-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 10:34	< LOD	8.60			< LOD	6.21			134.86	8.67		
27	7	RS-7-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 10:36	< LOD	8.70			< LOD	6.04			117.26	8.16		
28	7	RS-7-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 10:39	< LOD	9.24	<LOD		< LOD	6.53	<LOD		38.02	6.08	47	
29	7	RS-7-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 10:41	< LOD	8.72			< LOD	6.32			46.41	6.14		
30	7	RS-7-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 10:44	< LOD	8.76			< LOD	6.25			56.93	6.34		
372	8	RS-8-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 9:19	< LOD	8.29	<LOD		107.34	6.92	121		931.68	20.17	1,161	
373	8	RS-8-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 9:21	< LOD	8.19			124.09	7.21			1,199.06	22.62		
374	8	RS-8-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 9:22	< LOD	8.31			130.08	7.60			1,351.05	24.82		
375	8	RS-8-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 9:26	< LOD	9.22	<LOD		7.73	4.62	21		261.10	12.29	429	
376	8	RS-8-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 9:28	< LOD	8.75			26.22	5.25			477.78	15.88		
377	8	RS-8-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 9:30	< LOD	8.41			28.68	5.02			548.27	16.05		
378	8	RS-8-FR-6-12"-FD	6-12	Front right	Composite	R184142	6/4/2014 9:33	< LOD	8.73	<LOD		19.50	4.85	19		365.63	13.63	430	
379	8	RS-8-FR-6-12"-FD	6-12	Front right	Composite	R184142	6/4/2014 9:35	< LOD	8.11			19.16	4.50			397.28	13.19		
380	8	RS-8-FR-6-12"-FD	6-12	Front right	Composite	R184142	6/4/2014 9:37	< LOD	9.28			19.55	5.21			527.97	17.26		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
381	8	RS-8-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 9:42	< LOD	8.17	<LOD		8.02	4.19	8		84.77	7.04	77	
382	8	RS-8-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 9:43	< LOD	9.88			< LOD	6.74			78.69	8.11		
383	8	RS-8-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 9:45	< LOD	8.52			< LOD	6.59			68.37	6.87		
384	8	RS-8-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 9:50	< LOD	8.42	<LOD		< LOD	5.87	<LOD		49.51	5.98	54	
385	8	RS-8-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 9:52	< LOD	8.40			< LOD	5.96			44.70	5.86		
386	8	RS-8-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 9:55	< LOD	8.58			< LOD	5.85			69.12	6.87		
360	8	RS-8-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 8:48	< LOD	8.52	<LOD	4.4 B	156.96	8.17	152	180	953.01	21.02	947	1,100
361	8	RS-8-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 8:52	< LOD	8.43			131.32	7.56			974.13	20.96		
362	8	RS-8-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 8:54	< LOD	8.57			169.11	8.36			913.30	20.47		
363	8	RS-8-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 8:56	< LOD	8.98	<LOD		30.72	5.37	34		382.40	14.26	397	
364	8	RS-8-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 8:58	< LOD	9.23			31.52	5.55			383.98	14.69		
365	8	RS-8-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 9:00	< LOD	8.68			38.47	5.54			425.64	14.80		
366	8	RS-8-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 9:03	< LOD	8.71	<LOD		< LOD	6.21	<LOD		65.72	6.79	92	
367	8	RS-8-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 9:05	< LOD	8.93			< LOD	6.67			127.79	8.81		
368	8	RS-8-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 9:07	< LOD	9.50			< LOD	6.69			81.78	8.00		
369	8	RS-8-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 9:10	< LOD	9.12	<LOD		< LOD	6.28	<LOD		36.84	5.90	46	
370	8	RS-8-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 9:12	< LOD	9.42			< LOD	6.54			52.10	6.88		
371	8	RS-8-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 9:13	< LOD	9.28			< LOD	6.50			47.64	6.65		
387	8	RS-8-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 10:00	< LOD	8.45	<LOD		82.98	6.52	82		1,729.27	27.90	1,579	
388	8	RS-8-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 10:02	< LOD	8.30			99.73	6.80			1,637.37	26.70		
389	8	RS-8-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 10:05	< LOD	9.93			64.51	7.02			1,371.41	28.75		
390	8	RS-8-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 10:07	< LOD	8.68	<LOD		< LOD	6.54	<LOD		223.93	11.07	229	
391	8	RS-8-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 10:09	< LOD	9.17			< LOD	6.72			222.06	11.57		
392	8	RS-8-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 10:11	< LOD	9.02			< LOD	6.73			240.94	11.82		
393	8	RS-8-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 10:16	< LOD	8.97	<LOD		< LOD	6.42	<LOD		66.42	7.05	79	
394	8	RS-8-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 10:18	< LOD	9.80			< LOD	6.82			79.27	8.12		
395	8	RS-8-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 10:20	< LOD	9.56			< LOD	6.99			91.54	8.74		
396	8	RS-8-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 10:26	< LOD	11.55	<LOD		< LOD	8.27	<LOD		32.52	7.52	37	
397	8	RS-8-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 10:28	< LOD	10.58			< LOD	7.10			42.82	7.29		
398	8	RS-8-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 10:30	< LOD	9.86			< LOD	6.80			35.64	6.47		
399	8	RS-8-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 10:38	< LOD	8.16	<LOD		44.22	5.34	60		721.10	17.84	787	
400	8	RS-8-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 10:41	< LOD	8.50			59.57	5.92			771.78	18.82		
401	8	RS-8-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 10:44	< LOD	7.45			77.10	5.60			867.91	17.57		
402	8	RS-8-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 10:48	< LOD	8.23	<LOD		8.80	4.24	9		249.91	10.97	242	
403	8	RS-8-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 10:51	< LOD	8.72			8.53	4.49			246.43	11.58		
404	8	RS-8-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 10:53	< LOD	8.59			8.89	4.37			230.64	10.89		
405	8	RS-8-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 10:58	< LOD	9.70	<LOD		< LOD	7.06	<LOD		51.13	7.27	58	
406	8	RS-8-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:00	< LOD	9.30			< LOD	6.74			58.04	7.03		
407	8	RS-8-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:02	< LOD	11.48			< LOD	8.58			63.59	9.06		
408	8	RS-8-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 11:05	< LOD	10.73	<LOD		< LOD	7.52	<LOD		35.95	7.01	45	
409	8	RS-8-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 11:07	< LOD	9.51			< LOD	6.62			49.15	6.88		
410	8	RS-8-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 11:09	< LOD	11.40			< LOD	8.26			50.97	8.30		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
106	9	RS-9-G-0-6"	0-6	Garden	Discrete	R171092	6/3/2014 16:38	< LOD	9.02	<LOD	28	231.53	9.37	287	550	3,454.72	39.00	4,220	5,900 B
107	9	RS-9-G-0-6"	0-6	Garden	Discrete	R171092	6/3/2014 16:39	< LOD	10.21			339.93	12.29			4,751.81	50.81		
108	9	RS-9-G-0-6"	0-6	Garden	Discrete	R171092	6/3/2014 16:40	< LOD	9.18			288.98	10.62			4,454.19	45.65		
109	9	RS-9-G-6-12"	6-12	Garden	Discrete	R171092	6/3/2014 16:44	< LOD	10.68	<LOD		342.16	12.64	326		8,271.90	68.56	7,312	
110	9	RS-9-G-6-12"	6-12	Garden	Discrete	R171092	6/3/2014 16:45	< LOD	10.76			289.34	11.92			6,584.41	62.03		
111	9	RS-9-G-6-12"	6-12	Garden	Discrete	R171092	6/3/2014 16:46	< LOD	10.09			346.38	12.26			7,080.50	61.35		
112	9	RS-9-G-12-18"	12-18	Garden	Discrete	R171092	6/3/2014 16:51	< LOD	9.61	<LOD		91.99	7.15	118		2,154.90	32.92	2,806	
113	9	RS-9-G-12-18"	12-18	Garden	Discrete	R171092	6/3/2014 16:52	< LOD	10.02			108.80	7.83			2,370.52	35.69		
114	9	RS-9-G-12-18"	12-18	Garden	Discrete	R171092	6/3/2014 16:53	< LOD	9.90			153.67	8.72			3,891.18	45.03		
115	9	RS-9-G-18-24"	18-24	Garden	Discrete	R171092	6/3/2014 16:57	< LOD	9.26	<LOD		< LOD	6.32	<LOD		523.62	16.34	441	
116	9	RS-9-G-18-24"	18-24	Garden	Discrete	R171092	6/3/2014 16:58	< LOD	9.45			< LOD	6.23			378.29	14.29		
117	9	RS-9-G-18-24"	18-24	Garden	Discrete	R171092	6/3/2014 16:59	< LOD	9.48			< LOD	6.32			421.10	15.00		
118	9	RS-9-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 17:12	< LOD	9.85	<LOD		100.13	7.53	102		1,603.62	29.11	1,543	
119	9	RS-9-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 17:13	< LOD	11.60			71.48	8.37			1,353.67	33.09		
120	9	RS-9-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 17:15	< LOD	9.99			135.70	8.58			1,670.76	30.51		
121	9	RS-9-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 17:19	< LOD	10.36	<LOD		43.95	6.28	38		808.73	21.88	750	
122	9	RS-9-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 17:20	< LOD	10.07			43.28	6.11			822.08	21.57		
123	9	RS-9-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 17:21	< LOD	9.96			26.23	5.56			619.49	18.84		
124	9	RS-9-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 17:29	< LOD	9.72	<LOD		< LOD	6.67	11		250.09	12.25	277	
125	9	RS-9-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 17:30	< LOD	9.41			11.13	4.81			391.04	14.62		
126	9	RS-9-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 17:31	< LOD	10.52			< LOD	6.95			189.87	11.60		
127	9	RS-9-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 17:38	< LOD	11.20	<LOD		< LOD	6.94	27		86.31	9.17	104	
128	9	RS-9-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 17:39	< LOD	12.10			< LOD	8.10			118.98	11.13		
129	9	RS-9-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 17:40	< LOD	10.00			27.04	5.62			106.59	8.79		
159	9	RS-9-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 10:40	< LOD	9.39	<LOD		179.98	9.17	155		2,299.78	34.36	2,133	
160	9	RS-9-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 10:41	< LOD	9.62			140.47	8.29			2,019.54	31.96		
161	9	RS-9-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 10:43	< LOD	9.97			143.16	8.59			2,078.89	33.35		
162	9	RS-9-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 10:49	< LOD	9.93	<LOD		119.22	8.03	115		1,500.40	28.40	1,561	
163	9	RS-9-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 10:50	< LOD	10.22			115.04	8.23			1,576.99	30.10		
164	9	RS-9-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 10:53	< LOD	9.74			110.07	7.83			1,605.71	29.41		
165	9	RS-9-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 10:59	< LOD	10.64	<LOD		< LOD	7.69	<LOD		416.06	16.54	413	
166	9	RS-9-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:01	< LOD	10.68			< LOD	7.64			438.61	16.85		
167	9	RS-9-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:02	< LOD	10.34			< LOD	7.57			383.19	15.91		
168	9	RS-9-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:08	< LOD	10.92	<LOD		< LOD	7.11	<LOD		99.85	9.42	106	
169	9	RS-9-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:08	< LOD	12.78			< LOD	8.29			107.12	11.30		
170	9	RS-9-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:12	< LOD	10.41			< LOD	6.95			109.81	9.29		
130	9	RS-9-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 17:47	< LOD	10.70	<LOD		48.47	6.77	60		571.58	19.52	585	
131	9	RS-9-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 17:48	< LOD	10.48			88.85	7.86			627.52	20.07		
132	9	RS-9-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 17:49	< LOD	11.14			43.96	6.88			555.98	19.94		
133	9	RS-9-FL-6-12"	0-6	Front left	Composite	R171092	6/3/2014 17:55	< LOD	10.39	<LOD		61.63	7.10	94		818.20	22.84	994	
134	9	RS-9-FL-6-12"	0-6	Front left	Composite	R171092	6/3/2014 17:56	< LOD	10.42			66.07	7.12			928.59	23.89		
135	9	RS-9-FL-6-12"	0-6	Front left	Composite	R171092	6/3/2014 17:57	< LOD	10.41			153.45	9.20			1,234.13	27.00		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
141	9	RS-9-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 8:17	< LOD	10.88	<LOD		27.88	6.21	31		913.62	25.04	961	
142	9	RS-9-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 8:18	< LOD	10.68			34.35	6.20			1,185.07	27.16		
143	9	RS-9-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 8:20	< LOD	11.75			31.17	6.68			783.87	24.41		
144	9	RS-9-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 8:26	< LOD	11.17	<LOD		< LOD	7.74	<LOD		496.18	18.62	459	
145	9	RS-9-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 8:27	< LOD	13.57			< LOD	9.29			394.31	20.78		
146	9	RS-9-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 8:28	< LOD	11.01			< LOD	7.92			487.15	18.90		
147	9	RS-9-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 10:04	< LOD	10.65	<LOD	9.8 B	175.08	10.02	162	230	2,516.05	39.66	2,610	2,500
148	9	RS-9-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 10:05	< LOD	10.38			155.22	9.38			2,885.67	41.56		
149	9	RS-9-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 10:06	< LOD	10.16			155.64	9.16			2,428.89	37.23		
150	9	RS-9-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 10:12	< LOD	10.13	<LOD		9.44	5.01	28		832.38	21.94	838	
151	9	RS-9-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 10:13	< LOD	10.18			36.47	5.96			814.09	21.71		
152	9	RS-9-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 10:14	< LOD	10.01			39.45	6.06			867.83	22.39		
153	9	RS-9-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 10:21	< LOD	10.38	<LOD		8.16	5.17	8		209.78	12.11	177	
154	9	RS-9-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 10:22	< LOD	9.52			< LOD	6.85			162.07	9.98		
155	9	RS-9-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 10:24	< LOD	10.27			< LOD	7.22			158.25	10.69		
156	9	RS-9-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 10:32	< LOD	10.16	<LOD		< LOD	6.81	<LOD		66.44	7.72	72	
157	9	RS-9-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 10:33	< LOD	10.81			< LOD	7.09			79.45	8.44		
158	9	RS-9-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 10:35	< LOD	12.42			< LOD	8.09			69.55	9.73		
348	10	RS-10-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 8:06	< LOD	8.92	<LOD		67.85	6.39	69		1,029.18	22.59	1,010	
349	10	RS-10-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 8:09	< LOD	9.11			66.15	6.52			915.40	21.93		
350	10	RS-10-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 8:11	< LOD	8.82			72.02	6.48			1,084.22	23.07		
351	10	RS-10-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 8:14	< LOD	9.29	<LOD		38.33	5.68	58		725.51	19.54	937	
352	10	RS-10-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 8:17	< LOD	8.69			92.06	6.84			1,272.33	24.36		
353	10	RS-10-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 8:20	< LOD	8.11			44.16	5.25			813.03	18.53		
354	10	RS-10-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 8:23	< LOD	8.97	<LOD		< LOD	6.60	<LOD		307.53	12.80	261	
355	10	RS-10-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 8:26	< LOD	8.52			< LOD	6.25			348.97	12.92		
356	10	RS-10-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 8:29	< LOD	8.46			< LOD	5.70			125.17	8.22		
357	10	RS-10-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 8:32	< LOD	10.08	<LOD		< LOD	7.06	<LOD		109.73	9.42	90	
358	10	RS-10-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 8:34	< LOD	8.24			< LOD	5.66			66.13	6.35		
359	10	RS-10-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 8:36	< LOD	8.33			< LOD	6.02			95.10	7.48		
299	10	RS-10-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 15:45	< LOD	8.07	<LOD		106.32	6.71	106		1,195.71	22.23	1,324	
300	10	RS-10-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 15:47	< LOD	8.54			114.34	7.30			1,322.16	24.66		
301	10	RS-10-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 15:49	< LOD	8.31			96.22	6.74			1,454.40	25.37		
302	10	RS-10-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 15:54	< LOD	8.80	<LOD		80.93	6.71	95		939.56	21.51	1,087	
303	10	RS-10-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 15:56	< LOD	8.27			119.40	7.13			1,248.93	23.10		
304	10	RS-10-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 15:59	< LOD	8.97			83.74	6.82			1,071.34	23.07		
305	10	RS-10-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 16:02	< LOD	8.50	<LOD		< LOD	6.18	<LOD		437.92	14.75	415	
306	10	RS-10-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 16:04	< LOD	8.05			< LOD	5.78			379.39	12.95		
307	10	RS-10-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 16:06	< LOD	8.30			< LOD	6.10			428.65	14.02		
308	10	RS-10-BR-12-18"-FD	12-18	Back right	Composite	R184142	6/3/2014 16:10	< LOD	8.48	<LOD		< LOD	5.93	13		466.17	14.88	500	
309	10	RS-10-BR-12-18"-FD	12-18	Back right	Composite	R184142	6/3/2014 16:12	< LOD	8.10			12.93	4.30			516.76	15.03		
310	10	RS-10-BR-12-18"-FD	12-18	Back right	Composite	R184142	6/3/2014 16:14	< LOD	8.36			< LOD	5.98			517.00	15.38		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium XRF Result (ppm)	Cadmium XRF Error (± equals 2 std dev)	Cadmium Average XRF Reading (ppm)	Cadmium Lab Result (mg/kg)	Lead XRF Result (ppm)	Lead XRF Error (± equals 2 std dev)	Lead Average XRF Reading (ppm)	Lead Lab Result (mg/kg)	Zinc XRF Result (ppm)	Zinc XRF Error (± equals 2 std dev)	Zinc Average XRF Reading (ppm)	Zinc Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
311	10	RS-10-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 16:17	< LOD	9.25	<LOD		< LOD	6.32	<LOD		104.04	8.59	112	
312	10	RS-10-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 16:18	< LOD	8.85			< LOD	6.32			88.47	7.62		
313	10	RS-10-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 16:22	< LOD	8.33			< LOD	5.82			142.38	8.61		
329	10	RS-10-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 17:16	< LOD	9.03	<LOD		86.45	6.99	97		977.07	22.43	1,066	
330	10	RS-10-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 17:19	< LOD	8.95			100.61	7.27			1,102.52	23.53		
331	10	RS-10-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 17:21	< LOD	8.60			104.97	6.97			1,117.31	22.33		
332	10	RS-10-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 17:25	< LOD	9.20	<LOD		52.13	6.19	63		659.04	18.84	770	
333	10	RS-10-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 17:27	< LOD	8.54			55.68	5.91			720.75	18.58		
334	10	RS-10-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 17:29	< LOD	9.07			81.06	6.88			931.10	21.90		
335	10	RS-10-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 17:33	< LOD	8.40	<LOD		21.05	4.75	37		229.19	10.71	379	
336	10	RS-10-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 17:36	< LOD	8.76			43.00	5.76			407.91	14.69		
339	10	RS-10-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 17:40	< LOD	9.26			46.25	6.12			499.73	16.83		
340	10	RS-10-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 17:44	< LOD	8.76	<LOD		< LOD	6.35	10		77.78	7.17	87	
341	10	RS-10-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 17:46	< LOD	8.75			10.27	4.53			104.01	7.99		
342	10	RS-10-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 17:48	< LOD	8.74			< LOD	6.39			78.75	7.22		
314	10	RS-10-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 16:27	< LOD	8.91	<LOD	29 BV	147.40	8.17	154	330	1,458.86	26.44	1,693	4,100
315	10	RS-10-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 16:29	< LOD	8.52			152.18	8.08			1,795.89	28.62		
316	10	RS-10-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 16:31	< LOD	8.99			161.64	8.49			1,825.52	29.63		
317	10	RS-10-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 16:34	< LOD	8.78	<LOD		72.25	6.44	100		847.76	20.42	1,289	
318	10	RS-10-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 16:36	< LOD	8.42			102.86	6.83			1,185.93	22.79		
319	10	RS-10-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 16:38	< LOD	9.04			125.48	7.76			1,833.63	29.74		
320	10	RS-10-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 16:41	< LOD	8.77	<LOD		159.03	8.46	70		1,548.92	27.41	813	
321	10	RS-10-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 16:43	< LOD	8.51			24.74	4.92			519.88	15.76		
322	10	RS-10-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 16:45	< LOD	8.44			24.96	4.86			368.75	13.20		
323	10	RS-10-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 16:51	< LOD	8.35	<LOD		< LOD	5.94	<LOD		194.03	9.81	152	
327	10	RS-10-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 17:06	< LOD	8.57			< LOD	6.05			119.31	8.27		
328	10	RS-10-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 17:09	< LOD	7.57			< LOD	5.36			141.77	7.81		
187	11	RS-11-FR-0-6"	0-6	Front right	Composite	R171092	6/4/2014 14:26	< LOD	10.29	<LOD	8.5 B	286.50	11.90	275	210	3,340.11	44.44	2,820	1,900
188	11	RS-11-FR-0-6"	0-6	Front right	Composite	R171092	6/4/2014 14:27	< LOD	11.38			326.54	13.75			2,703.51	43.60		
189	11	RS-11-FR-0-6"	0-6	Front right	Composite	R171092	6/4/2014 14:28	< LOD	10.22			212.81	10.45			2,416.80	37.54		
190	11	RS-11-FR-6-12"	6-12	Front right	Composite	R171092	6/4/2014 14:32	< LOD	10.41	<LOD		< LOD	7.40	<LOD		349.95	15.63	326	
191	11	RS-11-FR-6-12"	6-12	Front right	Composite	R171092	6/4/2014 14:33	< LOD	11.42			< LOD	7.73			268.38	14.70		
192	11	RS-11-FR-6-12"	6-12	Front right	Composite	R171092	6/4/2014 14:35	< LOD	10.34			< LOD	7.42			360.15	15.69		
193	11	RS-11-FR-12-18"	12-18	Front right	Composite	R171092	6/4/2014 14:41	< LOD	10.52	<LOD		< LOD	6.91	<LOD		116.66	9.89	103	
194	11	RS-11-FR-12-18"	12-18	Front right	Composite	R171092	6/4/2014 14:42	< LOD	11.62			< LOD	7.59			95.37	10.00		
195	11	RS-11-FR-12-18"	12-18	Front right	Composite	R171092	6/4/2014 14:43	< LOD	10.75			< LOD	7.35			95.97	9.11		
196	11	RS-11-FR-18-24"	18-24	Front right	Composite	R171092	6/4/2014 14:49	< LOD	11.36	<LOD		< LOD	7.35	<LOD		152.04	11.80	130	
197	11	RS-11-FR-18-24"	18-24	Front right	Composite	R171092	6/4/2014 14:51	< LOD	10.69			< LOD	6.71			72.86	8.14		
198	11	RS-11-FR-18-24"	18-24	Front right	Composite	R171092	6/4/2014 14:52	< LOD	10.32			< LOD	6.52			164.28	11.01		
171	11	RS-11-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 11:27	< LOD	7.92	<LOD		111.36	6.44	113		856.59	17.77	866	
172	11	RS-11-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 11:29	< LOD	9.89			120.52	8.23			877.48	22.31		
173	11	RS-11-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 11:30	< LOD	10.26			108.26	8.16			863.46	22.82		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

								Cadmium				Lead				Zinc			
XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
174	11	RS-11-BR-0-6"-FD	0-6	Back right	Composite	R171092	6/4/2014 11:32	< LOD	10.15	<LOD		106.71	8.01	116		899.59	22.90	902	
175	11	RS-11-BR-0-6"-FD	0-6	Back right	Composite	R171092	6/4/2014 11:33	< LOD	10.06			114.03	8.15			925.18	23.15		
176	11	RS-11-BR-0-6"-FD	0-6	Back right	Composite	R171092	6/4/2014 11:35	< LOD	9.83			127.81	8.35			880.33	22.22		
180	11	RS-11-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 11:51	< LOD	10.18	<LOD		10.80	5.22	15		380.95	15.67	370	
181	11	RS-11-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 11:52	< LOD	10.60			14.48	5.54			348.78	15.47		
182	11	RS-11-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 11:53	< LOD	10.14			19.50	5.50			379.27	15.46		
177	11	RS-11-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:43	< LOD	10.48	<LOD		< LOD	6.91	<LOD		116.40	9.60	117	
178	11	RS-11-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:44	< LOD	10.14			< LOD	6.76			126.09	9.57		
179	11	RS-11-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:45	< LOD	10.87			< LOD	7.49			107.10	9.69		
183	11	RS-11-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:58	< LOD	11.32	<LOD		< LOD	7.49	<LOD		64.02	8.39	60	
184	11	RS-11-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:59	< LOD	12.00			< LOD	7.94			50.74	8.17		
185	11	RS-11-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 12:00	< LOD	11.38			< LOD	7.49			65.86	8.50		
199	11	RS-11-FL-0-6"	0-6	Front left	Composite	R171092	6/4/2014 14:58	< LOD	10.22	<LOD		157.15	9.30	165		1,564.28	30.35	1,630	
200	11	RS-11-FL-0-6"	0-6	Front left	Composite	R171092	6/4/2014 14:59	< LOD	9.93			182.16	9.66			1,730.33	31.34		
201	11	RS-11-FL-0-6"	0-6	Front left	Composite	R171092	6/4/2014 15:00	< LOD	10.07			154.51	9.19			1,595.93	30.48		
202	11	RS-11-FL-0-6"-FD	0-6	Front left	Composite	R171092	6/4/2014 15:03	< LOD	10.13	<LOD		173.49	9.54	143		1,691.22	31.13	1,523	
203	11	RS-11-FL-0-6"-FD	0-6	Front left	Composite	R171092	6/4/2014 15:04	< LOD	10.67			113.17	8.74			1,373.06	30.03		
204	11	RS-11-FL-0-6"-FD	0-6	Front left	Composite	R171092	6/4/2014 15:05	< LOD	9.86			143.15	8.88			1,505.47	29.51		
205	11	RS-11-FL-6-12"	6-12	Front left	Composite	R171092	6/4/2014 15:09	< LOD	9.90	<LOD		45.86	6.26	42		629.57	19.11	604	
206	11	RS-11-FL-6-12"	6-12	Front left	Composite	R171092	6/4/2014 15:11	< LOD	10.51			36.10	6.44			565.30	19.73		
207	11	RS-11-FL-6-12"	6-12	Front left	Composite	R171092	6/4/2014 15:12	< LOD	9.89			44.83	6.20			616.43	18.86		
208	11	RS-11-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 15:18	< LOD	10.08	<LOD		< LOD	6.73	<LOD		141.69	10.06	161	
209	11	RS-11-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 15:19	< LOD	10.28			< LOD	7.18			206.79	11.96		
210	11	RS-11-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 15:20	< LOD	10.77			< LOD	7.27			134.62	10.46		
211	11	RS-11-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 15:25	< LOD	10.32	<LOD		< LOD	6.99	<LOD		79.36	8.15	77	
212	11	RS-11-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 15:27	< LOD	10.63			< LOD	6.70			58.14	7.82		
213	11	RS-11-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 15:28	< LOD	10.80			< LOD	7.09			92.88	8.99		
214	11	RS-11-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 15:35	< LOD	9.72	<LOD		86.80	7.43	75		1,132.63	25.41	979	
215	11	RS-11-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 15:39	< LOD	8.60			68.92	6.00			917.06	19.82		
216	11	RS-11-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 15:40	< LOD	9.41			69.18	6.64			886.38	21.57		
217	11	RS-11-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 15:44	< LOD	10.10	<LOD		8.66	5.20	10		278.45	13.86	281	
218	11	RS-11-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 15:46	< LOD	9.98			8.25	4.97			297.83	13.58		
219	11	RS-11-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 15:47	< LOD	10.55			13.98	5.54			266.23	13.83		
220	11	RS-11-BL-6-12"-FD	6-12	Back left	Composite	R171092	6/4/2014 15:48	< LOD	9.68	<LOD		13.65	5.26	13		275.12	13.48	293	
221	11	RS-11-BL-6-12"-FD	6-12	Back left	Composite	R171092	6/4/2014 15:49	< LOD	10.34			11.45	5.35			260.93	13.53		
222	11	RS-11-BL-6-12"-FD	6-12	Back left	Composite	R171092	6/4/2014 15:50	< LOD	10.11			< LOD	7.14			342.03	14.69		
223	11	RS-11-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 16:01	< LOD	12.05	<LOD		< LOD	8.77	<LOD		71.09	10.21	78	
224	11	RS-11-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 16:02	< LOD	12.52			< LOD	8.93			74.69	9.60		
225	11	RS-11-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 16:04	< LOD	9.85			< LOD	6.23			89.34	8.25		
226	11	RS-11-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 16:10	< LOD	11.55	<LOD		< LOD	7.66	<LOD		46.87	7.80	44	
227	11	RS-11-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 16:11	< LOD	10.94			< LOD	7.74			43.27	7.16		
228	11	RS-11-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 16:12	< LOD	12.03			< LOD	7.87			40.56	7.81		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
440	12	RS-12-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 14:14	< LOD	7.66	<LOD		94.72	6.15	72		792.35	17.27	743	
441	12	RS-12-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 14:17	< LOD	8.19			61.08	5.79			727.21	17.89		
442	12	RS-12-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 14:20	< LOD	8.30			61.06	5.88			710.69	17.93		
443	12	RS-12-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 14:33	< LOD	7.99	<LOD		< LOD	5.89	7		259.43	10.74	254	
444	12	RS-12-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 14:38	< LOD	8.29			6.90	4.14			263.30	11.14		
445	12	RS-12-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 14:40	< LOD	9.25			< LOD	6.72			239.72	12.05		
446	12	RS-12-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 14:47	< LOD	10.19	<LOD		< LOD	7.13	<LOD		95.06	9.21	114	
447	12	RS-12-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 14:50	< LOD	8.56			< LOD	6.34			153.87	9.18		
448	12	RS-12-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 14:53	< LOD	8.79			< LOD	5.98			92.82	7.81		
449	12	RS-12-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 15:00	< LOD	8.92	<LOD		< LOD	6.44	<LOD		83.29	7.68	60	
450	12	RS-12-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 15:06	< LOD	10.86			< LOD	7.51			50.02	7.85		
451	12	RS-12-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 15:08	< LOD	9.44			< LOD	6.47			46.66	6.60		
452	12	RS-12-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/4/2014 15:12	< LOD	10.11	<LOD		< LOD	6.91	<LOD		75.76	8.11	61	
453	12	RS-12-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/4/2014 15:14	< LOD	8.77			< LOD	6.04			57.08	6.49		
454	12	RS-12-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/4/2014 15:16	< LOD	10.15			< LOD	6.95			49.10	7.25		
455	12	RS-12-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 15:29	< LOD	8.86	<LOD	4.1 B	188.19	9.56	159	180	819.59	21.34	842	870
456	12	RS-12-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 15:32	< LOD	8.64			143.70	8.23			840.21	20.56		
457	12	RS-12-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 15:35	< LOD	8.51			146.26	8.06			866.08	20.26		
458	12	RS-12-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 15:39	< LOD	6.93	<LOD		23.53	3.93	49		349.27	10.50	441	
459	12	RS-12-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 15:42	< LOD	8.32			83.64	6.43			586.96	16.28		
460	12	RS-12-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 15:45	< LOD	7.17			39.05	4.54			385.58	11.56		
461	12	RS-12-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 15:51	< LOD	13.05	<LOD		< LOD	10.62	23		123.30	13.76	174	
462	12	RS-12-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 15:53	< LOD	9.13			< LOD	6.82			183.57	10.73		
463	12	RS-12-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 15:55	< LOD	9.98			23.34	5.72			215.02	12.27		
467	12	RS-12-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 16:12	< LOD	13.28	<LOD		< LOD	10.14	<LOD		55.18	10.62	65	
468	12	RS-12-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 16:15	< LOD	15.07			< LOD	12.06			46.21	11.82		
469	12	RS-12-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 16:17	< LOD	9.82			< LOD	7.00			94.52	8.56		
425	12	RS-12-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 13:24	< LOD	8.93	<LOD		61.94	6.34	49		716.76	19.33	683	
426	12	RS-12-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 13:26	< LOD	8.46			56.66	5.91			781.36	19.28		
427	12	RS-12-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 13:28	< LOD	8.34			29.88	4.95			552.19	15.90		
428	12	RS-12-FL-0-6"-FD	0-6	Front left	Composite	R184142	6/4/2014 13:31	< LOD	8.22	<LOD		116.29	7.17	91		951.34	20.52	859	
429	12	RS-12-FL-0-6"-FD	0-6	Front left	Composite	R184142	6/4/2014 13:33	< LOD	7.52			89.16	5.96			846.38	17.66		
430	12	RS-12-FL-0-6"-FD	0-6	Front left	Composite	R184142	6/4/2014 13:38	< LOD	8.62			67.31	6.28			778.15	19.43		
431	12	RS-12-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 13:41	< LOD	8.36	<LOD		30.81	5.04	23		264.21	11.40	265	
432	12	RS-12-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 13:43	< LOD	8.70			25.57	5.07			259.23	11.70		
433	12	RS-12-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 13:45	< LOD	8.83			12.82	4.70			272.39	12.06		
434	12	RS-12-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 13:51	< LOD	10.59	<LOD		< LOD	7.69	<LOD		82.63	8.91	68	
435	12	RS-12-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 13:53	< LOD	8.52			< LOD	5.71			60.06	6.35		
436	12	RS-12-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 13:55	< LOD	9.47			< LOD	6.59			60.57	7.17		
437	12	RS-12-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 14:05	< LOD	9.64	<LOD		< LOD	6.19	<LOD		34.92	6.21	42	
438	12	RS-12-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 14:07	< LOD	9.15			< LOD	5.98			39.24	6.06		
439	12	RS-12-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 14:09	< LOD	9.26			< LOD	6.14			51.19	6.70		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

								Cadmium				Lead				Zinc			
XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
411	12	RS-12-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 11:31	< LOD	8.39	<LOD		137.58	7.60	141		1,163.49	22.59	1,234	
412	12	RS-12-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 11:35	< LOD	8.01			127.35	7.17			1,252.43	22.74		
413	12	RS-12-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 11:38	< LOD	8.26			158.17	7.81			1,287.40	23.19		
414	12	RS-12-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 11:42	< LOD	10.20	<LOD		13.93	5.63	52		219.67	13.04	498	
415	12	RS-12-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 11:45	< LOD	8.91			89.35	7.14			727.68	19.60		
416	12	RS-12-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 11:49	< LOD	8.18			52.46	5.48			548.04	15.35		
417	12	RS-12-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:56	< LOD	10.20	<LOD		< LOD	7.22	<LOD		88.91	8.85	70	
418	12	RS-12-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:59	< LOD	9.55			< LOD	6.49			62.01	7.42		
419	12	RS-12-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 12:01	< LOD	9.88			< LOD	6.95			58.08	7.48		
420	12	RS-12-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 12:58	< LOD	10.36	<LOD		8.91	5.17	9		223.49	12.59	185	
421	12	RS-12-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 13:00	< LOD	10.55			< LOD	7.71			123.21	10.21		
422	12	RS-12-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 13:03	< LOD	8.88			< LOD	6.36			207.56	10.87		
470	13	RS-13-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 16:24	< LOD	8.63	<LOD	6.4 B	266.41	10.31	286	310	2,221.90	32.41	2,190	2,200
471	13	RS-13-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 16:26	< LOD	9.11		5.8 B	310.39	11.49		230	2,191.83	33.59		1,800
472	13	RS-13-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 16:31	< LOD	8.74			281.94	10.62			2,156.78	32.13		
473	13	RS-13-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 16:34	< LOD	8.34	<LOD		49.69	5.55	66		395.93	13.48	509	
474	13	RS-13-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 16:36	< LOD	8.99			85.09	6.96			670.66	18.69		
475	13	RS-13-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 16:39	< LOD	8.75			62.46	6.17			459.63	15.18		
476	13	RS-13-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 16:44	< LOD	9.09	<LOD		16.43	5.04	19		215.62	11.38	297	
477	13	RS-13-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 16:46	< LOD	9.46			22.30	5.44			373.10	15.04		
478	13	RS-13-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 16:55	< LOD	9.19			18.62	5.27			301.71	13.58		
479	13	RS-13-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 16:57	< LOD	11.10	<LOD		< LOD	7.82	16		78.27	9.13	85	
480	13	RS-13-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 16:59	< LOD	8.93			16.13	4.91			111.37	8.53		
481	13	RS-13-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 17:01	< LOD	9.35			< LOD	7.04			66.63	7.36		
499	13	RS-13-BR-0-6"	0-6	Back right	Composite	R184142	6/5/2014 9:14	< LOD	8.64	<LOD	6.7 B	127.78	7.69	171	310	974.63	21.50	1,692	1,500
500	13	RS-13-BR-0-6"	0-6	Back right	Composite	R184142	6/5/2014 9:15	< LOD	8.19		5.6 B	136.06	7.64		280	840.74	19.49		1,400
501	13	RS-13-BR-0-6"	0-6	Back right	Composite	R184142	6/5/2014 9:17	< LOD	8.77			248.31	10.18			3,259.24	39.82		
502	13	RS-13-BR-6-12"	6-12	Back right	Composite	R184142	6/5/2014 9:21	< LOD	9.47	<LOD		41.82	6.21	54		373.42	15.45	498	
503	13	RS-13-BR-6-12"	6-12	Back right	Composite	R184142	6/5/2014 9:22	< LOD	8.76			64.16	6.35			607.44	17.64		
504	13	RS-13-BR-6-12"	6-12	Back right	Composite	R184142	6/5/2014 9:23	< LOD	8.72			55.33	6.11			513.93	16.32		
505	13	RS-13-BR-12-18"	12-18	Back right	Composite	R184142	6/5/2014 9:27	< LOD	9.42	<LOD		< LOD	7.07	17		72.02	7.67	94	
506	13	RS-13-BR-12-18"	12-18	Back right	Composite	R184142	6/5/2014 9:29	< LOD	9.35			22.14	5.38			119.90	9.11		
507	13	RS-13-BR-12-18"	12-18	Back right	Composite	R184142	6/5/2014 9:30	< LOD	12.57			11.91	6.78			89.80	11.27		
508	13	RS-13-BR-18-24"	18-24	Back right	Composite	R184142	6/5/2014 9:34	< LOD	10.23	<LOD		< LOD	6.97	9		32.53	6.53	43	
509	13	RS-13-BR-18-24"	18-24	Back right	Composite	R184142	6/5/2014 9:35	< LOD	10.17			< LOD	6.93			50.52	7.42		
510	13	RS-13-BR-18-24"	18-24	Back right	Composite	R184142	6/5/2014 9:36	< LOD	9.63			8.87	5.08			44.70	6.85		
511	13	RS-13-FL-0-6"	0-6	Front left	Composite	R184142	6/5/2014 9:41	< LOD	9.19	<LOD		70.33	6.67	76		753.79	20.04	736	
512	13	RS-13-FL-0-6"	0-6	Front left	Composite	R184142	6/5/2014 9:42	< LOD	9.16			80.47	6.91			745.32	19.87		
513	13	RS-13-FL-0-6"	0-6	Front left	Composite	R184142	6/5/2014 9:44	< LOD	9.21			76.94	6.86			708.39	19.48		
514	13	RS-13-FL-6-12"	6-12	Front left	Composite	R184142	6/5/2014 9:48	< LOD	9.53	<LOD		41.83	6.09	38		565.45	18.11	524	
515	13	RS-13-FL-6-12"	6-12	Front left	Composite	R184142	6/5/2014 9:49	< LOD	8.99			32.02	5.37			489.72	15.95		
516	13	RS-13-FL-6-12"	6-12	Front left	Composite	R184142	6/5/2014 9:50	< LOD	9.06			40.57	5.78			516.06	16.67		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
517	13	RS-13-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/5/2014 9:54	< LOD	9.01	<LOD		34.23	5.48	37		494.29	16.07	526	
518	13	RS-13-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/5/2014 9:55	< LOD	9.68			37.12	5.97			522.34	17.61		
519	13	RS-13-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/5/2014 9:56	< LOD	10.08			40.90	6.30			561.43	18.82		
520	13	RS-13-FL-12-18"	12-18	Front left	Composite	R184142	6/5/2014 10:00	< LOD	10.33	<LOD		< LOD	6.91	<LOD		129.84	10.35	124	
521	13	RS-13-FL-12-18"	12-18	Front left	Composite	R184142	6/5/2014 10:01	< LOD	11.00			< LOD	8.50			125.75	10.90		
522	13	RS-13-FL-12-18"	12-18	Front left	Composite	R184142	6/5/2014 10:02	< LOD	9.85			< LOD	7.37			116.28	9.57		
523	13	RS-13-FL-18-24"	18-24	Front left	Composite	R184142	6/5/2014 10:06	< LOD	10.81	<LOD		< LOD	7.64	<LOD		37.50	7.08	46	
524	13	RS-13-FL-18-24"	18-24	Front left	Composite	R184142	6/5/2014 10:07	< LOD	10.45			< LOD	7.84			59.45	8.06		
525	13	RS-13-FL-18-24"	18-24	Front left	Composite	R184142	6/5/2014 10:08	< LOD	12.24			< LOD	9.03			41.64	8.38		
487	13	RS-13-BL-0-6"	0-6	Back left	Composite	R184142	6/5/2014 8:34	< LOD	9.18	<LOD		69.22	6.67	81		577.90	17.67	574	
488	13	RS-13-BL-0-6"	0-6	Back left	Composite	R184142	6/5/2014 8:36	< LOD	9.72			80.51	7.47			580.92	19.03		
489	13	RS-13-BL-0-6"	0-6	Back left	Composite	R184142	6/5/2014 8:38	< LOD	9.65			93.17	7.61			564.61	18.28		
490	13	RS-13-BL-6-12"	6-12	Back left	Composite	R184142	6/5/2014 8:41	< LOD	10.09	<LOD		56.69	7.00	49		486.61	18.12	495	
491	13	RS-13-BL-6-12"	6-12	Back left	Composite	R184142	6/5/2014 8:43	< LOD	8.97			31.94	5.48			362.35	14.10		
492	13	RS-13-BL-6-12"	6-12	Back left	Composite	R184142	6/5/2014 8:45	< LOD	10.27			57.65	7.06			637.52	20.64		
493	13	RS-13-BL-12-18"	12-18	Back left	Composite	R184142	6/5/2014 8:50	< LOD	13.00	<LOD		< LOD	9.93	14		55.96	10.12	70	
494	13	RS-13-BL-12-18"	12-18	Back left	Composite	R184142	6/5/2014 8:53	< LOD	10.17			< LOD	7.61			69.86	8.42		
495	13	RS-13-BL-12-18"	12-18	Back left	Composite	R184142	6/5/2014 8:55	< LOD	9.03			13.74	4.86			84.90	7.67		
496	13	RS-13-BL-18-24"	18-24	Back left	Composite	R184142	6/5/2014 9:04	< LOD	9.57	<LOD		< LOD	6.88	<LOD		51.78	6.97	50	
497	13	RS-13-BL-18-24"	18-24	Back left	Composite	R184142	6/5/2014 9:08	< LOD	12.19			< LOD	9.16			37.24	8.55		
498	13	RS-13-BL-18-24"	18-24	Back left	Composite	R184142	6/5/2014 9:10	< LOD	10.05			< LOD	7.42			59.52	7.75		
230	14	RS-14-S-A-0-6"	0-6	Surface A	Discrete	R171092	6/4/2014 16:54	< LOD	9.67	<LOD	11 B	295.69	11.31	301	380	2,798.84	38.19	2,825	3,100
231	14	RS-14-S-A-0-6"	0-6	Surface A	Discrete	R171092	6/4/2014 16:55	< LOD	9.98			282.00	11.47			2,803.05	39.57		
232	14	RS-14-S-A-0-6"	0-6	Surface A	Discrete	R171092	6/4/2014 16:56	< LOD	9.98			324.31	12.23			2,873.00	40.24		
238	14	RS-14-S-B-0-6"	0-6	Surface B	Discrete	R171092	6/5/2014 8:39	< LOD	10.38	<LOD	9.2 B	387.78	13.42	415	470	2,214.42	35.91	2,618	2,400
239	14	RS-14-S-B-0-6"	0-6	Surface B	Discrete	R171092	6/5/2014 8:40	< LOD	9.48			423.62	13.57			2,495.22	37.08		
240	14	RS-14-S-B-0-6"	0-6	Surface B	Discrete	R171092	6/5/2014 8:41	< LOD	10.35			432.44	13.96			3,145.10	42.33		
241	14	RS-14-S-C-0-6"	0-6	Surface C	Discrete	R171092	6/5/2014 8:45	< LOD	10.07	<LOD		337.03	12.41	339		3,093.31	41.66	3,465	
242	14	RS-14-S-C-0-6"	0-6	Surface C	Discrete	R171092	6/5/2014 8:46	< LOD	10.11			350.63	12.51			4,193.27	47.94		
243	14	RS-14-S-C-0-6"	0-6	Surface C	Discrete	R171092	6/5/2014 8:47	< LOD	10.65			330.70	12.88			3,107.50	43.69		
244	14	RS-14-SB1-0-6"	0-6	Boring 1	Discrete	R171092	6/5/2014 8:52	< LOD	11.14	14	43 B	977.70	21.43	990	1,000	13,133.71	90.71	13,170	9,500
245	14	RS-14-SB1-0-6"	0-6	Boring 1	Discrete	R171092	6/5/2014 8:53	< LOD	11.12			956.97	21.30			12,244.32	87.98		
246	14	RS-14-SB1-0-6"	0-6	Boring 1	Discrete	R171092	6/5/2014 8:54	14.38	7.99			1,034.69	23.09			14,130.70	98.67		
250	14	RS-14-SB1-6-12"	6-12	Boring 1	Discrete	R171092	6/5/2014 9:11	< LOD	10.53	<LOD		< LOD	7.69	<LOD		204.58	12.03	219	
251	14	RS-14-SB1-6-12"	6-12	Boring 1	Discrete	R171092	6/5/2014 9:12	< LOD	10.69			< LOD	7.66			243.78	13.30		
252	14	RS-14-SB1-6-12"	6-12	Boring 1	Discrete	R171092	6/5/2014 9:13	< LOD	10.60			< LOD	7.65			207.22	12.29		
253	14	RS-14-SB1-12-18"	12-18	Boring 1	Discrete	R171092	6/5/2014 9:17	< LOD	10.87	<LOD		10.52	5.51	19		225.86	13.06	316	
254	14	RS-14-SB1-12-18"	12-18	Boring 1	Discrete	R171092	6/5/2014 9:18	< LOD	10.58			28.19	6.02			535.12	18.70		
255	14	RS-14-SB1-12-18"	12-18	Boring 1	Discrete	R171092	6/5/2014 9:22	< LOD	11.15			< LOD	8.14			187.23	12.26		
256	14	RS-14-SB1-18-24"	18-24	Boring 1	Discrete	R171092	6/5/2014 9:28	< LOD	11.30	<LOD		10.55	5.67	11		279.78	14.71	210	
257	14	RS-14-SB1-18-24"	18-24	Boring 1	Discrete	R171092	6/5/2014 9:29	< LOD	12.34			< LOD	9.04			169.18	12.79		
258	14	RS-14-SB1-18-24"	18-24	Boring 1	Discrete	R171092	6/5/2014 9:30	< LOD	11.50			< LOD	8.08			179.71	12.55		

Table 2: XRF Analytical Results with Corresponding Laboratory Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
259	14	RS-14-SB2-0-6"	0-6	Boring 2	Discrete	R171092	6/5/2014 9:36	< LOD	11.89	<LOD		140.95	10.20	140		1,908.58	38.00	2,108	
260	14	RS-14-SB2-0-6"	0-6	Boring 2	Discrete	R171092	6/5/2014 9:37	< LOD	10.70			141.59	9.33			2,420.67	39.09		
261	14	RS-14-SB2-0-6"	0-6	Boring 2	Discrete	R171092	6/5/2014 9:38	< LOD	10.79			136.40	9.25			1,993.51	35.72		
262	14	RS-14-SB2-0-6"-FD	0-6	Boring 2	Discrete	R171092	6/5/2014 9:39	< LOD	11.30	<LOD		109.05	8.78	112		1,961.65	36.32	1,927	
263	14	RS-14-SB2-0-6"-FD	0-6	Boring 2	Discrete	R171092	6/5/2014 9:41	< LOD	10.69			108.72	8.36			1,881.35	34.02		
264	14	RS-14-SB2-0-6"-FD	0-6	Boring 2	Discrete	R171092	6/5/2014 9:42	< LOD	10.72			117.09	8.78			1,937.04	35.37		
247	14	RS-14-SB2-6-12"	6-12	Boring 2	Discrete	R171092	6/5/2014 9:00	< LOD	11.96	<LOD		27.13	6.78	33		923.37	27.43	914	
248	14	RS-14-SB2-6-12"	6-12	Boring 2	Discrete	R171092	6/5/2014 9:01	< LOD	10.53			< LOD	7.45			589.80	19.55		
249	14	RS-14-SB2-6-12"	6-12	Boring 2	Discrete	R171092	6/5/2014 9:03	< LOD	10.98			38.48	6.66			1,228.33	29.08		
265	14	RS-14-SB2-12-18"	12-18	Boring 2	Discrete	R171092	6/5/2014 9:49	< LOD	12.87	<LOD		< LOD	8.82	<LOD		106.97	11.30	118	
266	14	RS-14-SB2-12-18"	12-18	Boring 2	Discrete	R171092	6/5/2014 9:50	< LOD	10.89			< LOD	7.40			118.76	10.00		
267	14	RS-14-SB2-12-18"	12-18	Boring 2	Discrete	R171092	6/5/2014 9:51	< LOD	10.95			< LOD	7.28			127.52	10.24		
268	14	RS-14-SB2-18-24"	18-24	Boring 2	Discrete	R171092	6/5/2014 9:55	< LOD	11.61	<LOD		< LOD	7.78	<LOD		84.53	9.43	75	
269	14	RS-14-SB2-18-24"	18-24	Boring 2	Discrete	R171092	6/5/2014 9:56	< LOD	11.57			< LOD	7.74			72.65	8.87		
270	14	RS-14-SB2-18-24"	18-24	Boring 2	Discrete	R171092	6/5/2014 9:58	< LOD	11.58			< LOD	7.68			68.62	8.68		
271	14	RS-14-SB3-0-6"	0-6	Boring 3	Discrete	R171092	6/5/2014 10:03	< LOD	12.02	<LOD		909.09	22.26	681		8,672.85	79.27	7,395	
272	14	RS-14-SB3-0-6"	0-6	Boring 3	Discrete	R171092	6/5/2014 10:04	< LOD	11.57			501.19	16.28			6,278.58	64.97		
273	14	RS-14-SB3-0-6"	0-6	Boring 3	Discrete	R171092	6/5/2014 10:05	< LOD	10.95			633.76	17.54			7,232.13	67.55		
274	14	RS-14-SB3-6-12"	6-12	Boring 3	Discrete	R171092	6/5/2014 10:09	< LOD	10.40	<LOD		16.50	5.40	21		230.86	12.43	288	
275	14	RS-14-SB3-6-12"	6-12	Boring 3	Discrete	R171092	6/5/2014 10:10	< LOD	10.38			37.00	6.19			420.03	16.35		
276	14	RS-14-SB3-6-12"	6-12	Boring 3	Discrete	R171092	6/5/2014 10:11	< LOD	10.36			8.79	5.16			214.29	12.24		
277	14	RS-14-SB3-12-18"	12-18	Boring 3	Discrete	R171092	6/5/2014 10:15	< LOD	11.20	<LOD		< LOD	7.94	19		198.23	12.72	144	
278	14	RS-14-SB3-12-18"	12-18	Boring 3	Discrete	R171092	6/5/2014 10:16	< LOD	10.31			< LOD	7.50			109.21	9.27		
279	14	RS-14-SB3-12-18"	12-18	Boring 3	Discrete	R171092	6/5/2014 10:17	< LOD	10.64			18.63	5.64			125.90	9.98		
280	14	RS-14-SB3-18-24"	18-24	Boring 3	Discrete	R171092	6/5/2014 10:20	< LOD	10.73	<LOD		17.04	5.62	22		250.56	13.34	232	
281	14	RS-14-SB3-18-24"	18-24	Boring 3	Discrete	R171092	6/5/2014 10:21	< LOD	11.40			35.54	6.80			254.42	14.46		
282	14	RS-14-SB3-18-24"	18-24	Boring 3	Discrete	R171092	6/5/2014 10:22	< LOD	14.13			12.39	7.36			192.50	15.97		
283	14	RS-14-SB3-18-24"-FD	18-24	Boring 3	Discrete	R171092	6/5/2014 10:24	< LOD	10.47	<LOD		105.92	8.38	52		644.77	20.48	439	
284	14	RS-14-SB3-18-24"-FD	18-24	Boring 3	Discrete	R171092	6/5/2014 10:25	< LOD	11.60			29.99	6.60			396.52	17.61		
285	14	RS-14-SB3-18-24"-FD	18-24	Boring 3	Discrete	R171092	6/5/2014 10:26	< LOD	11.20			19.14	6.19			276.07	15.04		

Notes:
Red indicates concentration exceeds Kansas RSK
Orange highlight indicates concentration exceeds XRF calculated number
<LOD: Less than the level of detection
B: Compound found in the blank and sample

Table 3: Laboratory Analytical Results
Former Owens Zinc Smelter Site / Caney, Kansas

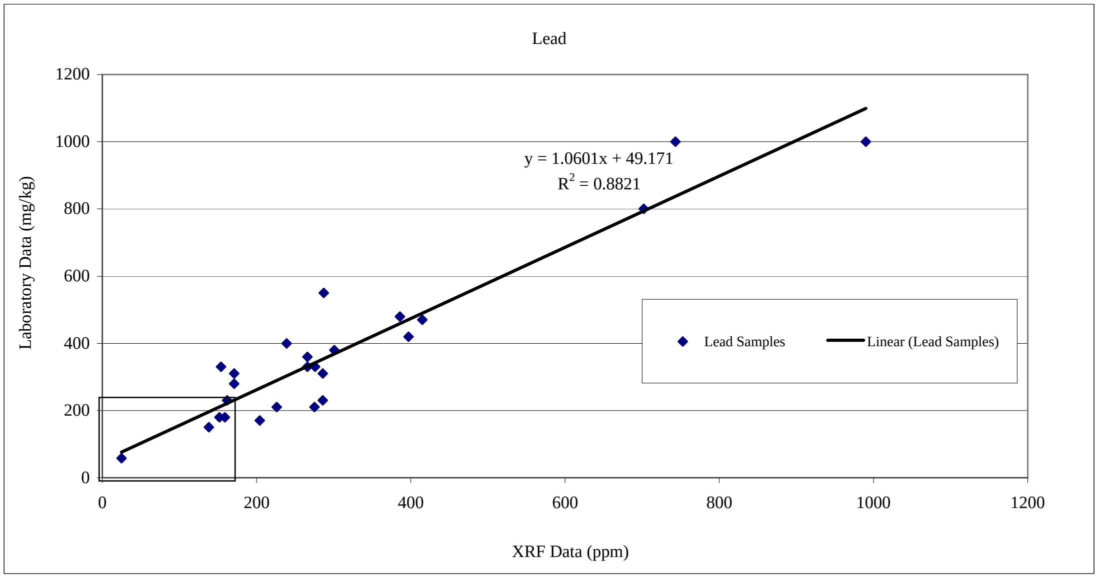
Sample ID	Date	Lab Report No.	Cadmium (mg/kg)		Lead (mg/kg)	Zinc (mg/kg)	
RS-1-BR-0-6"	06/03/14	500-78365	6.6	B	210	1000	
RS-3-BR-0-6"	06/02/14	500-78365	4.4		150	1000	B
RS-3-FL-6-12"	06/02/14	500-78365	14	B	420	2700	
RS-3-BL-0-6"	06/02/14	500-78365	4.2	B	170	910	
RS-4-FR-6-12"	06/02/14	500-78365	8.4		400	2400	B
RS-4-FL-0-6"	06/02/14	500-78365	9		330	2200	B
RS-5-FR-12-18"	06/02/14	500-78365	9.9		480	3600	B
RS-5-FL-6-12"	06/02/14	500-78365	26		1000	9300	B
RS-6-BR-0-6"	06/03/14	500-78365	6.3		800	2200	B
RS-6-BL-12-18"	06/03/14	500-78365	12	B	230	3200	
RS-6-FL-0-6"	06/03/14	500-78365	13	B	330	3600	
RS-6-FL-0-6"-FD	06/03/14	500-78365	8.6	B	360	2400	
RS-7-BL-0-6"	06/02/14	500-78365	3.3	B	58	470	
RS-8-BR-0-6"	06/03/14	500-78365	4.4	B	180	1100	
RS-9-G-0-6"	06/03/14	500-78365	28		550	5900	B
RS-9-BL-0-6"	06/03/14	500-78365	9.8	B	230	2500	
RS-10-BL-0-6"	06/03/14	500-78365	29	BV	330	4100	
RS-11-FR-0-6"	06/04/14	500-78365	8.5	B	210	1900	
RS-12-BR-0-6"	06/04/14	500-78365	4.1	B	180	870	
RS-13-FR-0-6"	06/04/14	500-78365	6.4	B	310	2200	
RS-13-FR-0-6"-FD	06/04/14	500-78365	5.8	B	230	1800	
RS-13-BR-0-6"	06/04/14	500-78365	6.7	B	310	1500	
RS-13-BR-0-6"-FD	06/04/14	500-78365	5.6	B	280	1400	
RS-14-S-A-0-6"	06/04/14	500-78365	11	B	380	3100	
RS-14-S-B-0-6"	06/04/14	500-78365	9.2	B	470	2400	
RS-14-SB1-0-6"	06/04/14	500-78365	43	B	1000	9500	

Table 4A: Lead Correlation between XRF and Laboratory Results
Former Owens Smelter Site / Caney, Kansas

ENTACT

Sample ID	XRF Pb Data (ppm)	Laboratory Data (mg/Kg)	Relative Percent Difference (RPD) %	Data Set w/o Outliers (RPDs > 90%)	
				XRF Pb Data (ppm)	Laboratory Data (mg/Kg)
RS-1-BR-0-6"	226	210	7.34	226	210
RS-3-BR-0-6"	138	150	-8.33	138	150
RS-3-FL-6-12"	397	420	-5.63	397	420
RS-3-BL-0-6"	204	170	18.18	204	170
RS-4-FR-6-12"	239	400	-50.39	239	400
RS-4-FL-0-6"	276	330	-17.82	276	330
RS-5-FR-12-18"	386	480	-21.71	386	480
RS-5-FL-6-12"	743	1000	-29.49	743	1000
RS-6-BR-0-6"	702	800	-13.05	702	800
RS-6-BL-12-18"	613	230	**90.87**		
RS-6-FL-0-6"	266	330	-21.48	266	330
RS-6-FL-0-6"-FD	266	360	-30.03	266	360
RS-7-BL-0-6"	25	58	-79.52	25	58
RS-8-BR-0-6"	152	180	-16.87	152	180
RS-9-G-0-6"	287	550	-62.84	287	550
RS-9-BL-0-6"	162	230	-34.69	162	230
RS-10-BL-0-6"	154	330	-72.73	154	330
RS-11-FR-0-6"	275	210	26.80	275	210
RS-12-BR-0-6"	159	180	-12.39	159	180
RS-13-FR-0-6"	286	310	-8.05	286	310
RS-13-FR-0-6"-FD	286	230	21.71	286	230
RS-13-BR-0-6"	171	310	-57.80	171	310
RS-13-BR-0-6"-FD	171	280	-48.34	171	280
RS-14-S-A-0-6"	301	380	-23.20	301	380
RS-14-S-B-0-6"	415	470	-12.43	415	470
RS-14-SB1-0-6"	990	1000	-1.01	990	1000
		Pearson's	**0.8640**	[With Outliers]	
		Co-Efficient	**0.9392**	[Without Outliers]	

u indicates field duplicate sample.



Slope =	**1.0601**
y Intercept =	**49.1707**
r =	**0.9392**
R^2 =	**0.8821**

$y = mx + b$
where:
y = remedial action goal of 400 mg/kg
m = X Variable Coefficient of 1.0601
x = Unknown XRF Value
b = Intercept Coefficient of 49.1707

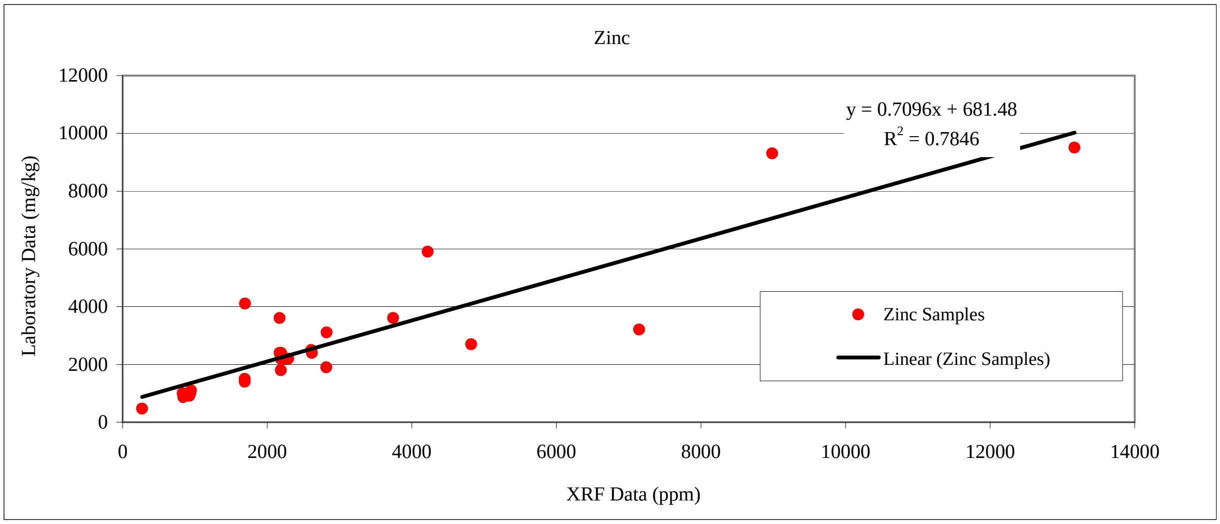
Thus, the calculated XRF lead screening concentration, x, equals:	**330.93**
in ppm.	

Table 4B: Zinc Correlation between XRF and Laboratory Results
Former Owens Smelter Site / Caney, Kansas

ENTACT

Sample ID	XRF Zn Data (ppm)	Laboratory Data (mg/Kg)	Relative Percent Difference (RPD) %	Data Set w/o Outliers (RPDs > 90%)	
				XRF Zn Data (ppm)	Laboratory Data (mg/Kg)
RS-1-BR-0-6"	830	1000	-18.58	830	1000
RS-3-BR-0-6"	936	1000	-6.61	936	1000
RS-3-FL-6-12"	4822	2700	56.42	4822	2700
RS-3-BL-0-6"	924	910	1.53	924	910
RS-4-FR-6-12"	2196	2400	-8.88	2196	2400
RS-4-FL-0-6"	2252	2200	2.34	2252	2200
RS-5-FR-12-18"	3745	3600	3.95	3745	3600
RS-5-FL-6-12"	8987	9300	-3.42	8987	9300
RS-6-BR-0-6"	2292	2200	4.10	2292	2200
RS-6-BL-12-18"	7145	3200	76.27	7145	3200
RS-6-FL-0-6"	2174	3600	-49.39	2174	3600
RS-6-FL-0-6"-FD	2174	2400	-9.88	2174	2400
RS-7-BL-0-6"	271	470	-53.71	271	470
RS-8-BR-0-6"	947	1100	-14.95	947	1100
RS-9-G-0-6"	4220	5900	-33.20	4220	5900
RS-9-BL-0-6"	2610	2500	4.31	2610	2500
RS-10-BL-0-6"	1693	4100	-83.10	1693	4100
RS-11-FR-0-6"	2820	1900	38.98	2820	1900
RS-12-BR-0-6"	842	870	-3.27	842	870
RS-13-FR-0-6"	2190	2200	-0.46	2190	2200
RS-13-FR-0-6"-FD	2190	1800	19.55	2190	1800
RS-13-BR-0-6"	1692	1500	12.03	1692	1500
RS-13-BR-0-6"-FD	1692	1400	18.89	1692	1400
RS-14-S-A-0-6"	2825	3100	-9.28	2825	3100
RS-14-S-B-0-6"	2618	2400	8.69	2618	2400
RS-14-SB1-0-6"	13170	9500	32.38	13170	9500
		Pearson's Co-Efficient	0.8858	[With Outliers]	
			0.8858	[Without Outliers]	

♦ indicates field duplicate sample.



Slope =	0.7096
y Intercept =	681.4754
r =	0.8858
R^2 =	0.7846

y = mx + b
where:
y = remedial action goal of 1,100 mg/kg
m = X Variable Coefficient of 1.6112
x = Unknown XRF Value
b = Intercept Coefficient of -244.1548

1.105720623
-105.2706004

Thus, the calculated XRF lead screening concentration, x, equals: **32,156.61** in ppm.

Table 5: Quality Control Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

Sample ID	Date	Lab Report No.	Cadmium (mg/l)	Lead (mg/l)	Zinc (mg/l)
RB-001	06/03/14	500-78365	0.00023 JB	<0.005	0.0045 JB
RB-002	06/04/14	500-78365	0.00041 JB	<0.005	0.0035 JB
RB-003	06/05/14	500-78365	0.00031 JB	<0.005	0.014 JB
RB-004	06/05/14	500-78365	0.00048 JB	<0.005	0.0029 J^

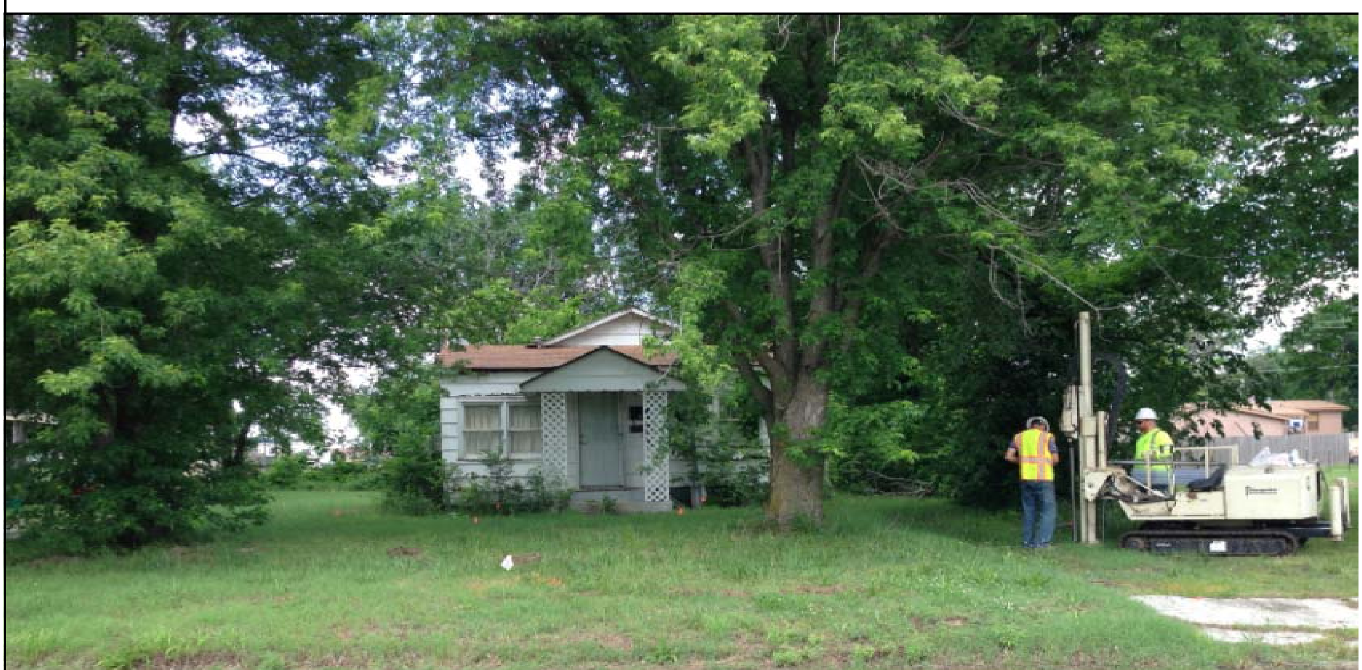
APPENDIX A

FIELD INVESTIGATION PHOTOGRAPHS

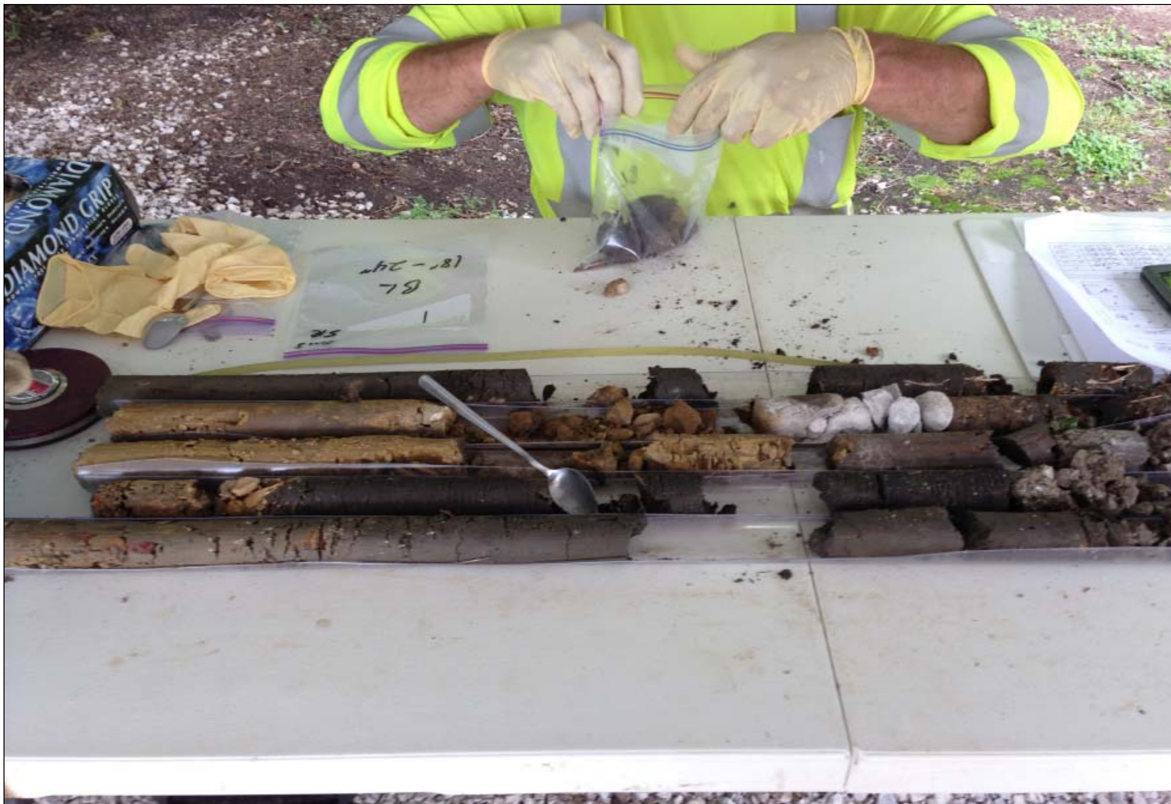
PHOTOGRAPH:	3	**PHOTOGRAPHER:**	Jenny Self
DATE:	02-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	XRF Sampling Station		

PHOTOGRAPH:	7	**PHOTOGRAPHER:**	Jenny Self
DATE/TIME:	02-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	Geoprobe Sampling on Property #5		

PHOTOGRAPH:	6	**PHOTOGRAPHER:**	Jenny Self
DATE/TIME:	02-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	Sample MacroCore at Property #5		



PHOTOGRAPH:	9	**PHOTOGRAPHER:**	Jenny Self
DATE/TIME:	02-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	Preparing to sample Property #3		



PHOTOGRAPH:	15	**PHOTOGRAPHER:**	Jenny Self
DATE/TIME:	03-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	Preparing soil samples for XRF analysis		

PHOTOGRAPH:	24	**PHOTOGRAPHER:**	Jenny Self
DATE/TIME:	03-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	Property #9 Garden Area		

PHOTOGRAPH:	16	**PHOTOGRAPHER:**	Jenny Self
DATE/TIME:	03-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	Property at corner of Moss and Wood verified to be zoned industrial/commericial with former fuel station structure		

PHOTOGRAPH:	28	**PHOTOGRAPHER:**	Jenny Self
DATE/TIME:	04-Jun-14		
PROJECT:	Owens Residential Sampling Investigation, Former Owens Smelter Site, Caney, Kansas		
SUBJECT:	Area along house requested to be sampled by Property #14 resident		

APPENDIX B

SIGNED ACCESS AGREEMENTS

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

MAY

THIS AGREEMENT is entered into this 28 day of 2014, 200 14, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1 Name of Owner: ARTHUR STARK
Property Address: 1202 N. WOOD ST.
City, State, Zip: ~~[illegible]~~ CANEY, KANSAS 67333
Parcel ID: ______
If Different--
Mailing Address: ______
City, State, Zip: ______
Telephone: ______

1.2 Name of Tenant: ______
Telephone: ______

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: Arthur L Stark

ENTACT

By: ______________________

**ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY**

THIS AGREEMENT is entered into this 28 day of May, 2014, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	EARL LAWRENCE METCALF
	Property Address:	1108 N. WOOD ST.
	City, State, Zip:	CANEY, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):	ENTACT
By: Donna Metcalf	By: Jerry Overton

ACCESS AGREEMENT FOR SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 28 day of May, 2014, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	DONNA METCALF MARGARET METCALF
	Property Address:	1106 N. WOOD
	City, State, Zip:	CANEY, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;
- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;
- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: Donna Metcalf

Margaret Raylene Metcalf

ENTACT

By: Jerry Overton

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 28 day of MAY, 2014 by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1 Name of Owner: EVERETT AND SHIRLEY DAVIS [LOT]
Property Address: 1104 N. WOOD
City, State, Zip: CANEY, KANSAS 67333
Parcel ID: ______
If Different--
Mailing Address: ______
City, State, Zip: ______
Telephone: ______

1.2 Name of Tenant: ______
Telephone: ______

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;
- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;
- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

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Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: Shirley Davis

ENTACT

By: [signature]

Current Address

208 N. Spring
Caney, Ks

620-515-2850 Cell

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 28 day of MAY, 2014, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	RALPH ANTHONY KENNEN SIMMONS
	Property Address:	1111 N. WOOD STREET
	City, State, Zip:	CANEY, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

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Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;
- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;
- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: ______________________

ENTACT

By: ______________________

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 28 day of May, 20014, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	LINDA DAVIS [NEW OWNER JOEL GAFF]
	Property Address:	600 WEST MYRTLE
	City, State, Zip:	CANEY, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

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Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

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Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: ______________________________

ENTACT

By: ______________________________

ACCESS AGREEMENT FOR SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 28 day of MAY, 2014, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	JERRY AND ROSE HOCKETT
	Property Address:	1101 N. STATE STREET
	City, State, Zip:	CANEY, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

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Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

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Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

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Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: ____________________

ENTACT

By: ____________________

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 28 day of May, 2014, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

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NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	DALE AND MARGARET DUNCAN
	Property Address:	1105 N STATE ST
	City, State, Zip:	CANEY, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

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Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

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Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S): Dale Duncan

By: ______________________

ENTACT

By: ______________________

ACCESS AGREEMENT FOR SAMPLING ACTIVITIES ON PRIVATE PROPERTY

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NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	COTTON FAMILY TRUST
	Property Address:	1111 N. STATE ST
	City, State, Zip:	CANEY, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

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Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

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- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

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Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: Dalvin K Cotton Sr

ENTACT

By: ____________________

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 28 day of MAY, 20014, by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1 Name of Owner: LARRY SUSAN CROWE - 620-515-5296
Property Address: 1101 N. SPRING STREET
City, State, Zip: CANEY, KANSAS 67333
Parcel ID: ____________
If Different--
Mailing Address: ____________
City, State, Zip: ____________
Telephone: ____________

1.2 Name of Tenant: ____________
Telephone: ____________

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: ____________________

ENTACT

By: ____________________

-NEEDS TO SIGN-

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 3rd day of June, 20~~0~~14 by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain sampling activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained ENTACT as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

Identification of Owner:

1.1	Name of Owner:	WILLIS D. WILKERSON BRVCBLE TRUST
	Property Address:	1360 CR 1600
	City, State, Zip:	Caney, KANSAS 67333
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

Grant of Access. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. ENTACT agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the ACO and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: *Willie Wilkerson*

ENTACT

By: *[signature]*

ACCESS AGREEMENT FOR
SAMPLING ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this 3 day of June, 20014 by and between the undersigned property owner (the "Owner") and ENTACT & Associates, LLC and its agents, employees, contractors, and subcontractors ("ENTACT").

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The property identified below is one of the properties identified for soil sampling activities. The sampling will be conducted to determine the concentrations of various metals in soils on the property in order to assess whether or not these levels are above either natural occurring levels or the KDHE's preliminary screening values. In order to perform the work, ENTACT requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and ENTACT agree as follows:

<u>Identification of Owner</u>:

1.1	Name of Owner:	Fred Bunch
	Property Address:	1202 N. State
	City, State, Zip:	Caney, KS
	Parcel ID:	
	If Different--	
	Mailing Address:	
	City, State, Zip:	
	Telephone:	
1.2	Name of Tenant:	
	Telephone:	

<u>Grant of Access</u>. Owner grants ENTACT, its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

<u>Availability of Access</u>. ENTACT shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

<u>Duration of Agreement</u>. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

<u>Indemnification:</u> ENTACT agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of ENTACT, its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to ENTACT. ENTACT shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: ENTACT warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by ENTACT are independent contractors and are not employees or agents for Owner.

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Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

ENTACT not an KDHE Representative. ENTACT is not, and shall not be deemed to be, a representative or agent of EPA with respect to the work.

Consent. ENTACT shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist ENTACT in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if ENTACT is unable to obtain such access.

Responsibilities of ENTACT:

ENTACT agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

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Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S):

By: Fred E. Banek

ENTACT

By: Jerry Half

APPENDIX C

PROPERTY DIAGRAMS

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 1

Owner Name: Arthur Stark

Property Address: 1202 N. Wood St

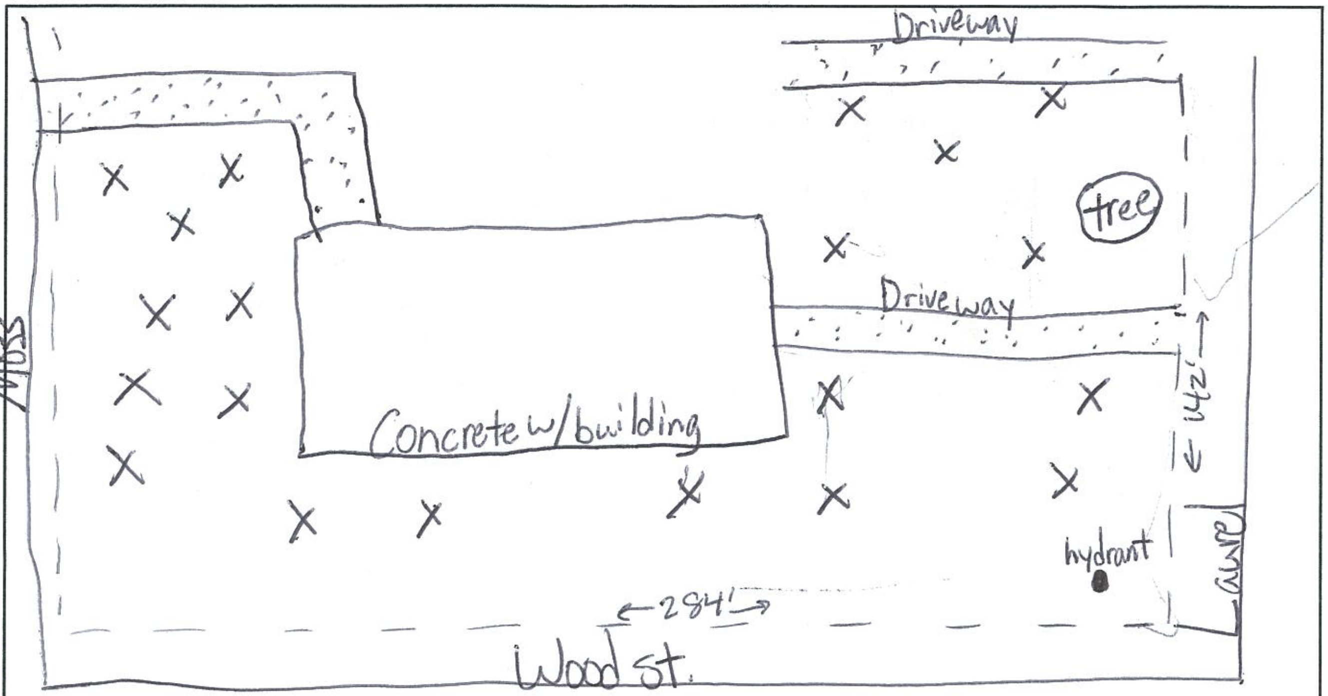
Phone No: ______ ______

Date/Time: 6/3/14 9:55 a.m.

Property Size: ☐ ≤ 5,000 sf or ☑ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-01-002.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 11:52 RS- -1 FL 0-6"	June 3 / 11:10 RS- -1 FR 0-6"	June 3 / 1:05 RS- -1 BL 0-6"	June 3 / 10:48 RS- 1 BR 0-6"	~~_____ / _____ RS- - -0-6"~~
6-12"	June 3 / 11:56 RS- -1 FL 6-12"	June 3 / 11:14 RS- -1 FR 6-12"	June 3 / 1:08 RS- -1 BL 6-12"	June 3 / 10:51 RS- 1 BR 6-12"	~~_____ / _____ RS- -6-12"~~
12-18"	June 3 / 11:58 RS- -1 FL 12-18"	June 3 / 11:16 RS- -1 FR 12-18"	June 3 / 1:10 RS- -1 BL 12-18"	June 3 / 10:53 RS- 1 BR 12-18"	~~_____ / _____ RS- - -12-18"~~
18-24"	June 3 / 12:00 RS- -1 FL 18-24"	June 3 / 11:18 RS- 1 FR 18-24"	June 3 / 1:14 RS- -1 BL 18-24"	June 3 / 10:55 RS- 1 BR 18-24"	~~_____ / _____ RS- - -18-24"~~

NOTES:

No garden

Team Initials: JJ SR

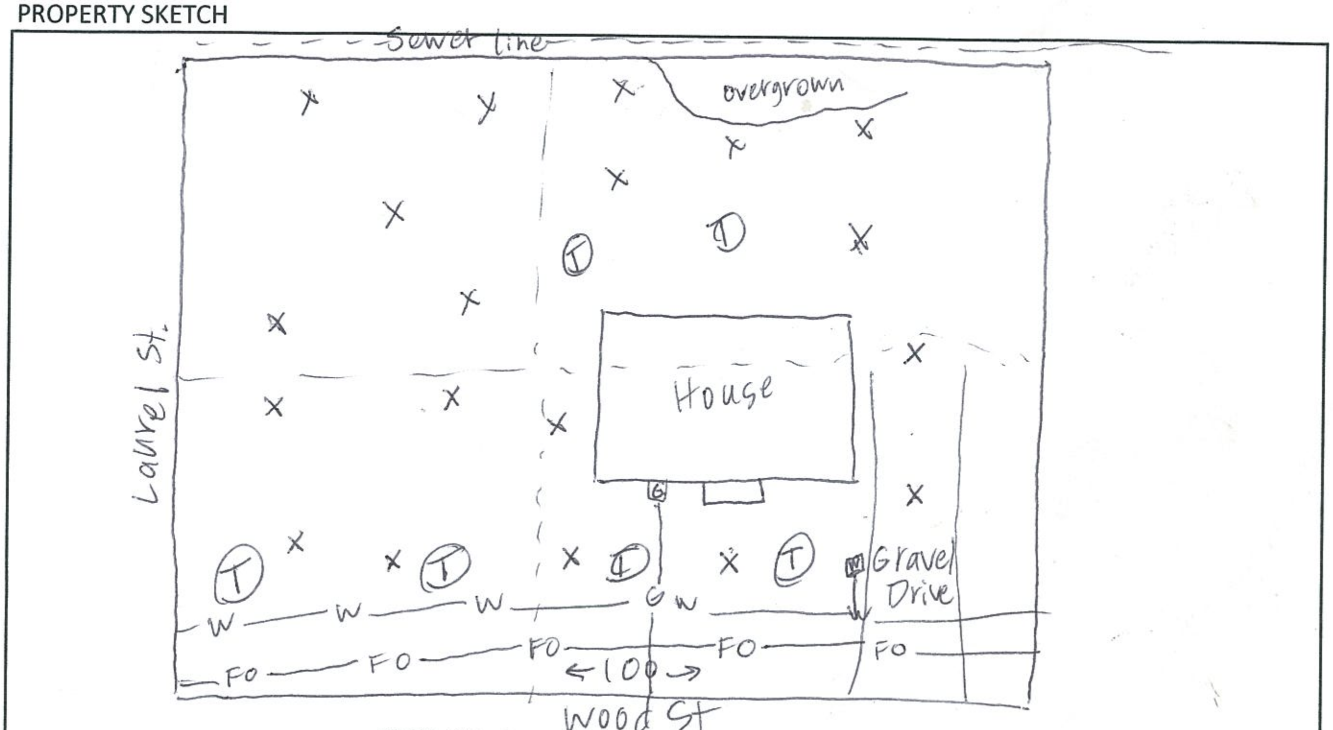
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 2
Owner Name: Earl Lawrence Metcalf
Property Address: 1108 N. Wood St
Phone No: ______ ______

Date/Time: 06/02/14
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-07-002.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2/5:32 RS- 2FL-0-6"	June 2/5:43 RS- 2FR-0-6"	June 2/5:06 RS- 2BL-0-6"	June 2/4:45 RS- 2BR-0-6"	~~__/__ RS- - -0-6"~~
6-12"	June 2/5:34 RS- 2FL-6-12"	June 2/5:46 RS- 2FR-6-12"	June 2/5:09 RS- 2BL-6-12"	June 2/4:48 RS- 2BR-6-12"	~~__/__ RS- - -6-12"~~
12-18"	June 2/5:35 RS- 2FL-12-18"	June 2/5:48 RS- 2FR-12-18"	June 2/5:11 RS- 2BL-12-18"	June 2/4:49 RS- 2BR-12-18"	~~__/__ RS- - -12-18"~~
18-24"	June 2/5:37 RS- 2FL-18-24"	June 2/5:49 RS- 2FR-18-24"	June 2/5:13 RS- 2BL-18-24"	June 2/4:51 RS- 2BR-18-24"	~~__/__ RS- - -18-24"~~

NOTES:
Sampled quadrants as 50' wide lots

No garden

Team Initials: JS SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 3

Owner Name: Margaret Metcalf

Property Address: 1106 N. Wood

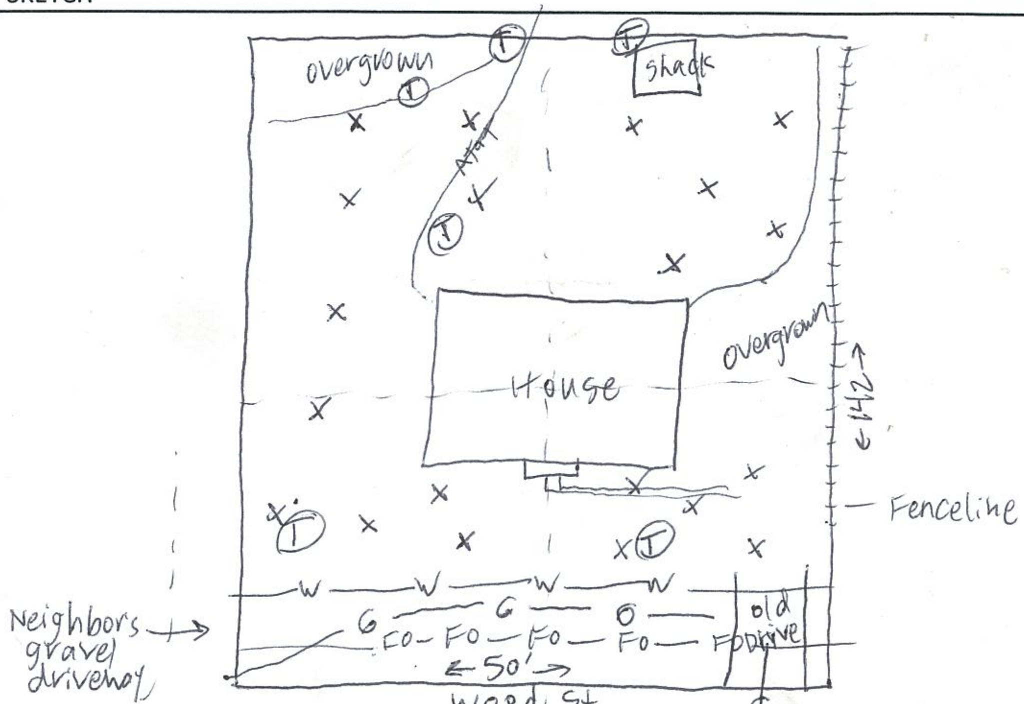
Phone No:

Date/Time: 6/2/14 1435

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-07-003.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 3:45 RS-3FL-0-6"	June 2 / 3:27 RS-3FR-0-6"	June 2 / 4:23 RS-3BL-0-6"	June 2 / 4:06 RS-3BR-0-6"	~~/ RS- - -0-6"~~
6-12"	June 2 / 3:47 RS-3FL-6-12"	June 2 / 3:29 RS-3FR-6-12"	June 2 / 4:25 RS-3BL-6-12"	June 2 / 4:09 RS-3BR-6-12"	~~/ RS- -6-12"~~
12-18"	June 2 / 3:49 RS-3FL-12-18"	June 2 / 3:31 RS-3FR-12-18"	June 2 / 4:27 RS-3BL-12-18"	June 2 / 4:12 RS-3BR-12-18"	~~/ RS- - -12-18"~~
18-24"	June 2 / 3:51 RS-3FL-18-24"	June 2 / 3:33 RS-3FR-18-24"	June 2 / 4:29 RS-3BL-18-24"	June 2 / 4:14 RS-3BR-18-24"	~~/ RS- - -18-24"~~

NOTES:
No garden

Team Initials: JB SR

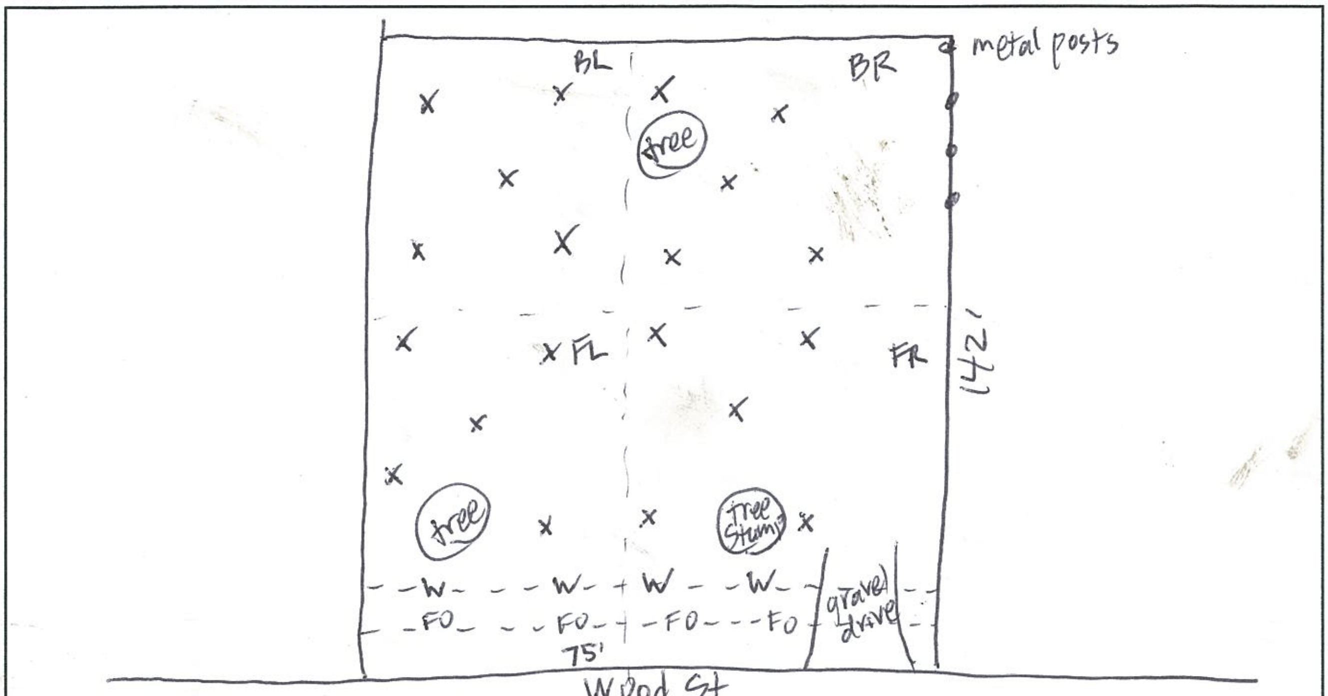
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 4
Owner Name: Everett & Shirley Davis
Property Address: 1104 N. Wood St
Phone No: ______ ______

Date/Time: 06/02/14
Property Size: ☐ ≤ 5,000 sf or ☑ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-07-004.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 2:58 RS- 4FL -0-6"	June 2 / 2:11 RS- 4FR -0-6"	June 2 / 2:42 RS- 4BL -0-6"	June 2 / 1:55 RS- 4BR -0-6"	~~_/_ RS- - -0-6"~~
6-12"	June 2 / 3:01 RS- 4FL -6-12"	June 2 / 2:13 RS- 4FR -6-12"	June 2 / 2:44 RS- 4BL -6-12"	June 2 / 1:58 RS- 4BR -6-12"	~~_/_ RS- - -6-12"~~
12-18"	June 2 / 3:02 RS- 4FL -12-18"	June 2 / 2:17 RS- 4FR -12-18"	June 2 / 2:46 RS- 4BL -12-18"	June 2 / 2:00 RS- 4BR -12-18"	~~_/_ RS- - -12-18"~~
18-24"	June 2 / 3:04 RS- 4FL -18-24"	June 2 / 2:10 RS- 4FR -18-24"	June 2 / 2:48 RS- 4BL -18-24"	June 2 / 2:02 RS- 4BR -18-24"	~~_/_ RS- - -18-24"~~

NOTES: measurements exclude utility easement. otherwise ~~90'~~ 75' × 162'
No garden

Team Initials: SS SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 5

Owner Name: Everett & Shirley Davis

Property Address: N. Wood St

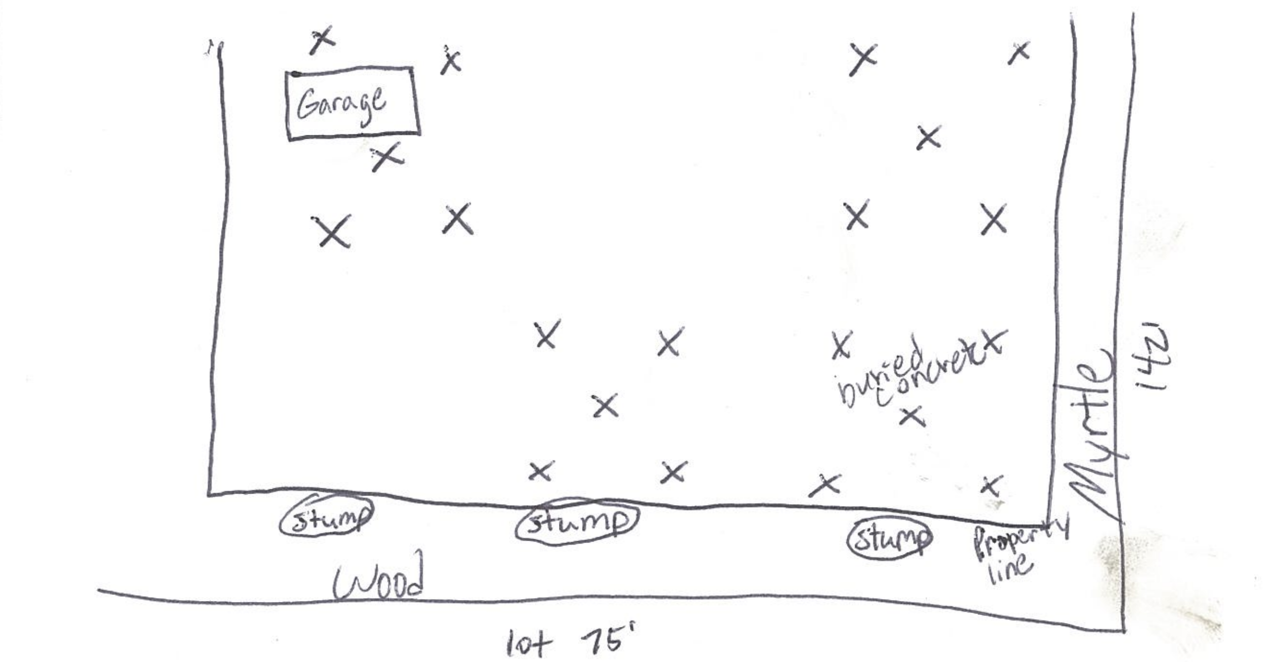
Phone No:

Date/Time: 6/2/14

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-07-005.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 11:38 RS- 5FL-0-6"	June 2 / 11:15 RS- 5FR-0-6"	June 2 / 12:20 RS- 5BL-0-6"	June 2 / 12:02 RS- 5BR-0-6"	~~/ RS- - -0-6"~~
6-12"	June 2 / 11:42 RS- 5FL-6-12"	June 2 / 11:19 RS- 5FR-6-12"	June 2 / 12:22 RS- 5BL-6-12"	June 2 / 12:06 RS- 5BR-6-12"	~~/ RS- - -6-12"~~
12-18"	June 2 / 11:46 RS- 5FL-12-18"	June 2 / 11:22 RS- 5FR-12-18"	June 2 / 12:25 RS- 5BL-12-18"	June 2 / 12:08 RS- 5BR-12-18"	~~/ RS- - -12-18"~~
18-24"	June 2 / 11:52 RS- 5FL-18-24"	June 2 / 11:25 RS- 5FR-18-24"	June 2 / 12:26 RS- 5BL-18-24"	June 2 / 12:10 RS- 5BR-18-24"	~~/ RS- - -18-24"~~

NOTES:
FR Concrete In 6"-12" found

BR 18"-24" med red color

measurement street to fence 90' x 162'
No garden

Team Initials: JW SR

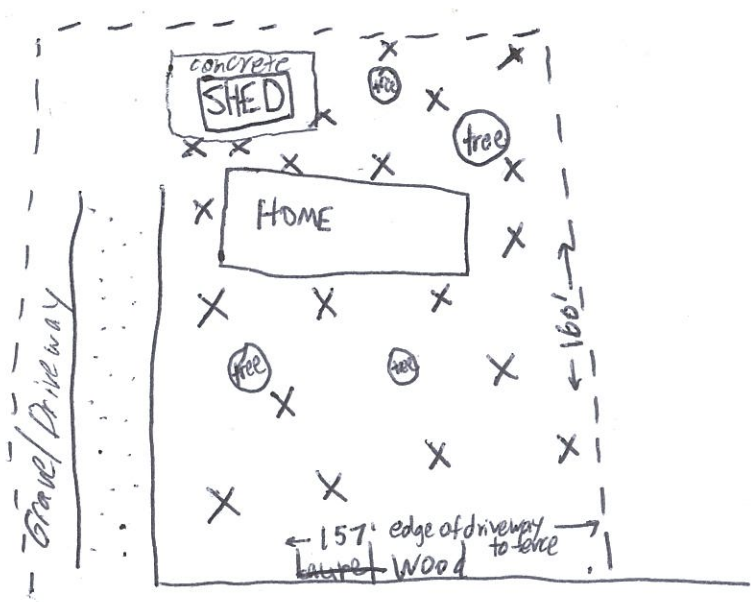
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 6
Owner Name: Ralph Anthony/Kennen Simmons
Property Address: 1111 N. Wood St
Phone No:

Date/Time: 7:35 a.m. 06/03/14
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-06-001.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 8:28 RS- 6FL-0-6"	June 3 / 8:53 RS- 6FR-0-6"	June 3 / 9:51 RS- 6BL-0-6"	June 3 / 9:25 RS- 6BR-0-6"	~~/ RS- - -0-6"~~
6-12"	June 3 / 8:31 RS- 6FL-6-12"	June 3 / 8:56 RS- 6FR-6-12"	June 3 / 9:54 RS- 6BL-6-12"	June 3 / 9:28 RS- 6BR-6-12"	~~/ RS- - -6-12"~~
12-18"	June 3 / 8:34 RS- 6FL-12-18"	June 3 / 8:58 RS- 6FR-12-18"	June 3 / 9:57 RS- 6BL-12-18"	June 3 / 9:30 RS- 6BR-12-18"	~~/ RS- - -12-18"~~
18-24"	June 3 / 8:36 RS- 6FL-18-24"	June 3 / 9:00 RS- 6FR-18-24"	June 3 / 9:58 RS- 6BL-18-24"	June 3 / 9:33 RS- 6BR-18-24"	~~/ RS- - -18-24"~~

NOTES: Dark Brown soil
Soil is moist thru
24"

No garden

Team Initials: JG SR

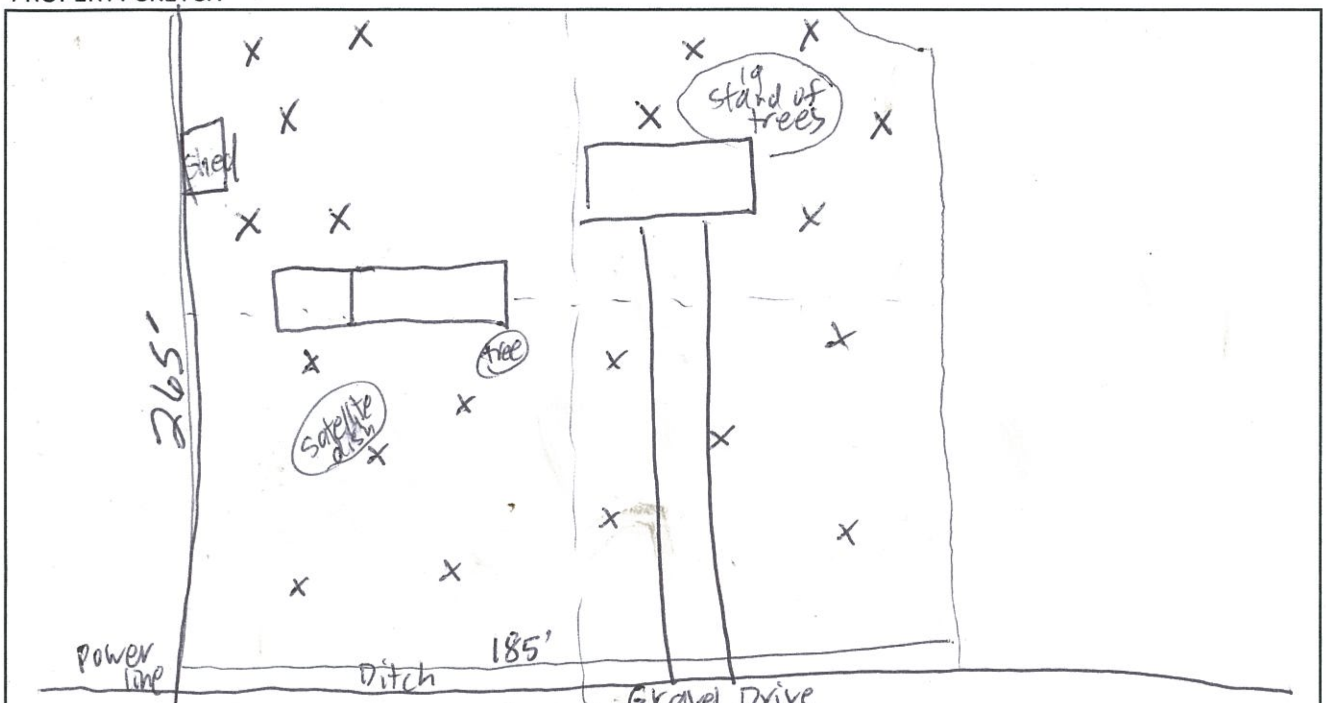
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 7
Owner Name: Joel + Tammy Gaff
Property Address: 600 Myrtle
Phone No:

Date/Time: 6/2/14
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-05-001.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 9:56 RS- 7 FL 0-6"	June 2 / 10:22 RS- 7 FR 0-6"	June 2 / 9:33 RS- 7 BL 0-6"	June 2 / 8:45 RS- 7 BR 0-6"	~~/ RS- - 0-6"~~
6-12"	June 2 / 10:00 RS- 7 FL 6-12"	June 2 / 10:26 RS- 7 FR 6-12"	June 2 / 9:35 RS- 7 BL 6-12"	June 2 / 9:10 RS- 7 BR 6-12"	~~/ RS- - 6-12"~~
12-18"	June 2 / 10:03 RS- 7 FL 12-18"	June 2 / 10:32 RS- 7 FR 12-18"	June 2 / 9:38 RS- 7 BL 12-18"	June 2 / 9:12 RS- 7 BR 12-18"	~~/ RS- - 12-18"~~
18-24"	June 2 / 10:05 RS- 7 FL 18-24"	June 2 / 10:35 RS- 7 FR 18-24"	June 2 / 9:40 RS- 7 BL 18-24"	June 2 / 9:16 RS- 7 BR 18-24"	~~/ RS- - 18-24"~~

NOTES:
BR
Moist Dark Brown
18"-24" Red orange Color
FR
12-18
Sandy
FL
18-24
medium orange color
No garden

Team Initials: JG SR

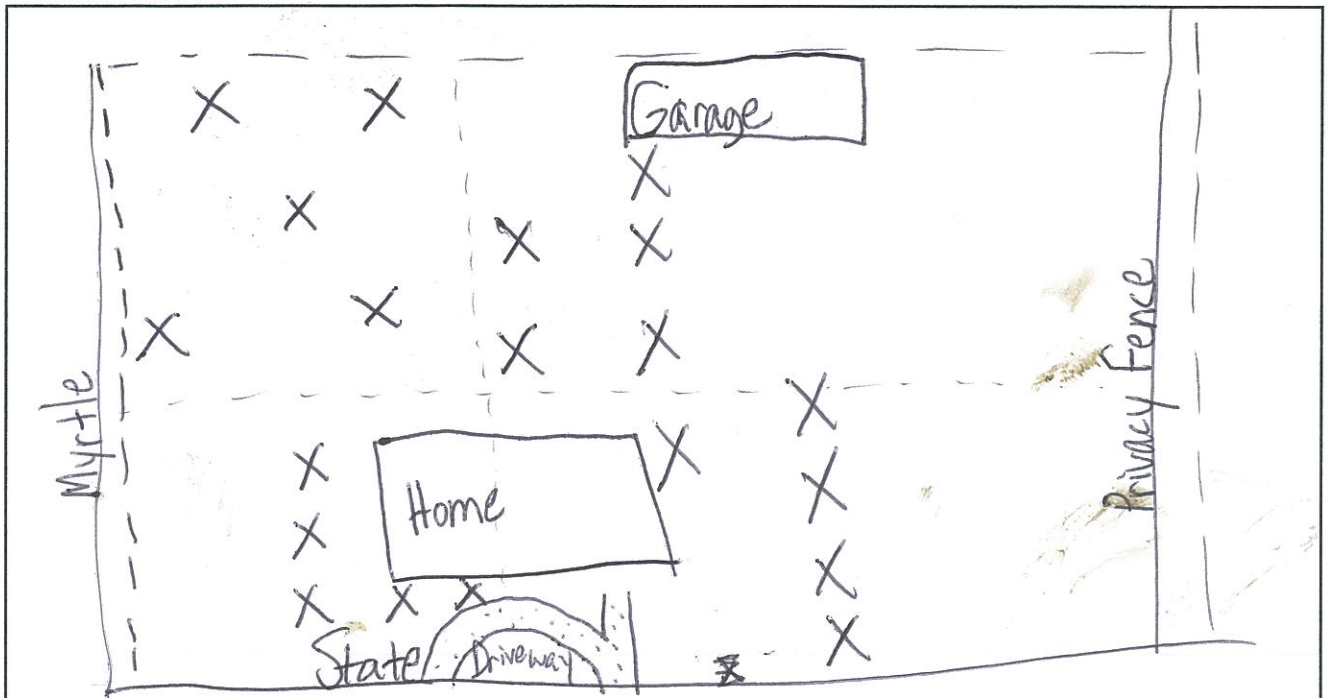
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 8
Owner Name: Jerry + Rose Hocker
Property Address: 1101 N. State St
Phone No: ______

Date/Time: 6/3/14 3:25 p.m.
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-01-006.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval / Yard/Quad	SAMPLE DATE / SAMPLE TIME				
	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 5:52 RS-8FL-0-6"	June 3 / 5:31 RS-8FR-0-6"	June 3 / 6:01 RS-8BL-0-6"	June 3 / 5:42 RS-8BR-0-6"	~~___ / ___ RS- - -0-6"~~
6-12"	June 3 / 5:54 RS-8FL-6-12"	June 3 / 5:34 RS-8FR-6-12"	June 3 / 6:03 RS-8BL-6-12"	June 3 / 5:43 RS-8BR-6-12"	~~___ / ___ RS- - -6-12"~~
12-18"	June 3 / 5:55 RS-8FL-12-18"	June 3 / 5:36 RS-8FR-12-18"	June 3 / 6:04 RS-8BL-12-18"	June 3 / 5:44 RS-8BR-12-18"	~~___ / ___ RS- - -12-18"~~
18-24"	June 3 / 5:56 RS-8FL-18-24"	June 3 / 5:38 RS-8FR-18-24"	June 3 / 6:05 RS-8BL-18-24"	June 3 / 5:44 RS-8BR-18-24"	~~___ / ___ RS- - -18-24"~~

NOTES:
No garden

Team Initials: JY SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 9

Owner Name: Dale + Margaret Duncan

Property Address: 1105 N. State St

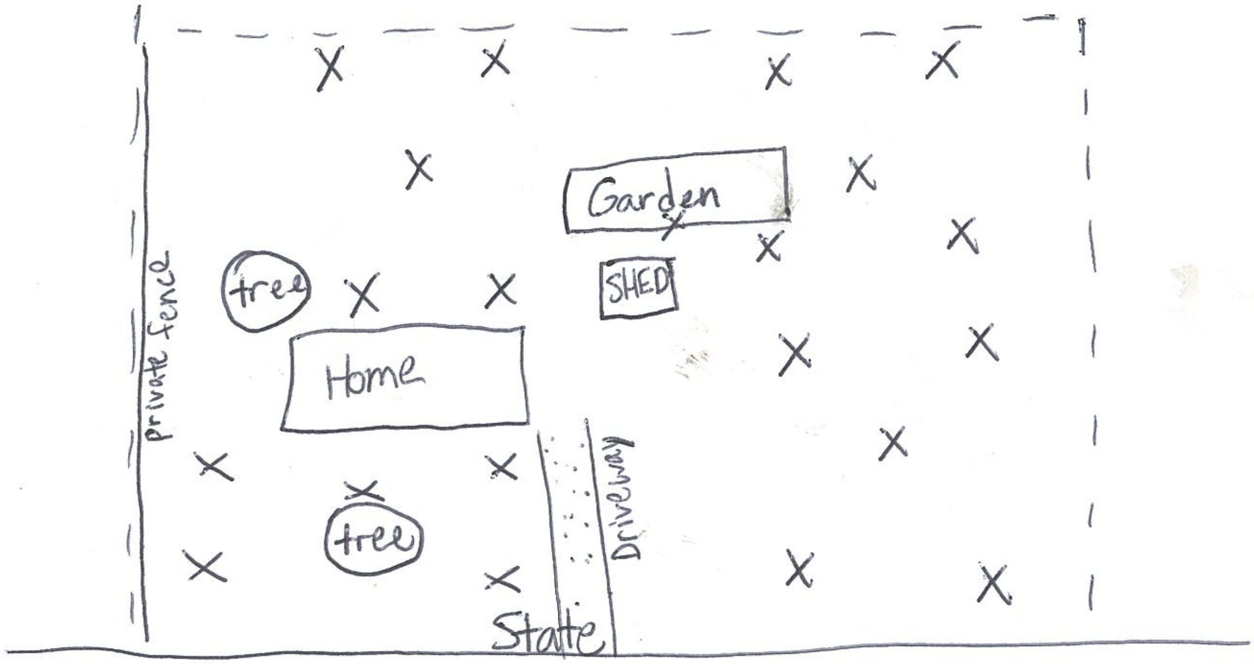
Phone No:

Date/Time: 6/3/14 1:48 p.m.

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-007-001.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 5:02 RS-9FL-0-6"	June 3 / 4:15 RS-9FR-0-6"	June 3 / 4:42 RS-9BL-0-6"	June 3 / 5:15 RS-9BR-0-6"	June 3 / 4:07 RS-9-G-0-6"
6-12"	June 3 / 5:05 RS-9FL-6-12"	June 3 / 4:18 RS-9FR-6-12"	June 3 / 4:44 RS-9BL-6-12"	June 3 / 5:17 RS-9BR-6-12"	June 3 / 4:08 RS-9G-6-12"
12-18"	June 3 / 5:06 RS-9FL-12-18"	June 3 / 4:20 RS-9FR-12-18"	June 3 / 4:46 RS-9BL-12-18"	June 3 / 5:17 RS-9BR-12-18"	June 3 / 4:09 RS-9G-12-18"
18-24"	June 3 / 5:07 RS-9FL-18-24"	June 3 / 4:21 RS-9FR-18-24"	June 3 / 4:49 RS-9BL-18-24"	June 3 / 5:19 RS-9BR-18-24"	June 3 / 4:10 RS-9G-18-24"

NOTES:

Team Initials: JT SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 10

Owner Name: Cotton Family Trust

Property Address: 1111 N. State St

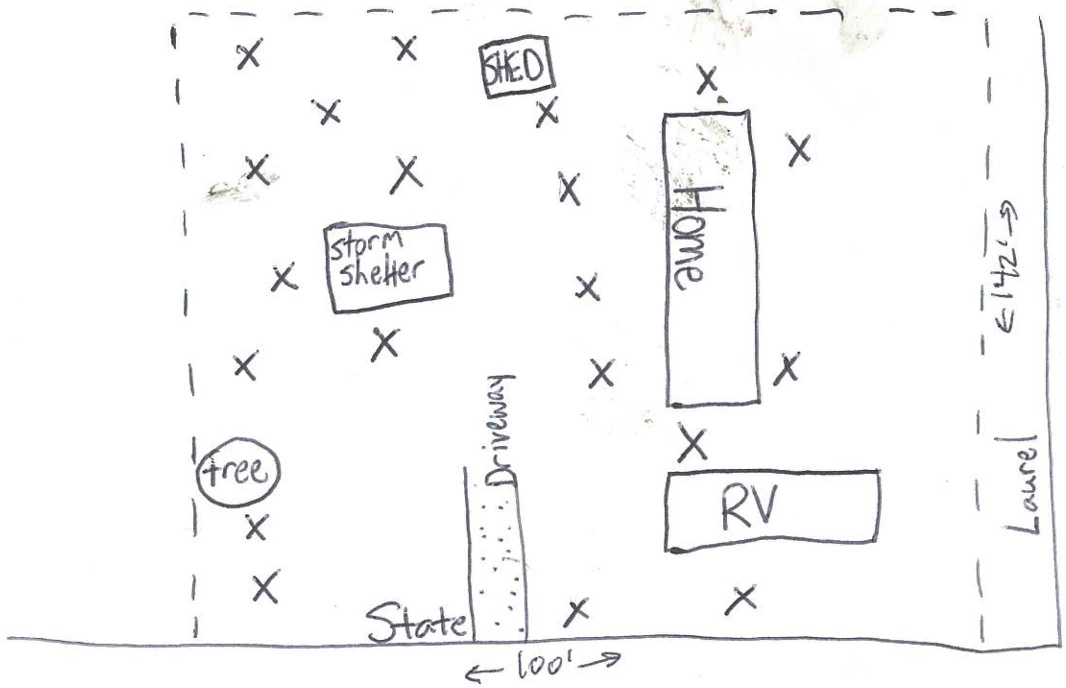
Phone No: ____________

Date/Time: 6/3/14 11:10 a.m.

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-07-001.01-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 3:23 RS- 10 FL -0-6"	June 3 / 1:46 RS- 10 FR -0-6"	June 3 / 2:52 RS- 10 BL -0-6"	June 3 / 2:04 RS- 10 BR -0-6"	~~___ / ___ RS- - -0-6"~~
6-12"	June 3 / 3:25 RS- 10 FL -6-12"	June 3 / 1:49 RS- 10 FR -6-12"	June 3 / 2:54 RS- 10 BL -6-12"	June 3 / 2:11 RS- 10 BR -6-12"	~~___ / ___ RS- -6-12"~~
12-18"	June 3 / 3:26 RS- 10 FL -12-18"	June 3 / 1:51 RS- 10 FR -12-18"	June 3 / 2:57 RS- 10 BL -12-18"	June 3 / 2:13 RS- 10 BR -12-18"	~~___ / ___ RS- - -12-18"~~
18-24"	June 3 / 3:30 RS- 10 FL -18-24"	June 3 / 1:52 RS- 10 FR -18-24"	June 3 / 2:58 RS- 10 BL -18-24"	June 3 / 2:16 RS- 10 BR -18-24"	~~___ / ___ RS- - -18-24"~~

NOTES:
No garden

Team Initials: JJ SK

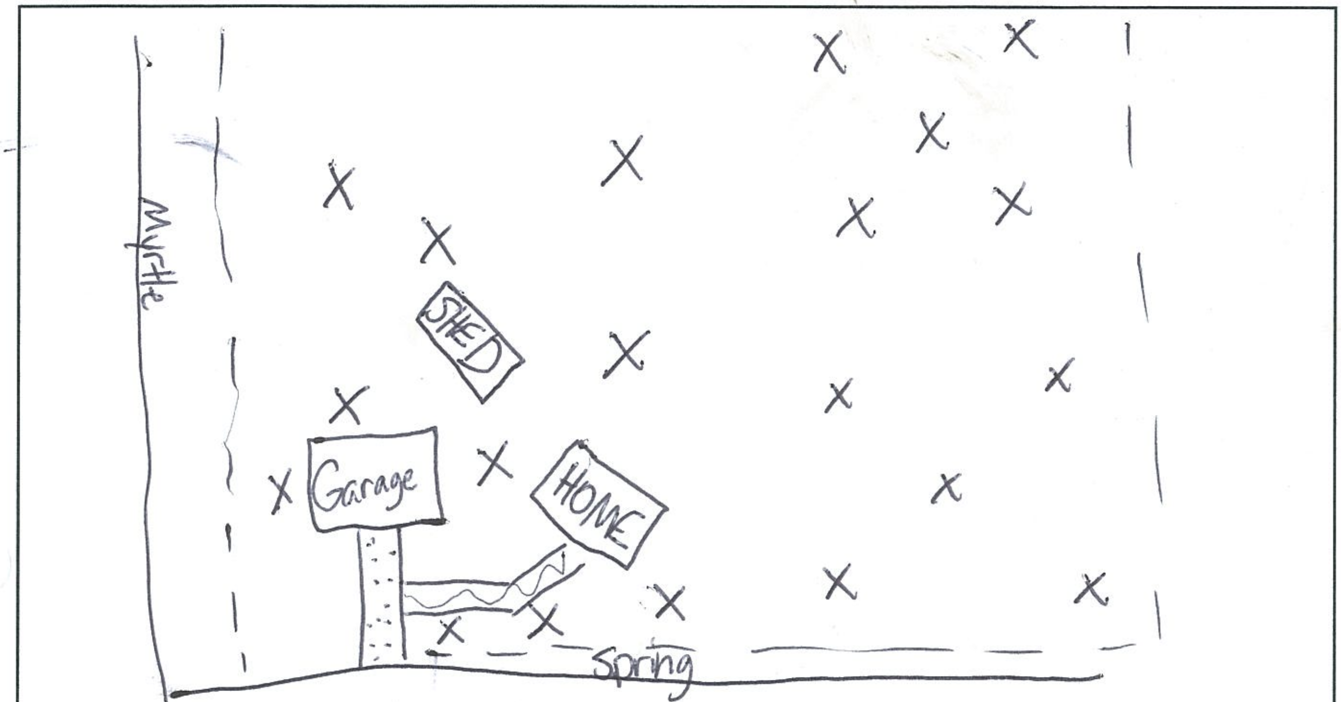
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 11
Owner Name: Larry & Susan Crowe
Property Address: 1101 N. Spring St
Phone No: ____

Date/Time: 9:30 6/4/14
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-10-02-005.00-0
063-251-12-0-10-02-001.02-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 4 / 1:12 RS-11-FL-0-6"	June 4 / 11:20 RS-11-FR-0-6"	June 4 / 1:30 RS-11-BL-0-6"	June 4 / 10:55 RS-11-BR-0-6"	/ RS- - -0-6"
6-12"	June 4 / 1:14 RS-11-FL-6-12"	June 4 / 11:22 RS-11-FR-6-12"	June 4 / 1:32 RS-11-BL-6-12"	June 4 / 11:00 RS-11-BR-6-12"	/ RS- - -6-12"
12-18"	June 4 / 1:16 RS-11-FL-12-18"	June 4 / 11:25 RS-11-FR-12-18"	June 4 / 1:34 RS-11-BL-12-18"	June 4 / 11:02 RS-11-BR-12-18"	/ RS- - -12-18"
18-24"	June 4 / 1:18 RS-11-FL-18-24"	June 4 / 11:27 RS-11-FR-18-24"	June 4 / 1:39 RS-11-BL-18-24"	June 4 / 11:04 RS-11-BR-18-24"	/ RS- - -18-24"

NOTES:

Team Initials: SR

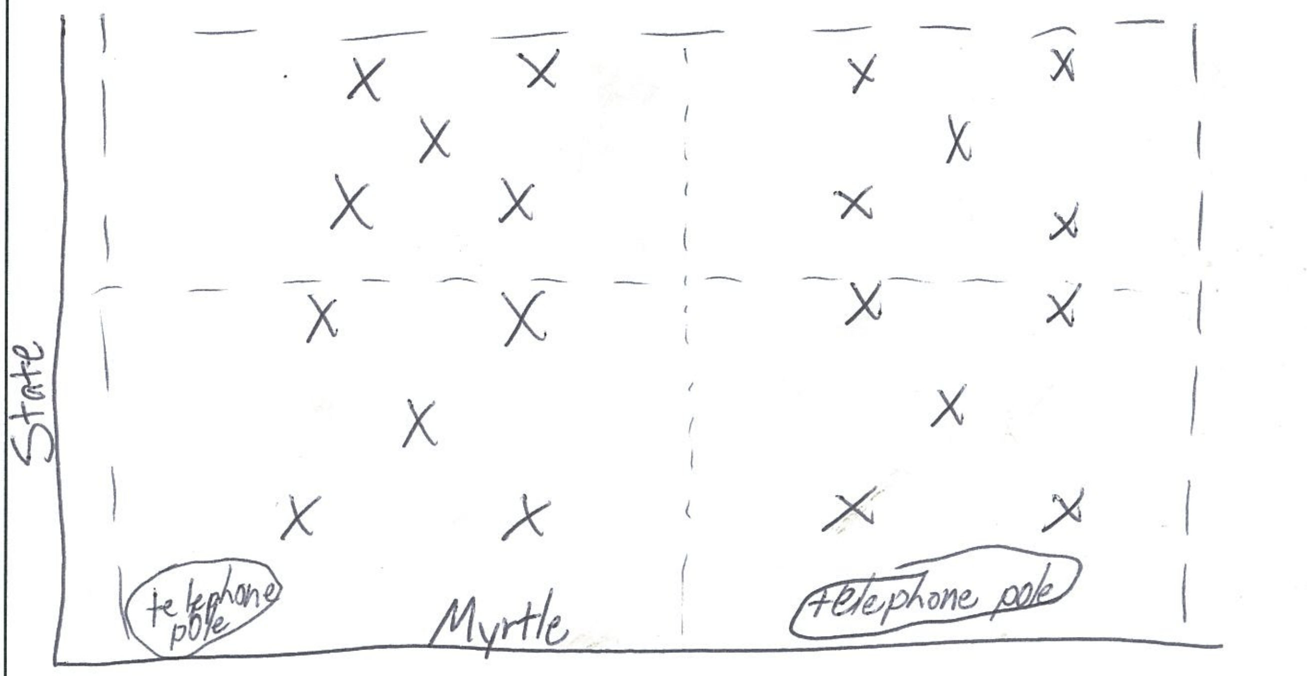
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 12
Owner Name: Larry & Susan Crowe
Property Address: N. State St
Phone No:

Date/Time: 6/4/14 8:15 a.m.
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-10-02-001.01-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 4 / 9:16 RS-12-FL-0-6"	June 4 / 8:46 RS-12-FR-0-6"	June 4 / 10:16 RS-12-BL-0-6"	June 4 / 9:36 RS-12-BR-0-6"	/ RS- - -0-6"
6-12"	June 4 / 9:18 RS-12-FL-6-12"	June 4 / 8:49 RS-12-FR-6-12"	June 4 / 10:18 RS-12-BL-6-12"	June 4 / 9:39 RS-12-BR-6-12"	/ RS- - -6-12"
12-18"	June 4 / 9:20 RS-12-FL-12-18"	June 4 / 8:50 RS-12-FR-12-18"	June 4 / 10:19 RS-12-BL-12-18"	June 4 / 9:41 RS-12-BR-12-18"	/ RS- - -12-18"
18-24"	June 4 / 9:22 RS-12-FL-18-24"	June 4 / 8:52 RS-12-FR-18-24"	June 4 / 10:21 RS-12-BL-18-24"	June 4 / 9:43 RS-12-BR-18-24"	/ RS- - -18-24"

NOTES:
0-6" Dk brown/black soil
6-12" red-orange mottling
12-24" change to yellow brown clayey silt

Team Initials: SR

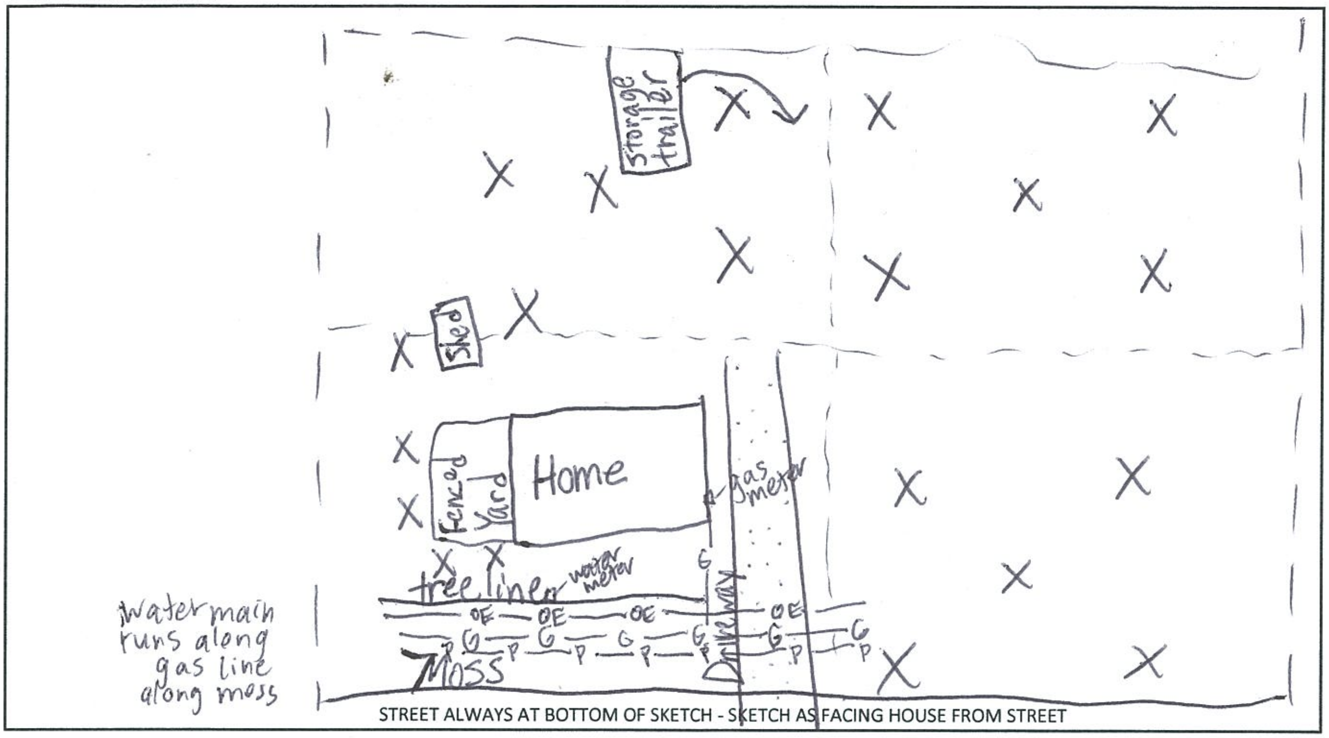
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 13
Owner Name: Willis Wilkerson
Property Address: 1360 CR 1600
Phone No:

Date/Time: 6/4/14 1:20 p.m
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-01-0-00-00-017

PROPERTY SKETCH



Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June4 / 3:42 RS-13-FL-0-6"	June4 / 3:10 RS-13-FR-0-6"	June4 / 3:31 RS-13-BL-0-6"	June4 / 3:52 RS-13-BR-0-6"	/ RS- - -0-6"
6-12"	June4 / 3:44 RS-13-FL-6-12"	June4 / 3:12 RS-13-FR-6-12"	June4 / 3:34 RS-13-BL-6-12"	June4 / 3:56 RS-13-BR-6-12"	/ RS- - -6-12"
12-18"	June4 / 3:45 RS-13-FL-12-18"	June4 / 3:14 RS-13-FR-12-18"	June4 / 3:35 RS-13-BL-12-18"	June4 / 3:57 RS-13-BR-12-18"	/ RS- - -12-18"
18-24"	June4 / 3:46 RS-13-FL-18-24"	June4 / 3:16 RS-13-FR-18-24"	June4 / 3:36 RS-13-BL-18-24"	June4 / 3:59 RS-13-BR-18-24"	/ RS- - -18-24"

NOTES:
BR one 12"-18" sample point All Concrete
2 dog In Fenced Area In ~~Back~~ Left yard Front

Team Initials: ~~R~~ SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: Bunch Property 14
Owner Name: Fred Bunch
Property Address: 1202 N. State
Phone No: ______________ ______________

Date/Time: ______________
Property Size: ☐ ≤ 5,000 sf or ☐ > 5,000 sf
Parcel ID No.: ______________

PROPERTY SKETCH

STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	Sample #1 ~~FY (or FL)~~	Sample #2 ~~SY (or FR)~~	Sample #3 ~~BY (or BL)~~	BR	G
0-6"	June 4 / 2:15 RS-14-1-0-6"	June 4 / 2:31 RS-14-2-0-6"	June 4 / 2:43 RS-14-3-0-6"	____ / ____ RS- - -0-6"	____ / ____ RS- - -0-6"
6-12"	June 4 / 2:17 RS-14-1-6-12"	June 4 / 2:32 RS-14-2-6-12"	June 4 / 2:45 RS-14-3-6-12"	____ / ____ RS- - -6-12"	____ / ____ RS- - -6-12"
12-18"	June 4 / 2:19 RS-14-1-12-18"	June 4 / 2:34 RS-14-2-12-18"	June 4 / 2:46 RS-14-3-12-18"	____ / ____ RS- - -12-18"	____ / ____ RS- - -12-18"
18-24"	June 4 / 2:21 RS-14-1-18-24"	June 4 / 2:36 RS-14-2-18-24"	June 4 / 2:47 RS-14-3-18-24"	____ / ____ RS- - -18-24"	____ / ____ RS- - -18-24"

NOTES:

Team Initials: SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

APPENDIX D

FIELD JOURNALS

APPENDIX D

XRF SAMPLE LOGS

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 1
Sample Date: 6/3/14
Sampler: [illegible]

Yard or Quadrant: FR
XRF Unit No.: R17109z

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1158	Rdg No.	52	53	54	
			Pb	49±6	62±7	32±7	
			Cd	<LOD=10.3	<LOD=10.6	<LOD=11.2	
			Zn	389±15	523±18	377±17	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1217	Rdg No.	55	56	57	
			Pb	47±7	65±7	83±7	
			Cd	<LOD=10.7	<LOD=10.3	<LOD=10.1	
			Zn	536±19	637±19	830±22	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1223	Rdg No.	58	59	60	
			Pb	27±6	13±5	43±7	
			Cd	<LOD=9.9	<LOD=9.8	<LOD=10.5	
			Zn	437±16	336±14	517±18	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1230	Rdg No.	61	62	63	
			Pb	20±5	26±6	26±6	
			Cd	<LOD=8.8	<LOD=10.3	<LOD=10.9	
			Zn	340±13	428±16	369±16	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 1
Sample Date: 06/03/14
Sampler: SR SY

Yard or Quadrant: FL
XRF Unit No.: RT71092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1510	Rdg No.	91	92	93	
			Pb	81±7	77±7	76±8	
			Cd	<LOD=9.5	<LOD=10.4	<LOD=10.9	
			Zn	1137±25	843±23	906±25	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1518	Rdg No.	94	95	96	
			Pb	129±11	77±8	114±9	
			Cd	<LOD=12.4	<LOD=10.6	<LOD=11.2	
			Zn	1602±38	1112±27	1627±34	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1617	Rdg No.	100	101	102	
			Pb	33±7	133±9	81±9	
			Cd	<LOD=11.5	<LOD=10.8	<LOD=12.2	
			Zn	560±20	1102±27	1143±31	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1625	Rdg No.	103	104	105	
			Pb	59±7	78±8	48±7	
			Cd	<LOD=10.7	<LOD=10.7	<LOD=12.1	
			Zn	862±24	917±25	683±23	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
6-12" DUP	6/3/14	1518	Rdg No.	97	98	99	
			Pb	80±8	70±7	79±8	
			Cd	<LOD=11.0	<LOD=10.5	<LOD=11.6	
			Zn	1380±31	1101±26	1086±28	

Laboratory Analysis		Cd, Pb and Zn
		Other:
QA/QC		Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 1
Sample Date: 6/3/14
Sampler: SRL / JS

Yard or Quadrant: BR
XRF Unit No.: R171092

Depth	XRF Date	XRF Time		XRF Results			
0-6" Below Ground Surface 5- pt composite	6/3/14	1239	Rdg No.	64	65	66	
			Pb	433±13	108±8	136±9	
			Cd	<LOD=9.6	<LOD=10.2	<LOD=10.3	
			Zn	803±21	837±23	850±22	
6-12" Below Ground Surface 5- pt composite	6/3/14	1247	Rdg No.	67	68	69	
			Pb	78±7	95±8	89±8	
			Cd	<LOD=9.9	<LOD=10.2	<LOD=10.5	
			Zn	645±19	731±21	705±21	
12-18" Below Ground Surface 5- pt composite	6/3/14	1300	Rdg No.	70	71	72	
			Pb	30±6	45±7	20±5	
			Cd	<LOD=10.2	<LOD=11.3	<LOD=8.9	
			Zn	426±16	580±21	332±13	
18-24" Below Ground Surface 5- pt composite	6/3/14	1415	Rdg No.	73	74	75	
			Pb	19±6	<LOD=7.3	18±6	
			Cd	<LOD=10.1	<LOD=10.6	<LOD=10.9	
			Zn	371±16	187±12	243±13	
Other			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis
0-6" — Cd, Pb and Zn
Other:

QA/QC
0-6" — Confirmation sample (10% of XRF readings)
Field duplicate (10% of XRF and lab samples)
Equipment blank (1 per day using non-disposable equipment)
MS/MSD at this location (5% of samples)
Other:

Comments:
Soil is moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 1
Sample Date: 06/03/14
Sampler: SR ~~SS~~

Yard or Quadrant: BL
XRF Unit No.: R17092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1423	Rdg No.	76	77	78	
			Pb	82±8	48±7	71±8	
			Cd	<LOD=11.1	<LOD=10.6	<LOD=11.6	
			Zn	666±22	466±18	725±23	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1432	Rdg No.	79	80	81	
			Pb	89±9	149±10	153±11	
			Cd	<LOD=12.3	<LOD=12.2	<LOD=11.8	
			Zn	1217±31	1606±35	1665±36	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1443	Rdg No.	82	83	84	
			Pb	<LOD=8.1	16±6	<LOD=7.0	
			Cd	<LOD=11.6	<LOD=11.6	<LOD=10.2	
			Zn	251±15	347±17	269±13	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1503 ~~1458~~	Rdg No.	88	89	90	
			Pb	<LOD=9.5	<LOD=7.8	<LOD=6.9	
			Cd	<LOD=13.3	<LOD=11.2	<LOD=10.9	
			Zn	55±10	139±11	81±9	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	2	Yard or Quadrant:	FR
Sample Date:	6/2/14	XRF Unit No.:	818 4142
Sampler:	SCOTT RUARK		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0932	Rdg No.	220	221	222
			Pb	135 ± 8	92 ± 7	102 ± 7
			Cd	<LOD = 8.7	<LOD = 9.0	<LOD = 8.4
			Zn	1172 ± 24	1105 ± 25	951 ± 20

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0940	Rdg No.	223	224	225
			Pb	110 ± 8	86 ± 6	116 ± 8
			Cd	< LOD = 8.9	<LOD = 8.2	< LOD = 8.8
			Zn	1236 ± 25	943 ± 20	1160 ± 24

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0947	Rdg No.	226	227	228
			Pb	95 ± 7	29 ± 5	72 ± 6
			Cd	<LOD = 8.8	<LOD = 8.7	<LOD = 8.9
			Zn	1469 ± 27	957 ± 21	1200 ± 24

DUP

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0954	Rdg No.	229	230	231
			Pb	34 ± 5	43 ± 6	21 ± 5
			Cd	<LOD = 8.6	<LOD = 8.7	<LOD = 8.7
			Zn	483 ± 15	491 ± 15	395 ± 14

Other	XRF Date	XRF Time	XRF Results			
18-24 G. S.	6/3/14	1002	Rdg No.	232	233	234
			Pb	51 ± 6	43 ± 6	34 ± 6
			Cd	<LOD = 9.0	<LOD = 9.0	<LOD = 9.4
			Zn	587 ± 18	633 ± 18	595 ± 18

Laboratory Analysis		Cd, Pb and Zn
		Other:
QA/QC		Confirmation sample (10% of XRF readings)
18-24"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 2

Sample Date: 6/2/14

Sampler: SCOTT RUARK

Yard or Quadrant: F2

XRF Unit No.: R-184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0900	Rdg No.	205	~~208~~ 209	210
			Pb	83 ± 6	96 ± 7	73 ± 7
			Cd	<LOD = 8.2	<LOD = 8.4	<LOD = 5.3
			Zn	666 ± 17	805 ± 19	818 ± 20

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0908	Rdg No.	211	212	213
			Pb	33 ± 5	68 ± 6	17 ± 4
			Cd	<LOD = 8.7	<LOD = 8.8	<LOD = 8.3
			Zn	468 ± 15	586 ± 17	453 ± 14

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0915	Rdg No.	214	215	216
			Pb	33 ± 7	8 ± 4	15 ±
			Cd	<LOD = 10.7	<LOD = 8.4	<LOD = 8.6
			Zn	451 ± 19	233 ± 11	310 ± 13

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	0923	Rdg No.	217	218	219
			Pb	<LOD = 6.8	<LOD = 6.4	<LOD = 6.4
			Cd	<LOD = 9.4	<LOD = 8.7	<LOD = 8.9
			Zn	66 ± 7	115 ± 8	71 ± 7

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 2
Sample Date: 6/2/14
Sampler: SCOTT RUARK

Yard or Quadrant: BR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1011	Rdg No.	235	236	237	
			Pb	116 ± 7	112 ± 7	92 ± 7	
			Cd	<LOD ± 7.8	<LOD 8.2	<LOD 8.5	
			Zn	806 ± 18	845 ± 19	851 ± 19	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1019	Rdg No.	238	239	240	
			Pb	107 ± 31	95 ± 7	100 ± 7	
			Cd	<LOD ± 5.4	<LOD ± 8.6	<LOD ± 8.9	
			Zn	900 ± 21	918 ± 21	895 ± 21	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1028	Rdg No.	241	242	243	
			Pb	35 ± 5	87 ± 7	64 ± 6	
			Cd	<LOD ± 8.5	<LOD ± 8.9	<LOD ± 9.1	
			Zn	413 ± 14	859 ± 20	623 ± 18	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1035	Rdg No.	244	245	246	
			Pb	75 ± 6	11 ± 4	71 ± 6	
			Cd	<LOD ± 8.5	<LOD ± 8.6	<LOD ± 5.9	
			Zn	959 ± 21	175 ± 10	604 ± 17	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 2
Sample Date: 6/2/14
Sampler: Jerry Orton / Scott Ruark

Yard or Quadrant: B2
XRF Unit No.: K184142

Depth	XRF Date	XRF Time	XRF Results				
0-6" Below Ground Surface 5- pt composite	6/3/14	0817	Rdg No.	196	197	198	
			Pb	38 ± 5	43 ± 5	50 ± 6	
			Cd	<LOD = 8.0	<LOD = 8.3	<LOD = 8.5	
			Zn	478 ± 14	511 ± 15	538 ± 16	
6-12" Below Ground Surface 5- pt composite	6/3/14	0825	Rdg No.	199	200	201	
			Pb	43 ± 6	55 ± 6	37 ± 5	
			Cd	<LOD = 8.9	<LOD = 8.9	<LOD = 8.5	
			Zn	576 ± 17	624 ± 18	549 ± 16	
12-18" Below Ground Surface 5- pt composite	6/3/14	0832	Rdg No.	202	203	204	
			Pb	20 ± 5	<LOD = 6.5	13 ± 5	
			Cd	<LOD = 8.5	<LOD = 8.8	<LOD = 8.8	
			Zn	394 ± 14	277 ± 12	323 ± 8	
18-24" Below Ground Surface 5- pt composite	6/3/14	0840	Rdg No.	205	206	207	
			Pb	<LOD = 7.3	<LOD = 5.9	<LOD = 5.9	
			Cd	<LOD = 9.9	<LOD = 8.2	<LOD = 8.5	
			Zn	84 ± 9	138 ± 9	100 ± 8	
Other			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

☐	Cd, Pb and Zn
☐	Other:

QA/QC

☐	Confirmation sample (10% of XRF readings)
☐	Field duplicate (10% of XRF and lab samples)
☐	Equipment blank (1 per day using non-disposable equipment)
☐	MS/MSD at this location (5% of samples)
☐	Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 3
Sample Date: 06/02/14
Sampler: [illegible]

Yard or Quadrant: FR
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	0818	Rdg No.	10	11	12	
			Pb	362±13	330±14	248±11	
			Cd	<LOD=10.4	<LOD=11.3	<LOD=10.7	
			Zn	4613±51	4769±57	3676±46	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	0826	Rdg No.	13	14	15	
			Pb	227±11	209±11	325±13	
			Cd	<LOD=10.6	<LOD=11.6	<LOD=11.4	
			Zn	4635±52	3326±48	4797±57	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	0832	Rdg No.	16	17	18	
			Pb	163±9	233±11	196±10	
			Cd	<LOD=10.5	<LOD=10.8	<LOD=10.1	
			Zn	2582±38	4074±51	3538±44	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	0840	Rdg No.	19	20	21	
			Pb	52±6	101±8	32±6	
			Cd	<LOD=10.1	<LOD=11.1	<LOD=10.3	
			Zn	1728±31	1624±33	1293±27	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		Cd, Pb and Zn
		Other:
QA/QC		Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 3
Sample Date: 6/2/14
Sampler: GR SS

Yard or Quadrant: FL
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1021	Rdg No.	36	37	38	
			Pb	242±11	293±13	341±12	
			Cd	<LOD=9.7	<LOD=11.1	<LOD=9.8	
			Zn	2378±36	2470±42	3716±44	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1028	Rdg No.	39	40	41	
			Pb	368±14	311±13	510±16	
			Cd	<LOD=11.2	<LOD=10.9	<LOD=10.7	
			Zn	5234±59	4395±54	4838±54	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1035	Rdg No.	42	43	44	
			Pb	181±10	193±10	154±9	
			Cd	<LOD=10.0	<LOD=10.5	<LOD=10.4	
			Zn	3119±42	2396±38	2403±37	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1042	Rdg No.	45	46	47	
			Pb	121±8	131±9	134±9	
			Cd	<LOD=10.3	<LOD=11.0	<LOD=10.3	
			Zn	1717±31	2500±41	1960±34	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
18-24" DUP	6/3/14	1047	Rdg No.	48	49	50	51
			Pb	27±6	44±6	111±8	66±7
			Cd	<LOD=10.1	<LOD=10.3	<LOD=10.4	<LOD=10.5
			Zn	881±22	1047±25	1717±32	1327±29

Laboratory Analysis	6-12"	Cd, Pb and Zn
		Other:
QA/QC	6-12"	Confirmation sample (10% of XRF readings)
18-24"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 3
Sample Date: 6/2/14
Sampler: [illegible]

Yard or Quadrant: BR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1709	Rdg No.	175	176	177	
			Pb	110±7	152±8	152±8	
			Cd	<LOD±8.1	<LOD±8.7	<LOD±7.8	
			Zn	876±19	990±22	942±19	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1715	Rdg No.	178	179	180	
			Pb	88±6	232±10	161±8	
			Cd	<LOD±7.9	<LOD±9.2	<LOD±8.1	
			Zn	805±18	1068±24	968±20	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1721	Rdg No.	181	182	183	
			Pb	53±6	51±6	57±6	
			Cd	<LOD±8.5	<LOD±8.7	<LOD±8.7	
			Zn	627±17	602±17	586±17	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
* Dup 5- pt composite	6/2/14	1726	Rdg No.	184	185	186	
			Pb	18±5	16±4	12±5	
			Cd	<LOD±8.5	<LOD±8.2	<LOD±8.7	
			Zn	410±14	373±13	306±13	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
18-24" Dup			Rdg No.	187	188	189	
			Pb	14±5	28±5	16±4	
			Cd	<LOD±8.8	<LOD±8.0	<LOD±8.3	
			Zn	310±13	402±13	518±15	

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
18-24"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 3
Sample Date: 6/2/14
Sampler: SR KS

Yard or Quadrant: B2
XRF Unit No.: RI1092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	0948	Rdg No.	22	23	24	25
			Pb	176±10	459±15	88±7	91±7
			Cd	<LOD=10.3	<LOD=10.5	<LOD=9.9	<LOD=10.0
			Zn	1157±27	818±22	845±22	825±22

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	0957	Rdg No.	26	27	28	
			Pb	86±7	70±8	68±7	
			Cd	<LOD=9.9	<LOD=11.1	<LOD=10.1	
			Zn	758±21	716±22	733±21	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1005	Rdg No.	~~29~~	~~29~~ 30	31	32
			Pb	~~68±7~~	19±5	17±5	16±6
			Cd	~~<LOD=10.1~~	<LOD=9.9	<LOD=9.9	<LOD=11.0
			Zn	~~733±21~~	375±15	356±14	332±15

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1011	Rdg No.	33	34	35	
			Pb	12±5	16±5	14±5	
			Cd	<LOD=9.9	<LOD=10.3	<LOD=10.3	
			Zn	199±11	234±12	265±13	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 4
Sample Date: 6/2/2014
Sampler: Jerry Overton

Yard or Quadrant: FR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1438	Rdg No.	#117	#118	#119	
			Pb	188 ± 9	242 ± 9	172 ± 18	
			Cd	<LOD = 8.9	<LOD = 8.1	<LOD = 7.8	
			Zn	1657 ± 29	1811 ± 28	1539 ± 25	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1445	Rdg No.	#120	#121	#122	
			Pb	282 ± 10	146 ± 9	289 ± 10	
			Cd	<LOD = 8.6	<LOD = 9.4	<LOD = 8.2	
			Zn	2460 ± 33	1787 ± 31	2339 ± 32	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1452	Rdg No.	#123	#124	#125	
			Pb	48 ± 5	19 ± 5	97 ± 7	
			Cd	<LOD = 8.1	<LOD = 9.1	<LOD = 8.8	
			Zn	206 ± 10	197 ± 11	683 ± 19	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1500	Rdg No.	#126	#127	#128	
			Pb	16 ± 5	11 ± 4	<LOD = 6.3	
			Cd	<LOD = 8.7	<LOD = 8.6	<LOD = 8.7	
			Zn	150 ± 9	106 ± 8	55 ± 6	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis	6-12"	Cd, Pb and Zn
		Other:
QA/QC	6-12"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
Samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 4
Sample Date: 6/2/14
Sampler: Terry Overton

Yard or Quadrant: FL
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	~~1544~~ 6/2/14	1541	Rdg No.	#141	#142	#143	
			Pb	276 ± 10	296 ± 11	255 ± 10	
			Cd	<LOD = 8.5	<LOD = 8.6	<LOD = 8.5	
			Zn	2328 ± 32	2247 ± 32	2182 ± 32	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**		**XRF Results**			
5- pt composite	6/2/14	~~1548~~ 1607	Rdg No.	~~#144~~ #151	#152	#153	
			Pb	273 ± 11	170 ± 9	388 ± 12	
			Cd	<LOD = 5.4	<LOD = 9.0	<LOD = 8.8	
			Zn	3134 ± 39	3119 ± 38	3419 ± 38	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**		**XRF Results**			
5- pt composite	6/2/14	1624	Rdg No.	#157	#158	#159	
			Pb	73 ± 6	95 ± 7	75 ± 6	
			Cd	<LOD = 8.6	<LOD = 8.6	<LOD = 8.5	
			Zn	1294 ± 25	833 ± 20	826 ± 20	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**		**XRF Results**			
5- pt composite	6/2/14	1630	Rdg No.	#160	#161	#162	
			Pb	<LOD = 6.2	8 ± 4	16 ± 5	
			Cd	<LOD = 8.2	<LOD = 8.7	<LOD = 9.4	
			Zn	734 ± 18	697 ± 19	1215 ± 26	
Other	**XRF Date**	**XRF Time**		**XRF Results**			
6-12 G.S.	6/2/14	1614	Rdg No.	#154	#155	#156	
			Pb	261 ± 11	356 ± 12	168 ± 9	
			Cd	<LOD = 9.0	<LOD = 8.7	<LOD = 9.1	
			Zn	2106 ± 33	4548 ± 46	2750 ± 38	

* DUP

Laboratory Analysis

0-6"	Cd, Pb and Zn
	Other:

QA/QC

	0-6"	Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

Samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 4
Sample Date: 6/2/14
Sampler: Jerry Overton

Yard or Quadrant: BR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1511	Rdg No.	#129	#130	#131	
			Pb	118 ± 8	212 ± 9	155 ± 8	
			Cd	<LOD = 9.4	<LOD = 8.6	<LOD = 8.6	
			Zn	1108 ± 25	851 ± 20	1232 ± 24	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1517	Rdg No.	#132	#133	#134	
			Pb	53 ± 6	87 ± 7	127 ± 8	
			Cd	<LOD = 8.5	<LOD = 8.6	<LOD = 9.0	
			Zn	473 ± 15	669 ± 18	1109 ± 24	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1524	Rdg No.	#135	#136	#137	
			Pb	17 ± 5	<LOD = 6.8	<LOD = 7.5	
			Cd	<LOD = 8.8	<LOD = 8.9	<LOD = 9.8	
			Zn	132 ± 9	103 ± 8	108 ± 9	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1530	Rdg No.	#138	#139	#140	
			Pb	<LOD = 6.7	<LOD = 7.5	<LOD = 7.4	
			Cd	<LOD = 8.9	<LOD = 10.	<LOD = 9.7	
			Zn	72 ± 7	64 ± 8	87 ± 8	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis
- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC
- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:
samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	4	Yard or Quadrant:	BL
Sample Date:	6/2/14	XRF Unit No.:	R184142
Sampler:	JERRY OVERTON		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1643	Rdg No.	#163	#164	#165	
			Pb	166 ± 8	180 ± 9	172 ± 8	
			Cd	<LOD = 8.3	<LOD = 8.6	<LOD = 8.2	
			Zn	1124 ± 22	1160 ± 23	1160 ± 22	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1652	Rdg No.	#166	#167	168	
			Pb	57 ± 6	53 ± 6	78 ± 7	
			Cd	<LOD = 8.5	<LOD = 8.7	<LOD = 9.7	
			Zn	519 ± 16	409 ± 14	684 ± 20	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1658	Rdg No.	169	170	171	
			Pb	16 ± 5	9 ± 5	8 ± 4	
			Cd	<LOD = 9.2	<LOD = 9.1	<LOD = 8.6	
			Zn	176 ± 10	119 ± 9	107 ± 8	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	~~1503~~ 1703	Rdg No.	172	173	174	
			Pb	<LOD = 9.6	<LOD = 7.0	7 ± 5	
			Cd	<LOD = 12.5	<LOD = 9.9	<LOD = 9.2	
			Zn	55 ± 10	66 ± 8	70 ± 7	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis	☐	Cd, Pb and Zn
	☐	Other:
QA/QC	☐	Confirmation sample (10% of XRF readings)
	☐	Field duplicate (10% of XRF and lab samples)
	☐	Equipment blank (1 per day using non-disposable equipment)
	☐	MS/MSD at this location (5% of samples)
	☐	Other:

Comments: samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 5
Sample Date: 6/2/2014
Sampler: JERRY OVERTON
Yard or Quadrant: FR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1200	Rdg No.	58	59	60	
			Pb	1616±23	1311±20	1199±20	
			Cd	<LOD±8.2	<LOD±8.2	<LOD±8.6	
			Zn	4350±44	4631±44	4125±43	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1213	Rdg No.	61	62	63	64
			Pb	1745±25	1091±21	632±17	060±19
			Cd	<LOD±9.0	<LOD±9.6	<LOD±9.9	<LOD±9.4
			Zn	11.8K±0.1K	11.0K±0.1K	6875±62	9005±69

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1221	Rdg No.	65	66	67	
			Pb	377±12	530±14	251±12	
			Cd	<LOD±8.9	<LOD±9.2	<LOD±10.2	
			Zn	4185±47	3642±43	2807±43	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite *	6/2/14	1227	Rdg No.	68	69	70	
			Pb	34±5	143±10	43±7	
			Cd	<LOD±9.1	<LOD±11.1	<LOD±10.9	
			Zn	691±19	1561±35	718±24	

Other	XRF Date	XRF Time	XRF Results				
18-24" DUP	6/2/14	1234	Rdg No.	71	72	73	
			Pb	74±7	75±7	43±6	
			Cd	<LOD±9.9	<LOD±9.1	<LOD±10.3	
			Zn	1133±26	975±23	627±20	

Laboratory Analysis

12-18"	Cd, Pb and Zn
	Other:

QA/QC

12-18"	Confirmation sample (10% of XRF readings)
18-24" ~~XRF Lab~~	Field duplicate (10% of XRF and lab samples)
	Equipment blank (1 per day using non-disposable equipment)
	MS/MSD at this location (5% of samples)
	Other:

Comments:

samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 5
Sample Date: 6/2/14
Sampler: SR/JS

Yard or Quadrant: FL
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1242	Rdg No.	74	75	76	
			Pb	1471±23	2080±28	1481±24	
			Cd	<LOD:9.0	<LOD:9.3	<LOD:9.4	
			Zn	10.0K±0.1K	10.3K±0.1K	9194±69	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1248	Rdg No.	77	78	79	
			Pb	517±15	724±17	987±19	
			Cd	<LOD:9.7	<LOD:9.6	<LOD:9.4	
			Zn	7260±63	9148±70	10.6K±0.1K	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1254	Rdg No.	80	81	82	
			Pb	62±6	74±7	57±6	
			Cd	9±6	<LOD:9.3	<LOD:8.6	
			Zn	1720±28	1453±27	1466±26	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/2/14	1300	Rdg No.	83	84	85	
			Pb	26±5	17±5	21±5	
			Cd	<LOD:9.1	<LOD:9.5	<LOD:9.2	
			Zn	1057±23	891±22	1374±21	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
6-12" DUP	6/2/14	1305	Rdg No.	86	87	88	
			Pb	630±16	520±14	964±20	
			Cd	14±6	<LOD:9.0	12±7	
			Zn	8603±66	7307±60	18.0K±0.1K	

Laboratory Analysis		
	6-12"	Cd, Pb and Zn
		Other:

QA/QC		
	6-12"	Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

Samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 5
Sample Date: 6/2/14
Sampler: SR/BS

Yard or Quadrant: BR
XRF Unit No.: R18412

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1314	Rdg No.	89	90	91	
			Pb	358±12	361±13	282±11	
			Cd	<LOD:9.5	<LOD:9.6	<LOD:9.0	
			Zn	6532±56	6220±60	5449±51	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1320	Rdg No.	92	93	94	
			Pb	48±6	45±6	43±6	
			Cd	<LOD:9.2	<LOD:8.7	<LOD:9.1	
			Zn	993±23	1022±22	1081±24	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1326	Rdg No.	95	96	97	
			Pb	89±7	15±5	46±6	
			Cd	<LOD:8.6	<LOD:9.1	<LOD:8.8	
			Zn	848±20	370±14	598±17	

*

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1345	Rdg No.	#98	#99	#100	
			Pb	<LOD:6.8	11±5	8±5	
			Cd	<LOD:9.2	<LOD:9.6	<LOD:10.2	
			Zn	147±10	168±10	280±14	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:
samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 5
Sample Date: 6/22/14
Sampler: JERRY OVERTON

Yard or Quadrant: BL
XRF Unit No.: B 184142

Depth	XRF Date	XRF Time		Reading 1	Reading 2	Reading 3	
0-6" Below Ground Surface 5- pt composite	6/02/14	1353	Rdg No.	#101	#102	#103	
			Pb	221 ± 10	228 ± 10	337 ± 11	
			Cd	<LOD = 9.3	<LOD = 9.4	<LOD = 8.7	
			Zn	2852 ± 38	3716 ± 45	4519 ± 46	
6-12" Below Ground Surface 5- pt composite	6/02/14	1400	Rdg No.	#104	#105	#106	
			Pb	48 ± 5	47 ± 6	74 ± 6	
			Cd	<LOD = 8.3	<LOD = 11.4	<LOD = 8.5	
			Zn	911 ± 20	1281 ± 28	1482 ± 26	
12-18" Below Ground Surface 5- pt composite	6/02/14	1407	Rdg No.	#107	#108	#109	
			Pb	38 ± 5	36 ± 5	58 ± 6	
			Cd	<LOD = 8.2	<LOD = 8.7	<LOD = 8.5	
			Zn	507 ± 15	847 ± 20	760 ± 19	
* DUP **18-24" Below Ground Surface** 5- pt composite	6/02/14	1414	Rdg No.	#110	#111	#112	
			Pb	13 ± 5	<LOD = 6.7	10 ± 5	
			Cd	<LOD = 9.8	<LOD = 8.9	<LOD = 8.9	
			Zn	388 ± 16	288 ± 13	362 ± 14	
Other 18-24" G.S.	6/02/14	1420	Rdg No.	#113	#114	#115	
			Pb	7 ± 4	<LOD = 6.1	14 ± 5	
			Cd	<LOD = 5.6	<LOD = 8.4	<LOD ± 9.3	
			Zn	221 ± 11	264 ± 11	356 ± 14	

Laboratory Analysis

	Cd, Pb and Zn
	Other:

QA/QC

	Confirmation sample (10% of XRF readings)
18-24" XRF	Field duplicate (10% of XRF and lab samples)
	Equipment blank (1 per day using non-disposable equipment)
	MS/MSD at this location (5% of samples)
	Other:

Comments:

Samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 6
Sample Date: 6/3/14
Sampler: SCOTT RUARK

Yard or Quadrant: 8/ ~~FY~~ FR
XRF Unit No.: R18~~74~~ 4142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1054	Rdg No.	247	248	249	
			Pb	241 ± 11	187 ± 9	181 ± 7	
			Cd	<LOD = 9.8	<LOD = 8.7	<LOD = 7.0	
			Zn	1728 ± 31	1709 ± 29	1479 ± 22	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1105	Rdg No.	250	251	252	
			Pb	40 ± 5	65 ± 6	62 ± 6	
			Cd	<LOD = 8.6	<LOD 8.6	<LOD = 8.8	
			Zn	565 ± 16	694 ± 18	681 ± 18	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1119	Rdg No.	253	254	255	
			Pb	<LOD = 6.2	<LOD = 6.0	<LOD = 6.1	
			Cd	<LOD = 8.6	<LOD = 8.4	<LOD = 8.2	
			Zn	304 ± 12	182 ± 10	218 ± 10	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1125	Rdg No.	256	257	258	
			Pb	<LOD = 6.1	<LOD = 6.4	<LOD = 6.5	
			Cd	<LOD = 8.6	<LOD = 5.5	<LOD = 8.7	
			Zn	79 ± 7	104 ± 8	98 ± 8	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	6	Yard or Quadrant:	FL
Sample Date:	6/3/14	XRF Unit No.:	R-184142
Sampler:	SCOTT RUARK		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	~~1505~~ 6/3/14	1505	Rdg No.	287	288	289	
			Pb	300 ± 11	300 ± 11	198 ± 9	
			Cd	<LOD = 8.7	<LOD = 8.5	<LOD = 7.9	
			Zn	2213 ± 32	2355 ± 33	1954 ± 29	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1512	Rdg No.	290	291	292	
			Pb	158 ± 9	201 ± 9	160 ± 8	
			Cd	<LOD = 9.0	<LOD = 8.7	<LOD = 8.5	
			Zn	954 ± 22	1294 ± 25	993 ± 21	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1520	Rdg No.	293	294	295	
			Pb	27 ± 6	27 ± 5	13 ± 5	
			Cd	<LOD = 8.7	<LOD = 8.4	<LOD = 8.5	
			Zn	515 ± 16	493 ± 15	364 ± 14	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1527	Rdg No.	296	297	298	
			Pb ~~Pb~~	~~296~~	<LOD = 6.1	<LOD = 6.6	
			Cd	<LOD = 8.9	<LOD = 8.5	<LOD = 8.8	
			Zn	142 ± 9	175 ± 10	208 ± 11	

Pb <LOD = 6.3

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
	Lab 0-6"	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 6
Sample Date: ~~8~~6 ~~2~~/3/14
Sampler: SCOTT RUARK

Yard or Quadrant: BR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6 ~~2~~/3/14	1423	Rdg No.	275	276	277	
			Pb	834±18	476±13	795±17	
			Cd	<LOD 8.9	<LOD=8.6	<LOD=8.6	
			Zn	2216±33	1942±31	2717±36	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6 ~~2~~/3/14	1432	Rdg No.	278	279	280	
			Pb	84±7	131±8	100±8	
			Cd	<LOD=8.9	<LOD=9.0	<LOD=9.8	
			Zn	818±20	723±19	922±23	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6 ~~2~~/3/14	1441	Rdg No.	281	282	283	
			Pb	89±7	40±5	27±5	
			Cd	<LOD=8.6	<LOD=8.7	<LOD=8.7	
			Zn	454±15	376±14	417±14	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6 ~~2~~/3/14	1452	Rdg No.	284	285	286	
			Pb	17±5	295±10	131±7	
			Cd	<LOD=8.4	<LOD±8.3	<LOD±8.2	
			Zn	212±10	1770±28	826±19	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	6	Yard or Quadrant:	BL
Sample Date:	6/3/14	XRF Unit No.:	R184142
Sampler:	SCOTT RUARK		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	1141	Rdg No.	259	260	261
			Pb	606 ± 15	460 ± 13	465 ± 13
			Cd	<LOD = 8.5	<LOD = 8.5	<LOD = 8.7
			Zn	4871 ± 47	3496 ± 40	3620 ± 42

Dup

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	1150	Rdg No.	262	263	264
			Pb	2943 ± 37	3439 ± 42	2148 ± 31
			Cd	26 ± 7	19 ± 8	<LOD = 10.1
			Zn	22.1K ± .1K	21.6K ± .1K	16.2K ± .1K

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	1209	Rdg No.	268	269	270
			Pb	589 ± 15	130 ± 8	1118 ± 20
			Cd	<LOD = 9.2	<LOD = 8.8	LOD = 8.8
			Zn	11.7K ± .2K	3719 ±	5986 ± 53

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/3/14	1308	Rdg No.	271	272	273
			Pb	418 ± 13	193 ± 9	204 ± 9
			Cd	32 ± 6	<LOD = 8.7	<LOD = 10.0
			Zn	4054 ± 45	1640 ± 28	1722 ± 29

Other	XRF Date	XRF Time	XRF Results			
~~12-18"~~ 6-12" GS	6/3/14	1159	Rdg No.	265	266	267
			Pb	2853 ± 35	1844 ± 29	2194 ± 30
			Cd	18 ± 7	18 ± 7	11 ± 7
			Zn	23.2K ± .1K	17.2K ± 1	20.K ± .1K

Laboratory Analysis		
	12-18"	Cd, Pb and Zn
		Other:

QA/QC		
	12-18"	Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments: Chat, Grit, material

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 7
Sample Date: 6/2/14
Sampler: Jerry Overton
Yard or Quadrant: FR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1132 1134 1136	Rdg No.	#46	#47	#48	
			Pb	17±4	30±5	18±4	
			Cd	<LOD=4.8	<LOD=8.1	<LOD=7.8	
			Zn	231±10	282±11	209±10	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1138 1140 1142	Rdg No.	#49	#50	#51	
			Pb	19±4	9±4	20±4	
			Cd	<LOD=5.0	<LOD=8.2	<LOD=7.9	
			Zn	261±11	159±9	293±11	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1145 1147 1149	Rdg No.	#52	#53	#54	
			Pb	<LOD=6.8	<LOD=7.0	8±4	
			Cd	<LOD=9.2	<LOD=9.4	<LOD=8.5	
			Zn	85±8	79±8	163±9	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1152 1154	Rdg No.	#55	#56	#57	
			Pb	<LOD±6.2	<LOD±7.1	<LOD=6.3	
			Cd	<LOD±8.4	<LOD±10.2	<LOD=8.5	
			Zn	152±9	73±8	116±8	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	7	Yard or Quadrant:	FY-L
Sample Date:	6/2/2014	XRF Unit No.:	R184142
Sampler:	JERRY OVERTON		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1047 1049 1051	Rdg No.	#31	#32	#33	
			Pb	20±14	8±4	11±4	
			Cd	<LOD=8.1	<LOD=8.5	<LOD±7	
			Zn	207±10	161±9	184±9	

*DUP

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1055 1057 1100	Rdg No.	#34	#35	#36	
			Pb	8±4	<LOD=6.1	<LOD=6.3	
			Cd	<LOD=5.0	<LOD=8.2	<LOD=8.3	
			Zn	126±8	119±8	129±8	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1111 1116 1118	Rdg No.	#40	#41	#42	
			Pb	<LOD=5.8	<LOD=6.2	<LOD=6.2	
			Cd	<LOD=8.6	<LOD=8.5	<LOD=9.0	
			Zn	39±6	48±6	31±6	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1122 1125 1127	Rdg No.	#43	#44	#45	
			Pb	<LOD=6.5	<LOD=6.2	<LOD=6.2	
			Cd	<LOD=9.6	<LOD=8.9	<LOD=8.9	
			Zn	40±6	40±6	40±6	

*

DUP Other	XRF Date	XRF Time	XRF Results				
6-12 BELOW G.S.	6/2/2014 DUP	1104 1106 1108	Rdg No.	#37	#38	#39	
			Pb	11±4	<LOD=5.9	12±4	
			Cd	<LOD±8	<LOD=8.7	<LOD=8.2	
			Zn	191±9	101±8	182±10	

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 7
Sample Date: 2 June 2014
Sampler: Jerry Overton

Yard or Quadrant: BR
XRF Unit No.: R-184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	2 Jun 14	0938 0942 0946	Rdg No.	#7	#8	#9	
			Pb	21 ± 5	20 ± 5	26 ± 5	
			Cd	LOD = 8.0	<LOD = 8.5	< = 8.5	
			Zn	215 ± 10	191 ± 10	242 ± 11	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	2 Jun 14	0948 0951 0959	Rdg No.	#10	#11	#12	
			Pb	<LOD = 6.6	12 ± 4	11 ± 5	
			Cd	<LOD = 8.9	<LOD = 8.5	<LOD = 8.9	
			Zn	142 ± 9	199 ± 10	171 ± 10	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1001 1005 1007	Rdg No.	R#13	R#14	R#15	
			Pb	<LOD = 5.7	<LOD = 6.2	<LOD = 6.0	
			Cd	<LOD = 8.1	<LOD = 8.8	<LOD = 8.7	
			Zn	54 ± 6	71 ± 7	70 ± 7	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/14	1010 1012 1014	Rdg No.	R#16	R#17	R#18	
			Pb	<LOD = 6.1	<LOD = 6.3	<LOD = 6.2	
			Cd	<LOD = 8.8	<LOD = 8.8	<LOD = 8.9	
			Zn	47 ± 6	39 ± 6	34 ± 6	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

	Cd, Pb and Zn
	Other:

QA/QC

	Confirmation sample (10% of XRF readings)
	Field duplicate (10% of XRF and lab samples)
	Equipment blank (1 per day using non-disposable equipment)
	MS/MSD at this location (5% of samples)
	Other:

Comments:

Samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	7	Yard or Quadrant:	BL
Sample Date:	6/2/2014	XRF Unit No.:	R184142
Sampler:	Jerry Overton		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1018 1020 1023	Rdg No.	#19	#20	#21	
			Pb	23 ± 5	26 ± 5	24 ± 5	
			Cd	<LOD = 8.1	<LOD = 8.5	<LOD = 8.7	
			Zn	251 ± 11	307 ± 12	255 ± 11	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1026 1028 1031	Rdg No.	#22	#23	#24	
			Pb	17 ± 5	24 ± 5	16 ± 5	
			Cd	<LOD = 8.5	LOD = 8.6	LOD = 8.8	
			Zn	267 ± 11	266 ± 12	258 ± 12	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1033 1035 1038	Rdg No.	#25	#26	#27	
			Pb	<LOD = 6.1	<LOD ± 6.2	<LOD = 6.0	
			Cd	<LOD = 8.6	<LOD = 8.6	<LOD = 8.7	
			Zn	99 ± 8	135 ± 9	117 ± 8	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/2/2014	1040 1042 1044	Rdg No.	#28	#29	#30	
			Pb	<LOD = 6.5	<LOD = 6.3	<LOD = 6.2	
			Cd	<LOD = 5.6	<LOD = 8.7	<LOD = 8.8	
			Zn	38 ± 6	46 ± 6	57 ± 6	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis	0-6"	Cd, Pb and Zn
		Other:
QA/QC	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

samples are moist

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 8
Sample Date: 6/3/14
Sampler: SCOTT RUARK

Yard or Quadrant: FR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0918	Rdg No.	372	373	374	
			Pb	107±7	124±7	130±8	
			Cd	<LOD=8.3	<LOD=8.2	<LOD=8.3	
			Zn	932±20	1199±23	1351±25	

Dup

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0924	Rdg No.	375	376	377	
			Pb	8±5	26±5	29±5	
			Cd	<LOD=9.2	<LOD=8.7	<LOD=8.4	
			Zn	261±12	478±16	548±16	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0941	Rdg No.	381	382	383	
			Pb	8±4	<LOD=6.7	<LOD=6.6	
			Cd	<LOD=8.2	<LOD=9.9	<LOD=8.5	
			Zn	85±7	79±8	68±7	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0950	Rdg No.	384	385	386	
			Pb	<LOD=5.9	<LOD=6.0	<LOD=5.9	
			Cd	<LOD=8.4	<LOD=9.8	<LOD=8.6	
			Zn	50±6	45±6	69±7	

Dup

Other	XRF Date	XRF Time	XRF Results				
6-12" ~~0.5.~~ Ground Surface	6/4/14	0932	Rdg No.	378	379	380	
			Pb	19±5	19±4	20±5	
			Cd	<LOD=8.7	<LOD=8.1	<LOD=9.3	
			Zn	366±14	397±13	528±17	

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 8
Sample Date: 6/3/14
Sampler: SCOTT RUHNK

Yard or Quadrant: FL
XRF Unit No.: R 184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1000	Rdg No.	387	388	389	
			Pb	83±7	100±7	65±7	
			Cd	<LOD=8.4	<LOD=8.3	<LOD=9.9	
			Zn	1729±28	1637±27	1371±29	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1007	Rdg No.	390	391	392	
			Pb	<LOD=6.5	<LOD=6.7	<LOD=6.7	
			Cd	<LOD=8.7	<LOD=9.2	<LOD=9.0	
			Zn	224±11	222±12	241±12	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1015	Rdg No.	393	394	395	
			Pb	<LOD=6.4	<LOD=6.8	<LOD=7.0	
			Cd	<LOD=9	<LOD=9.8	<LOD=9.6	
			Zn	66±7	79±8	92±9	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1025	Rdg No.	396	397	398	
			Pb	<LOD=8.3	<LOD=7.1	<LOD=6.8	
			Cd	<LOD=11.6	<LOD=10.6	<LOD=9.9	
			Zn	33±8	43±7	36±6	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 8
Sample Date: 3 Jun 2014
Sampler: SCOTT RUARK

Yard or Quadrant: BYR
XRF Unit No.: A-184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0847	Rdg No.	360	361	362	
			Pb	157 ± 8	131 ± 8	169 ± 8	
			Cd	<LOD = 8.5	<LOD = 8.4	<LOD = 8.6	
			Zn	953 ± 21	974 ± 21	913 ± 20	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0855	Rdg No.	363	364	365	
			Pb	31 ± 5	32 ± 6	38 ± 6	
			Cd	<LOD = 9.0	<LOD = 9.2	<LOD = 8.7	
			Zn	382 ± 14	384 ± 15	426 ± 15	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0903	Rdg No.	366	367	368	
			Pb	<LOD = 6.2	<LOD = 6.7	<LOD = 6.7	
			Cd	<LOD = 8.7	<LOD = 8.9	<LOD = 9.5	
			Zn	66 ± 7	128 ± 9	82 ± 8	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0910	Rdg No.	369	370	371	
			Pb	<LOD = 6.3	<LOD = 6.5	<LOD = 6.5	
			Cd	<LOD = 9.1	<LOD = 9.4	<LOD = 9.3	
			Zn	37 ± 6	52 ± 7	48 ± 7	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	8	Yard or Quadrant:	BL
Sample Date:	6/3/14	XRF Unit No.:	R184142
Sampler:	Scott Ruark		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1037	Rdg No.	399	~~8~~ 400	401	
			Pb	44 ±5	60 ±6	77 ±6	
			Cd	<LOD=8.2	<LOD=8.5	<LOD=7.4	
			Zn	721 ±18	772 ±19	868 ±18	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1048	Rdg No.	402	403	404	
			Pb	9±4	9±4	9±4	
			Cd	<LOD=8.2	<LOD=8.7	<LOD=8.6	
			Zn	250 ±11	246 ±12	231 ±11	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1055	Rdg No.	405	406	407	
			Pb	<LOD=7.1	<LOD=6.7	<LOD=8.6	
			Cd	<LOD=9.7	<LOD=9.3	<LOD=11.5	
			Zn	51±7	58±7	64±9	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1104	Rdg No.	408	409	410	
			Pb	<LOD=7.5	<LOD=6.6	<LOD=8.3	
			Cd	<LOD=10.7	<LOD=9.5	<LOD=11.4	
			Zn	36±7	49±7	51±8	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	☐	Cd, Pb and Zn
	☐	Other:

QA/QC		
	☐	Confirmation sample (10% of XRF readings)
	☐	Field duplicate (10% of XRF and lab samples)
	☐	Equipment blank (1 per day using non-disposable equipment)
	☐	MS/MSD at this location (5% of samples)
	☐	Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 9
Sample Date: 6/3/14
Sampler: SK SS

Yard or Quadrant: FR
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	~~1703~~ 1707 SS	Rdg No.	118	119	120	
			Pb	100±8	71±8	136±9	
			Cd	<LOD=9.8	<LOD=11.6	<LOD=10.0	
			Zn	1604±29	1354±33	1671±31	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1712	Rdg No.	121	122	123	
			Pb	44±6	43±6	26±6	
			Cd	<LOD=10.4	<LOD=10.1	<LOD=10.0	
			Zn	809±22	822±22	619±19	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1724	Rdg No.	124	125	126	
			Pb	<LOD=6.7	11±5	<LOD=7.0	
			Cd	<LOD=9.7	<LOD=9.4	<LOD=10.5	
			Zn	250±12	391±15	190±12	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1733	Rdg No.	127	128	129	
			Pb	<LOD=6.9	<LOD=8.1	27±6	
			Cd	<LOD=11.2	<LOD=12.2	<LOD=10.0	
			Zn	86±9	119±11	107±9	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 9
Sample Date: 6/3/14
Sampler: SK BS

Yard or Quadrant: 9
XRF Unit No.: FL

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1742	Rdg No.	130	131	132	
			Pb	48±7	89±8	44±7	
			Cd	<LOD=10.7	<LOD=10.5	<LOD=11.1	
			Zn	572±20	628±20	556±20	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1750	Rdg No.	133	134	135	
			Pb	62±7	66±7	153±9	
			Cd	<LOD=10.4	<LOD=10.4	<LOD=10.4	
			Zn	818±23	929±24	1234±27	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0812	Rdg No.	141	142	143	
			Pb	28±6	34±6	31±7	
			Cd	<LOD=10.9	<LOD=10.7	<LOD=11.8	
			Zn	914±25	1185±27	784±24	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	0821	Rdg No.	144	145	146	
			Pb	<LOD=7.7	<LOD=9.3	<LOD=7.9	
			Cd	<LOD=11.2	<LOD=13.6	<LOD=11.0	
			Zn	496±19	394±21	487±19	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 9
Sample Date: 060314
Sampler: CM SS

Yard or Quadrant: BR
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results ~~140±8~~				
5- pt composite	60414	1036	Rdg No.	159	160 ~~160~~	161	
			Pb	190±9	140±8	143±9	
			Cd	<LOD=9.4	<LOD=9.6	<LOD=10.0	
			Zn	2300±34	2020±32	2079±33	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1045	Rdg No.	162	163	164	
			Pb	119±8	115±8	110±8	
			Cd	<LOD=9.9	<LOD=10.2	<LOD=9.7	
			Zn	1500±28	1577±30	1606±29	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1055	Rdg No.	165	166	167	
			Pb	<LOD=7.7	<LOD=7.6	<LOD=7.6	
			Cd	<LOD=10.6	<LOD=10.7	<LOD=10.3	
			Zn	416±17	439±17	383±16	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1103	Rdg No.	168	169	170	
			Pb	<LOD=7.1	<LOD=8.3	<LOD=7.0	
			Cd	<LOD=10.9	<LOD=12.8	<LOD=10.4	
			Zn	100±9	107±11	110±9	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

	Cd, Pb and Zn
	Other:

QA/QC

	Confirmation sample (10% of XRF readings)
	Field duplicate (10% of XRF and lab samples)
	Equipment blank (1 per day using non-disposable equipment)
	MS/MSD at this location (5% of samples)
	Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	9	Yard or Quadrant:	BL
Sample Date:	060314	XRF Unit No.:	R171092
Sampler:	SM JB		

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1000	Rdg No.	147	148	149	
			Pb	175±10	155±9	156±9	
			Cd	<LOD=10.6	<LOD=10.4	<LOD=10.2	
			Zn	2516±40	2886±42	2429±37	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/4/14	1007	Rdg No.	150	151	152	
			Pb	9±5	36±6	39±6	
			Cd	<LOD=10.1	<LOD=10.2	<LOD=10.0	
			Zn	832±22	814±22	868±22	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/4/14	1017	Rdg No.	153	154	155	
			Pb	8±5	<LOD=6.9	<LOD=7.2	
			Cd	<LOD=10.4	<LOD=9.5	<LOD=10.3	
			Zn	210±12	162±10	158±11	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/4/14	1027	Rdg No.	156	157	158	
			Pb	<LOD=6.8	<LOD=7.1	<LOD=8.1	
			Cd	<LOD=10.2	<LOD=10.8	<LOD=12.4	
			Zn	66±8	79±8	70±10	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis	0-6"	Cd, Pb and Zn
		Other:
QA/QC	X 0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
0-6" Black topsoil
6-12 clayey silt
6-24 Brown silty clay w/red-orange mottling

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 9
Sample Date: 6/3/14
Sampler: SK JS

Yard or Quadrant: Garden
XRF Unit No.: K171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1633	Rdg No.	106	107	108	
			Pb	232±9	340±12	289±11	
			Cd	<LOD=9.0	<LOD=10.2	<LOD=9.2	
			Zn	3455±39	4152±51	4454±46	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1639	Rdg No.	109	110	111	
			Pb	342±13	289±12	346±12	
			Cd	<LOD=10.7	<LOD=10.8	<LOD=10.1	
			Zn	8272±69	6584±62	7081±61	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1646	Rdg No.	112	113	114	
			Pb	92±7	109±8	154±9	
			Cd	<LOD=9.6	<LOD=10.0	<LOD=9.9	
			Zn	2155±33	2371±36	3891±45	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1652	Rdg No.	115	116	117	
			Pb	<LOD=6.3	<LOD=6.2	<LOD=6.3	
			Cd	<LOD=9.3	<LOD=9.4	<LOD=9.5	
			Zn	524±16	378±14	421±15	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis	0-6"	Cd, Pb and Zn
		Other:
QA/QC	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	10	Yard or Quadrant:	FR
Sample Date:	6/3/14	XRF Unit No.:	R 18442
Sampler:	SCOTT RUARK		

Depth	XRF Date	XRF Time	XRF Results				
0-6" Below Ground Surface 5- pt composite	6/4/14	0808	Rdg No.	348	349	350	
			Pb	68 ± 6	66 ± 7	72 ± 6	
			Cd	<LOD = 8.9	<LOD = 9.1	<LOD = 8.8	
			Zn	1029 ± 23	915 ± 22	1084 ± 23	
6-12" Below Ground Surface 5- pt composite	6/4/14	0814	Rdg No.	351	352	353	
			Pb	38 ± 6	92 ± 7	44 ± 5	
			Cd	<LOD = 9.3	<LOD = 8.7	<LOD = 8.1	
			Zn	726 ± 20	1272 ± 24	813 ± 19	
12-18" Below Ground Surface 5- pt composite	6/4/14	0823	Rdg No.	354	355	356	
			Pb	<LOD = 6.6	<LOD = 5.6	<LOD = 5.7	
			Cd	<LOD = 9.0	<LOD = 8.5	<LOD = 8.5	
			Zn	308 ± 13	349 ± 13	125 ± 8	
18-24" Below Ground Surface 5- pt composite	6/4/14	0830	Rdg No.	357	358	359	
			Pb	<LOD = 7.1	<LOD = 5.7	<LOD = 6.0	
			Cd	<LOD = 10.1	<LOD = 8.2	<LOD = 8.3	
			Zn	110 ± 9	66 ± 6	95 ± 7	
Other			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis	☐	Cd, Pb and Zn
	☐	Other:
QA/QC	☐	Confirmation sample (10% of XRF readings)
	☐	Field duplicate (10% of XRF and lab samples)
	☐	Equipment blank (1 per day using non-disposable equipment)
	☐	MS/MSD at this location (5% of samples)
	☐	Other:

Comments:

0-6" Black topsoil

6-24" Silty Clay, moist, Dk brown

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 10
Sample Date: 6/3/14
Sampler: SCOTT RUARK

Yard or Quadrant: FL
XRF Unit No.: R-18442

	XRF Date	XRF Time	XRF Results				
0-6" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1715	**Rdg No.**	329	330	331	
			Pb	86±7	101±7	105±7	
			Cd	<LOD±9.0	<LOD=9.0	<LOD=8.6	
			Zn	977±22	1103±24	1117±22	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1724	**Rdg No.**	332	333	334	
			Pb	52±6	56±6	81±7	
			Cd	<LOD=9.2	<LOD=8.5	<LOD=8.1	
			Zn	659±19	721±19	931±22	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results** ~~337~~ ~~338~~ 337 338 > NO READING				
5- pt composite	6/3/14	1732	**Rdg No.**	335	336	339	
			Pb	21±5	43±6	46±6	
			Cd	<LOD=8.4	<LOD=8.8	<LOD=9.3	
			Zn	229±11	408±15	500±15	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/3/14	1743	**Rdg No.**	340	341	342	
			Pb	<LOD=6.4	10±5	<LOD=6.4	
			Cd	<LOD=8.8	<LOD=8.8	<LOD=8.7	
			Zn	78±7	104±8	79±7	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

- [ ] Cd, Pb and Zn
- [ ] Other:

QA/QC

- [ ] Confirmation sample (10% of XRF readings)
- [ ] Field duplicate (10% of XRF and lab samples)
- [ ] Equipment blank (1 per day using non-disposable equipment)
- [ ] MS/MSD at this location (5% of samples)
- [ ] Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 10
Sample Date: 6/3/14
Sampler: SCOTT BUARK

Yard or Quadrant: BR
XRF Unit No.: K18442

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1544	Rdg No.	299	300	301	
			Pb	106 ± 7	114 ± 7	96 ± 7	
			Cd	<LOD = 8.1	<LOD = 8.5	<LOD = 8.3	
			Zn	1196 ± 22	1322 ± 25	1454 ± 25	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1554	Rdg No.	302	303	304	
			Pb	81 ± 7	119 ± 7	84 ± 7	
			Cd	<LOD = 8.8	<LOD = 8.3	<LOD = 9	
			Zn	940 ± 22	1249 ± 23	1071 ± 23	

Dup

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1601	Rdg No.	305	306	307	
			Pb	<LOD = 6.2	<LOD = 5.8	<LOD = 6.1	
			Cd	<LOD = 8.5	<LOD = 8.0	<LOD = 8.3	
			Zn	438 ± 15	379 ± 13	429 ± 14	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1616	Rdg No.	311	312	313	
			Pb	<LOD = 6.3	<LOD = 6.3	<LOD = 5.8	
			Cd	<LOD = 9.2	<LOD = 8.9	<LOD = 8.3	
			Zn	104 ± 9	88. ± 8	142 ± 9	

Dup

Other	XRF Date	XRF Time	XRF Results				
12-18 G.S.	6/3/14	1610	Rdg No.	308	309	310	
			Pb	<LOD = 5.9	13 ± 4	<LOD = 6.0	
			Cd	<LOD = 8.5	<LOD = 8.1	<LOD = 8.4	
			Zn	466 ± 15	517 ± 15	517 ± 15	

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
	12-18' XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 10
Sample Date: 6/3/14
Sampler: Scott Ruark

Yard or Quadrant: BL
XRF Unit No.: 818442

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1627	Rdg No.	314	315	316	
			Pb	147±8	152±8	162±8	
			Cd	<LOD=8.9	<LOD=8.5	<LOD=9.0	
			Zn	1459±26	1796±29	1826±30	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1634	Rdg No.	317	318	319	
			Pb	72±6	103±7	125±5	
			Cd	<LOD=8.8	<LOD=8.4	<LOD=9.0	
			Zn	848±20	1186±23	1834±30	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1640	Rdg No.	320	321	322	
			Pb	159±8	25±5	25±5	
			Cd	<LOD=8.8	<LOD=8.5	<LOD=8.4	
			Zn	1549±27	520±16	369±13	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/3/14	1651	Rdg No.	323	~~324~~ 327	328	
			Pb	<LOD=5.9	<LOD=6.1	<LOD=5.4	
			Cd	<LOD=8.4	<LOD=8.6	<LOD=7.6	
			Zn	194±10	119±8	142±8	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
	X	MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 11
Sample Date: 060404
Sampler: SR SS

Yard or Quadrant: FR
XRF Unit No.: RT1092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1421	Rdg No.	187	188	189	
			Pb	287±12	327±14	213±10	
			Cd	<LOD=10.3	<LOD=11.4	<LOD=10.2	
			Zn	3340±44	2704±44	2417±38	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1428	Rdg No.	190	191	192	
			Pb	<LOD=7.4	<LOD=7.7	<LOD=7.4	
			Cd	<LOD=10.4	<LOD=11.4	<LOD=10.3	
			Zn	350±16	268±15	360±16	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1435	Rdg No.	193	194	195	
			Pb	<LOD=6.9	<LOD=7.6	<LOD=7.3	
			Cd	<LOD=10.5	<LOD=11.6	<LOD=10.8	
			Zn	117±10	95±10	96±9	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1444	Rdg No.	196	197	198	
			Pb	<LOD=7.3	<LOD=6.7	<LOD=6.5	
			Cd	<LOD=11.4	<LOD=10.7	<LOD=10.3	
			Zn	152±12	73±8	164±11	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

18-24" orange-brown silty, rx fragments

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 11
Sample Date: 060414
Sampler: SR SB

Yard or Quadrant: FL
XRF Unit No.: R17092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1453	Rdg No.	199	200	201	
			Pb	157±9	182±10	155±9	
			Cd	<LOD=10.2	<LOD=9.9	<LOD=10.1	
			Zn	1564±30	1730±31	1596±30	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1504	Rdg No.	205	206	207	
			Pb	46±6	36±6	45±6	
			Cd	<LOD=9.9	<LOD=10.5	<LOD=9.9	
			Zn	630±19	565±20	616±19	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1512	Rdg No.	208	209	210	
			Pb	<LOD=6.7	<LOD=7.2	<LOD=7.3	
			Cd	<LOD=10.1	<LOD=10.3	<LOD=10.8	
			Zn	142±10	207±12	135±10	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1520	Rdg No.	211	212	213	
			Pb	<LOD=7.0	<LOD=6.7	<LOD=7.1	
			Cd	<LOD=10.3	<LOD=10.6	<LOD=10.8	
			Zn	79±8	58±8	93±9	

Other	XRF Date	XRF Time	XRF Results				
0-6" DUP	60414	1458	Rdg No.	202	203	204	
			Pb	173±10	113±9	143±9	
			Cd	<LOD=10.1	<LOD=10.7	<LOD=9.9	
			Zn	1691±31	1373±30	1505±30	

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
0-6"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 11
Sample Date: 060414
Sampler: SR JB

Yard or Quadrant: BR
XRF Unit No.: R17092

Depth	XRF Date	XRF Time	XRF Results				
0-6" Below Ground Surface 5- pt composite	60414	1122	Rdg No.	171	172	173	
			Pb	111±6	121±8	108±8	
			Cd	<LOD=7.9	<LOD=9.9	<LOD=10.3	
			Zn	857±18	877±22	863±23	
~~6-12"~~ Below Ground Surface 12-18" 5- pt composite	60414	1137	Rdg No.	177	178	179	
			Pb	<LOD=6.9	<LOD=6.9	<LOD=7.5	
			Cd	<LOD=10.5	<LOD=10.1	<LOD=10.9	
			Zn	116±10	126±10	107±10	
~~12-18"~~ Below Ground Surface 6-12" 5- pt composite	60414	1146	Rdg No.	180	181	182	
			Pb	11±5	14±6	19±6	
			Cd	<LOD=10.2	<LOD=10.6	<LOD=10.1	
			Zn	381±16	349±15	379±15	
18-24" Below Ground Surface 5- pt composite	60414	1152	Rdg No.	183	184	185	
			Pb	<LOD=7.5	<LOD=7.9	<LOD=7.5	
			Cd	<LOD=11.3	<LOD=12.0	<LOD=11.4	
			Zn	64±8	51±8	66±9	
Other 0-6" Dup	60414	1128	Rdg No.	174	175	176	
			Pb	107±8	114±8	128±8	
			Cd	<LOD=10.1	<LOD=10.1	<LOD=9.8	
			Zn	900±23	925±23	880±22	

Laboratory Analysis		Cd, Pb and Zn
		Other:
QA/QC		Confirmation sample (10% of XRF readings)
0-6"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 11
Sample Date: 060414
Sampler: SM 8S

Yard or Quadrant: BL
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1530	Rdg No.	214	215	216	
			Pb	87±7	69±6	69±7	
			Cd	<LOD=9.7	<LOD=8.6	<LOD=9.4	
			Zn	1133±25	917±20	886±22	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1539	Rdg No.	217	218	219	
			Pb	9±5	8±5	14±6	
			Cd	<LOD=10.1	<LOD=10.0	<LOD=10.6	
			Zn	278±14	298±14	266±14	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1556	Rdg No.	223	224	225	
			Pb	<LOD=8.8	<LOD=8.9	<LOD=6.2	
			Cd	<LOD=12.1	<LOD=12.5	<LOD=9.8	
			Zn	71±10	75±10	89±8	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	60414	1604	Rdg No.	226	227	228	
			Pb	<LOD=7.7	<LOD=7.7	<LOD=7.9	
			Cd	<LOD=11.6	<LOD=10.9	<LOD=12.0	
			Zn	47±8	43±7	41±8	

Other	XRF Date	XRF Time	XRF Results				
6-12" DUP	60414	1539	Rdg No.	220	221	222	
			Pb	14±5	11±5	<LOD=7.1	
			Cd	<LOD=9.7	<LOD=10.3	<LOD=10.1	
			Zn	275±13	261±14	342±15	

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

0-6" Dk brown topsoil
6-12" Brick or red rx fragments, brown
12-24" Lt brown clayey silt, more red-or in 18-24"

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 12
Sample Date: 6/4/14
Sampler: Scott Ruark

Yard or Quadrant: FYR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/4/14 ~~1413~~	1413	Rdg No.	440	441	442
			Pb	95 ± 6	61 ± 6	61 ± 6
			Cd	<LOD = 7.7	~~727 ± 18~~ <LOD = 8.2	<LOD = 8.3
			Zn	792 ± 17	727 ± 18	711 ± 18

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/4/14	1432	Rdg No.	443	444	445
			Pb	<LOD = 5.9	7 ± 4	<LOD = 6.7
			Cd	<LOD = 8.0	<LOD = 8.3	LOD = 9.2
			Zn	259 ± 11	263 ± 11	240 ± 12

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/4/14	1447	Rdg No.	446	447	448
			Pb	<LOD = 7.1	<LOD = 6.3	<LOD = 6.0
			Cd	<LOD = 10.2	<LOD = 8.6	<LOD = 8.8
			Zn	95 ± 6	154 ± 9	93 ± 8

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results			
DUP 5- pt composite	6/4/14	1453	Rdg No.	449	450	451
			Pb	<LOD = 6.4	<LOD = 7.5	<LOD = 6.5
			Cd	<LOD = 8.9	<LOD = 10.9	<LOD = 9.4
			Zn	83 ± 4	50 ± 8	47 ± 7

Other	XRF Date	XRF Time	XRF Results			
DUP 18-24 Ground Surface	6/4/14	1511	Rdg No.	452	453	454
			Pb	<LOD = 6.9	<LOD = 6.0	<LOD = 7.0
			Cd	<LOD = 10.1	<LOD = 8.8	<LOD = 10.1
			Zn	76 ± 8	57 ± 6	49 ± 7

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
18-24"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
0-6 Dk brown topsoil w/clay
6-24 Silty clay, rx fragments
red-orange mottling 18-24" Dk yellow brown

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 12
Sample Date: 6/4/14
Sampler: SCOTT RUARK

Yard or Quadrant: FL
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/4/14	1320	Rdg No.	425	426	427
			Pb	62 ± 6	57 ± 6	30 ± 5
			Cd	<LOD = 6.9	<LOD = 8.5	<LOD = 8.3
			Zn	717 ± 19	781 ± 19	552 ± 16

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/4/14	1341	Rdg No.	431	432	433
			Pb	31 ± 5	26 ± 5	13 ± 5
			Cd	<LOD = 8.4	<LOD = 8.7	<LOD = 8.8
			Zn	264 ± 11	259 ± 12	272 ± 12

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/4/14	1347	Rdg No.	434	435	436
			Pb	<LOD = 7.7	<LOD = 5.7	<LOD = 6.6
			Cd	<LOD = 10.6	<LOD = 8.5	<LOD = 9.5
			Zn	83 ± 9	60 ± 6	61 ± 7

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results			
5- pt composite	6/4/14	1405	Rdg No.	437	438	439
			Pb	<LOD = 6.7	<LOD = 6.0	<LOD = 6.1
			Cd	<LOD = 9.6	<LOD = 9.2	<LOD = 9.3
			Zn	35 ± 6	39 ± 6	51 ± 7

Other	XRF Date	XRF Time	XRF Results			
0-6" Below Ground Surface	6/4/14	1330	Rdg No.	428	429	430
			Pb	116 ± 7	89 ± 6	67 ± 6
			Cd	<LOD = 8.2	<LOD = 7.5	<LOD = 8.6
			Zn	951 ± 21	846 ± 18	778 ± 19

Laboratory Analysis

	Cd, Pb and Zn
	Other:

QA/QC

0-6" XRF	Confirmation sample (10% of XRF readings)
	Field duplicate (10% of XRF and lab samples)
	Equipment blank (1 per day using non-disposable equipment)
	MS/MSD at this location (5% of samples)
	Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 12
Sample Date: 6/4/14
Sampler: Scott Ruark

Yard or Quadrant: BR
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1523	Rdg No.	455	456	457	
			Pb	188 ± 10	144 ± 8	146 ± 8	
			Cd	<LOD = 8.9	<LOD = 8.6	<LOD = 8.5	
			Zn	820 ± 21	840 ± 21	866 ± 20	

6-12" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1531	Rdg No.	458	459	460	
			Pb	24 ± 4	84 ± 6	39 ± 5	
			Cd	<LOD = 6.9	<LOD = 8.3	<LOD = 7.2	
			Zn	349 ± 10	587 ± 16	386 ± 12	

12-18" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1547	Rdg No.	461	462	463	
			Pb	<LOD = 10.6	<LOD = 6.8	23 ± 6	
			Cd	<LOD = 13.1	<LOD = 9.1	<LOD = 10	
			Zn	123 ± 14	184 ± 11	215 ± 12	

18-24" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1557	Rdg No.	~~464~~ 467	468	469	
			Pb	<LOD = 10.1	<LOD = 12.1	<LOD = 7.0	
			Cd	<LOD = 13.3	<LOD = 15.1	<LOD = 9.8	
			Zn	55 ± 11	46 ± 12	95 ± 9	

Other	XRF Date	XRF Time		XRF Results			
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

0-6"	Cd, Pb and Zn
	Other:

QA/QC

X 0-6"	Confirmation sample (10% of XRF readings)
	Field duplicate (10% of XRF and lab samples)
	Equipment blank (1 per day using non-disposable equipment)
	MS/MSD at this location (5% of samples)
	Other:

Comments:
0-12" Dk brown clayey silt
12-24 Brown w/red-orange, yellow mottling, rx fragments

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 12
Sample Date: 6/4/14
Sampler: SCOTT RUARK

Yard or Quadrant: BL
XRF Unit No.: R184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1130	Rdg No.	411	412	413	
			Pb	138±8	127±7	158±8	
			Cd	<LOD=8.4	<LOD=8.0	<LOD=8.3	
			Zn	1163±23	1252±23	1287±23	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1142	Rdg No.	414	415	416	
			Pb	14±6	89±	52±5	
			Cd	<LOD=10.2	<LOD=8.9	<LOD=8.2	
			Zn	220±13	728±20	548±15	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1156	Rdg No.	417	418	419	
			Pb	<LOD=7.2	<LOD=6.5	<LOD=7.0	
			Cd	<LOD=10.2	<LOD=9.6	<LOD=9.9	
			Zn	89±9	62±7	58±7	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/4/14	1258	Rdg No.	420	421	422	
			Pb	9±5	<LOD=7.7	<LOD=6.4	
			Cd	<LOD=10.4	<LOD=10.5	<LOD=13.5	
			Zn	223±13	123±10	288±11	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis

☐	Cd, Pb and Zn
☐	Other:

QA/QC

☐	Confirmation sample (10% of XRF readings)
☐	Field duplicate (10% of XRF and lab samples)
☐	Equipment blank (1 per day using non-disposable equipment)
☐	MS/MSD at this location (5% of samples)
☐	Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID:	13	Yard or Quadrant:	FR
Sample Date:	6/4/14	XRF Unit No.:	A184142
Sampler:	Scott Ruark		

0-6" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1622	Rdg No.	~~469~~ 470	471	472	
			Pb	266 ± 10	310 ± 11	282 ± 11	
			Cd	<LOD = 8.6	<LOD = 9.1		
			Zn	2222 ± 32	2192 ± 34	2157 ± 32	

6-12" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1632	Rdg No.	473	474	475	
			Pb	50 ± 6	85 ± 7	62 ± 6	
			Cd	<LOD = 8.3	<LOD = 9.0	~~<LOD = 8.7~~	
			Zn	396 ± 13	671 ± 19	~~460 ± 15~~ 302 ± 14	

12-18" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1643	Rdg No.	476	477	478	
			Pb	16 ± 5	22 ± 5	~~14 ± 6~~ 19 ± 5	
			Cd	<LOD = 9.1	<LOD = 9.5	~~<LOD = 10.8~~ <LOD = 9.2	
			Zn	216 ± 11	373 ± 15	277 ± 14	

18-24" Below Ground Surface	XRF Date	XRF Time		XRF Results			
5- pt composite	6/4/14	1653	Rdg No.	479	480	481	
			Pb	<LOD = 7.8	16 ± 5	<LOD = 7.0	
			Cd	<LOD = 11.1	<LOD = 8.9	<LOD = 9.4	
			Zn	78 ± 9	111 ± 9	67 ± 7	

Other	XRF Date	XRF Time		XRF Results			
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	X 0-6"	Confirmation sample (10% of XRF readings)
	Lab 0-6"	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

0-6" DK brown/black topsoil
~~6-12~~ some clay
6-24" DK brown, rx fragments

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 13
Sample Date: 6/4/14
Sampler: SCOTT RUARK

Yard or Quadrant: ~~13~~ FL
XRF Unit No.: R 184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	~~09~~ 6/5/14	0940	Rdg No.	511	512	513	
			Pb	70±70	80±7	71±7	
			Cd	<LOD=9.2	<LOD=9.2	<LOD=9.2	
			Zn	754±20	745±20	708±19	
6-12" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/5/14	0947	Rdg No.	514	515	516	
			Pb	42±6	32±5	41±6	
			Cd	<LOD=9.5	<LOD=9.0	<LOD=9.1	
			Zn	565±18	490±16	516±17	
12-18" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/5/14	1000	Rdg No.	520	521	522	
			Pb	<LOD=6.9	<LOD=8.5	<LOD=7.4	
			Cd	<LOD=10.3	<LOD=11	<LOD=9.8	
			Zn	130±10	126±11	116±10	
18-24" Below Ground Surface	**XRF Date**	**XRF Time**	**XRF Results**				
5- pt composite	6/5/14	1005	Rdg No.	523	524	525	
			Pb	<LOD=7.6	LOD=7.8	<LOD=9.0	
			Cd	<LOD=10.8	<LOD=10.5	<LOD=12.2	
			Zn	38±7	59±8	42±8	
Other	**XRF Date**	**XRF Time**	**XRF Results**				
6-12" Ground Surface	6/5/14	0953	Rdg No.	517	518	519	
			Pb	34±5	37±6	41±6	
			Cd	<LOD=9	<LOD=9.7	<LOD=10.1	
			Zn	494±16	522±18	561±19	

Dup

Dup

Laboratory Analysis

	Cd, Pb and Zn
	Other:

QA/QC

		Confirmation sample (10% of XRF readings)
6-12"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments: 0-6" Black/dk brown Topsoil w/Some clay
clay content increases w/depth
18-24" Dk gray-brown Silty clay

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 13
Sample Date: 6/4/14
Sampler: SCOTT RUARK

Yard or Quadrant: BR
XRF Unit No.: R. 184142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0915	Rdg No.	499	500	501	
			Pb	128±8	136±8	248±10	
			Cd	<LOD=8.6	<LOD=8.2	<LOD=8.8	
			Zn	975±22	841±19	3259±10	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0920	Rdg No.	502	503	504	
			Pb	42±6	64±6	55±6	
			Cd	<LOD=9.5	<LOD=8.8	<LOD=14.3	
			Zn	373±15	607±18	514±16	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0927	Rdg No.	505	506	507	
			Pb	<LOD=7.1	22±5	12±7	
			Cd	<LOD=9.4	LOD=9.4	<LOD=7.5	
			Zn	72±8	120±9	90±11	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0933	Rdg No.	508	509	510	
			Pb	<LOD=7.0	<LOD=6.9	9±5	
			Cd	<LOD=10.2	<LOD=10.2	<LOD=9.6	
			Zn	33±7	51±7	45±7	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
	lab 0-6"	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

0-12 Dk brown/black topsoil w/ clay
12-24" yellow-brown silty clay

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 13
Sample Date: 6/4/14
Sampler: SCOTT RUARK

Yard or Quadrant: BL
XRF Unit No.: R18Y142

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0835	Rdg No.	487	488	489	
			Pb	69±7	81±7	93±8	
			Cd	<LOD=9.2	<LOD=9.7	<LOD=9.6	
			Zn	578±18	581±19	565±18	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0841	Rdg No.	490	491	492	
			Pb	57±7	32±5	58±7	
			Cd	<LOD=10.1	<LOD=9.0	<LOD=10.3	
			Zn	487±18	362±14	638±21	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0850	Rdg No.	493	494	495	
			Pb	<LOD=9.9	<LOD=7.6	14±5	
			Cd	<LOD=13.0	<LOD=10.2	<LOD=9	
			Zn	56±10	70±8	85±8	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite	6/5/14	0903	Rdg No.	496	497	498	
			Pb	<LOD=6.9	<LOD=9.2	<LOD=7.4	
			Cd	<LOD=9.6	<LOD=12.2	<LOD=10	
			Zn	52±7	37±9	60±8	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
DK brown Silty Clay
6-12 Brown-gray
18-24 clay, DK brown

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 14
Sample Date: 060414
Sampler: 88

Yard or Quadrant: S-A
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
Discrete ~~5-pt composite~~	060414	1649	Rdg No.	230	231	232	
			Pb	296±11	282±11	324±12	
			Cd	<LOD=9.7	<LOD=10.0	<LOD=10.0	
			Zn	2799±39	2803±40	2873±40	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	X 0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 14
Sample Date: 060414
Sampler: SS

Yard or Quadrant: S-B
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
discrete ~~5-pt composite~~	060514	0934	Rdg No.	238	239	240	
			Pb	388±13	424±14	432±14	
			Cd	<LOD=12.4	<LOD=9.5	<LOD=10.4	
			Zn	2214±36	2495±37	3145±42	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	X 0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	X 0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 14
Sample Date: 060414
Sampler: J8

Yard or Quadrant: S-C
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
Discrete ~~5-pt composite~~	060514	0840	Rdg No.	241	242	243	
			Pb	337±12	351±13	331±13	
			Cd	<LOD=10.1	<LOD=10.1	<LOD=10.6	
			Zn	3093±42	4193±48	3107±44	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
5- pt composite			Rdg No.				
			Pb				
			Cd				
			Zn				

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 14
Sample Date: 060414
Sampler: SN 88

Yard or Quadrant: SB-1
XRF Unit No.: R171092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results				
Discrete ~~5-pt composite~~	060514	0847	Rdg No.	244	245	246	
			Pb	978±21	957±21	1035±23	
			Cd	<LOD=11.1	<LOD=11.1	14±8	
			Zn	13.1K±0.1K	12.2K±0.1K	14.1K±0.1K	

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results				
Discrete ~~5-pt composite~~	060514	0905	Rdg No.	250	251	252	
			Pb	<LOD=7.7	<LOD=7.7	<LOD=7.7	
			Cd	<LOD=10.5	<LOD=10.7	<LOD=10.6	
			Zn	205±12	244±13	207±12	

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results				
Discrete ~~5-pt composite~~	060514	0912	Rdg No.	253	254	255	
			Pb	11±6	28±6	<LOD=8.1	
			Cd	<LOD=10.9	<LOD=10.6	<LOD=11.2	
			Zn	226±13	535±19	187±12	

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results				
Discrete ~~5-pt composite~~	060514	0931	Rdg No.	256	257	258	
			Pb	11±6	<LOD=9.0	<LOD=8.1	
			Cd	<LOD=11.3	<LOD=12.3	<LOD=11.5	
			Zn	280±15	169±13	180±13	

Other	XRF Date	XRF Time	XRF Results				
			Rdg No.				
			Pb				
			Cd				
			Zn				

Laboratory Analysis		
	0-6"	Cd, Pb and Zn
		Other:

QA/QC		
	0-6"	Confirmation sample (10% of XRF readings)
		Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
0-6" – Black topsoil
6-18" " w/ clay
18-24 Brown w/ lt yellow brown clay seams

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 14
Sample Date: 060414
Sampler: SRL JS

Yard or Quadrant: SB-2
XRF Unit No.: R71092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	0943	Rdg No.	259	260	261
			Pb	141±10	142±9	136±9
			Cd	<LOD=11.9	<LOD=10.7	<LOD=10.8
			Zn	1909±38	2421±39	1994±36

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	0855	Rdg No.	247	248	249
			Pb	27±7	<LOD=7.4	38±7
			Cd	<LOD=12.0	<LOD=10.5	<LOD=11.0
			Zn	923±27	590±20	1228±29

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	0952	Rdg No.	265	266	267
			Pb	<LOD=8.8	<LOD=7.4	<LOD=7.5
			Cd	<LOD=12.9	<LOD=10.9	<LOD=11.0
			Zn	107±11	119±10	128±10

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	0958	Rdg No.	268	269	270
			Pb	<LOD=7.8	<LOD=7.7	<LOD=7.7
			Cd	<LOD=11.6	<LOD=11.6	<LOD=15.0
			Zn	85±9	73±9	69±9

Other	XRF Date	XRF Time	XRF Results			
Discrete	6/5/14	0943	Rdg No.	262	263	264
			Pb	109±9	109±8	117±9
			Cd	<LOD=11.3	<LOD=13.6	<LOD=10.7
			Zn	1962±36	1881±34	1937±35

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
0-6" Black topsoil
>6" Brown silty clay
12-24" yellow brown silty clay

RESIDENTIAL SOIL XRF LOG
FORMER OWENS SMELTER SITE, CANEY, KS

Property ID: 14
Sample Date: 060414
Sampler: SR JS

Yard or Quadrant: SB-3
XRF Unit No.: R172092

0-6" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	1006	Rdg No.	271	272	273
			Pb	909±22	501±16	634±18
			Cd	<LOD=12.0	<LOD=11.6	<LOD=11.0
			Zn	8073±79	6279±65	7232±68

6-12" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	1012	Rdg No.	274	275	276
			Pb	76±5	37±6	9±5
			Cd	<LOD=13.5	<LOD=10.4	<LOD=10.4
			Zn	281±12	420±16	214±12

12-18" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	1017	Rdg No.	277	278	279
			Pb	<LOD=7.9	<LOD=7.5	19±6
			Cd	<LOD=11.2	<LOD=10.9	<LOD=10.6
			Zn	198±13	109±9	126±10

18-24" Below Ground Surface	XRF Date	XRF Time	XRF Results			
Discrete ~~5-pt composite~~	060514	1026	Rdg No.	280	281	282
			Pb	17±6	36±7	12±7
			Cd	<LOD=10.7	<LOD=11.4	<LOD=14.1
			Zn	251±13	254±14	192±16

Other	XRF Date	XRF Time	XRF Results			
Duplicate '18-24"	060514	1028	Rdg No.	283	284	285
			Pb	106±8	30±7	19±6
			Cd	<LOD=13.5	<LOD=11.6	<LOD=11.2
			Zn	645±20	397±18	276±15

Laboratory Analysis		
		Cd, Pb and Zn
		Other:

QA/QC		
		Confirmation sample (10% of XRF readings)
18-24"	XRF	Field duplicate (10% of XRF and lab samples)
		Equipment blank (1 per day using non-disposable equipment)
		MS/MSD at this location (5% of samples)
		Other:

Comments:
0-6" Black topsoil w/ brick fragments
6-18 "
18-24 Dk brown clayey silt

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Date 06/02/14 By JG Sheet No.____of_____

Project Former Owens Smelter Site Subject Resi Sampling

6/2/14 - Lab Samples

52 Comp. Samples Collected
6 XRF dups

✓	RS-5-FR-12-18"		06/02/14	1122	
✓	RS-5-FL-6-12"		06/02/14	1142	
✓	RS-4-FR-6-12"		06/02/14	1413	
✓	RS-4-FL-0-6"		06/02/14	1458	KDHE Split
✓	RS-3-BR-0-6"		06/02/14	1606	
	RS-7-BL-0-6"		06/02/14		

6/3/14

82 ~~86~~ Comp. Samples Collected
5 XRF dups

✓	RS-9-G-0-6"		06/03/14	1607	
✓	RS-6-BR-0-6"		06/03/14	~~1625~~ 0925	KDHE Split
✓	RS-10-BL-0-6"	MS/MSD	06/03/14	1452	
✓	RS-3-FL-6-12"		06/02/14	1547	RS-3-BL-0-6" KDHE Split
✓	RS-1-BR-0-6"		06/03/14	1048	KDHE Split
✓	RS-6-BL-12-18"		06/03/14	0957	
✓	RS-3-BL-0-6"		06/02/14	1623	
✓	RS-6-FL-0-6"	FD	06/03/14	0828	

RS-5-FL-0-6" KDHE Split

ENTACT
environmental services
www.entact.com

Date 06/04/14 By J8 Sheet No.____of_____

Project Former Owens Smelter Site Subject Resi Sampling

6/4/14

67 samples screened
6 XRF dups

✓ RS-11-FR-0-6"	060414	1120
✓ RS-8-BR-0-6"	060314	1742
✓ RS-12-BR-0-6"	060414	0936
✓ RS-13-FR-0-6"/FD	060414	1510
✓ RS-14-SA-0-6"	060414	1305
RS-9-BL-0-6"	060314	1642

6/5/14

RS-14-S-B-0-6"	060414	1300
RS-14-SB1-0-6"	060414	1415
RS-13-BR-0-6"	060414	1552
RS-13-BR-0-6"-FD	060414	1552

26 samples screened
3 XRF dups

APPENDIX E

LABORATORY DATA

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

TestAmerica Job ID: 500-78365-1
Client Project/Site: Former Owens Zinc Caney, Kansas

For:
ENTACT, LLC
3129 Bass Pro Drive
Grapevine, Texas 76051

Attn: Mrs. Jenny Self

Authorized for release by:
6/20/2014 3:41:16 PM

Bonnie Stadelmann, Senior Project Manager
(708)534-5200
bonnie.stadelmann@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Job ID: 500-78365-1

Laboratory: TestAmerica Chicago

Narrative

Job Narrative
500-78365-1

Comments
No additional comments.

Receipt
The samples were received on 6/6/2014 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5º C.

Metals
Method(s) 6010C: The continuing calibration verification (CCV) at line 49 associated with batch 240535 recovered above the upper control limit for Zn. The samples 500-78365-30 associated with this CCV was a non-detect for the affected analyte; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client: ENTACT, LLC
TestAmerica Job ID: 500-78365-1
Project/Site: Former Owens Zinc Caney, Kansas

Client Sample ID: RS-5-FR-12-18" — Lab Sample ID: 500-78365-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	9.9		0.23	0.030	mg/Kg	1	☼	6010C	Total/NA
Lead	480		0.58	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	3600	B	23	3.4	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-5-FL-6-12" — Lab Sample ID: 500-78365-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	26		0.20	0.026	mg/Kg	1	☼	6010C	Total/NA
Lead	1000		0.51	0.13	mg/Kg	1	☼	6010C	Total/NA
Zinc	9300	B	20	3.0	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-4-FR-6-12" — Lab Sample ID: 500-78365-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	8.4		0.24	0.031	mg/Kg	1	☼	6010C	Total/NA
Lead	400		0.60	0.16	mg/Kg	1	☼	6010C	Total/NA
Zinc	2400	B	24	3.5	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-4-FL-0-6" — Lab Sample ID: 500-78365-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	9.0		0.23	0.029	mg/Kg	1	☼	6010C	Total/NA
Lead	330		0.57	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	2200	B	2.3	0.33	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-3-BR-0-6" — Lab Sample ID: 500-78365-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	4.4		0.23	0.029	mg/Kg	1	☼	6010C	Total/NA
Lead	150		0.57	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	1000	B	2.3	0.33	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-9-G-0-6" — Lab Sample ID: 500-78365-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	28		0.26	0.033	mg/Kg	1	☼	6010C	Total/NA
Lead	550		0.65	0.17	mg/Kg	1	☼	6010C	Total/NA
Zinc	5900	B	26	3.7	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-6-BR-0-6" — Lab Sample ID: 500-78365-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	6.3		0.22	0.028	mg/Kg	1	☼	6010C	Total/NA
Lead	800		0.56	0.14	mg/Kg	1	☼	6010C	Total/NA
Zinc	2200	B	22	3.2	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-10-BL-0-6" — Lab Sample ID: 500-78365-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	29	B V	0.25	0.031	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: RS-10-BL-0-6" (Continued)
Lab Sample ID: 500-78365-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	330		0.62	0.16	mg/Kg	1	☼	6010C	Total/NA
Zinc	4100		25	3.6	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-3-FL-6-12"
Lab Sample ID: 500-78365-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	14	B	0.23	0.030	mg/Kg	1	☼	6010C	Total/NA
Lead	420		0.59	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	2700		23	3.4	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-1-BR-0-6"
Lab Sample ID: 500-78365-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	6.6	B	0.22	0.028	mg/Kg	1	☼	6010C	Total/NA
Lead	210		0.56	0.14	mg/Kg	1	☼	6010C	Total/NA
Zinc	1000		2.2	0.32	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-6-BL-12-18"
Lab Sample ID: 500-78365-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	12	B	0.21	0.026	mg/Kg	1	☼	6010C	Total/NA
Lead	230		0.52	0.13	mg/Kg	1	☼	6010C	Total/NA
Zinc	3200		21	3.0	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-3-BL-0-6"
Lab Sample ID: 500-78365-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	4.2	B	0.22	0.028	mg/Kg	1	☼	6010C	Total/NA
Lead	170		0.56	0.14	mg/Kg	1	☼	6010C	Total/NA
Zinc	910		2.2	0.32	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-6-FL-0-6"
Lab Sample ID: 500-78365-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	13	B	0.22	0.028	mg/Kg	1	☼	6010C	Total/NA
Lead	330		0.55	0.14	mg/Kg	1	☼	6010C	Total/NA
Zinc	3600		22	3.2	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-7-BL-0-6"
Lab Sample ID: 500-78365-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	3.3	B	0.25	0.032	mg/Kg	1	☼	6010C	Total/NA
Lead	58		0.62	0.16	mg/Kg	1	☼	6010C	Total/NA
Zinc	470		2.5	0.36	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-6-FL-0-6"-FD
Lab Sample ID: 500-78365-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	8.6	B	0.22	0.027	mg/Kg	1	☼	6010C	Total/NA
Lead	360		0.54	0.14	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: ENTACT, LLC
TestAmerica Job ID: 500-78365-1
Project/Site: Former Owens Zinc Caney, Kansas

Client Sample ID: RS-6-FL-0-6"-FD (Continued) — Lab Sample ID: 500-78365-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Zinc	2400		22	3.1	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RB-001 — Lab Sample ID: 500-78365-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.00023	J B	0.0020	0.00022	mg/L	1		6010C	Total/NA
Zinc	0.0045	J B	0.020	0.0019	mg/L	1		6010C	Total/NA

Client Sample ID: RB-002 — Lab Sample ID: 500-78365-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.00041	J B	0.0020	0.00022	mg/L	1		6010C	Total/NA
Zinc	0.0035	J B	0.020	0.0019	mg/L	1		6010C	Total/NA

Client Sample ID: RB-003 — Lab Sample ID: 500-78365-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.00031	J B	0.0020	0.00022	mg/L	1		6010C	Total/NA
Zinc	0.014	J B	0.020	0.0019	mg/L	1		6010C	Total/NA

Client Sample ID: RS-11-FR-0-6" — Lab Sample ID: 500-78365-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	8.5	B	0.22	0.028	mg/Kg	1	☼	6010C	Total/NA
Lead	210		0.55	0.14	mg/Kg	1	☼	6010C	Total/NA
Zinc	1900		22	3.2	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-8-BR-0-6" — Lab Sample ID: 500-78365-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	4.4	B	0.23	0.029	mg/Kg	1	☼	6010C	Total/NA
Lead	180		0.58	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	1100		2.3	0.33	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-12-BR-0-6" — Lab Sample ID: 500-78365-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	4.1	B	0.23	0.029	mg/Kg	1	☼	6010C	Total/NA
Lead	180		0.58	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	870		2.3	0.33	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-13-FR-0-6" — Lab Sample ID: 500-78365-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	6.4	B	0.21	0.026	mg/Kg	1	☼	6010C	Total/NA
Lead	310		0.52	0.13	mg/Kg	1	☼	6010C	Total/NA
Zinc	2200		21	3.0	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-13-FR-0-6"-FD — Lab Sample ID: 500-78365-23

This Detection Summary does not include radiochemical test results.

Client Sample ID: RS-13-FR-0-6"-FD (Continued) — Lab Sample ID: 500-78365-23

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	5.8	B	0.23	0.029	mg/Kg	1	☼	6010C	Total/NA
Lead	230		0.57	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	1800		2.3	0.33	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-14-SA-0-6" — Lab Sample ID: 500-78365-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	11	B	0.23	0.029	mg/Kg	1	☼	6010C	Total/NA
Lead	380		0.58	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	3100		23	3.3	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-9-BL-0-6" — Lab Sample ID: 500-78365-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	9.8	B	0.23	0.029	mg/Kg	1	☼	6010C	Total/NA
Lead	230		0.58	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	2500		23	3.4	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-14-S-B-0-6" — Lab Sample ID: 500-78365-26

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	9.2	B	0.21	0.027	mg/Kg	1	☼	6010C	Total/NA
Lead	470		0.53	0.14	mg/Kg	1	☼	6010C	Total/NA
Zinc	2400		21	3.1	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-14-SB1-0-6" — Lab Sample ID: 500-78365-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	43	B	0.25	0.032	mg/Kg	1	☼	6010C	Total/NA
Lead	1000		0.62	0.16	mg/Kg	1	☼	6010C	Total/NA
Zinc	9500		25	3.6	mg/Kg	10	☼	6010C	Total/NA

Client Sample ID: RS-13-BR-0-6" — Lab Sample ID: 500-78365-28

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	6.7	B	0.24	0.030	mg/Kg	1	☼	6010C	Total/NA
Lead	310		0.59	0.15	mg/Kg	1	☼	6010C	Total/NA
Zinc	1500		2.4	0.34	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RS-13-BR-0-6"-FD — Lab Sample ID: 500-78365-29

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	5.6	B	0.22	0.028	mg/Kg	1	☼	6010C	Total/NA
Lead	280		0.55	0.14	mg/Kg	1	☼	6010C	Total/NA
Zinc	1400		2.2	0.32	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: RB-004 — Lab Sample ID: 500-78365-30

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.00048	J B	0.0020	0.00022	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: RB-004 (Continued) Lab Sample ID: 500-78365-30

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Zinc	0.0029	J ^	0.020	0.0019	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: ENTACT, LLC
Project/Site: Former Owens Zinc Caney, Kansas

TestAmerica Job ID: 500-78365-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
500-78365-1	RS-5-FR-12-18"	Solid	06/02/14 11:22	06/06/14 10:10
500-78365-2	RS-5-FL-6-12"	Solid	06/02/14 11:42	06/06/14 10:10
500-78365-3	RS-4-FR-6-12"	Solid	06/02/14 14:13	06/06/14 10:10
500-78365-4	RS-4-FL-0-6"	Solid	06/02/14 14:58	06/06/14 10:10
500-78365-5	RS-3-BR-0-6"	Solid	06/02/14 16:06	06/06/14 10:10
500-78365-6	RS-9-G-0-6"	Solid	06/03/14 16:07	06/06/14 10:10
500-78365-7	RS-6-BR-0-6"	Solid	06/03/14 09:25	06/06/14 10:10
500-78365-8	RS-10-BL-0-6"	Solid	06/03/14 14:52	06/06/14 10:10
500-78365-9	RS-3-FL-6-12"	Solid	06/02/14 15:47	06/06/14 10:10
500-78365-10	RS-1-BR-0-6"	Solid	06/03/14 10:48	06/06/14 10:10
500-78365-11	RS-6-BL-12-18"	Solid	06/03/14 09:57	06/06/14 10:10
500-78365-12	RS-3-BL-0-6"	Solid	06/02/14 16:23	06/06/14 10:10
500-78365-13	RS-6-FL-0-6"	Solid	06/03/14 08:28	06/06/14 10:10
500-78365-14	RS-7-BL-0-6"	Solid	06/02/14 09:33	06/06/14 10:10
500-78365-15	RS-6-FL-0-6"-FD	Solid	06/03/14 08:28	06/06/14 10:10
500-78365-16	RB-001	Water	06/03/14 07:40	06/06/14 10:10
500-78365-17	RB-002	Water	06/04/14 07:39	06/06/14 10:10
500-78365-18	RB-003	Water	06/05/14 08:20	06/06/14 10:10
500-78365-19	RS-11-FR-0-6"	Solid	06/04/14 11:20	06/06/14 10:10
500-78365-20	RS-8-BR-0-6"	Solid	06/03/14 17:42	06/06/14 10:10
500-78365-21	RS-12-BR-0-6"	Solid	06/04/14 09:36	06/06/14 10:10
500-78365-22	RS-13-FR-0-6"	Solid	06/04/14 15:10	06/06/14 10:10
500-78365-23	RS-13-FR-0-6"-FD	Solid	06/04/14 15:10	06/06/14 10:10
500-78365-24	RS-14-SA-0-6"	Solid	06/04/14 13:05	06/06/14 10:10
500-78365-25	RS-9-BL-0-6"	Solid	06/03/14 16:42	06/06/14 10:10
500-78365-26	RS-14-S-B-0-6"	Solid	06/04/14 13:00	06/06/14 10:10
500-78365-27	RS-14-SB1-0-6"	Solid	06/04/14 14:15	06/06/14 10:10
500-78365-28	RS-13-BR-0-6"	Solid	06/04/14 15:52	06/06/14 10:10
500-78365-29	RS-13-BR-0-6"-FD	Solid	06/04/14 15:52	06/06/14 10:10
500-78365-30	RB-004	Water	06/05/14 10:45	06/06/14 10:10

Client Sample Results

Client: ENTACT, LLC
TestAmerica Job ID: 500-78365-1
Project/Site: Former Owens Zinc Caney, Kansas

Client Sample ID: RS-5-FR-12-18"
Lab Sample ID: 500-78365-1

Date Collected: 06/02/14 11:22
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.2

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	9.9		0.23	0.030	mg/Kg	☼	06/11/14 08:00	06/13/14 04:57	1
Lead	480		0.58	0.15	mg/Kg	☼	06/11/14 08:00	06/13/14 04:57	1
Zinc	3600	B	23	3.4	mg/Kg	☼	06/11/14 08:00	06/13/14 13:59	10

Client Sample ID: RS-5-FL-6-12"
Lab Sample ID: 500-78365-2

Date Collected: 06/02/14 11:42
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	26		0.20	0.026	mg/Kg	☼	06/11/14 08:00	06/13/14 05:01	1
Lead	1000		0.51	0.13	mg/Kg	☼	06/11/14 08:00	06/13/14 05:01	1
Zinc	9300	B	20	3.0	mg/Kg	☼	06/11/14 08:00	06/13/14 14:03	10

Client Sample Results

Client Sample ID: RS-4-FR-6-12" **Lab Sample ID: 500-78365-3**
Date Collected: 06/02/14 14:13 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 81.1**

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	8.4		0.24	0.031	mg/Kg	☼	06/11/14 08:00	06/13/14 05:06	1
Lead	400		0.60	0.16	mg/Kg	☼	06/11/14 08:00	06/13/14 05:06	1
Zinc	2400	B	24	3.5	mg/Kg	☼	06/11/14 08:00	06/13/14 14:07	10

Client Sample ID: RS-4-FL-0-6" **Lab Sample ID: 500-78365-4**

Date Collected: 06/02/14 14:58 **Matrix: Solid**

Date Received: 06/06/14 10:10 **Percent Solids: 83.3**

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	9.0		0.23	0.029	mg/Kg	☼	06/11/14 08:00	06/13/14 05:10	1
Lead	330		0.57	0.15	mg/Kg	☼	06/11/14 08:00	06/13/14 05:10	1
Zinc	2200	B	2.3	0.33	mg/Kg	☼	06/11/14 08:00	06/13/14 05:10	1

Client Sample Results

Client Sample ID: RS-3-BR-0-6"
Lab Sample ID: 500-78365-5
Date Collected: 06/02/14 16:06
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 77.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	4.4		0.23	0.029	mg/Kg	☼	06/11/14 08:00	06/13/14 05:14	1
Lead	150		0.57	0.15	mg/Kg	☼	06/11/14 08:00	06/13/14 05:14	1
Zinc	1000	B	2.3	0.33	mg/Kg	☼	06/11/14 08:00	06/13/14 05:14	1

Client Sample ID: RS-9-G-0-6" Lab Sample ID: 500-78365-6

Date Collected: 06/03/14 16:07 **Matrix: Solid**

Date Received: 06/06/14 10:10 **Percent Solids: 68.3**

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	28		0.26	0.033	mg/Kg	☼	06/11/14 08:00	06/13/14 05:18	1
Lead	550		0.65	0.17	mg/Kg	☼	06/11/14 08:00	06/13/14 05:18	1
Zinc	5900	B	26	3.7	mg/Kg	☼	06/11/14 08:00	06/13/14 14:11	10

Client Sample ID: RS-6-BR-0-6"
Lab Sample ID: 500-78365-7

Date Collected: 06/03/14 09:25
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.6

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	6.3		0.22	0.028	mg/Kg	☼	06/11/14 08:00	06/13/14 05:30	1
Lead	800		0.56	0.14	mg/Kg	☼	06/11/14 08:00	06/13/14 05:30	1
Zinc	2200	B	22	3.2	mg/Kg	☼	06/11/14 08:00	06/13/14 14:15	10

Client Sample ID: RS-10-BL-0-6"

Lab Sample ID: 500-78365-8

Date Collected: 06/03/14 14:52
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.7

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	29	B V	0.25	0.031	mg/Kg	☼	06/11/14 08:30	06/17/14 21:12	1
Lead	330		0.62	0.16	mg/Kg	☼	06/11/14 08:30	06/17/14 21:12	1
Zinc	4100		25	3.6	mg/Kg	☼	06/11/14 08:30	06/20/14 11:49	10

Client Sample ID: RS-3-FL-6-12"
Date Collected: 06/02/14 15:47
Date Received: 06/06/14 10:10

Lab Sample ID: 500-78365-9
Matrix: Solid
Percent Solids: 82.6

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	14	B	0.23	0.030	mg/Kg	☼	06/11/14 08:30	06/17/14 21:41	1
Lead	420		0.59	0.15	mg/Kg	☼	06/11/14 08:30	06/17/14 21:41	1
Zinc	2700		23	3.4	mg/Kg	☼	06/11/14 08:30	06/20/14 12:09	10

Client Sample ID: RS-1-BR-0-6"
Lab Sample ID: 500-78365-10
Date Collected: 06/03/14 10:48
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	6.6	B	0.22	0.028	mg/Kg	☼	06/11/14 08:30	06/17/14 21:45	1
Lead	210		0.56	0.14	mg/Kg	☼	06/11/14 08:30	06/17/14 21:45	1
Zinc	1000		2.2	0.32	mg/Kg	☼	06/11/14 08:30	06/20/14 12:13	1

Client Sample ID: RS-6-BL-12-18" Lab Sample ID: 500-78365-11

Date Collected: 06/03/14 09:57 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 84.9**

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	12	B	0.21	0.026	mg/Kg	☼	06/11/14 08:30	06/17/14 21:49	1
Lead	230		0.52	0.13	mg/Kg	☼	06/11/14 08:30	06/17/14 21:49	1
Zinc	3200		21	3.0	mg/Kg	☼	06/11/14 08:30	06/20/14 12:26	10

Client Sample ID: RS-3-BL-0-6"　　Lab Sample ID: 500-78365-12

Date Collected: 06/02/14 16:23　　**Matrix: Solid**

Date Received: 06/06/14 10:10　　**Percent Solids: 79.1**

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	4.2	B	0.22	0.028	mg/Kg	☼	06/11/14 08:30	06/17/14 21:53	1
Lead	170		0.56	0.14	mg/Kg	☼	06/11/14 08:30	06/17/14 21:53	1
Zinc	910		2.2	0.32	mg/Kg	☼	06/11/14 08:30	06/20/14 12:30	1

Client Sample Results

Client: ENTACT, LLC
Project/Site: Former Owens Zinc Caney, Kansas

TestAmerica Job ID: 500-78365-1

Client Sample ID: RS-6-FL-0-6"
Date Collected: 06/03/14 08:28
Date Received: 06/06/14 10:10

Lab Sample ID: 500-78365-13
Matrix: Solid
Percent Solids: 80.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	13	B	0.22	0.028	mg/Kg	☼	06/11/14 08:30	06/17/14 21:57	1
Lead	330		0.55	0.14	mg/Kg	☼	06/11/14 08:30	06/17/14 21:57	1
Zinc	3600		22	3.2	mg/Kg	☼	06/11/14 08:30	06/20/14 12:34	10

Client Sample ID: RS-7-BL-0-6"
Date Collected: 06/02/14 09:33
Date Received: 06/06/14 10:10

Lab Sample ID: 500-78365-14
Matrix: Solid
Percent Solids: 80.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	3.3	B	0.25	0.032	mg/Kg	☼	06/11/14 08:30	06/17/14 22:01	1
Lead	58		0.62	0.16	mg/Kg	☼	06/11/14 08:30	06/17/14 22:01	1
Zinc	470		2.5	0.36	mg/Kg	☼	06/11/14 08:30	06/20/14 12:38	1

Client Sample ID: RS-6-FL-0-6"-FD
Lab Sample ID: 500-78365-15
Date Collected: 06/03/14 08:28
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.6

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	8.6	B	0.22	0.027	mg/Kg	☼	06/11/14 08:30	06/17/14 22:05	1
Lead	360		0.54	0.14	mg/Kg	☼	06/11/14 08:30	06/17/14 22:05	1
Zinc	2400		22	3.1	mg/Kg	☼	06/11/14 08:30	06/20/14 12:42	10

Client Sample ID: RB-001
Date Collected: 06/03/14 07:40
Date Received: 06/06/14 10:10

Lab Sample ID: 500-78365-16
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.00023**	**J B**	0.0020	0.00022	mg/L		06/06/14 15:30	06/09/14 21:48	1
Lead	<0.0050		0.0050	0.0020	mg/L		06/06/14 15:30	06/10/14 14:18	1
Zinc	**0.0045**	**J B**	0.020	0.0019	mg/L		06/06/14 15:30	06/09/14 21:48	1

Client Sample ID: RB-002
Date Collected: 06/04/14 07:39
Date Received: 06/06/14 10:10

Lab Sample ID: 500-78365-17
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.00041**	**J B**	0.0020	0.00022	mg/L		06/06/14 15:30	06/09/14 21:52	1
Lead	<0.0050		0.0050	0.0020	mg/L		06/06/14 15:30	06/10/14 14:22	1
Zinc	**0.0035**	**J B**	0.020	0.0019	mg/L		06/06/14 15:30	06/09/14 21:52	1

Client Sample ID: RB-003
Lab Sample ID: 500-78365-18
Date Collected: 06/05/14 08:20
Matrix: Water
Date Received: 06/06/14 10:10

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.00031**	**J B**	0.0020	0.00022	mg/L		06/06/14 15:30	06/09/14 21:56	1
Lead	<0.0050		0.0050	0.0020	mg/L		06/06/14 15:30	06/10/14 14:26	1
Zinc	**0.014**	**J B**	0.020	0.0019	mg/L		06/06/14 15:30	06/09/14 21:56	1

Client Sample Results

Client: ENTACT, LLC
Project/Site: Former Owens Zinc Caney, Kansas

TestAmerica Job ID: 500-78365-1

Client Sample ID: RS-11-FR-0-6"

Lab Sample ID: 500-78365-19

Date Collected: 06/04/14 11:20
Date Received: 06/06/14 10:10

Matrix: Solid
Percent Solids: 82.3

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	8.5	B	0.22	0.028	mg/Kg	☼	06/11/14 08:30	06/17/14 22:10	1
Lead	210		0.55	0.14	mg/Kg	☼	06/11/14 08:30	06/17/14 22:10	1
Zinc	1900		22	3.2	mg/Kg	☼	06/11/14 08:30	06/20/14 12:46	10

Client Sample ID: RS-8-BR-0-6"

Lab Sample ID: 500-78365-20

Date Collected: 06/03/14 17:42
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.7

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	4.4	B	0.23	0.029	mg/Kg	☼	06/11/14 08:30	06/17/14 22:14	1
Lead	180		0.58	0.15	mg/Kg	☼	06/11/14 08:30	06/17/14 22:14	1
Zinc	1100		2.3	0.33	mg/Kg	☼	06/11/14 08:30	06/20/14 12:50	1

Client Sample ID: RS-12-BR-0-6"
Lab Sample ID: 500-78365-21
Date Collected: 06/04/14 09:36
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	4.1	B	0.23	0.029	mg/Kg	☼	06/11/14 08:30	06/17/14 22:25	1
Lead	180		0.58	0.15	mg/Kg	☼	06/11/14 08:30	06/17/14 22:25	1
Zinc	870		2.3	0.33	mg/Kg	☼	06/11/14 08:30	06/20/14 12:54	1

Client Sample ID: RS-13-FR-0-6"
Lab Sample ID: 500-78365-22

Date Collected: 06/04/14 15:10
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 81.9

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**6.4**	**B**	0.21	0.026	mg/Kg	☼	06/11/14 08:30	06/17/14 22:29	1
Lead	**310**		0.52	0.13	mg/Kg	☼	06/11/14 08:30	06/17/14 22:29	1
Zinc	**2200**		21	3.0	mg/Kg	☼	06/11/14 08:30	06/20/14 12:58	10

Client Sample ID: RS-13-FR-0-6"-FD
Lab Sample ID: 500-78365-23
Date Collected: 06/04/14 15:10
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 81.9

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	5.8	B	0.23	0.029	mg/Kg	☼	06/11/14 08:30	06/17/14 22:33	1
Lead	230		0.57	0.15	mg/Kg	☼	06/11/14 08:30	06/17/14 22:33	1
Zinc	1800		2.3	0.33	mg/Kg	☼	06/11/14 08:30	06/20/14 13:02	1

Client Sample ID: RS-14-SA-0-6" **Lab Sample ID: 500-78365-24**
Date Collected: 06/04/14 13:05 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 82.7**

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	11	B	0.23	0.029	mg/Kg	☼	06/11/14 08:30	06/17/14 22:37	1
Lead	380		0.58	0.15	mg/Kg	☼	06/11/14 08:30	06/17/14 22:37	1
Zinc	3100		23	3.3	mg/Kg	☼	06/11/14 08:30	06/20/14 13:26	10

Client Sample ID: RS-9-BL-0-6"
Lab Sample ID: 500-78365-25
Date Collected: 06/03/14 16:42
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 79.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	9.8	B	0.23	0.029	mg/Kg	☼	06/11/14 08:30	06/17/14 22:41	1
Lead	230		0.58	0.15	mg/Kg	☼	06/11/14 08:30	06/17/14 22:41	1
Zinc	2500		23	3.4	mg/Kg	☼	06/11/14 08:30	06/20/14 13:30	10

Client Sample ID: RS-14-S-B-0-6"
Lab Sample ID: 500-78365-26
Date Collected: 06/04/14 13:00
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.7

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	9.2	B	0.21	0.027	mg/Kg	☼	06/11/14 08:30	06/17/14 22:45	1
Lead	470		0.53	0.14	mg/Kg	☼	06/11/14 08:30	06/17/14 22:45	1
Zinc	2400		21	3.1	mg/Kg	☼	06/11/14 08:30	06/20/14 13:34	10

Client: ENTACT, LLC
TestAmerica Job ID: 500-78365-1
Project/Site: Former Owens Zinc Caney, Kansas

Client Sample ID: RS-14-SB1-0-6"
Lab Sample ID: 500-78365-27
Date Collected: 06/04/14 14:15
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 79.5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	43	B	0.25	0.032	mg/Kg	☼	06/11/14 08:30	06/17/14 22:49	1
Lead	1000		0.62	0.16	mg/Kg	☼	06/11/14 08:30	06/17/14 22:49	1
Zinc	9500		25	3.6	mg/Kg	☼	06/11/14 08:30	06/20/14 13:38	10

Client Sample ID: RS-13-BR-0-6"
Lab Sample ID: 500-78365-28
Date Collected: 06/04/14 15:52
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.9

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	6.7	B	0.24	0.030	mg/Kg	☼	06/11/14 08:30	06/17/14 22:53	1
Lead	310		0.59	0.15	mg/Kg	☼	06/11/14 08:30	06/17/14 22:53	1
Zinc	1500		2.4	0.34	mg/Kg	☼	06/11/14 08:30	06/20/14 13:42	1

Client Sample ID: RS-13-BR-0-6"-FD　　Lab Sample ID: 500-78365-29

Date Collected: 06/04/14 15:52　　**Matrix: Solid**

Date Received: 06/06/14 10:10　　**Percent Solids: 80.7**

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	5.6	B	0.22	0.028	mg/Kg	☼	06/11/14 08:30	06/17/14 22:57	1
Lead	280		0.55	0.14	mg/Kg	☼	06/11/14 08:30	06/17/14 22:57	1
Zinc	1400		2.2	0.32	mg/Kg	☼	06/11/14 08:30	06/20/14 13:46	1

Client Sample ID: RB-004
Date Collected: 06/05/14 10:45
Date Received: 06/06/14 10:10

Lab Sample ID: 500-78365-30
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.00048**	**J B**	0.0020	0.00022	mg/L		06/10/14 15:00	06/11/14 20:06	1
Lead	<0.0050		0.0050	0.0020	mg/L		06/10/14 15:00	06/12/14 23:03	1
Zinc	**0.0029**	**J ^**	0.020	0.0019	mg/L		06/10/14 15:00	06/11/14 20:06	1

Definitions/Glossary

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC exceeds the control limits.
V	Serial Dilution exceeds the control limits
F3	Duplicate RPD exceeds the control limit
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Metals

Prep Batch: 239837

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-16	RB-001	Total/NA	Water	3010A	
500-78365-17	RB-002	Total/NA	Water	3010A	
500-78365-18	RB-003	Total/NA	Water	3010A	
LCS 500-239837/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 500-239837/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 240106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-16	RB-001	Total/NA	Water	6010C	239837
500-78365-17	RB-002	Total/NA	Water	6010C	239837
500-78365-18	RB-003	Total/NA	Water	6010C	239837
LCS 500-239837/2-A	Lab Control Sample	Total/NA	Water	6010C	239837
MB 500-239837/1-A	Method Blank	Total/NA	Water	6010C	239837

Analysis Batch: 240226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-16	RB-001	Total/NA	Water	6010C	239837
500-78365-17	RB-002	Total/NA	Water	6010C	239837
500-78365-18	RB-003	Total/NA	Water	6010C	239837
LCS 500-239837/2-A	Lab Control Sample	Total/NA	Water	6010C	239837
MB 500-239837/1-A	Method Blank	Total/NA	Water	6010C	239837

Prep Batch: 240231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-30	RB-004	Total/NA	Water	3010A	
LCS 500-240231/2-A	Lab Control Sample	Total/NA	Water	3010A	
MB 500-240231/1-A	Method Blank	Total/NA	Water	3010A	

Prep Batch: 240365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-1	RS-5-FR-12-18"	Total/NA	Solid	3050B	
500-78365-2	RS-5-FL-6-12"	Total/NA	Solid	3050B	
500-78365-3	RS-4-FR-6-12"	Total/NA	Solid	3050B	
500-78365-4	RS-4-FL-0-6"	Total/NA	Solid	3050B	
500-78365-5	RS-3-BR-0-6"	Total/NA	Solid	3050B	
500-78365-6	RS-9-G-0-6"	Total/NA	Solid	3050B	
500-78365-7	RS-6-BR-0-6"	Total/NA	Solid	3050B	
LCS 500-240365/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-240365/1-A	Method Blank	Total/NA	Solid	3050B	

Prep Batch: 240370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-8	RS-10-BL-0-6"	Total/NA	Solid	3050B	
500-78365-8 DU	RS-10-BL-0-6"	Total/NA	Solid	3050B	
500-78365-8 MS	RS-10-BL-0-6"	Total/NA	Solid	3050B	
500-78365-8 MSD	RS-10-BL-0-6"	Total/NA	Solid	3050B	
500-78365-9	RS-3-FL-6-12"	Total/NA	Solid	3050B	
500-78365-10	RS-1-BR-0-6"	Total/NA	Solid	3050B	
500-78365-11	RS-6-BL-12-18"	Total/NA	Solid	3050B	
500-78365-12	RS-3-BL-0-6"	Total/NA	Solid	3050B	
500-78365-13	RS-6-FL-0-6"	Total/NA	Solid	3050B	

Metals (Continued)

Prep Batch: 240370 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-14	RS-7-BL-0-6"	Total/NA	Solid	3050B	
500-78365-15	RS-6-FL-0-6"-FD	Total/NA	Solid	3050B	
500-78365-19	RS-11-FR-0-6"	Total/NA	Solid	3050B	
500-78365-20	RS-8-BR-0-6"	Total/NA	Solid	3050B	
500-78365-21	RS-12-BR-0-6"	Total/NA	Solid	3050B	
500-78365-22	RS-13-FR-0-6"	Total/NA	Solid	3050B	
500-78365-23	RS-13-FR-0-6"-FD	Total/NA	Solid	3050B	
500-78365-24	RS-14-SA-0-6"	Total/NA	Solid	3050B	
500-78365-25	RS-9-BL-0-6"	Total/NA	Solid	3050B	
500-78365-26	RS-14-S-B-0-6"	Total/NA	Solid	3050B	
500-78365-27	RS-14-SB1-0-6"	Total/NA	Solid	3050B	
500-78365-28	RS-13-BR-0-6"	Total/NA	Solid	3050B	
500-78365-29	RS-13-BR-0-6"-FD	Total/NA	Solid	3050B	
LCS 500-240370/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 500-240370/1-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 240535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-30	RB-004	Total/NA	Water	6010C	240231
LCS 500-240231/2-A	Lab Control Sample	Total/NA	Water	6010C	240231
MB 500-240231/1-A	Method Blank	Total/NA	Water	6010C	240231

Analysis Batch: 240738

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-30	RB-004	Total/NA	Water	6010C	240231
LCS 500-240231/2-A	Lab Control Sample	Total/NA	Water	6010C	240231
MB 500-240231/1-A	Method Blank	Total/NA	Water	6010C	240231

Analysis Batch: 240741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-1	RS-5-FR-12-18"	Total/NA	Solid	6010C	240365
500-78365-2	RS-5-FL-6-12"	Total/NA	Solid	6010C	240365
500-78365-3	RS-4-FR-6-12"	Total/NA	Solid	6010C	240365
500-78365-4	RS-4-FL-0-6"	Total/NA	Solid	6010C	240365
500-78365-5	RS-3-BR-0-6"	Total/NA	Solid	6010C	240365
500-78365-6	RS-9-G-0-6"	Total/NA	Solid	6010C	240365
500-78365-7	RS-6-BR-0-6"	Total/NA	Solid	6010C	240365
LCS 500-240365/2-A	Lab Control Sample	Total/NA	Solid	6010C	240365
MB 500-240365/1-A	Method Blank	Total/NA	Solid	6010C	240365

Analysis Batch: 240979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-1	RS-5-FR-12-18"	Total/NA	Solid	6010C	240365
500-78365-2	RS-5-FL-6-12"	Total/NA	Solid	6010C	240365
500-78365-3	RS-4-FR-6-12"	Total/NA	Solid	6010C	240365
500-78365-6	RS-9-G-0-6"	Total/NA	Solid	6010C	240365
500-78365-7	RS-6-BR-0-6"	Total/NA	Solid	6010C	240365

Analysis Batch: 241360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-8	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370

Metals (Continued)

Analysis Batch: 241360 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-8 DU	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-8 MS	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-8 MSD	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-9	RS-3-FL-6-12"	Total/NA	Solid	6010C	240370
500-78365-10	RS-1-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-11	RS-6-BL-12-18"	Total/NA	Solid	6010C	240370
500-78365-12	RS-3-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-13	RS-6-FL-0-6"	Total/NA	Solid	6010C	240370
500-78365-14	RS-7-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-15	RS-6-FL-0-6"-FD	Total/NA	Solid	6010C	240370
500-78365-19	RS-11-FR-0-6"	Total/NA	Solid	6010C	240370
500-78365-20	RS-8-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-21	RS-12-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-22	RS-13-FR-0-6"	Total/NA	Solid	6010C	240370
500-78365-23	RS-13-FR-0-6"-FD	Total/NA	Solid	6010C	240370
500-78365-24	RS-14-SA-0-6"	Total/NA	Solid	6010C	240370
500-78365-25	RS-9-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-26	RS-14-S-B-0-6"	Total/NA	Solid	6010C	240370
500-78365-27	RS-14-SB1-0-6"	Total/NA	Solid	6010C	240370
500-78365-28	RS-13-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-29	RS-13-BR-0-6"-FD	Total/NA	Solid	6010C	240370
LCS 500-240370/2-A	Lab Control Sample	Total/NA	Solid	6010C	240370
MB 500-240370/1-A	Method Blank	Total/NA	Solid	6010C	240370

Analysis Batch: 241865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-8	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-8 DU	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-8 MS	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-8 MSD	RS-10-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-9	RS-3-FL-6-12"	Total/NA	Solid	6010C	240370
500-78365-10	RS-1-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-11	RS-6-BL-12-18"	Total/NA	Solid	6010C	240370
500-78365-12	RS-3-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-13	RS-6-FL-0-6"	Total/NA	Solid	6010C	240370
500-78365-14	RS-7-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-15	RS-6-FL-0-6"-FD	Total/NA	Solid	6010C	240370
500-78365-19	RS-11-FR-0-6"	Total/NA	Solid	6010C	240370
500-78365-20	RS-8-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-21	RS-12-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-22	RS-13-FR-0-6"	Total/NA	Solid	6010C	240370
500-78365-23	RS-13-FR-0-6"-FD	Total/NA	Solid	6010C	240370
500-78365-24	RS-14-SA-0-6"	Total/NA	Solid	6010C	240370
500-78365-25	RS-9-BL-0-6"	Total/NA	Solid	6010C	240370
500-78365-26	RS-14-S-B-0-6"	Total/NA	Solid	6010C	240370
500-78365-27	RS-14-SB1-0-6"	Total/NA	Solid	6010C	240370
500-78365-28	RS-13-BR-0-6"	Total/NA	Solid	6010C	240370
500-78365-29	RS-13-BR-0-6"-FD	Total/NA	Solid	6010C	240370
LCS 500-240370/2-A	Lab Control Sample	Total/NA	Solid	6010C	240370
MB 500-240370/1-A	Method Blank	Total/NA	Solid	6010C	240370

Client: ENTACT, LLC
Project/Site: Former Owens Zinc Caney, Kansas

TestAmerica Job ID: 500-78365-1

General Chemistry

Analysis Batch: 239843

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-78365-1	RS-5-FR-12-18"	Total/NA	Solid	Moisture	
500-78365-2	RS-5-FL-6-12"	Total/NA	Solid	Moisture	
500-78365-3	RS-4-FR-6-12"	Total/NA	Solid	Moisture	
500-78365-4	RS-4-FL-0-6"	Total/NA	Solid	Moisture	
500-78365-5	RS-3-BR-0-6"	Total/NA	Solid	Moisture	
500-78365-6	RS-9-G-0-6"	Total/NA	Solid	Moisture	
500-78365-7	RS-6-BR-0-6"	Total/NA	Solid	Moisture	
500-78365-8	RS-10-BL-0-6"	Total/NA	Solid	Moisture	
500-78365-8 DU	RS-10-BL-0-6"	Total/NA	Solid	Moisture	
500-78365-8 MS	RS-10-BL-0-6"	Total/NA	Solid	Moisture	
500-78365-8 MSD	RS-10-BL-0-6"	Total/NA	Solid	Moisture	
500-78365-9	RS-3-FL-6-12"	Total/NA	Solid	Moisture	
500-78365-10	RS-1-BR-0-6"	Total/NA	Solid	Moisture	
500-78365-11	RS-6-BL-12-18"	Total/NA	Solid	Moisture	
500-78365-12	RS-3-BL-0-6"	Total/NA	Solid	Moisture	
500-78365-13	RS-6-FL-0-6"	Total/NA	Solid	Moisture	
500-78365-14	RS-7-BL-0-6"	Total/NA	Solid	Moisture	
500-78365-15	RS-6-FL-0-6"-FD	Total/NA	Solid	Moisture	
500-78365-19	RS-11-FR-0-6"	Total/NA	Solid	Moisture	
500-78365-20	RS-8-BR-0-6"	Total/NA	Solid	Moisture	
500-78365-21	RS-12-BR-0-6"	Total/NA	Solid	Moisture	
500-78365-22	RS-13-FR-0-6"	Total/NA	Solid	Moisture	
500-78365-23	RS-13-FR-0-6"-FD	Total/NA	Solid	Moisture	
500-78365-24	RS-14-SA-0-6"	Total/NA	Solid	Moisture	
500-78365-25	RS-9-BL-0-6"	Total/NA	Solid	Moisture	
500-78365-26	RS-14-S-B-0-6"	Total/NA	Solid	Moisture	
500-78365-27	RS-14-SB1-0-6"	Total/NA	Solid	Moisture	
500-78365-28	RS-13-BR-0-6"	Total/NA	Solid	Moisture	
500-78365-29	RS-13-BR-0-6"-FD	Total/NA	Solid	Moisture	

Client: ENTACT, LLC
Project/Site: Former Owens Zinc Caney, Kansas

TestAmerica Job ID: 500-78365-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 500-239837/1-A
Matrix: Water
Analysis Batch: 240106

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239837

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.000418	J	0.0020	0.00022	mg/L		06/06/14 15:30	06/09/14 20:30	1
Zinc	0.00314	J	0.020	0.0019	mg/L		06/06/14 15:30	06/09/14 20:30	1

Lab Sample ID: MB 500-239837/1-A
Matrix: Water
Analysis Batch: 240226

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 239837

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<0.0050		0.0050	0.0020	mg/L		06/06/14 15:30	06/10/14 14:11	1

Lab Sample ID: LCS 500-239837/2-A
Matrix: Water
Analysis Batch: 240106

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239837

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.0500	0.0478		mg/L		96	80 - 120
Zinc	0.500	0.471		mg/L		94	80 - 120

Lab Sample ID: LCS 500-239837/2-A
Matrix: Water
Analysis Batch: 240226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 239837

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	0.100	0.103		mg/L		103	80 - 120

Lab Sample ID: MB 500-240231/1-A
Matrix: Water
Analysis Batch: 240535

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240231

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.000637	J	0.0020	0.00022	mg/L		06/10/14 15:00	06/11/14 18:44	1
Zinc	<0.020		0.020	0.0019	mg/L		06/10/14 15:00	06/11/14 18:44	1

Lab Sample ID: MB 500-240231/1-A
Matrix: Water
Analysis Batch: 240738

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240231

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<0.0050		0.0050	0.0020	mg/L		06/10/14 15:00	06/12/14 22:43	1

Lab Sample ID: LCS 500-240231/2-A
Matrix: Water
Analysis Batch: 240535

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240231

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.0500	0.0427		mg/L		85	80 - 120
Zinc	0.500	0.435		mg/L		87	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 500-240231/2-A
Matrix: Water
Analysis Batch: 240738

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240231

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	0.100	0.0850		mg/L		85	80 - 120

Lab Sample ID: MB 500-240365/1-A
Matrix: Solid
Analysis Batch: 240741

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240365

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	<0.20		0.20	0.025	mg/Kg		06/11/14 08:00	06/13/14 03:13	1
Lead	<0.50		0.50	0.13	mg/Kg		06/11/14 08:00	06/13/14 03:13	1
Zinc	1.27	J	2.0	0.29	mg/Kg		06/11/14 08:00	06/13/14 03:13	1

Lab Sample ID: LCS 500-240365/2-A
Matrix: Solid
Analysis Batch: 240741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240365

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	5.00	4.80		mg/Kg		96	80 - 120
Lead	10.0	9.80		mg/Kg		98	80 - 120
Zinc	50.0	48.0		mg/Kg		96	80 - 120

Lab Sample ID: MB 500-240370/1-A
Matrix: Solid
Analysis Batch: 241360

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240370

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.0316	J	0.20	0.025	mg/Kg		06/11/14 08:30	06/17/14 21:04	1
Lead	<0.50		0.50	0.13	mg/Kg		06/11/14 08:30	06/17/14 21:04	1

Lab Sample ID: MB 500-240370/1-A
Matrix: Solid
Analysis Batch: 241865

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 240370

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	<2.0		2.0	0.29	mg/Kg		06/11/14 08:30	06/20/14 11:41	1

Lab Sample ID: LCS 500-240370/2-A
Matrix: Solid
Analysis Batch: 241360

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	5.00	4.59		mg/Kg		92	80 - 120
Lead	10.0	9.59		mg/Kg		96	80 - 120

Lab Sample ID: LCS 500-240370/2-A
Matrix: Solid
Analysis Batch: 241865

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	50.0	46.8		mg/Kg		94	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 500-78365-8 MS
Matrix: Solid
Analysis Batch: 241360

Client Sample ID: RS-10-BL-0-6"
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	29	B V	5.37	23.3	4	mg/Kg	☼	-102	75 - 125
Lead	330		10.7	259	4	mg/Kg	☼	-670	75 - 125

Lab Sample ID: 500-78365-8 MS
Matrix: Solid
Analysis Batch: 241865

Client Sample ID: RS-10-BL-0-6"
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	4100		53.7	3410	4	mg/Kg	☼	-1349	75 - 125

Lab Sample ID: 500-78365-8 MSD
Matrix: Solid
Analysis Batch: 241360

Client Sample ID: RS-10-BL-0-6"
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	29	B V	5.63	19.3	4	mg/Kg	☼	-167	75 - 125	18	20
Lead	330		11.3	264	4	mg/Kg	☼	-595	75 - 125	2	20

Lab Sample ID: 500-78365-8 MSD
Matrix: Solid
Analysis Batch: 241865

Client Sample ID: RS-10-BL-0-6"
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Zinc	4100		56.3	4080	4	mg/Kg	☼	-86	75 - 125	18	20

Lab Sample ID: 500-78365-8 DU
Matrix: Solid
Analysis Batch: 241360

Client Sample ID: RS-10-BL-0-6"
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cadmium	29	B V	22.8	F3	mg/Kg	☼	23	20
Lead	330		335		mg/Kg	☼	1	20

Lab Sample ID: 500-78365-8 DU
Matrix: Solid
Analysis Batch: 241865

Client Sample ID: RS-10-BL-0-6"
Prep Type: Total/NA
Prep Batch: 240370

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Zinc	4100		4640		mg/Kg	☼	12	20

Client Sample ID: RS-5-FR-12-18"
Lab Sample ID: 500-78365-1
Date Collected: 06/02/14 11:22
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		1	240741	06/13/14 04:57	PJ1	TAL CHI
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		10	240979	06/13/14 13:59	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-5-FL-6-12"
Lab Sample ID: 500-78365-2
Date Collected: 06/02/14 11:42
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		1	240741	06/13/14 05:01	PJ1	TAL CHI
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		10	240979	06/13/14 14:03	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-4-FR-6-12"
Lab Sample ID: 500-78365-3
Date Collected: 06/02/14 14:13
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 81.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		1	240741	06/13/14 05:06	PJ1	TAL CHI
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		10	240979	06/13/14 14:07	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-4-FL-0-6"
Lab Sample ID: 500-78365-4
Date Collected: 06/02/14 14:58
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		1	240741	06/13/14 05:10	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-3-BR-0-6" **Lab Sample ID: 500-78365-5**
Date Collected: 06/02/14 16:06 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 77.1**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		1	240741	06/13/14 05:14	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-9-G-0-6" **Lab Sample ID: 500-78365-6**
Date Collected: 06/03/14 16:07 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 68.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		1	240741	06/13/14 05:18	PJ1	TAL CHI
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		10	240979	06/13/14 14:11	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-6-BR-0-6" **Lab Sample ID: 500-78365-7**
Date Collected: 06/03/14 09:25 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 80.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		1	240741	06/13/14 05:30	PJ1	TAL CHI
Total/NA	Prep	3050B			240365	06/11/14 08:00	MJP	TAL CHI
Total/NA	Analysis	6010C		10	240979	06/13/14 14:15	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-10-BL-0-6" **Lab Sample ID: 500-78365-8**
Date Collected: 06/03/14 14:52 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 80.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 21:12	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 11:49	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

## Client Sample ID: RS-3-FL-6-12"	Lab Sample ID: 500-78365-9

Date Collected: 06/02/14 15:47	**Matrix: Solid**
Date Received: 06/06/14 10:10	**Percent Solids: 82.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 21:41	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 12:09	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

## Client Sample ID: RS-1-BR-0-6"	Lab Sample ID: 500-78365-10

Date Collected: 06/03/14 10:48	**Matrix: Solid**
Date Received: 06/06/14 10:10	**Percent Solids: 80.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 21:45	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 12:13	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

## Client Sample ID: RS-6-BL-12-18"	Lab Sample ID: 500-78365-11

Date Collected: 06/03/14 09:57	**Matrix: Solid**
Date Received: 06/06/14 10:10	**Percent Solids: 84.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 21:49	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 12:26	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

## Client Sample ID: RS-3-BL-0-6"	Lab Sample ID: 500-78365-12

Date Collected: 06/02/14 16:23	**Matrix: Solid**
Date Received: 06/06/14 10:10	**Percent Solids: 79.1**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 21:53	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 12:30	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Lab Chronicle

Client: ENTACT, LLC
TestAmerica Job ID: 500-78365-1
Project/Site: Former Owens Zinc Caney, Kansas

Client Sample ID: RS-6-FL-0-6"
Lab Sample ID: 500-78365-13
Date Collected: 06/03/14 08:28
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 21:57	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 12:34	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-7-BL-0-6"
Lab Sample ID: 500-78365-14
Date Collected: 06/02/14 09:33
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:01	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 12:38	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-6-FL-0-6"-FD
Lab Sample ID: 500-78365-15
Date Collected: 06/03/14 08:28
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 80.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:05	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 12:42	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RB-001
Lab Sample ID: 500-78365-16
Date Collected: 06/03/14 07:40
Matrix: Water
Date Received: 06/06/14 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			239837	06/06/14 15:30	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240106	06/09/14 21:48	PJ1	TAL CHI
Total/NA	Prep	3010A			239837	06/06/14 15:30	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240226	06/10/14 14:18	PJ1	TAL CHI

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Client Sample ID: RB-002

Lab Sample ID: 500-78365-17

Date Collected: 06/04/14 07:39

Matrix: Water

Date Received: 06/06/14 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			239837	06/06/14 15:30	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240106	06/09/14 21:52	PJ1	TAL CHI
Total/NA	Prep	3010A			239837	06/06/14 15:30	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240226	06/10/14 14:22	PJ1	TAL CHI

Client Sample ID: RB-003

Lab Sample ID: 500-78365-18

Date Collected: 06/05/14 08:20

Matrix: Water

Date Received: 06/06/14 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			239837	06/06/14 15:30	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240106	06/09/14 21:56	PJ1	TAL CHI
Total/NA	Prep	3010A			239837	06/06/14 15:30	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240226	06/10/14 14:26	PJ1	TAL CHI

Client Sample ID: RS-11-FR-0-6"

Lab Sample ID: 500-78365-19

Date Collected: 06/04/14 11:20

Matrix: Solid

Date Received: 06/06/14 10:10

Percent Solids: 82.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:10	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 12:46	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-8-BR-0-6"

Lab Sample ID: 500-78365-20

Date Collected: 06/03/14 17:42

Matrix: Solid

Date Received: 06/06/14 10:10

Percent Solids: 80.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:14	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 12:50	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-12-BR-0-6"

Lab Sample ID: 500-78365-21

Date Collected: 06/04/14 09:36

Matrix: Solid

Date Received: 06/06/14 10:10

Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI

Client Sample ID: RS-12-BR-0-6"
Lab Sample ID: 500-78365-21
Date Collected: 06/04/14 09:36
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	6010C		1	241360	06/17/14 22:25	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 12:54	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-13-FR-0-6"
Lab Sample ID: 500-78365-22
Date Collected: 06/04/14 15:10
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:29	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 12:58	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-13-FR-0-6"-FD
Lab Sample ID: 500-78365-23
Date Collected: 06/04/14 15:10
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 81.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:33	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 13:02	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-14-SA-0-6"
Lab Sample ID: 500-78365-24
Date Collected: 06/04/14 13:05
Matrix: Solid
Date Received: 06/06/14 10:10
Percent Solids: 82.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:37	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 13:26	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-9-BL-0-6" **Lab Sample ID: 500-78365-25**
Date Collected: 06/03/14 16:42 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 79.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:41	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 13:30	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-14-S-B-0-6" **Lab Sample ID: 500-78365-26**
Date Collected: 06/04/14 13:00 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 83.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:45	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 13:34	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-14-SB1-0-6" **Lab Sample ID: 500-78365-27**
Date Collected: 06/04/14 14:15 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 79.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:49	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		10	241865	06/20/14 13:38	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-13-BR-0-6" **Lab Sample ID: 500-78365-28**
Date Collected: 06/04/14 15:52 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 80.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:53	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 13:42	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RS-13-BR-0-6"-FD Lab Sample ID: 500-78365-29

Date Collected: 06/04/14 15:52 **Matrix: Solid**
Date Received: 06/06/14 10:10 **Percent Solids: 80.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241360	06/17/14 22:57	PJ1	TAL CHI
Total/NA	Prep	3050B			240370	06/11/14 08:30	MJP	TAL CHI
Total/NA	Analysis	6010C		1	241865	06/20/14 13:46	PJ1	TAL CHI
Total/NA	Analysis	Moisture		1	239843	06/06/14 17:35	LWN	TAL CHI

Client Sample ID: RB-004 Lab Sample ID: 500-78365-30

Date Collected: 06/05/14 10:45 **Matrix: Water**
Date Received: 06/06/14 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			240231	06/10/14 15:00	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240738	06/12/14 23:03	PJ1	TAL CHI
Total/NA	Prep	3010A			240231	06/10/14 15:00	LA1	TAL CHI
Total/NA	Analysis	6010C		1	240535	06/11/14 20:06	PJ1	TAL CHI

Laboratory References:

TAL CHI = TestAmerica Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Certification Summary

Client: ENTACT, LLC
Project/Site: Former Owens Zinc Caney, Kansas

TestAmerica Job ID: 500-78365-1

Laboratory: TestAmerica Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Kansas	NELAP	7	E-10161	10-31-14

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
Phone: 708.534.5200 Fax: 708.534.5211

Report To (optional)
Contact: Pat Thomson / Jenny Self
Company: ENTACT
Address: 3129 Bass Pro Dr
Address: Grapevine, TX 76051
Phone: 972.580.1323
Fax: 972.550.7464
E-Mail: jself@entact.com

Bill To (optional)
Contact:
Company: SAME
Address:
Address:
Phone:
Fax:
PO#/Reference#

Chain of Custody Record

Lab Job #: 500-78365
Chain of Custody Number:
Page 1 of 3
Temperature °C of Cooler: 0.5

Client: ENTACT
Client Project #: E8265
Project Name: Former Owens Zinc Site
Project Location/State: Caney, KS
Lab Project #:
Sampler: Jenny Self
Lab PM:

Preservative: 7
Parameter: Total Pb, Cd, Zn

Lab ID	MS/MSD	Sample ID	Sampling Date	Sampling Time	# of Containers	Matrix	Total Pb, Cd, Zn	Comments
1		RS-5-FR-12-18"	060214	1122	1	S	X	
2		RS-5-FL-6-12"	060214	1142	1	S	X	
3		RS-4-FR-6-12"	060214	1413	1	S	X	
4		RS-4-FL-0-6"	060214	1458	1	S	X	
5		RS-3-BR-0-6"	060214	1606	1	S	X	
6		RS-9-6-0-6"	060314	1607	1	S	X	
7		RS-6-BR-0-6"	060314	0925	1	S	X	
8	X	RS-10-BL-0-6"	060314	1452	2	S	X	
9		RS-3-FL-6-12"	060214	1547	1	S	X	
10		RS-1-BR-0-6"	06034	1048	1	S	X	

Preservative Key
1. HCL, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. NaHSO4
7. Cool to 4°
8. None
9. Other

Turnaround Time Required (Business Days)
__ 1 Day __ 2 Days __ 5 Days __ 7 Days X 10 Days __ 15 Days __ Other
Requested Due Date ____

Sample Disposal
[ ] Return to Client [X] Disposal by Lab [ ] Archive for __ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Jenny Self	ENTACT	06/05/14	1900	[signature]	TA	6/6/14	1010

Lab Courier:
Shipped: FedEx
Hand Delivered:

Matrix Key
WW – Wastewater
W – Water
S – Soil
SL – Sludge
MS – Miscellaneous
OL – Oil
A – Air
SE – Sediment
SO – Soil
L – Leachate
WI – Wipe
DW – Drinking Water
O – Other

Client Comments: FedEx # 803738295280

Lab Comments:

TAL-4124-500 (1209)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
Phone: 708.534.5200 Fax: 708.534.5211

Chain of Custody Record

Report To (optional)
Contact: Pat Thomson / Jenny Self
Company: ENTACT
Address: 3129 Bass Pro Dr
Address: Grapevine TX 76051
Phone: 972.580.1323
Fax: 972.550.7464
E-Mail: jSelf@entact.com

Bill To (optional)
Contact:
Company: SAME
Address:
Address:
Phone:
Fax:
PO#/Reference#

Lab Job #: 500-78365
Chain of Custody Number:
Page 2 of 2
Temperature °C of Cooler: 0.5

Client: ENTACT
Client Project #: E9265
Project Name: Former Owens Zinc Site
Project Location/State: Caney, KS
Lab Project #:
Sampler: Jenny Self
Lab PM:

Lab ID	MS/MSD	Sample ID	Sampling Date	Sampling Time	# of Containers	Matrix	Total Pb, Cd, Zn (Preservative 7)	Total Pb, Cd, Zn (Preservative 3)								Comments
11		RS-6-BL-12-18"	060314	0957	1	S	X									
12		RS-3-BL-0-6"	060214	1623	1	S	X									
13		RS-6-FL-0-6"	060314	0828	1	S	X									
14		RS-7-BL-0-6"	060214	0933	1	S	X									
15		RS-6-FL-0-6"-FD	060314	0828	1	S	X									
16		RB-001	060314	0740	1	W		X								
17		RB-002	060414	0739	1	W		X								
18		RB-003	060514	0820	1	W		X								
19		RS-11-FR-0-6"	060414	1120	1	S	X									
20		RS-8-BR-0-6"	060314	1742	1	S	X									

Preservative Key
1. HCL, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. NaHSO4
7. Cool to 4°
8. None
9. Other

Turnaround Time Required (Business Days)
__ 1 Day __ 2 Days __ 5 Days __ 7 Days X 10 Days __ 15 Days __ Other
Requested Due Date ____

Sample Disposal
☐ Return to Client ☒ Disposal by Lab ☐ Archive for __ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Jenny Self	ENTACT	06/05/14	1900	[signature]	TA	6/6/14	1010

Lab Courier:
Shipped: FedEx
Hand Delivered:

Matrix Key
WW – Wastewater
W – Water
S – Soil
SL – Sludge
MS – Miscellaneous
OL – Oil
A – Air
SE – Sediment
SO – Soil
L – Leachate
WI – Wipe
DW – Drinking Water
O – Other

Client Comments
FedEx # 803738295250

Lab Comments:

TAL-4124-500 (1209)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
Phone: 708.534.5200 Fax: 708.534.5211

Report To (optional)
Contact: Pat Thomson / Jenny Self
Company: Entact
Address: 3129 Bass Pro Dr
Address: Grapevine, TX 76051
Phone: 972.580.1323
Fax: 972.550.7464
E-Mail: jself@entact.com

Bill To (optional)
Contact:
Company: SAME
Address:
Address:
Phone:
Fax:
PO#/Reference#

Chain of Custody Record

Lab Job #: 500-78365
Chain of Custody Number:
Page 3 of 3
Temperature °C of Cooler: 0.5

Client: Entact
Client Project #: E8265
Project Name: Former Owens Zinc Site
Project Location/State: Caney, KS
Lab Project #:
Sampler: Jenny Self
Lab PM:

Preservative Key
1. HCL, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. NaHSO4
7. Cool to 4°
8. None
9. Other

Lab ID	MS/MSD	Sample ID	Sampling Date	Sampling Time	# of Containers	Matrix	Total Pb, Cd, Zn (Preservative 7)	Total Pb, Cd, Zn (Preservative 3)	Comments
21		RS-12-BR-0-6"	060414	0936	1	S	X		
22		RS-13-FR-0-6"	060414	1510	1	S	X		
23		RS-13-FR-0-6"-FD	060414	1510	1	S	X		
24		RS-14-SA-0-6"	060414	1305	1	S	X		
25		RS-9-BL-0-6"	060314	1642	1	S	X		
26		RS-14-S-B-0-6"	060414	1300	1	S	X		
27		RS-14-SBL-0-6"	060414	1415	1	S	X		
28		RS-13-BR-0-6"	060414	1552	1	S	X		
29		RS-13-BR-0-6"-FD	060414	1552	1	S	X		
30		RB-004	060514	1045	1	W		X	

Turnaround Time Required (Business Days)
__ 1 Day __ 2 Days __ 5 Days __ 7 Days X 10 Days __ 15 Days ____ Other
Requested Due Date ________

Sample Disposal
☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Jenny Self	ENTACT	06/05/14	1900	[signature]	TA	6/6/14	1010

Lab Courier:
Shipped: Fedex
Hand Delivered:

Matrix Key
WW – Wastewater
W – Water
S – Soil
SL – Sludge
MS – Miscellaneous
OL – Oil
A – Air
SE – Sediment
SO – Soil
L – Leachate
WI – Wipe
DW – Drinking Water
O – Other

Client Comments: Fedex # 803778295250

Lab Comments:

TAL-4124-590 (1209)

Login Sample Receipt Checklist

Client: ENTACT, LLC Job Number: 500-78365-1

Login Number: 78365 **List Source: TestAmerica Chicago**
List Number: 1
Creator: Lunt, Jeff T

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	0.5
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

11.10 Draft Owens Residential Soil Removal Action Work Plan

DRAFT OWENS RESIDENTIAL SOIL REMOVAL ACTION WORK PLAN

Residential Soil Removal Action in Vicinity of the Former Owens Zinc Smelter Site

Caney, Kansas

Revision 0

July 2014

Draft Owens Residential Soil Removal Action Work Plan
Caney Kansas
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1.0 INTRODUCTION

On behalf of Blue Tee Corp. (Blue Tee), this Draft Owens Residential Soil Removal Action Work Plan (RA Work Plan) has been prepared by ENTACT LLC (ENTACT) for the Kansas Department of Health and Environment (KDHE) to describe the proposed residential soil removal action activities at four residential and two vacant properties in Caney, Kansas, where soils have been determined to contain concentrations of cadmium, lead and/or zinc at levels in excess of the KDHE Tier 2 Residential Risk-based Standards for Kansas (RSK). These properties are located to the immediate south or east of the former Owens Zinc Smelter Site (the Site), shown in Figure 1, which underwent Corrective Action under a 2004 Consent Order, Case No. 03-E-0022 BER (the 2004 Consent Order) between Blue Tee and KDHE. This RA Work Plan has been developed concurrently with negotiations between Blue Tee and the KDHE for a 2014 Amended Consent Order [Case No. 03-E-0022 BER] (the Order) and is an exhibit to that Order.

The properties to be addressed under this RA Work Plan include the two properties located south of the Site that were sampled by KDHE between 2012 and 2013 as part of two separate Integrated Site Evaluations (ISE), and four additional properties that were sampled as part of a focused sampling investigation conducted by ENTACT on behalf of Blue Tee between June 2 and 5, 2014 in accordance with the KDHE-approved April 2014 Final Owens Investigative Work Plan.

This Draft RA Work Plan has been prepared in accordance with the guidelines outlined in the U.S. Environmental Protection Agency (USEPA) August 2003 OSWER 9285.7-50 *Final Superfund Lead-Contaminated Residential Sites Handbook* and the USEPA Region VII *Generic Quality Assurance Project Plan (QAPP) for Lead-Contaminated Sites* (June 2007) and in accordance with the KDHE Bureau of Environmental Remediation (BER) Policy #BER-RS-026 *Scope of Work for Remedial Action*. The Draft RA Work Plan will be finalized following receipt of KDHE's comments.

The RA Work Plan has been organized as follows:

Section 1: Provides the property location and owner information of the four properties covered under this RA Work Plan; background information including a summary of the previous 2012 and 2013 residential soil sampling conducted by KDHE; and a summary of the results of the 2014 residential sampling that was conducted by ENTACT on behalf of Blue Tee (ENTACT, 2014).

Section 2: Describes the general project organization and lines of communication for the remedial action.

Section 3: Presents the proposed scope of work including pre-removal tasks and plans, the soil removal action tasks and restoration activities.

Section 4: Presents the Sampling and Analysis Plan (SAP) detailing methodology for confirmatory soil sampling to verify that the cleanup criteria have been achieved, imported backfill characterization sampling of clean fill that is used in restoration activities, and personal air sampling of field personnel that is completed in accordance with the requirements outlined in the Health and Safety Plan (HASP).

Section 5: Presents the QAPP which complies with the USEPA Region VII Generic QAPP for Lead-Contaminated Sites (June 2007).

Section 6: Provides the submittals and project schedule for implementation of the work.

The HASP governing the health and safety procedures and protocol for field activities required by both the Final Owens Investigative Work Plan and the RA Work Plan was completed prior to initiation of the residential investigative sampling. The HASP conforms to the applicable Occupational Safety and Health Administration (OSHA) and related federal and state requirements governing work at hazardous waste sites.

1.1 PROPERTY LOCATION AND OWNERSHIP

The four residential and two vacant properties that are the subject of this RA Work Plan are located in the northern part of Caney, Montgomery County, Kansas, within a general area south of Moss Road (part of County Road (CR) 1600), north of Myrtle Street and east of Spring Street, in Section 12, Township 35 South, Range 13 East.

The properties are located near the Site which was remediated by Blue Tee as part of a KDHE-approved Corrective Action in 2004, as discussed below in Section 1.2.1. The locations of these properties in relation to the former Owens Smelter Site are illustrated in Figure 2, and summarized below in Table A.

Table A: Properties Identified for Soil Removal

Property Address	Property Owner	Current Property Use	Parcel Tax ID[1]
1202 North State Street	Fred Eugene Bunch	Residence	063-251-12-0-10-02-003.00-0
1180 North State Street	Derek Robards	Adjoining vacant lot	063-251-12-0-10-02-001.00-0
1105 North State Street	Dale and Margaret Duncan	Residence (garden only)	063-251-12-0-20-07-001.00-0
1106 N. Wood	Margaret Metcalf	Residence	063-251-12-0-20-07-003.00-0
North Wood Street (adjacent to 1104 North Wood)	Everett and Shirley Davis	Adjoining vacant lot	063-251-12-0-20-07-005.00-0
1111 N. Wood Street	Ralph Anthony and Kennen Simmons	Residence	063-251-12-0-20-06-001.00-0

1: *Source: Montgomery County Tax Assessor: http://www.mgcountyks.org/appraiser.htm*

1.2 BACKGROUND INFORMATION

The April 2014 Final Owens Investigative Work Plan (Investigative Work Plan) presented a comprehensive discussion of the background information related to historic activities at the Site and the results of previous investigations and remediation conducted by KDHE and Blue Tee between 2001 and 2004 and a subsequent residential soil investigation conducted by KDHE in 2012 on one residential property. To avoid repetitiveness, this RA Work Plan provides a brief summary of background information previously presented in the Investigative Workplan.

1.2.1 Former Owens Smelter Site

The Site was originally the location of the Caney Brick Company which operated between 1902 and 1915. Charles Owen and a partner constructed the former Owens Zinc Smelter Facility (the Facility) on a portion of the property of the former Caney Brick Company. In August 1915, the American Zinc, Lead and Smelting Company (American Zinc) leased the Facility from the Owens Zinc Company and held the lease until 1918. The smelter facility was small compared to other smelters in the area, having a single ore roaster and three furnace buildings (KDHE, 2001). In 1918, the smelter works was sold to Weir Smelting Company which operated the Facility until 1931. The Weir Smelting Company went bankrupt, the smelter was demolished and the property subsequently sold (KDHE, 2001).

Between 1990 and 2000, several investigations were conducted at the Site by USEPA and KDHE as part of a state-wide investigation of former smelter sites. The result of the investigations showed levels of lead, cadmium and/or zinc above the residential and/or non-residential RSK criteria. On October 1 and 2, 2003, ENTACT, on behalf of Blue Tee, performed an additional field investigation at the Site to further delineate the extent of the Contaminants of Concern (COCs) that exceeded the applicable RSK criteria within the three areas of concern defined by the KDHE in the previous investigations: the southeast portion of the Site, the road ditch and the Torres property.

Following this investigation, a Corrective Action (CA) was conducted between May 24, 2004 and August 19, 2004 in accordance with the approved Corrective Action Plan (CAP) and included the following: excavation of smelter residues and soil with lead and cadmium concentrations in excess of the non-residential RSK criteria on the former smelter property for placement and consolidation in an on-Site Consolidation Cell; the excavation of road ditch soil containing COCs in excess of residential RSK criteria on the north side of Moss Street for placement within the Consolidation Cell or for use on Site as fill; and the excavation of soils with COCs in excess of residential RSK criteria from the Torres property either for placement within the Consolidation Cell or as fill in excavated areas on Site. After all excavated material was consolidated into the Consolidation Cell and the cell was capped with soil, vegetated, and surrounded with a split-rail fence. Environmental Use Controls (EUCs) were placed on the 8-acre Site to maintain non-residential land use and on the Consolidation Cell to prohibit disturbance of the capped area.

1.2.2 2012 - 2013 KDHE Integrated Site Evaluations

Two separate Integrated Site Evaluations (ISE) were conducted by KDHE in 2012 and 2013 in response to a citizen complaint and request for soil sampling and as part of a continuing agreement with USEPA under the authority of the Comprehensive Environmental Response and Liability Act of 1980 (CERCLA). The purpose of the ISEs was to evaluate potential or actual releases of hazardous substances, pollutants, or contaminants in Kansas.

1.2.2.1 KDHE 2012 ISE – 1202 North State Street Property

In response to a resident's complaint, KDHE conducted an ISE (KDHE, 2013a) on June 19, 2012 at 1202 N. State Street in Caney, Kansas (the Bunch Property) located to the immediate south of the Site (Figure 2).. The purpose of the ISE at the Bunch Property was to determine if COCs potentially associated with former smelting activities were present in soils above residential RSK criteria.

During the ISE, KDHE collected surface soil samples from thirty-five locations for analysis of lead, arsenic, cadmium, and zinc using an Innov-X Delta X-Ray fluorescence (XRF) unit, and submitted fourteen samples to KDHE's laboratory for confirmatory analysis. The results of the KDHE XRF and/or laboratory samples showed eleven samples exceeded KDHE's residential Tier 2 RSK levels for lead (400 mg/Kg); two samples showed exceedences of the Tier 2 RSK levels for arsenic (18.9 mg/Kg); two samples exceeded Tier 2 RSK levels for zinc (23,000 mg/Kg); and two samples exceeded Tier 2 RSK levels for cadmium (39 mg/Kg) (KDHE, 2013a).

The results of the investigation showed that the lead and/or co-located arsenic or cadmium exceedences were limited to discrete areas, primarily along CR 1600 and State Street, and not widely distributed across the property, as shown in Figure 3.

1.2.2.2 2013 KDHE ISE – Robard Property

In response to a neighboring resident's request, the KDHE conducted additional soil sampling at a vacant residential property at 1180 North State Street (the Robard Property) on July 17, 2013 (KDHE, 2013b). The Robard Property is located to the immediate south of the Bunch Property, as shown in Figure 2.

KDHE collected surface soil samples from twenty-two locations (including one sample location on the neighboring Crowe property to the south) for XRF analysis of lead, arsenic, cadmium, and zinc and submitted ten samples to KDHE's laboratory for confirmatory analysis. The results of the KDHE soil sampling showed three samples exceeded KDHE's residential Tier 2 RSK levels for lead (400 mg/Kg) and five samples exceeded Tier 2 RSK levels for arsenic (18.9 mg/Kg) (KDHE, 2013b).

From the XRF and laboratory data, a 150-foot by 150-foot area was identified with exceedences of lead and/or arsenic RSK criteria. The affected area was bounded by the Bunch property to the north, 25 feet within the Crowe property to the south, and from approximately 25 feet east of N. State Street to approximately 200 feet east of N. State Street (KDHE, 2013b). The extents of the affected soil area on the Robard Property, as identified by the KDHE, are shown in Figure 3.

1.2.3 2013 Reconnaissance Inspection and Defined Area of Further Investigation

Based on the results of the February 2012 ISE, the KDHE requested that Blue Tee conduct additional characterization of residential properties in the vicinity of the Site. As discussed during a July 23, 2013 teleconference call between KDHE, Blue Tee and Environmental Management Services (EMS), residential properties located adjacent to or near the Site were to be sampled within an area initially defined by the KDHE (referred to as the KDHE-defined investigative area). Since it was unknown how many residential properties or vacant residential lots were located within this investigation area, KDHE and Blue Tee conducted a reconnaissance of the initial investigation area to more clearly define the investigation boundary and the number of residential properties to be sampled.

The reconnaissance was conducted on August 6, 2013 by Chris Carey and Pamela Green of KDHE and Gary Uphoff of EMS. Based on observations during the reconnaissance and from subsequent information obtained from the Montgomery County Tax Assessor, a total of 11 residential properties and 2 vacant lots that are or potentially could be used for residential purposes were identified for sampling to assess metal concentrations in soil. The locations and approximate sampling boundaries of the properties identified for sampling are shown in the aerial photograph provided in Figure 2.

1.3 2014 RESIDENTIAL SOIL SAMPLING INVESTIGATION

The residential soil sampling investigation was conducted by ENTACT on behalf of Blue Tee between June 2 and June 5, 2014 in accordance with the approved Investigative Work Plan which was submitted to the KDHE on April 23, 2014 and approved by the KDHE on May 7, 2014. A field activities notification form was filed on May 27, 2014, followed by email correspondence with the KDHE Project Manager, Pamela Green. Pamela Green was present for the sampling activities on June 3 and 4, 2014 and collected five split soil surface samples at five selected property locations.

The complete details of the residential soil sampling investigation was provided in the July 2014 Owens Investigative Sampling Report submitted to the KDHE on July 2, 2014 in accordance with the submittal schedule defined in the approved Investigative Work Plan. The report provided a complete description of the sampling activities and methodology, the XRF and confirmatory laboratory results, the correlation of the XRF data with the corresponding laboratory data, as well as all field documentation, access agreements and site photographs. A brief summary of the residential soil investigation results is discussed in this section for purposes of defining the scope of work covered under the RA Work Plan.

1.3.1 Soil Sampling Methodology

The residential soil sampling investigation included the 11 residential and 2 vacant lots identified in the Investigative Work Plan, as listed in Table 1 and shown in Figure 2. The work was completed in accordance with the approved Investigative Work Plan and HASP.

Access agreements were obtained from all property owners prior to mobilization. At this same time, utility clearance requests were obtained in all locations where borings were proposed.

At each property, the property was divided into four quadrants and samples were collected in each of the quadrants designated as Front Right (FR), Front Left (FL), Back Right (BR), and Back Left (BL). Where a garden was observed, additional samples were collected and designated as Garden (G). The property features, dimensions and sample locations were recorded by the sampling team on the residential soil sample field documents. Five soil borings were advanced in each quadrant to a depth of two feet below ground surface using a direct-push Geoprobe rig. The boring and soil sample locations are shown in the individual property sketches presented in Appendix A.

Soil samples were collected as 5-part composite samples from each quadrant and/or garden area at sample intervals of 0-6 inches, 6-12 inches, 12-18 inches, and 18-24 inches. The samples were placed in dedicated, labeled plastic bags and homogenized by physically breaking the soil within the bag. Each of the soil composite samples was screened for lead, cadmium and zinc using a Niton XL2 980 GOLDD XRF unit a minimum of three times. The results were recorded in the XRF sample logs with copies provided in Attachment A.

Samples were selected for laboratory analysis at a rate of approximately 1 laboratory sample per 10 investigative samples for confirmation of the XRF results. The samples selected for laboratory analysis included, but were not limited to, those soil samples with measured lead concentrations between 280 mg/kg (representing approximately 70% of the RSK criterion of 400 mg/kg) and 400 mg/kg to verify the XRF results.

Each laboratory sample was identified by the property ID number where the sample was collected followed by the yard quadrant (FR, FL, BR, BL, or G) and the top and bottom depths of the sampled interval in inches. An example of sample identification is shown below:

RS-1-FY-0-6”
Sample depth (in inches)
Yard quadrant
ENTACT property ID number
Soil sample type (i.e., RS for residential soil sample)

Duplicate samples for both XRF readings and laboratory analysis were collected at a rate of 1 duplicate sample per 10 investigative XRF or laboratory samples. Laboratory Quality Control samples, i.e., matrix spike/matrix spike duplicates (MS/MSD), were collected at a rate of 1 MS/MSD per 20 investigative laboratory samples. Laboratory samples were submitted to TestAmerica Laboratories in University Park, Illinois for analysis of total cadmium, lead and zinc by USEPA Method 6010.

In addition to the sampling conducted as part of the approved Investigative Work Plan, three additional borings (SB-1, SB-2 and SB-3) were advanced to a maximum depth of

24 inches on the Bunch property in the general areas where the KDHE found lead and/or co-located metal exceedences in surface samples collected from the upper 6 inches. The purpose of this sampling was to determine the vertical extent of lead exceedences for estimating the volume of soils to be removed.

1.3.2 Soil Sample Analytical Results

A summary of the XRF soil sample results for the 11 residential and 2 vacant lots is presented in Table 1 along with the corresponding laboratory confirmatory soil sample results, if applicable.

As shown in Table 1, four of the properties sampled as part of the 2014 residential investigation showed one or more soil samples with lead concentrations in excess of the RSK lead criterion of 400 mg/kg. The affected properties include Property #3: a residence at 1106 N. Wood Street, Property #5: a residence at 1111 N. Wood Street, Property #6: a vacant lot at North Wood Street adjacent to the 1104 N. Wood Street residence, and Property #9: a residence at 1105 North State Street where the lead exceedences were localized to a small garden area (refer to Appendix A). None of the samples showed exceedences of cadmium or zinc.

In these four properties, the lead exceedences were limited to specific yard sections and not widely distributed across the entire property, as found during the 2012 and 2013 KDHE ISE sampling of the Bunch and Robard properties.

1.3.3 Estimated Volume of Lead-Impacted Soils

Based on the results of the 2012-2013 KDHE ISEs and the 2014 Blue Tee residential sampling investigation, a total of six properties are slated for the RA, as identified in Section 1.1. The estimated dimensions and depth of the areas with lead-impacted soil and the estimated volume of soils to be removed are summarized below in Table B.

Table B: Volume of Affected Soils on Properties to be Remediated

ID#	Address	Affected Yard Area	Approximate Affected Soil Area Dimensions (sq ft)	Depth (feet)	Estimated Removal Volume (Cubic Yards)
2012 – 2013 KDHE ISE					
14[1]	1202 N. State	Area 1 (at Moss)	8,000	0.5	150
		Area 2 (at State)	8,180	0.5	150
		Area 3 (interior)	5,000	0.5	100
15	1180 N. State	Area 1	7,500	0.5	480
2014 Blue Tee Investigation					
3	1106 N. Wood	FL	1775	0.5 (6-12” interval)	35

ID#	Address	Affected Yard Area	Approximate Affected Soil Area Dimensions (sq ft)	Depth (feet)	Estimated Removal Volume (Cubic Yards)
5	N. Wood St.	FR	2,662	1.5	150
		FL	2,662	1.0	100
		BR	2,662	0.5	50
6	1111 Wood St.	BR	6,280	0.5	120
		BL	6,280	1.0	230
9	1105 N. State	Garden	600	1.0	25
				Total Volume (Cubic Yards)	1,650

As part of the RA, an estimated volume of 1,600 cubic yards of affected soils is slated for removal for the six identified properties with lead and/or co-located metal exceedences.

1.4 REMOVAL ACTION CLEANUP OBJECTIVES AND STANDARDS

The removal action objective is to remove the pathway for direct contact, inhalation and ingestion to soils containing concentrations of lead and/or lesser-occurring co-located metals in excess of the Tier 2 RSK residential soil criteria. Lead is the primary COC due to the frequency and magnitude of detection, with lesser-occurring co-located COCs (arsenic, cadmium or zinc) found in some samples. Therefore, any remedial action that addresses the lead exceedences in soils will also address these lesser-occurring and co-located metals.

The remediation objective will be achieved through the excavation and removal of affected soils to pre-defined depths (up to a maximum of 24 inches) as confirmed by post-excavation confirmatory soil sampling, backfilling of the excavated areas to grade with clean fill, and seeding the areas as appropriate for the time of year and growing season.

The RA RSK cleanup standards are summarized below in Table C.

Table C: Removal Action RSK Cleanup Standards

Constituent of Concern	RSK Residential Standards (mg/Kg)
Lead	400
Cadmium	39
Zinc	23,500

2.0 PROJECT ORGANIZATION

The project organization that will be followed during the implementation of the field investigation includes the following team members:

KDHE Project Manager (PM), *Pamela Green*

The KDHE Project Manager has the overall authority of oversight for all phases of the work related to implementation of residential sampling activities.

Project Coordinator, *Gary Uphoff, Environmental Management Services, Inc.*

The EMS Project Coordinator for Blue Tee is responsible for overseeing and tracking the investigative activities, submittals and schedule and serves as the liaison between ENTACT and the KDHE.

Remedial Action Contractor (RAC) Project Manager,

The RAC Project Manager (PM) will have the overall responsibility for successfully completing the RA activities. This includes safely completing the approved scope of work, fulfilling contractual obligations, performing work in compliance with the Amended Order and approved RA Work Plan, the QAPP and Site-specific HASP, and meeting the established project schedule and budget. The PM will be responsible for monitoring work progress, reviewing and planning project tasks with the technical staff and the RAC Field Project Manager, and ensuring that appropriate and sufficient resources were available to the Field Team.

RAC Field Project Manager (FPM)

The FPM will be responsible for directing project personnel, equipment, subcontractors, and activities to ensure the successful implementation of the work. Specific responsibilities of the RAC Field Project Manager will include, but not be limited to, the following:

- Supervising field activities and ensuring that the RA activities are executed in accordance with the approved RA Work Plan;
- Ensuring adequate resources are available to complete required tasks and meet required schedule;
- Ensuring personal and any subcontractors are properly trained in the safe performance of the tasks to which they are assigned;
- Assisting in the planning, coordination, and implementation of the work;
- Communicating with the RAC Project Manager to remedy problems, to ensure agreement on the tasks to be performed each day, and to monitor compliance with the RA Work Plan, and Federal, State, and Local regulations; and

- In the event of unforeseen field conditions, redirecting the sequence of required work and specifics of work procedures and protocols to accomplish task objectives in the most efficient and safe manner possible.

RAC Quality Control (QC) Manager

The RAC QC Manager will ensure that all field sampling activities conform to sampling protocol outlined in the QAPP and Sampling and Analysis Plan (SAP), including the completion of all required sampling and shipment documentation. The RAC QC Manager will direct and oversee all sample collection in the field and have the authority to correct and implement additional measures to assure compliance with the approved RA Work Plan including the QAPP.

RAC Health and Safety (H&S) Officer

The RAC H&S Officer reviews and approves the HASP governing all health and safety requirements for safely implementing the work and will coordinate and provide oversight for the health and safety protocol at the Site.

3.0 SCOPE OF WORK

3.1 PRE-REMOVAL ACTION TASKS

The following sections discuss the pre-removal tasks to be completed before construction activities can begin at the identified residential properties.

3.1.1 Final Residential Soil RA Work Plan and Schedule

This RA Work Plan will be finalized within 30 days following receipt of KDHE comments on this Draft RA Work Plan and resubmitted for KDHE approval prior to initiating the work.

3.1.2 Access Agreements and Notifications

Access agreements will be obtained from Property Owners to allow for the removal of affected soils where identified. A copy of the sample access agreement is provided in Appendix B. If any of the four Property Owners decline permission to conduct soil removal action on their property, the KDHE will be notified immediately and asked to assist in procuring access.

The required KDHE field activities notification will be filed electronically at least seven days before mobilization.

3.1.3 Permitting

Permitting for this RA is expected to be minimal. A permit for stormwater run-off control during construction activities will be scoped and obtained from KDHE prior to initiation of construction.

3.1.4 Construction Timeline Schedule

Following approval of the RA Work Plan, a construction timeline schedule will be submitted to the KDHE outlining the sequence and duration of the work. The schedule will be coordinated with KDHE and the affected property owners regarding access to the properties so that disruption to the resident is minimized to the extent possible.

4.0 REMEDIATION ACTIVITIES

4.1 MOBILIZATION AND PREPARATION ACTIVITIES

4.1.1 Mobilization and Site Preparation

Mobilization will occur following the submission and approval by KDHE of all required pre-construction submittals. Personnel, equipment, supplies, and support zone facilities will be mobilized as needed to conduct removal activities. If possible, work will be coordinated with a cover system redesign at American Lead and Zinc Repository (Repository) located at the corner of CR1600 and Route 75.

A centrally-located area will be established for a temporary trailer office and support activities during the completion of soil removal activities. The support zone area will have a stable surface for trailer placement. Operation of temporary sanitary facilities and disposal of sanitary wastes will be conducted in accordance with state and local regulations. All support zone facilities utilized by the Contractor will be removed at project completion.

4.1.2 Decontamination Facilities

Decontamination of personnel, equipment, and materials will be performed in accordance with applicable state and OSHA regulation and in accordance with the procedures provided in the HASP. A portable, personnel decontamination station equipped with a hand and face wash system will be provided for the work. Storage for used personal protective equipment and first aid supplies will also be provided. Any rinse water generated from decontamination activities (i.e., wash water or personal protective equipment wash water) will be utilized for dust suppression in excavation areas.

Decontamination of excavation equipment will be performed to minimize the potential for tracking residual soil or mud between removal areas or onto public streets. Residual material on excavation equipment buckets, tires or tracks will be manually removed using dry decontamination procedures prior to leaving the work area. These procedures include brushing and scraping the vehicle and equipment tires, tracks and buckets with stiff brushes, shovels, and hoes to remove soil. The goal of the dry decontamination procedure is to remove the soil from the tires and buckets while minimizing the production of decontamination wastewater. Any materials tracked onto streets and sidewalks will be removed immediately using sweeping equipment that will remain on-site throughout the duration of the project.

4.1.3 Work Zones and Site Safety and Security

Contamination reduction zones and exclusion zones will be identified and demarcated for each property. It is anticipated that zones will vary based on the size of the removal area. The zones will be identified using silt fence, construction safety fence or caution tape. The plan for establishing the zones and how equipment and personnel decontamination will be accomplished within each area of active remediation will be identified prior to beginning soil removal on the property.

Site safety and security will be conducted in accordance with the HASP.

4.1.4 Utility Clearance

Utility clearance will be obtained by calling Kansas One Call (811 or 1-800-DIGSAFE) at least one week before excavation activities commence. Property owners will be asked to identify any additional utility lines (phone, sewer, gas, fiber optic, electricity, etc.) that may not be identified by public utility locators. All known utilities will be flagged and/or denoted with paint before excavation begins.

4.1.5 Pre-Excavation Meeting and Photo-documentation

Prior to the start of soil excavation activities on a given property, a meeting will be held with each property owner to describe the soil removal and restoration activities to be performed on the property, including a tentative schedule, work area restrictions, property access, and communication. The meeting will include a property inspection of the removal area and photo-documentation of pre-removal property conditions.

Moveable structures such as fences, pens, personal property, vehicles, firewood, tools, or other personal property that may be present within the delineated removal areas will be identified and the property owner asked to remove or relocate the structures prior to the scheduled removal activities. Following the removal and restoration work, the Property Owner will be able to return the items to their original position.

4.2 SOIL REMOVAL, TRANSPORT AND DISPOSAL

Upon completion of preparation activities and receipt of access agreements, the contractor will begin soil removal activities at the designated properties. Sequencing of removal areas will be done in a manner that allows for safe and efficient haul routes for dump trucks and also minimizes potential cross contamination of clean removal areas. All work will be conducted between 7:00 a.m. and 6:00 p.m. Monday through Saturday in order to limit disrupting or disturbing area residents.

Soils containing lead and/or lesser-occurring co-located arsenic, cadmium and zinc in excess of the of residential RSK criteria will be excavated to the pre-defined removal limits as shown in Figure 3 and to the predefined depths described in Section 1.4. The soils will be excavated using appropriately-sized conventional construction equipment that will include mini excavators, single-axis dump trucks and/or loaders. Due to the small number of properties to be addressed as part of the RA and the proximity of the properties to each other, the excavations may be contiguous across properties rather than performed in a parcel by parcel manner, as determined by the FPM.

During excavation, extreme caution will be taken to prevent damage to the structures and utilities. For fixed structures with slabs, structures that cannot be moved, and around utility poles, excavation will be performed as close as practical to the structure base and the soil will be sloped away from the structure at a 1:1 ratio (vertical and horizontal). Where access is restricted and/or where structures are not accessible with conventional equipment, hand digging will be performed.

Once the pre-defined lateral and vertical limits of the removal area have been reached, XRF field screening will be conducted to assess soil lead concentrations along the edges and the base of the excavation area to ensure that the pre-defined excavation depth has successfully met the RSK lead criterion of 400 mg/kg. For excavations exceeding 1 foot in depth, XRF screening will also be conducted along the excavation sidewalls. XRF analysis will be conducted using a Niton XL2 980 GOLDD XRF unit or equivalent and will be performed in accordance with the in-situ field screening procedures outlined in the XRF Standard Operations Procedures provided in the April 2014 Investigative Work Plan.

When the XRF field screening indicates that the lead criterion has been achieved on both the lateral and vertical extents of the removal area, confirmatory soil samples will be collected as discussed in Section 4.3. If XRF screening indicates the RSK criterion has not been met, excavation and XRF screening will continue until the RSK lead criterion has been reached, unless the structural integrity of roads, sidewalks, driveways, or other improvements will be affected. In the event that the maximum depth of 24 inches is reached and soils continue to show exceedences of the RSK lead criterion, appropriate marker material will be placed at the base of the excavation to warn property owners not to dig below this depth.

The excavated soils will be directly loaded into dump trucks and transported to the nearby Repository. The appropriate disposal location adjacent to the Repository will be identified by the Repository engineers prior to transport and the route from the properties to the Repository will be determined prior to transport.

Steps will be taken to prevent the generation of any visible dust during all excavation and soil management activities. Water will be applied directly to the active excavation areas during dry or dusty conditions so that disturbed soils do not release fugitive dust. This includes pre-watering excavations that are near-surface and that may have the potential to release fugitive dust when excavation begins. Application of water will be performed using a misting nozzle. Rinse and decontamination water, if generated, may be used for dust suppression in removal areas requiring excavation, but not in clean or remediated areas.

Upon completion of excavation activities at each property, sidewalks and driveways will be cleaned using brooms and shovels and/or with a high volume, low pressure water stream, if necessary.

4.3 CONFIRMATORY SOIL SAMPLING

When the predefined limits of the excavation have been reached and XRF screening indicates the lead RSK criterion has been met, confirmatory soil samples will be collected following the general guidelines found in the USEPA August 2003 OSWER 9285.7-50 *Final Superfund Lead-Contaminated Residential Sites Handbook* and in accordance with the Site-specific SAP and QAPP provided in the April 2014 Investigative Work Plan, and the USEPA Region VII *Generic Quality Assurance Project Plan for Lead-Contaminated Sites* (June 2007).

The confirmatory soil methodology is described in Section 4.3.1.

4.3.1 Confirmatory Sampling Methodology

A 5-part composite confirmatory sample will be collected from the bottom of each excavation area at a depth of 0 to 3 inches. For individual excavation areas exceeding 5,000 square feet, two 5-part composite samples will be collected, with one 5-part composite bottom sample collected from each half of the excavation area. The five aliquots comprising each composite sample will be well distributed across the excavation area to ensure a valid sample representation of the removal area.

For excavations exceeding one foot in depth, a 4-part composite sidewall confirmatory sample will be collected at a point three inches above the excavation bottom along each wall of the excavation.

For each composite sample, the soil sample aliquots will be placed in clean Ziploc bags labeled with the sample number, location and depth. The sample aliquots will then be transferred to a clean stainless steel bowl and thoroughly homogenized prior to transfer to a clean Zip-loc bag. The homogenized sample will be screened by the XRF instrument and field screened to verify that the RSK lead criterion is met. The XRF analysis will include three separate shots of the bagged sample in accordance with the sampling methodology outlined in the XRF Standard Operations Procedures provided in the April 2014 Investigative Work Plan. If the XRF results indicate that the RSK criteria has been achieved, the sample material will then be transferred to the laboratory-supplied sample jars for laboratory analysis of lead, cadmium and zinc.

Based on the number and depth of the defined removal areas, approximately 12 composite bottom samples and 4 sidewall composite samples will be collected plus two field duplicates.

All confirmation samples will be declared acceptable if concentrations do not exceed the RSK criteria of 400 mg/kg for lead, 39 mg/kg for cadmium and 23,000 mg/kg for zinc.

4.3.2 Confirmatory Soil Sample Identification

For bottom composite samples, each laboratory confirmatory soil sample will be identified by a CS-B# to identify the sample as a confirmatory soil bottom sample and number, the property ID number where the sample was collected followed by the yard quadrant (FR, FL, BR, BL or G) and the bottom excavation depths of the sampled interval in inches. An example sample identification is shown below:

CS-B1-1-FY-6”
Excavation depth (in inches)
Yard quadrant
Property ID number
Confirmation soil bottom sample number type
(i.e., CS for confirmation soil, -B for bottom sample and #)

For sidewall composite samples, each laboratory confirmatory soil sample will be identified by a CS-SW to identify the sample as a confirmatory sidewall sample, the sidewall direction (north, south, east or west), the property ID number where the sample was collected followed by the yard quadrant (FR, FL, BR, BL or G), and the sample depth in inches. An example sample identification is shown below:

CS-SW-N-1-FY-3”
Sample depth (in inches)
Yard quadrant
Property ID number
Sidewall orientation (north wall)
Confirmation soil sidewall sample

All confirmatory soil samples will be labeled, packaged and handled following the sampling protocol outlined in the approved SAP and submitted to the Kansas-certified laboratory for analysis of lead, cadmium, and zinc using USEPA Test Method 6010 with a request for an expedited turn-around time. Analytical parameters and test methods are presented on Table 2.

4.3.3 Field and Laboratory Quality Control and Assurance Procedures

The USEPA Region 7 Generic QAPP requires that sampling activities be under the control of a QA program to ensure data generated during the residential sampling investigation are accurate, precise, comparable, and complete and therefore, representative of site conditions. The site-specific QAPP provided in the April 2014 Investigative Work Plan outlines the quality assurance and quality control procedures to be implemented to ensure that the data is usable and valid.

In accordance with the approved QAPP, duplicate samples for XRF and laboratory composite sample analysis will be collected at a rate of 1 duplicate sample per 10 investigative samples.

Laboratory QC samples, i.e., MS/MSD, will be collected at a rate of 1 MS/MSD per 20 investigative laboratory samples.

4.3.4 Laboratory Analysis

The following Kansas-certified analytical laboratory will perform the chemical analyses for the sampling activities:

Test America Laboratories (TA)
2417 Bond Street
University Park, Illinois 60484
Phone: (708) 534-5200

TA may contract with other laboratories in the TA laboratory network to perform some analyses. A complete list of analytical parameters, methods, matrices, holding times and preservation requirements are included in Table 2.

4.3.5 Split Samples

During confirmation sampling, an adequate volume will be collected to supply KDHE with split samples, if requested.

4.4 EXCAVATION BACKFILL AND RE-VEGETATION

Once the confirmation sample analyses have been reviewed and all excavation areas are deemed clean, approved fill material will be imported from a nearby source to backfill and replace soil removed during excavation. Imported fill soil sampling will follow the methodology outlined in Section 4.4.1 to ensure the backfill material is determined to be clean before placement at the residential properties. Topsoil will be replaced and the properties hydro-seeded.

4.4.1 Imported Fill Sampling

Samples of fill material imported from off-Site sources will be collected at a frequency of one sample for every 5,000 cubic yards per source area. The sample will be collected according to the following procedures. Initially, each source of fill material will be sampled once for the Target Analyte List (TAL) Metals, volatile organic compounds (VOCs), pesticides/polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons (TPH). Analytical results of the backfill material will be compared to RSK residential criteria.

The sample will be collected as a 4-part composite sample obtained from the source area or stockpiled material from the source area, with the exception of VOCs. Four separate grab samples will be collected from the source area at four discrete locations and depths that are spatially representative of the fill area since compositing is not permitted for VOC analyses.

Sample test methods and sample container requirements are listed on Table 2. The source location of the backfill material will be documented by source location and address.

5.0 HEALTH AND SAFETY

The HASP includes information about health and safety training, medical surveillance, first aid and emergency information, ambient air monitoring, personal protective equipment, decontamination procedures, and documentation. The HASP conforms to applicable OSHA standards including 29 Code of Federal Regulations (CFR) 1910.120 and corporate guidelines. The HASP is available as a separate document for review by the KDHE at its request.

All work will be conducted in accordance with the HASP to ensure a safe and effective implementation of the work. The HASP outlines procedures for work zone demarcation and security, the necessary level of personal protective equipment (PPE), decontamination procedures, personnel air monitoring, fugitive dust control, traffic control, material handling, emergency response and hospital routes.

As part of the HASP requirements, a daily tailgate meeting will be held prior to initiating work to go over the tasks slated for that day and any specific health and safety issues or concerns.

6.0 REPORTING

6.1 FINAL REMEDIATION WORK PLAN

Within 30 days following receipt of KDHE comments on the Draft RA Work Plan and within 30 days following completion of the analytical results from the field investigation, whichever is later, ENTACT will submit a Final Remedial Action Work Plan finalizing the proposed scope of work for the removal action of the identified affected property soils.

6.2 FIELD LOGS

Field log books will be used to record excavation and confirmatory soil sampling activities. These books will be bound and have consecutively numbered pages. Entries in the field logbook will be made in ink and will include: the name of the author, date and time of entry, location of activity, names and affiliations of sampling personnel, sample collection or measurement methods, number of samples collected, daily weather report, sample identification numbers, field observations and comments, sampling depth increment for soils, field measurements, locations of photographs, and any deviations from the sampling plan. Upon project completion, all logbooks will become part of the file records.

6.3 XRF SAMPLING JOURNAL AND ELECTRONIC DATA LOGS

An XRF Sampling Journal will be used to record the XRF field screening confirmatory soil sample results. A dedicated XRF Sampling Journal will be assigned to each XRF unit operated during the project. This journal will be bound and have consecutively numbered pages. Entries in each XRF Sampling Journal will be made in ink and will include the name of the screener, date and time of entry, location of activity, XRF results and corresponding sample identification numbers, and XRF instrument reading numbers. The electronic files on the XRF unit will also be downloaded on a daily basis. Upon project completion, all journals and electronic files will become part of the file records.

6.4 PHOTOGRAPHIC DOCUMENTATION

Photographs will be taken in order to serve as a written and pictorial record of the excavation activities, confirmatory sample locations and other activities. Photographic documentation will also be included in the Remedial Action Completion Report.

6.5 FINAL PROPERTY INSPECTION AND REMEDIAL ACTION COMPLETION REPORT

Following the removal activities on each property, a site walk will be made with KDHE and the resident of the remediated and restored property to verify that the work was conducted in a satisfactory manner. Any issues or problems will be discussed at that time and addressed appropriately.

Following the site walk and inspection and within 60 days from completion of the remedial action, a Remedial Action Completion Report will be submitted describing and documenting the remedial action and verifying that the work was conducted in a safe and effective manner in accordance with the approved RA Work Plan.

7.0 REFERENCES

KDHE, February 2013. *Integrated Site Evaluation. 1202 North State Street Complaint Site, Caney, Montgomery County, Kansas.* State ID: C3-063-72925. Prepared by the KDHE, Site Assessment Unit, Topeka, Kansas.

KDHE, August 2013. *Integrated Site Evaluation. Robards Property, Caney, Montgomery County, Kansas.* State ID: C3-063-73037. Prepared by the KDHE, Site Assessment Unit, Topeka, Kansas.

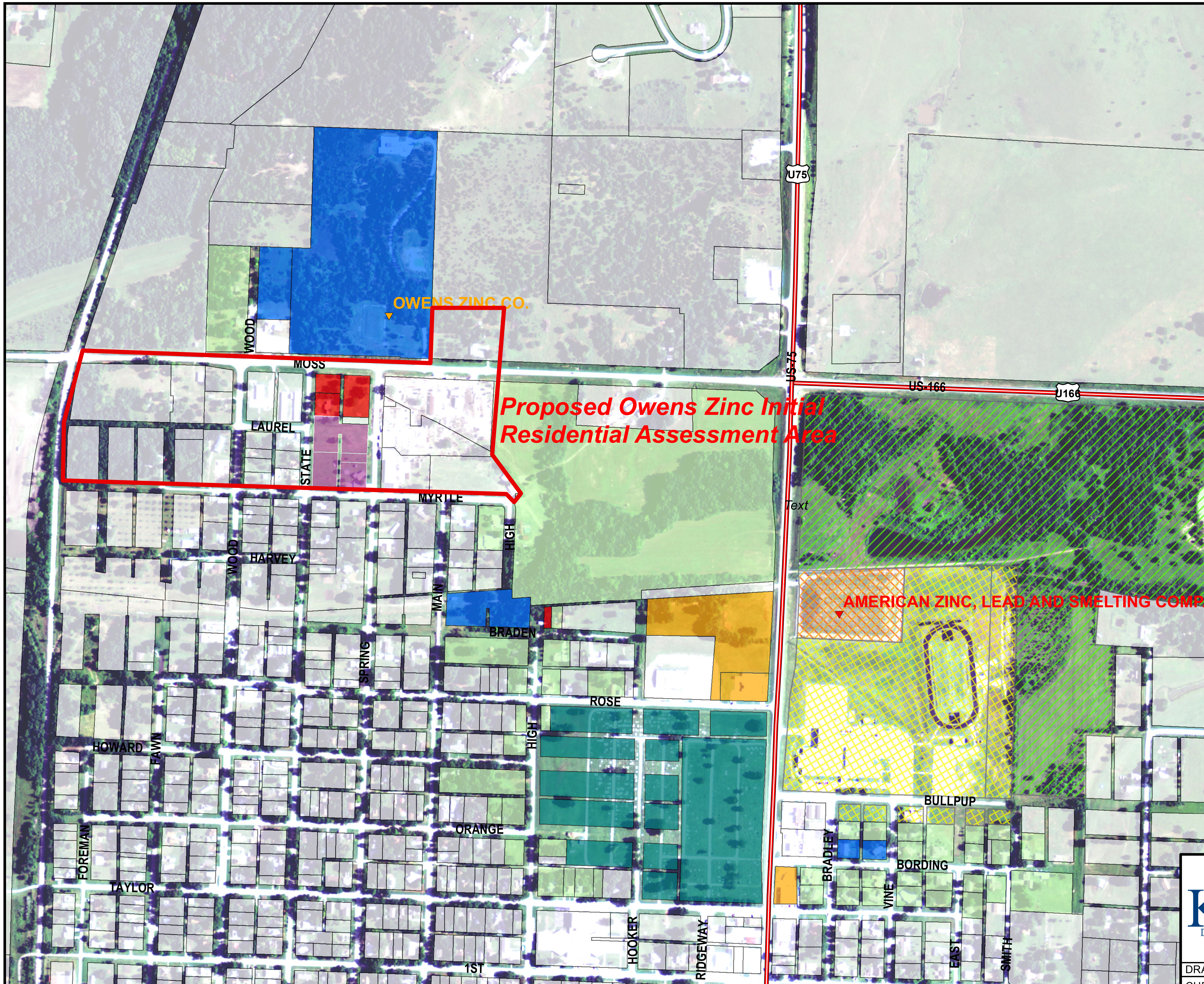
ENTACT, April 2014. Final Owens Investigative Work Plan, Caney, Kansas. Prepared by ENTACT on behalf of Blue Tee for the KDHE.

ENTACT, July 2014. Owens Residential Investigative Sampling Report, Caney, Kansas. Prepared by ENTACT on behalf of Blue Tee for the KDHE.

USEPA August 2003 *Final Superfund Lead-Contaminated Residential Sites Handbook* [OSWER 9285.7-50].

USEPA Region VII *Generic Quality Assurance Project Plan (QAPP) for Lead-Contaminated Sites*

FIGURES



Legend

US Route Divided

KDHE Identified Sites

SITENAME

- AMERICAN ZINC, LEAD AND SMELTING COMPANY
- OWENS ZINC CO.

Parcels

- Property Not Sampled (450)
- Agricultural Property, Remediated (1)
- AZLS Repository (1)
- Non-Residential Property, >RSK*, No Remediation (3)
- Cemetary, Not Sampled (13)
- Residential Property, <RSK (45)
- Residential Property, > RSK, No Remediation (4)
- Residential Property, Remediated (5)
- Residential Property, KDHE Assessment Ongoing (4)
- School Property (8)

Value in parentheses ( ) indicates the number of properties in each category within the map extent.

**Concentration data screened against KDHE's Risk-Based Standards for Kansas (RSK) Manual Tier 2 Levels for lead of 400 mg/kg for residential properties and 1,000 mg/kg for non-residential properties. The approved cleanup level for the AZLS site was 500 mg/kg for residential properties.*

Working Draft
Subject to Modification

For Discussion Purposes Only

N

0 375 750 1,500 Feet

Map Source: Aerial Photograph 2012 National Agriculture Imagery Program (NAIP)

Kansas Department of Health and Environment

SITE:	**Owens Zinc Site Caney, Kansas**		
TITLE:	**Historical Residential Property Assesment Findings**		
PROJECT PHASE:	Residential Assessment		
DRAWN BY: CC	7/23/2013	BASEMAP DATE:	2012
CHECKED BY: PG	7/23/2013	**Figure 1**	

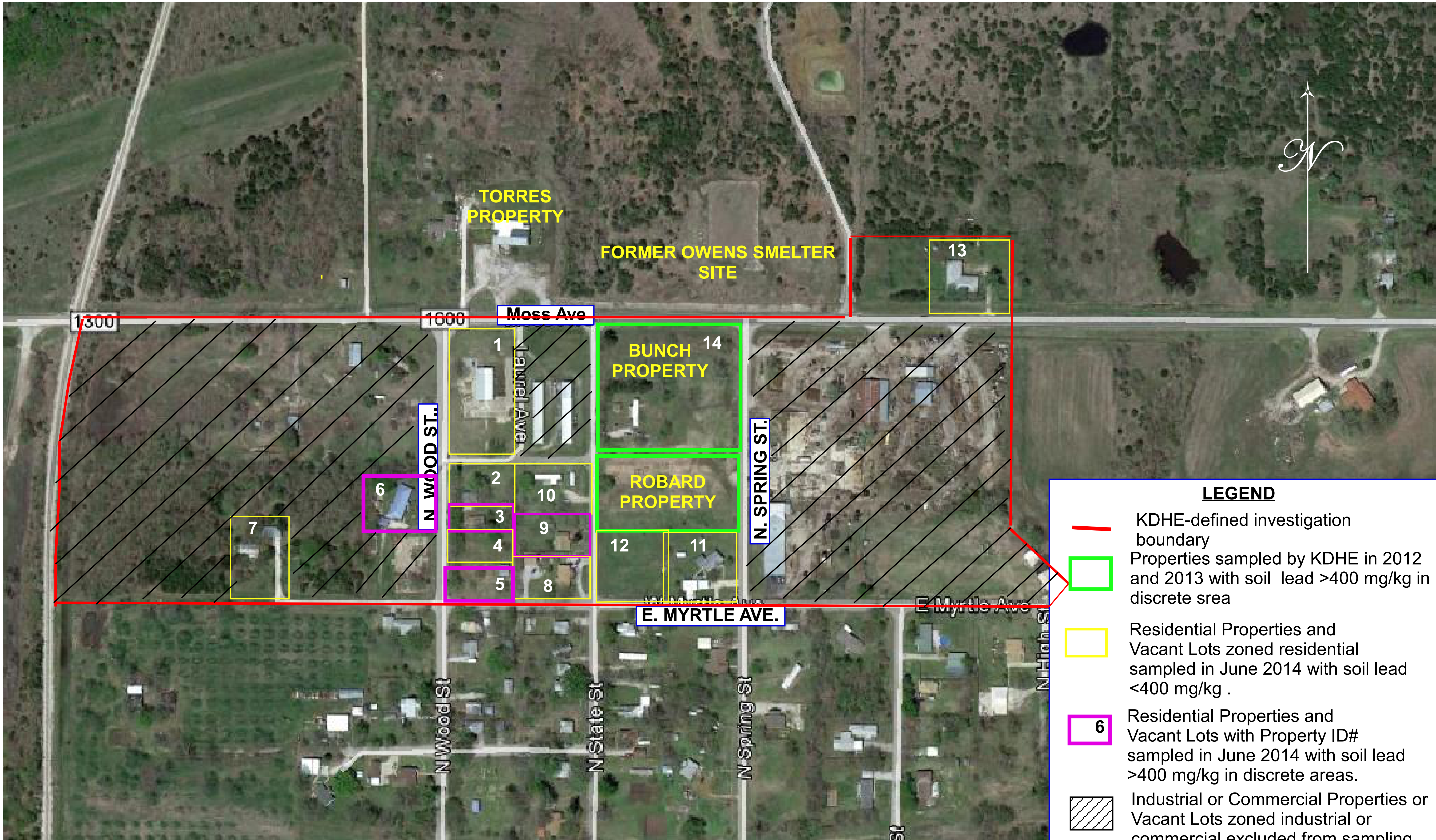


FIGURE 2
RESIDENTIAL SOIL SAMPLING LOCATIONS AND SURROUNDING AREA FEATURES
RESIDENTIAL SOIL REMOVAL ACTION WORK PLAN
CANEY, KANSAS

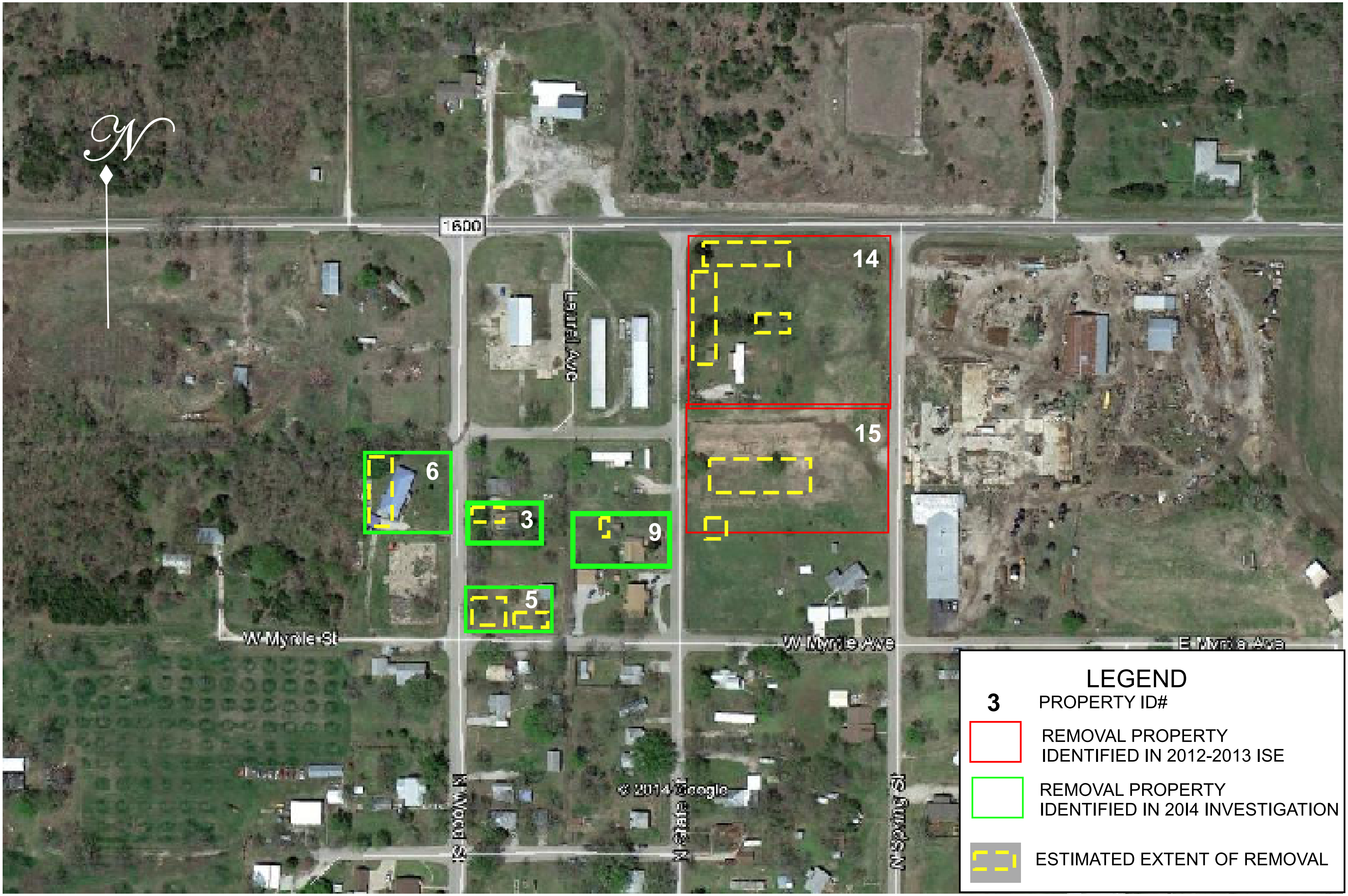


FIGURE 3
PROPERTIES SLATED FOR REMOVAL ACTION
AND PROPOSED EXCAVATION AREAS

TABLES

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium XRF Result (ppm)	Cadmium XRF Error (± equals 2 std dev)	Cadmium Average XRF Reading (ppm)	Cadmium Lab Result (mg/kg)	Lead XRF Result (ppm)	Lead XRF Error (± equals 2 std dev)	Lead Average XRF Reading (ppm)	Lead Lab Result (mg/kg)	Zinc XRF Result (ppm)	Zinc XRF Error (± equals 2 std dev)	Zinc Average XRF Reading (ppm)	Zinc Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
Calculated XRF Values														**330**				**32,000**	
52	1	RS-1-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 12:03	< LOD	10.34	<LOD		48.98	6.45	48		389.08	15.49	430	
53	1	RS-1-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 12:05	< LOD	10.56			62.02	6.94			523.11	18.07		
54	1	RS-1-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 12:06	< LOD	11.22			31.65	6.55			377.09	17.05		
55	1	RS-1-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 12:21	< LOD	10.74	<LOD		46.66	6.83	65		536.46	19.34	668	
56	1	RS-1-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 12:22	< LOD	10.28			64.99	6.91			636.72	19.44		
57	1	RS-1-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 12:24	< LOD	10.07			83.07	7.26			829.89	21.59		
58	1	RS-1-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 12:29	< LOD	9.93	<LOD		27.34	5.53	28		437.36	15.70	430	
59	1	RS-1-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 12:30	< LOD	9.75			13.13	4.97			335.66	13.77		
60	1	RS-1-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 12:31	< LOD	10.54			43.27	6.52			516.67	18.33		
61	1	RS-1-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 12:36	< LOD	8.85	<LOD		20.42	4.74	24		339.93	12.53	379	
62	1	RS-1-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 12:37	< LOD	10.28			25.68	5.72			427.81	16.29		
63	1	RS-1-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 12:38	< LOD	10.91			26.36	6.07			369.02	16.04		
64	1	RS-1-BR-0-6"	0-6	Back right	Composite	R171092	6/3/2014 12:44	< LOD	9.57	<LOD		432.97	13.23	226	210	802.82	20.59	830	1,000
65	1	RS-1-BR-0-6"	0-6	Back right	Composite	R171092	6/3/2014 12:45	< LOD	10.20			107.89	8.28			837.48	22.80		
66	1	RS-1-BR-0-6"	0-6	Back right	Composite	R171092	6/3/2014 12:46	< LOD	10.31			136.20	8.76			849.97	22.45		
67	1	RS-1-BR-6-12"	6-12	Back right	Composite	R171092	6/3/2014 12:52	< LOD	9.91	<LOD		77.53	7.06	87		645.47	19.05	694	
68	1	RS-1-BR-6-12"	6-12	Back right	Composite	R171092	6/3/2014 12:55	< LOD	10.19			94.82	7.72			731.13	20.82		
69	1	RS-1-BR-6-12"	6-12	Back right	Composite	R171092	6/3/2014 12:56	< LOD	10.54			89.04	7.85			704.89	21.18		
70	1	RS-1-BR-12-18"	12-18	Back right	Composite	R171092	6/3/2014 13:01	< LOD	10.22	<LOD		29.95	5.83	32		426.02	16.20	446	
71	1	RS-1-BR-12-18"	12-18	Back right	Composite	R171092	6/3/2014 13:02	< LOD	11.28			45.41	7.09			579.97	20.87		
72	1	RS-1-BR-12-18"	12-18	Back right	Composite	R171092	6/3/2014 13:07	< LOD	8.95			20.19	4.79			332.10	12.62		
73	1	RS-1-BR-18-24"	18-24	Back right	Composite	R171092	6/3/2014 14:16	< LOD	10.07	<LOD		18.98	5.57	18		371.45	15.63	267	
74	1	RS-1-BR-18-24"	18-24	Back right	Composite	R171092	6/3/2014 14:17	< LOD	10.61			< LOD	7.31			186.88	11.81		
75	1	RS-1-BR-18-24"	18-24	Back right	Composite	R171092	6/3/2014 14:18	< LOD	10.89			17.91	5.76			242.97	13.37		
91	1	RS-1-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 15:16	< LOD	9.49	<LOD		81.29	7.04	78		1,136.88	24.67	962	
92	1	RS-1-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 15:17	< LOD	10.43			76.71	7.41			842.94	22.76		
93	1	RS-1-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 15:18	< LOD	10.85			75.69	7.77			905.52	24.76		
94	1	RS-1-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 15:23	< LOD	12.43	<LOD		129.23	10.68	107		1,601.67	37.76	1,447	
95	1	RS-1-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 15:24	< LOD	10.63			77.16	7.67			1,111.95	26.80		
96	1	RS-1-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 15:25	< LOD	11.25			113.72	9.03			1,626.94	33.56		
97	1	RS-1-FL-6-12"-FD	6-12	Front left	Composite	R171092	6/3/2014 15:26	< LOD	10.99	<LOD		80.06	7.99	76		1,379.87	30.66	1,189	
98	1	RS-1-FL-6-12"-FD	6-12	Front left	Composite	R171092	6/3/2014 15:27	< LOD	10.46			69.94	7.33			1,100.72	26.34		
99	1	RS-1-FL-6-12"-FD	6-12	Front left	Composite	R171092	6/3/2014 15:29	< LOD	11.63			79.30	8.30			1,085.57	28.40		
100	1	RS-1-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 16:23	< LOD	11.50	<LOD		32.71	6.54	82		560.06	20.20	935	
101	1	RS-1-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 16:24	< LOD	10.76			132.65	9.21			1,102.44	26.88		
102	1	RS-1-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 16:25	< LOD	12.25			80.86	8.96			1,143.31	31.28		
103	1	RS-1-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 16:31	< LOD	10.65	<LOD		59.06	7.08	62		862.30	23.60	841	
104	1	RS-1-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 16:32	< LOD	10.74			77.79	7.56			977.25	24.73		
105	1	RS-1-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 16:33	< LOD	12.07			48.34	7.44			682.74	23.26		
76	1	RS-1-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 14:28	< LOD	11.13	<LOD	6.6 B	82.22	8.09	67		666.22	21.70	619	
77	1	RS-1-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 14:29	< LOD	10.64			48.33	6.70			465.61	17.58		
78	1	RS-1-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 14:30	< LOD	11.63			70.91	7.93			725.27	23.18		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
79	1	RS-1-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 14:37	< LOD	12.27	<LOD		88.99	9.02	130		1,217.24	31.49	1,496	
80	1	RS-1-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 14:38	< LOD	12.18			149.19	10.43			1,605.69	34.90		
81	1	RS-1-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 14:39	< LOD	11.84			152.55	10.61			1,665.05	35.96		
82	1	RS-1-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 14:49	< LOD	11.60	<LOD		< LOD	8.08	16		250.58	14.67	289	
83	1	RS-1-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 14:50	< LOD	11.59			16.46	6.04			347.49	16.62		
84	1	RS-1-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 14:51	< LOD	10.24			< LOD	7.01			269.22	13.39		
88	1	RS-1-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 15:08	< LOD	13.31	<LOD		< LOD	9.53	<LOD		54.52	9.74	92	
89	1	RS-1-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 15:09	< LOD	11.16			< LOD	7.84			139.35	10.86		
90	1	RS-1-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 15:10	< LOD	10.89			< LOD	6.86			80.68	8.66		
220	2	RS-2-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 9:33	< LOD	8.69	<LOD		134.82	7.96	110		1,172.39	23.90	1,076	
221	2	RS-2-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 9:35	< LOD	9.04			91.80	7.35			1,105.10	24.61		
222	2	RS-2-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 9:37	< LOD	8.35			102.00	6.84			951.00	20.50		
223	2	RS-2-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 9:40	< LOD	8.93	<LOD		109.72	7.59	104		1,236.47	25.19	1,113	
224	2	RS-2-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 9:42	< LOD	8.18			85.92	6.34			942.82	20.03		
225	2	RS-2-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 9:45	< LOD	8.77			115.77	7.54			1,159.65	23.79		
226	2	RS-2-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 9:47	< LOD	8.79	<LOD		95.30	7.04	66		1,469.09	26.57	1,209	
227	2	RS-2-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 9:50	< LOD	8.68			29.48	5.14			957.12	21.33		
228	2	RS-2-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 9:52	< LOD	8.88			71.72	6.48			1,200.05	24.17		
229	2	RS-2-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 9:55	< LOD	8.56	<LOD		33.95	5.29	33		482.95	15.42	456	
230	2	RS-2-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 9:57	< LOD	8.66			43.43	5.52			490.81	15.41		
231	2	RS-2-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 9:59	< LOD	8.68			21.30	4.91			394.99	14.06		
232	2	RS-2-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/3/2014 10:03	< LOD	8.95	<LOD		50.59	6.01	42		586.97	17.53	605	
233	2	RS-2-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/3/2014 10:05	< LOD	9.03			43.01	5.77			633.31	18.06		
234	2	RS-2-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/3/2014 10:08	< LOD	9.39			33.74	5.69			594.57	18.28		
235	2	RS-2-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 10:12	< LOD	7.76	<LOD		116.48	6.68	107		805.93	17.71	834	
236	2	RS-2-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 10:14	< LOD	8.19			112.44	6.98			844.84	19.12		
237	2	RS-2-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 10:17	< LOD	8.46			91.51	6.58			851.03	19.38		
238	2	RS-2-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 10:20	< LOD	8.72	<LOD		107.04	7.16	101		900.27	20.54	904	
239	2	RS-2-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 10:22	< LOD	8.61			94.68	6.85			917.59	20.67		
240	2	RS-2-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 10:25	< LOD	8.93			100.17	7.24			894.62	21.14		
241	2	RS-2-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 10:28	< LOD	8.46	<LOD		35.40	5.19	62		413.27	14.00	632	
242	2	RS-2-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 10:30	< LOD	8.86			86.80	6.77			858.83	20.32		
243	2	RS-2-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 10:32	< LOD	9.07			64.03	6.30			623.05	17.85		
244	2	RS-2-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 10:35	< LOD	8.47	<LOD		75.48	6.31	52		959.32	20.84	579	
245	2	RS-2-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 10:37	< LOD	8.58			10.71	4.49			174.58	9.68		
246	2	RS-2-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 10:39	< LOD	8.40			70.90	6.16			603.63	16.67		
208	2	RS-2-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 9:01	< LOD	8.23	<LOD		83.46	6.31	84		666.43	16.98	763	
209	2	RS-2-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 9:03	< LOD	8.42			96.19	6.70			804.67	18.89		
210	2	RS-2-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 9:06	< LOD	8.76			72.96	6.51			817.91	20.17		
211	2	RS-2-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 9:09	< LOD	8.67	<LOD		33.24	5.26	40		467.79	15.11	502	
212	2	RS-2-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 9:11	< LOD	8.81			68.01	6.31			585.79	16.97		
213	2	RS-2-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 9:13	< LOD	8.27			17.38	4.50			453.06	14.19		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
214	2	RS-2-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 9:15	< LOD	10.69	<LOD		33.45	6.63	19		451.34	18.61	328	
215	2	RS-2-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 9:17	< LOD	8.42			8.31	4.40			222.75	10.84		
216	2	RS-2-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 9:19	< LOD	8.55			15.43	4.66			309.64	12.51		
217	2	RS-2-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 9:23	< LOD	9.44	<LOD		< LOD	6.75	<LOD		66.22	7.36	84	
218	2	RS-2-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 9:25	< LOD	8.69			< LOD	6.41			114.88	8.18		
219	2	RS-2-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 9:28	< LOD	8.88			< LOD	6.36			71.17	7.08		
196	2	RS-2-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 8:18	< LOD	8.00	<LOD		37.88	5.06	44		477.59	14.37	509	
197	2	RS-2-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 8:20	< LOD	8.31			43.29	5.36			511.02	15.26		
198	2	RS-2-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 8:23	< LOD	8.48			50.13	5.60			537.72	15.77		
199	2	RS-2-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 8:26	< LOD	8.90	<LOD		43.40	5.69	45		575.83	17.03	583	
200	2	RS-2-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 8:28	< LOD	8.92			55.50	6.00			623.82	17.56		
201	2	RS-2-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 8:30	< LOD	8.50			36.85	5.27			549.22	16.04		
202	2	RS-2-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 8:32	< LOD	8.45	<LOD		20.44	4.68	17		393.95	13.54	331	
203	2	RS-2-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 8:34	< LOD	8.76			< LOD	6.54			276.86	11.98		
204	2	RS-2-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 8:37	< LOD	8.80			13.39	4.74			323.02	13.17		
205	2	RS-2-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 8:40	< LOD	9.88	<LOD		< LOD	7.29	<LOD		83.90	8.66	107	
206	2	RS-2-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 8:43	< LOD	8.24			< LOD	5.92			137.75	8.79		
207	2	RS-2-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 8:46	< LOD	8.49			< LOD	5.92			100.36	7.69		
10	3	RS-3-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 8:23	< LOD	10.35	<LOD		361.93	12.99	313		4,612.61	51.47	4,352	
11	3	RS-3-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 8:27	< LOD	11.31			330.37	13.52			4,769.08	56.68		
12	3	RS-3-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 8:28	< LOD	10.66			248.12	11.18			3,675.53	46.49		
13	3	RS-3-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 8:31	< LOD	10.58	<LOD		226.67	10.79	253		4,635.20	52.10	4,253	
14	3	RS-3-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 8:32	< LOD	11.62			208.60	11.24			3,326.02	47.62		
15	3	RS-3-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 8:33	< LOD	11.37			324.85	13.49			4,797.27	56.98		
16	3	RS-3-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 8:37	< LOD	10.55	<LOD		162.92	9.28	197		2,582.26	38.15	3,398	
17	3	RS-3-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 8:38	< LOD	10.83			232.72	11.35			4,074.34	50.95		
18	3	RS-3-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 8:39	< LOD	10.14			196.35	9.77			3,538.12	43.67		
19	3	RS-3-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 8:43	< LOD	10.06	<LOD		52.15	6.43	62		1,728.22	31.09	1,548	
20	3	RS-3-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 8:45	< LOD	11.14			101.04	8.47			1,624.25	32.85		
21	3	RS-3-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 8:54	< LOD	10.27			32.03	5.83			1,293.02	27.15		
175	3	RS-3-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 17:13	< LOD	8.09	<LOD	4.4	110.05	6.85	138	150	876.24	19.28	936	1,000 B
176	3	RS-3-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 17:15	< LOD	8.71			152.36	8.16			990.23	21.62		
177	3	RS-3-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 17:16	< LOD	7.83			151.87	7.52			941.85	19.50		
178	3	RS-3-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 17:19	< LOD	7.94	<LOD		88.34	6.23	160		805.26	18.13	947	
179	3	RS-3-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 17:21	< LOD	9.24			232.45	10.13			1,068.28	23.54		
180	3	RS-3-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 17:22	< LOD	8.14			160.58	7.91			967.74	20.30		
181	3	RS-3-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 17:25	< LOD	8.54	<LOD		52.82	5.81	54		626.91	17.28	605	
182	3	RS-3-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 17:26	< LOD	8.74			51.17	5.79			601.69	17.01		
183	3	RS-3-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 17:27	< LOD	8.69			56.90	5.90			586.06	16.65		
184	3	RS-3-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 17:32	< LOD	8.49	<LOD		17.84	4.64	16		409.78	13.90	363	
185	3	RS-3-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 17:33	< LOD	8.23			16.32	4.48			372.73	13.06		
186	3	RS-3-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 17:34	< LOD	8.74			12.37	4.60			305.70	12.59		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
187	3	RS-3-BR-18-24"-FD	18-24	Back right	Composite	R184142	6/2/2014 17:35	< LOD	8.80	<LOD		14.04	4.65	19		309.67	12.63	410	
188	3	RS-3-BR-18-24"-FD	18-24	Back right	Composite	R184142	6/2/2014 17:37	< LOD	8.05			27.54	4.79			402.01	13.37		
189	3	RS-3-BR-18-24"-FD	18-24	Back right	Composite	R184142	6/2/2014 17:38	< LOD	8.27			15.90	4.48			518.41	15.23		
36	3	RS-3-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 10:26	< LOD	9.69	<LOD		241.99	10.69	292		2,378.18	36.23	2,855	
37	3	RS-3-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 10:27	< LOD	11.07			292.69	13.15			2,469.84	41.91		
38	3	RS-3-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 10:28	< LOD	9.75			341.09	12.12			3,715.53	44.26		
39	3	RS-3-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 10:33	< LOD	11.19	<LOD	14 B	368.26	14.15	397	420	5,233.78	59.27	4,822	2,700
40	3	RS-3-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 10:34	< LOD	10.90			311.31	13.02			4,395.14	53.78		
41	3	RS-3-FL-6-12"	6-12	Front left	Composite	R171092	6/3/2014 10:35	< LOD	10.67			510.32	15.56			4,838.05	54.18		
42	3	RS-3-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 10:40	< LOD	10.00	<LOD		180.99	9.59	176		3,118.90	41.66	2,639	
43	3	RS-3-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 10:41	< LOD	10.54			192.78	10.13			2,395.53	37.58		
44	3	RS-3-FL-12-18"	12-18	Front left	Composite	R171092	6/3/2014 10:42	< LOD	10.45			154.05	9.17			2,403.21	37.21		
45	3	RS-3-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 10:47	< LOD	10.32	<LOD		121.05	8.27	129		1,716.74	31.00	2,059	
46	3	RS-3-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 10:48	< LOD	11.04			130.67	9.44			2,500.05	41.37		
47	3	RS-3-FL-18-24"	18-24	Front left	Composite	R171092	6/3/2014 10:49	< LOD	10.30			134.14	8.72			1,959.61	33.63		
48	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:52	< LOD	10.13	<LOD		26.72	5.64	62		880.57	22.37	1,243	
49	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:53	< LOD	10.32			43.84	6.25			1,047.07	24.60		
50	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:54	< LOD	10.45			111.40	8.37			1,716.71	32.26		
51	3	RS-3-FL-18-24"-FD	18-24	Front left	Composite	R171092	6/3/2014 10:57	< LOD	10.48			66.14	7.14			1,327.00	28.51		
22	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:52	< LOD	10.26	<LOD	4.2 B	175.93	9.85	204	170	1,157.11	26.62	924	910
23	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:54	< LOD	10.45			458.59	14.62			818.35	22.34		
24	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:55	< LOD	9.86			88.30	7.33			845.06	21.66		
25	3	RS-3-BL-0-6"	0-6	Back left	Composite	R171092	6/3/2014 9:58	< LOD	10.01			91.28	7.49			875.30	22.27		
26	3	RS-3-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 10:02	< LOD	9.89	<LOD		86.13	7.29	75		758.09	20.52	735	
27	3	RS-3-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 10:03	< LOD	11.13			69.92	7.69			715.60	22.41		
28	3	RS-3-BL-6-12"	6-12	Back left	Composite	R171092	6/3/2014 10:04	< LOD	10.05			67.72	6.94			732.60	20.71		
30	3	RS-3-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 10:10	< LOD	9.93	<LOD		18.92	5.28	17		375.25	14.78	354	
31	3	RS-3-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 10:11	< LOD	9.89			17.25	5.16			356.39	14.38		
32	3	RS-3-BL-12-18"	12-18	Back left	Composite	R171092	6/3/2014 10:12	< LOD	10.98			15.53	5.62			331.79	15.30		
33	3	RS-3-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 10:17	< LOD	9.95	<LOD		12.40	5.09	14		198.75	11.33	233	
34	3	RS-3-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 10:18	< LOD	10.25			15.58	5.30			234.28	12.43		
35	3	RS-3-BL-18-24"	18-24	Back left	Composite	R171092	6/3/2014 10:19	< LOD	10.27			13.60	5.28			265.38	13.21		
117	4	RS-4-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 14:39	< LOD	8.90	<LOD		188.40	9.22	201		1,657.21	28.88	1,669	
118	4	RS-4-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 14:41	< LOD	8.08			241.57	9.36			1,811.48	27.75		
119	4	RS-4-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 14:43	< LOD	7.82			171.72	7.98			1,538.88	25.04		
120	4	RS-4-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 14:46	< LOD	8.59	<LOD	8.4	282.22	10.35	239	400	2,460.40	33.39	2,196	2,400 B
121	4	RS-4-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 14:47	< LOD	9.36			145.73	8.52			1,787.44	30.59		
122	4	RS-4-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 14:49	< LOD	8.19			289.01	10.11			2,338.81	31.53		
123	4	RS-4-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 14:52	< LOD	8.08	<LOD		47.55	5.36	54		205.91	9.82	362	
124	4	RS-4-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 14:55	< LOD	9.15			18.80	5.06			197.45	10.84		
125	4	RS-4-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 14:57	< LOD	8.81			96.75	7.13			683.22	18.53		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium XRF Result (ppm)	Cadmium XRF Error (± equals 2 std dev)	Cadmium Average XRF Reading (ppm)	Cadmium Lab Result (mg/kg)	Lead XRF Result (ppm)	Lead XRF Error (± equals 2 std dev)	Lead Average XRF Reading (ppm)	Lead Lab Result (mg/kg)	Zinc XRF Result (ppm)	Zinc XRF Error (± equals 2 std dev)	Zinc Average XRF Reading (ppm)	Zinc Lab Result (mg/kg)
Kansas RSK								39		39	39	400		400	400	23,500		23,500	23,500
126	4	RS-4-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 15:00	< LOD	8.74	<LOD		15.88	4.79	13		150.36	9.37	104	
127	4	RS-4-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 15:02	< LOD	8.65			10.51	4.47			105.78	7.92		
128	4	RS-4-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 15:04	< LOD	8.73			< LOD	6.33			54.83	6.31		
129	4	RS-4-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 15:11	< LOD	9.39	<LOD		118.39	8.23	162		1,108.05	25.13	1,064	
130	4	RS-4-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 15:14	< LOD	8.59			212.23	9.26			850.61	20.03		
131	4	RS-4-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 15:15	< LOD	8.65			155.15	8.33			1,232.11	24.37		
132	4	RS-4-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 15:18	< LOD	8.47	<LOD		53.31	5.82	89		472.68	15.28	750	
133	4	RS-4-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 15:20	< LOD	8.60			87.38	6.73			669.33	17.97		
134	4	RS-4-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 15:21	< LOD	9.04			127.36	7.96			1,109.14	24.08		
135	4	RS-4-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 15:24	< LOD	8.79	<LOD		17.09	4.86	17		132.48	8.97	115	
136	4	RS-4-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 15:26	< LOD	8.94			< LOD	6.76			103.35	8.21		
137	4	RS-4-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 15:28	< LOD	9.83			< LOD	7.48			108.14	9.31		
138	4	RS-4-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 15:30	< LOD	8.93	<LOD		< LOD	6.74	<LOD		71.51	7.29	74	
139	4	RS-4-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 15:32	< LOD	9.97			< LOD	7.45			64.46	7.87		
140	4	RS-4-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 15:34	< LOD	9.67			< LOD	7.41			87.11	8.46		
141	4	RS-4-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 15:42	< LOD	8.54	<LOD	9	276.49	10.13	276	330	2,327.58	32.09	2,252	2,200 B
142	4	RS-4-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 15:44	< LOD	8.63			295.54	10.65			2,247.48	32.27		
143	4	RS-4-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 15:46	< LOD	8.54			255.00	10.01			2,182.26	31.80		
151	4	RS-4-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 16:07	< LOD	9.06	<LOD		273.11	10.62	277		3,133.80	39.12	3,134	
152	4	RS-4-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 16:10	< LOD	9.00			169.82	8.61			3,118.82	38.41		
153	4	RS-4-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 16:12	< LOD	8.77			388.21	12.10			3,148.88	38.41		
154	4	RS-4-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 16:17	< LOD	9.01	<LOD		260.73	10.53	262		2,105.94	32.50	3,135	
155	4	RS-4-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 16:19	< LOD	8.75			356.08	11.73			4,548.10	46.41		
156	4	RS-4-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 16:21	< LOD	9.05			168.45	8.99			2,749.94	37.73		
157	4	RS-4-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 16:24	< LOD	8.62	<LOD		72.77	6.41	81		1,293.76	24.86	984	
158	4	RS-4-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 16:26	< LOD	8.62			94.68	6.92			833.12	19.93		
159	4	RS-4-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 16:28	< LOD	8.50			74.73	6.33			825.84	19.53		
160	4	RS-4-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 16:31	< LOD	8.18	<LOD		< LOD	6.18	12		734.21	18.21	882	
161	4	RS-4-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 16:34	< LOD	8.72			7.70	4.47			697.12	18.66		
162	4	RS-4-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 16:37	< LOD	9.44			15.85	5.15			1,214.81	26.17		
163	4	RS-4-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 16:44	< LOD	8.26	<LOD		165.90	8.09	173		1,124.45	22.09	1,148	
164	4	RS-4-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 16:47	< LOD	8.61			179.67	8.67			1,160.05	23.26		
165	4	RS-4-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 16:49	< LOD	8.25			172.00	8.17			1,160.49	22.32		
166	4	RS-4-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 16:52	< LOD	8.53	<LOD		56.98	5.88	63		518.65	15.76	537	
167	4	RS-4-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 16:56	< LOD	8.67			53.39	5.74			409.07	13.96		
168	4	RS-4-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 16:58	< LOD	9.68			77.90	7.22			684.09	20.10		
169	4	RS-4-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 17:02	< LOD	9.19	<LOD		16.05	4.93	11		175.65	10.21	134	
170	4	RS-4-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 17:04	< LOD	9.07			9.04	4.71			118.50	8.79		
171	4	RS-4-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 17:05	< LOD	8.61			8.11	4.46			107.08	8.08		
172	4	RS-4-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 17:07	< LOD	12.47	<LOD		< LOD	9.63	7		55.05	9.58	64	
173	4	RS-4-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 17:08	< LOD	9.86			< LOD	6.97			65.81	7.67		
174	4	RS-4-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 17:10	< LOD	9.18			7.23	4.72			70.05	7.46		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
58	5	RS-5-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 12:04	< LOD	8.24	<LOD		1,616.44	22.74	1,376		4,350.46	43.50	4,369	
59	5	RS-5-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 12:07	< LOD	8.17			1,311.13	20.38			4,630.61	44.49		
60	5	RS-5-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 12:12	< LOD	8.58			1,198.97	20.20			4,125.37	43.46		
61	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:16	< LOD	9.04	<LOD		1,744.52	24.98	1,082		11,800.07	75.58	9,662	
62	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:18	< LOD	9.62			1,091.27	20.87			10,966.77	76.33		
63	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:20	< LOD	9.83			632.01	16.63			6,874.80	62.31		
64	5	RS-5-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 12:22	< LOD	9.42			860.27	18.55			9,005.44	68.80		
65	5	RS-5-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 12:25	< LOD	8.93	<LOD	9.9	377.32	12.00	386	480	4,785.28	47.43	3,745	3,600 B
66	5	RS-5-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 12:27	< LOD	9.19			530.18	14.40			3,641.56	42.66		
67	5	RS-5-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 12:29	< LOD	10.23			251.31	11.78			2,807.45	42.54		
68	5	RS-5-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 12:31	< LOD	9.06	<LOD		34.09	5.46	73		690.67	18.85	990	
69	5	RS-5-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 12:33	< LOD	11.07			142.76	10.29			1,560.55	34.67		
70	5	RS-5-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 12:35	< LOD	10.89			43.23	7.10			718.06	23.64		
71	5	RS-5-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/2/2014 12:37	< LOD	9.95	<LOD		74.01	7.17	64		1,132.74	25.60	911	
72	5	RS-5-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/2/2014 12:40	< LOD	9.14			75.48	6.77			974.98	22.61		
73	5	RS-5-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/2/2014 12:41	< LOD	10.26			43.28	6.42			626.71	19.91		
89	5	RS-5-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 13:18	< LOD	9.52	<LOD		357.55	12.37	334		6,531.57	58.41	6,067	
90	5	RS-5-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 13:20	< LOD	9.61			361.30	13.01			6,220.00	59.69		
91	5	RS-5-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 13:22	< LOD	9.01			281.77	10.64			5,448.18	50.91		
92	5	RS-5-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 13:24	< LOD	9.23	<LOD		47.91	6.01	45		993.13	22.82	1,032	
93	5	RS-5-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 13:26	< LOD	8.74			44.81	5.57			1,022.10	21.87		
94	5	RS-5-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 13:28	< LOD	9.11			43.37	5.89			1,080.89	23.84		
95	5	RS-5-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 13:30	< LOD	8.61	<LOD		88.56	6.60	50		848.04	19.58	605	
96	5	RS-5-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 13:33	< LOD	9.11			14.60	4.84			370.41	14.11		
97	5	RS-5-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 13:35	< LOD	8.76			45.81	5.73			597.69	17.26		
98	5	RS-5-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 13:45	< LOD	9.22	<LOD		< LOD	6.78	9		147.47	9.51	199	
99	5	RS-5-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 13:47	< LOD	9.62			11.15	4.96			168.38	10.48		
100	5	RS-5-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 13:49	< LOD	10.22			7.70	5.12			280.03	13.86		
74	5	RS-5-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 12:46	< LOD	9.00	<LOD		1,470.53	22.96	1,677		10,025.33	69.59	9,848	
75	5	RS-5-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 12:48	< LOD	9.31			2,080.42	27.68			10,322.80	71.94		
76	5	RS-5-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 12:50	< LOD	9.39			1,481.45	23.76			9,194.38	68.75		
77	5	RS-5-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 12:52	< LOD	9.66	<LOD	26	517.48	15.02	743	1,000	7,260.20	63.28	8,987	9,300 B
78	5	RS-5-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 12:54	< LOD	9.58			724.44	17.22			9,148.11	69.81		
79	5	RS-5-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 12:56	< LOD	9.44			987.28	19.50			10,553.67	73.35		
86	5	RS-5-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 13:09	14.25	6.30	13		630.38	15.68	705		8,603.24	65.77	11,300	
87	5	RS-5-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 13:11	< LOD	8.99			519.69	14.13			7,306.94	59.69		
88	5	RS-5-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 13:13	12.35	6.63			964.27	20.20			17,991.01	100.27		
80	5	RS-5-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 12:58	9.49	5.85	9		61.83	5.94	64		1,719.62	27.65	1,546	
81	5	RS-5-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 13:00	< LOD	9.29			73.94	6.67			1,453.41	27.18		
82	5	RS-5-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 13:02	< LOD	8.61			56.67	5.80			1,466.35	25.61		
83	5	RS-5-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 13:04	< LOD	9.15	<LOD		26.41	5.16	23		1,057.33	22.94	1,107	
84	5	RS-5-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 13:06	< LOD	9.49			16.65	5.07			890.52	22.15		
85	5	RS-5-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 13:07	< LOD	9.15			27.17	5.28			1,373.54	26.50		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								39		39	39	400		400	400	23,500		23,500	23,500
101	5	RS-5-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 13:53	< LOD	9.27	<LOD		221.43	9.91	262		2,851.70	38.00	3,696	
102	5	RS-5-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 13:55	< LOD	9.39			227.73	10.33			3,716.50	44.68		
103	5	RS-5-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 13:58	< LOD	8.70			336.78	11.29			4,519.26	45.69		
104	5	RS-5-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 14:00	< LOD	8.33	<LOD		48.19	5.46	56		911.00	19.94	1,225	
105	5	RS-5-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 14:02	< LOD	10.04			47.26	6.50			1,281.43	28.11		
106	5	RS-5-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 14:04	< LOD	8.53			73.85	6.31			1,482.31	25.94		
107	5	RS-5-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 14:07	< LOD	8.24	<LOD		38.31	5.15	44		507.18	15.00	705	
108	5	RS-5-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 14:09	< LOD	8.72			35.65	5.29			847.39	19.97		
109	5	RS-5-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 14:11	< LOD	8.48			57.75	5.84			760.02	18.61		
110	5	RS-5-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 14:14	< LOD	9.79	<LOD		13.23	5.28	12		387.78	15.95	346	
111	5	RS-5-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 14:16	< LOD	8.90			< LOD	6.70			287.79	12.62		
112	5	RS-5-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 14:18	< LOD	8.93			10.32	4.63			362.47	13.83		
113	5	RS-5-BL-18-24"-FD	18-24	Back left	Composite	R184142	6/2/2014 14:21	< LOD	8.79	<LOD		7.48	4.43	11		220.71	10.96	280	
114	5	RS-5-BL-18-24"-FD	18-24	Back left	Composite	R184142	6/2/2014 14:23	< LOD	8.37			< LOD	6.07			264.21	11.43		
115	5	RS-5-BL-18-24"-FD	18-24	Back left	Composite	R184142	6/2/2014 14:25	< LOD	9.31			13.96	5.02			356.24	14.50		
247	6	RS-6-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 10:55	< LOD	9.79	<LOD		240.81	10.80	203		1,727.85	31.27	1,639	
248	6	RS-6-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 10:58	< LOD	8.74			186.96	9.21			1,708.79	29.38		
249	6	RS-6-FR-0-6"	0-6	Front right	Composite	R184142	6/3/2014 11:02	< LOD	7.04			180.76	7.16			1,479.29	21.61		
250	6	RS-6-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 11:05	< LOD	8.59	<LOD		40.16	5.39	56		565.21	16.31	647	
251	6	RS-6-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 11:08	< LOD	8.62			65.39	6.16			694.37	18.16		
252	6	RS-6-FR-6-12"	6-12	Front right	Composite	R184142	6/3/2014 11:10	< LOD	8.81			61.52	6.12			680.56	18.20		
253	6	RS-6-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 11:17	< LOD	8.55	<LOD		< LOD	6.24	<LOD		303.60	12.45	234	
254	6	RS-6-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 11:20	< LOD	8.41			< LOD	6.01			182.12	9.69		
255	6	RS-6-FR-12-18"	12-18	Front right	Composite	R184142	6/3/2014 11:23	< LOD	8.22			< LOD	6.11			217.66	10.16		
256	6	RS-6-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 11:25	< LOD	8.57	<LOD		< LOD	6.13	<LOD		78.68	7.17	93	
257	6	RS-6-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 11:30	< LOD	8.66			< LOD	6.45			103.64	8.00		
258	6	RS-6-FR-18-24"	18-24	Front right	Composite	R184142	6/3/2014 11:32	< LOD	8.71			< LOD	6.46			97.78	7.84		
275	6	RS-6-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 14:24	< LOD	8.94	<LOD	6.3	833.96	17.78	702	800	2,216.16	33.43	2,292	2,200 B
276	6	RS-6-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 14:27	< LOD	8.63			476.02	13.38			1,942.10	30.55		
277	6	RS-6-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 14:29	< LOD	8.59			794.61	16.81			2,717.27	35.76		
278	6	RS-6-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 14:33	< LOD	8.87	<LOD		83.96	6.83	105		817.98	20.21	821	
279	6	RS-6-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 14:35	< LOD	9.00			130.97	7.97			722.85	19.10		
280	6	RS-6-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 14:38	< LOD	9.84			99.70	7.90			921.69	23.35		
281	6	RS-6-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 14:41	< LOD	8.64	<LOD		89.37	6.77	52		454.21	14.87	416	
282	6	RS-6-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 14:43	< LOD	8.67			39.58	5.45			376.43	13.70		
283	6	RS-6-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 14:47	< LOD	8.65			27.18	5.04			417.10	14.25		
284	6	RS-6-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 14:52	< LOD	8.45	<LOD		17.37	4.62	148		211.53	10.32	936	
285	6	RS-6-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 14:54	< LOD	8.26			295.44	10.35			1,770.10	27.86		
286	6	RS-6-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 14:57	< LOD	8.22			130.81	7.47			825.87	19.17		
287	6	RS-6-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 15:05	< LOD	8.71	<LOD	13 B	299.84	10.76	266	330	2,213.19	32.15	2,174	3,600
288	6	RS-6-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 15:08	< LOD	8.53		8.6 B	299.65	10.72		360	2,355.11	33.05		2,400
289	6	RS-6-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 15:10	< LOD	7.86			198.03	8.54			1,954.46	28.54		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

								Cadmium				Lead				Zinc			
XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
290	6	RS-6-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 15:13	< LOD	8.99	<LOD		158.43	8.62	173		953.66	22.07	1,080	
291	6	RS-6-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 15:15	< LOD	8.74			201.28	9.15			1,293.50	24.74		
292	6	RS-6-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 15:17	< LOD	8.52			159.72	8.13			993.44	21.18		
293	6	RS-6-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 15:20	< LOD	8.70	<LOD		26.72	5.09	22		515.21	16.06	457	
294	6	RS-6-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 15:22	< LOD	8.35			27.33	4.93			492.76	15.09		
295	6	RS-6-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 15:25	< LOD	8.49			12.59	4.55			364.21	13.54		
296	6	RS-6-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 15:28	< LOD	8.89	<LOD		< LOD	6.27	<LOD		141.76	9.20	175	
297	6	RS-6-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 15:30	< LOD	8.53			< LOD	6.07			175.47	9.71		
298	6	RS-6-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 15:32	< LOD	8.83			< LOD	6.60			208.47	10.75		
259	6	RS-6-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 11:42	< LOD	8.46	<LOD		605.69	14.65	510		4,871.48	47.27	3,996	
260	6	RS-6-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 11:45	< LOD	8.49			459.96	12.83			3,495.57	39.78		
261	6	RS-6-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 11:48	< LOD	8.72			465.24	13.30			3,619.93	41.73		
262	6	RS-6-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 11:52	26.17	7.24	23		2,942.86	37.06	2,843		22,123.92	118.81	19,955	
263	6	RS-6-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 11:54	19.42	7.52			3,439.12	41.94			21,566.11	122.94		
264	6	RS-6-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 11:57	< LOD	10.14			2,147.79	30.79			16,176.08	98.52		
265	6	RS-6-BL-6-12"-FD	6-12	Back left	Composite	R184142	6/3/2014 12:00	17.78	6.83	11		2,852.73	34.96	2,297		23,173.16	116.45	20,122	
266	6	RS-6-BL-6-12"-FD	6-12	Back left	Composite	R184142	6/3/2014 12:03	18.18	6.97			1,843.98	28.73			17,239.90	102.16		
267	6	RS-6-BL-6-12"-FD	6-12	Back left	Composite	R184142	6/3/2014 12:06	10.65	6.66			2,194.35	30.33			19,951.46	106.56		
268	6	RS-6-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 12:09	< LOD	9.23	<LOD	12 B	589.44	15.04	613	230	11,731.39	75.95	7,145	3,200
269	6	RS-6-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 12:12	< LOD	8.80			130.48	7.81			3,718.69	41.92		
270	6	RS-6-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 12:14	< LOD	8.77			1,117.64	19.67			5,986.18	52.61		
271	6	RS-6-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 13:08	32.25	6.48	32		418.39	13.03	272		4,053.56	45.26	2,472	
272	6	RS-6-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 13:11	< LOD	8.75			193.37	8.99			1,639.73	27.77		
273	6	RS-6-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 13:13	< LOD	9.08			203.87	9.34			1,722.11	28.91		
46	7	RS-7-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 11:32	< LOD	7.79	<LOD		17.10	4.25	22		231.33	9.92	241	
47	7	RS-7-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 11:34	< LOD	8.10			30.17	4.85			282.00	11.30		
48	7	RS-7-FR-0-6"	0-6	Front right	Composite	R184142	6/2/2014 11:36	< LOD	7.76			17.58	4.29			209.06	9.60		
49	7	RS-7-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 11:39	< LOD	8.12	<LOD		18.79	4.49	16		261.47	10.90	238	
50	7	RS-7-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 11:40	< LOD	8.19			8.74	4.22			158.87	8.96		
51	7	RS-7-FR-6-12"	6-12	Front right	Composite	R184142	6/2/2014 11:42	< LOD	7.86			20.29	4.45			292.93	11.27		
52	7	RS-7-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 11:45	< LOD	9.21	<LOD		< LOD	6.83	8		85.03	8.02	109	
53	7	RS-7-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 11:47	< LOD	9.40			< LOD	6.95			78.85	7.88		
54	7	RS-7-FR-12-18"	12-18	Front right	Composite	R184142	6/2/2014 11:49	< LOD	8.50			8.10	4.26			162.80	9.16		
55	7	RS-7-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 11:52	< LOD	8.37	<LOD		< LOD	6.20	<LOD		152.38	9.06	114	
56	7	RS-7-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 11:55	< LOD	10.17			< LOD	7.14			72.66	8.29		
57	7	RS-7-FR-18-24"	18-24	Front right	Composite	R184142	6/2/2014 11:57	< LOD	8.46			< LOD	6.30			115.75	8.28		
7	7	RS-7-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 9:38	< LOD	8.02	<LOD		21.36	4.51	26		215.48	9.93	216	
8	7	RS-7-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 9:41	< LOD	8.49			20.37	4.74			190.81	9.93		
9	7	RS-7-BR-0-6"	0-6	Back right	Composite	R184142	6/2/2014 9:46	< LOD	8.34			25.60	4.83			242.04	10.85		
10	7	RS-7-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 9:49	< LOD	8.88	<LOD		< LOD	6.59	12		142.32	9.05	171	
11	7	RS-7-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 9:51	< LOD	8.45			12.21	4.43			198.75	10.00		
12	7	RS-7-BR-6-12"	6-12	Back right	Composite	R184142	6/2/2014 9:59	< LOD	8.90			11.40	4.58			171.23	9.79		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
13	7	RS-7-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 10:02	< LOD	8.15	<LOD		< LOD	5.68	<LOD		53.57	5.93	65	
14	7	RS-7-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 10:05	< LOD	8.82			< LOD	6.19			71.15	7.03		
15	7	RS-7-BR-12-18"	12-18	Back right	Composite	R184142	6/2/2014 10:07	< LOD	8.69			< LOD	6.05			69.78	6.84		
16	7	RS-7-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 10:10	< LOD	8.78	<LOD		< LOD	6.12	<LOD		46.59	6.01	40	
17	7	RS-7-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 10:12	< LOD	8.83			< LOD	6.29			38.73	5.88		
18	7	RS-7-BR-18-24"	18-24	Back right	Composite	R184142	6/2/2014 10:14	< LOD	8.90			< LOD	6.22			34.28	5.66		
31	7	RS-7-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 10:47	< LOD	8.05	<LOD		20.07	4.45	13		207.27	9.70	184	
32	7	RS-7-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 10:49	< LOD	8.52			8.26	4.37			161.33	9.39		
33	7	RS-7-FL-0-6"	0-6	Front left	Composite	R184142	6/2/2014 10:51	< LOD	7.79			11.06	4.07			184.18	9.04		
34	7	RS-7-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 10:55	< LOD	8.38	<LOD		7.67	4.23	8		125.50	8.20	124	
35	7	RS-7-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 10:57	< LOD	8.25			< LOD	6.06			119.16	7.98		
36	7	RS-7-FL-6-12"	6-12	Front left	Composite	R184142	6/2/2014 11:00	< LOD	8.34			< LOD	6.28			128.56	8.41		
37	7	RS-7-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 11:04	< LOD	8.01	<LOD		11.29	4.23	12		191.29	9.49	158	
38	7	RS-7-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 11:06	< LOD	8.69			< LOD	5.93			101.16	7.82		
39	7	RS-7-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/2/2014 11:08	< LOD	8.24			12.24	4.36			182.18	9.51		
40	7	RS-7-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 11:11	< LOD	8.58	<LOD		< LOD	5.82	<LOD		39.23	5.71	39	
41	7	RS-7-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 11:16	< LOD	8.49			< LOD	6.17			47.65	5.92		
42	7	RS-7-FL-12-18"	12-18	Front left	Composite	R184142	6/2/2014 11:18	< LOD	8.96			< LOD	6.18			31.00	5.54		
43	7	RS-7-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 11:22	< LOD	9.61	<LOD		< LOD	6.55	<LOD		39.56	6.22	40	
44	7	RS-7-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 11:25	< LOD	8.87			< LOD	6.20			40.28	5.99		
45	7	RS-7-FL-18-24"	18-24	Front left	Composite	R184142	6/2/2014 11:27	< LOD	8.93			< LOD	6.17			40.49	5.95		
19	7	RS-7-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 10:18	< LOD	8.13	<LOD	3.3 B	23.15	4.59	25	58	250.68	10.61	271	470
20	7	RS-7-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 10:20	< LOD	8.47			26.19	4.91			307.26	12.23		
21	7	RS-7-BL-0-6"	0-6	Back left	Composite	R184142	6/2/2014 10:23	< LOD	8.69			24.23	4.91			255.06	11.32		
22	7	RS-7-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 10:26	< LOD	8.48	<LOD		16.51	4.59	19		267.43	11.48	264	
23	7	RS-7-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 10:28	< LOD	8.63			24.49	5.01			266.19	11.79		
24	7	RS-7-BL-6-12"	6-12	Back left	Composite	R184142	6/2/2014 10:30	< LOD	8.75			16.18	4.68			258.26	11.51		
25	7	RS-7-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 10:32	< LOD	8.63	<LOD		< LOD	6.13	<LOD		99.40	7.70	117	
26	7	RS-7-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 10:34	< LOD	8.60			< LOD	6.21			134.86	8.67		
27	7	RS-7-BL-12-18"	12-18	Back left	Composite	R184142	6/2/2014 10:36	< LOD	8.70			< LOD	6.04			117.26	8.16		
28	7	RS-7-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 10:39	< LOD	9.24	<LOD		< LOD	6.53	<LOD		38.02	6.08	47	
29	7	RS-7-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 10:41	< LOD	8.72			< LOD	6.32			46.41	6.14		
30	7	RS-7-BL-18-24"	18-24	Back left	Composite	R184142	6/2/2014 10:44	< LOD	8.76			< LOD	6.25			56.93	6.34		
372	8	RS-8-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 9:19	< LOD	8.29	<LOD		107.34	6.92	121		931.68	20.17	1,161	
373	8	RS-8-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 9:21	< LOD	8.19			124.09	7.21			1,199.06	22.62		
374	8	RS-8-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 9:22	< LOD	8.31			130.08	7.60			1,351.05	24.82		
375	8	RS-8-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 9:26	< LOD	9.22	<LOD		7.73	4.62	21		261.10	12.29	429	
376	8	RS-8-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 9:28	< LOD	8.75			26.22	5.25			477.78	15.88		
377	8	RS-8-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 9:30	< LOD	8.41			28.68	5.02			548.27	16.05		
378	8	RS-8-FR-6-12"-FD	6-12	Front right	Composite	R184142	6/4/2014 9:33	< LOD	8.73	<LOD		19.50	4.85	19		365.63	13.63	430	
379	8	RS-8-FR-6-12"-FD	6-12	Front right	Composite	R184142	6/4/2014 9:35	< LOD	8.11			19.16	4.50			397.28	13.19		
380	8	RS-8-FR-6-12"-FD	6-12	Front right	Composite	R184142	6/4/2014 9:37	< LOD	9.28			19.55	5.21			527.97	17.26		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium XRF Result (ppm)	Cadmium XRF Error (± equals 2 std dev)	Cadmium Average XRF Reading (ppm)	Cadmium Lab Result (mg/kg)	Lead XRF Result (ppm)	Lead XRF Error (± equals 2 std dev)	Lead Average XRF Reading (ppm)	Lead Lab Result (mg/kg)	Zinc XRF Result (ppm)	Zinc XRF Error (± equals 2 std dev)	Zinc Average XRF Reading (ppm)	Zinc Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
381	8	RS-8-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 9:42	< LOD	8.17	<LOD		8.02	4.19	8		84.77	7.04	77	
382	8	RS-8-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 9:43	< LOD	9.88			< LOD	6.74			78.69	8.11		
383	8	RS-8-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 9:45	< LOD	8.52			< LOD	6.59			68.37	6.87		
384	8	RS-8-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 9:50	< LOD	8.42	<LOD		< LOD	5.87	<LOD		49.51	5.98	54	
385	8	RS-8-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 9:52	< LOD	8.40			< LOD	5.96			44.70	5.86		
386	8	RS-8-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 9:55	< LOD	8.58			< LOD	5.85			69.12	6.87		
360	8	RS-8-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 8:48	< LOD	8.52	<LOD	4.4 B	156.96	8.17	152	180	953.01	21.02	947	1,100
361	8	RS-8-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 8:52	< LOD	8.43			131.32	7.56			974.13	20.96		
362	8	RS-8-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 8:54	< LOD	8.57			169.11	8.36			913.30	20.47		
363	8	RS-8-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 8:56	< LOD	8.98	<LOD		30.72	5.37	34		382.40	14.26	397	
364	8	RS-8-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 8:58	< LOD	9.23			31.52	5.55			383.98	14.69		
365	8	RS-8-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 9:00	< LOD	8.68			38.47	5.54			425.64	14.80		
366	8	RS-8-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 9:03	< LOD	8.71	<LOD		< LOD	6.21	<LOD		65.72	6.79	92	
367	8	RS-8-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 9:05	< LOD	8.93			< LOD	6.67			127.79	8.81		
368	8	RS-8-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 9:07	< LOD	9.50			< LOD	6.69			81.78	8.00		
369	8	RS-8-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 9:10	< LOD	9.12	<LOD		< LOD	6.28	<LOD		36.84	5.90	46	
370	8	RS-8-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 9:12	< LOD	9.42			< LOD	6.54			52.10	6.88		
371	8	RS-8-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 9:13	< LOD	9.28			< LOD	6.50			47.64	6.65		
387	8	RS-8-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 10:00	< LOD	8.45	<LOD		82.98	6.52	82		1,729.27	27.90	1,579	
388	8	RS-8-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 10:02	< LOD	8.30			99.73	6.80			1,637.37	26.70		
389	8	RS-8-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 10:05	< LOD	9.93			64.51	7.02			1,371.41	28.75		
390	8	RS-8-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 10:07	< LOD	8.68	<LOD		< LOD	6.54	<LOD		223.93	11.07	229	
391	8	RS-8-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 10:09	< LOD	9.17			< LOD	6.72			222.06	11.57		
392	8	RS-8-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 10:11	< LOD	9.02			< LOD	6.73			240.94	11.82		
393	8	RS-8-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 10:16	< LOD	8.97	<LOD		< LOD	6.42	<LOD		66.42	7.05	79	
394	8	RS-8-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 10:18	< LOD	9.80			< LOD	6.82			79.27	8.12		
395	8	RS-8-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 10:20	< LOD	9.56			< LOD	6.99			91.54	8.74		
396	8	RS-8-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 10:26	< LOD	11.55	<LOD		< LOD	8.27	<LOD		32.52	7.52	37	
397	8	RS-8-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 10:28	< LOD	10.58			< LOD	7.10			42.82	7.29		
398	8	RS-8-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 10:30	< LOD	9.86			< LOD	6.80			35.64	6.47		
399	8	RS-8-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 10:38	< LOD	8.16	<LOD		44.22	5.34	60		721.10	17.84	787	
400	8	RS-8-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 10:41	< LOD	8.50			59.57	5.92			771.78	18.82		
401	8	RS-8-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 10:44	< LOD	7.45			77.10	5.60			867.91	17.57		
402	8	RS-8-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 10:48	< LOD	8.23	<LOD		8.80	4.24	9		249.91	10.97	242	
403	8	RS-8-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 10:51	< LOD	8.72			8.53	4.49			246.43	11.58		
404	8	RS-8-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 10:53	< LOD	8.59			8.89	4.37			230.64	10.89		
405	8	RS-8-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 10:58	< LOD	9.70	<LOD		< LOD	7.06	<LOD		51.13	7.27	58	
406	8	RS-8-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:00	< LOD	9.30			< LOD	6.74			58.04	7.03		
407	8	RS-8-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:02	< LOD	11.48			< LOD	8.58			63.59	9.06		
408	8	RS-8-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 11:05	< LOD	10.73	<LOD		< LOD	7.52	<LOD		35.95	7.01	45	
409	8	RS-8-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 11:07	< LOD	9.51			< LOD	6.62			49.15	6.88		
410	8	RS-8-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 11:09	< LOD	11.40			< LOD	8.26			50.97	8.30		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
106	9	RS-9-G-0-6"	0-6	Garden	Discrete	R171092	6/3/2014 16:38	< LOD	9.02	<LOD	28	231.53	9.37	287	550	3,454.72	39.00	4,220	5,900 B
107	9	RS-9-G-0-6"	0-6	Garden	Discrete	R171092	6/3/2014 16:39	< LOD	10.21			339.93	12.29			4,751.81	50.81		
108	9	RS-9-G-0-6"	0-6	Garden	Discrete	R171092	6/3/2014 16:40	< LOD	9.18			288.98	10.62			4,454.19	45.65		
109	9	RS-9-G-6-12"	6-12	Garden	Discrete	R171092	6/3/2014 16:44	< LOD	10.68	<LOD		342.16	12.64	326		8,271.90	68.56	7,312	
110	9	RS-9-G-6-12"	6-12	Garden	Discrete	R171092	6/3/2014 16:45	< LOD	10.76			289.34	11.92			6,584.41	62.03		
111	9	RS-9-G-6-12"	6-12	Garden	Discrete	R171092	6/3/2014 16:46	< LOD	10.09			346.38	12.26			7,080.50	61.35		
112	9	RS-9-G-12-18"	12-18	Garden	Discrete	R171092	6/3/2014 16:51	< LOD	9.61	<LOD		91.99	7.15	118		2,154.90	32.92	2,806	
113	9	RS-9-G-12-18"	12-18	Garden	Discrete	R171092	6/3/2014 16:52	< LOD	10.02			108.80	7.83			2,370.52	35.69		
114	9	RS-9-G-12-18"	12-18	Garden	Discrete	R171092	6/3/2014 16:53	< LOD	9.90			153.67	8.72			3,891.18	45.03		
115	9	RS-9-G-18-24"	18-24	Garden	Discrete	R171092	6/3/2014 16:57	< LOD	9.26	<LOD		< LOD	6.32	<LOD		523.62	16.34	441	
116	9	RS-9-G-18-24"	18-24	Garden	Discrete	R171092	6/3/2014 16:58	< LOD	9.45			< LOD	6.23			378.29	14.29		
117	9	RS-9-G-18-24"	18-24	Garden	Discrete	R171092	6/3/2014 16:59	< LOD	9.48			< LOD	6.32			421.10	15.00		
118	9	RS-9-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 17:12	< LOD	9.85	<LOD		100.13	7.53	102		1,603.62	29.11	1,543	
119	9	RS-9-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 17:13	< LOD	11.60			71.48	8.37			1,353.67	33.09		
120	9	RS-9-FR-0-6"	0-6	Front right	Composite	R171092	6/3/2014 17:15	< LOD	9.99			135.70	8.58			1,670.76	30.51		
121	9	RS-9-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 17:19	< LOD	10.36	<LOD		43.95	6.28	38		808.73	21.88	750	
122	9	RS-9-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 17:20	< LOD	10.07			43.28	6.11			822.08	21.57		
123	9	RS-9-FR-6-12"	6-12	Front right	Composite	R171092	6/3/2014 17:21	< LOD	9.96			26.23	5.56			619.49	18.84		
124	9	RS-9-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 17:29	< LOD	9.72	<LOD		< LOD	6.67	11		250.09	12.25	277	
125	9	RS-9-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 17:30	< LOD	9.41			11.13	4.81			391.04	14.62		
126	9	RS-9-FR-12-18"	12-18	Front right	Composite	R171092	6/3/2014 17:31	< LOD	10.52			< LOD	6.95			189.87	11.60		
127	9	RS-9-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 17:38	< LOD	11.20	<LOD		< LOD	6.94	27		86.31	9.17	104	
128	9	RS-9-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 17:39	< LOD	12.10			< LOD	8.10			118.98	11.13		
129	9	RS-9-FR-18-24"	18-24	Front right	Composite	R171092	6/3/2014 17:40	< LOD	10.00			27.04	5.62			106.59	8.79		
159	9	RS-9-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 10:40	< LOD	9.39	<LOD		179.98	9.17	155		2,299.78	34.36	2,133	
160	9	RS-9-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 10:41	< LOD	9.62			140.47	8.29			2,019.54	31.96		
161	9	RS-9-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 10:43	< LOD	9.97			143.16	8.59			2,078.89	33.35		
162	9	RS-9-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 10:49	< LOD	9.93	<LOD		119.22	8.03	115		1,500.40	28.40	1,561	
163	9	RS-9-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 10:50	< LOD	10.22			115.04	8.23			1,576.99	30.10		
164	9	RS-9-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 10:53	< LOD	9.74			110.07	7.83			1,605.71	29.41		
165	9	RS-9-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 10:59	< LOD	10.64	<LOD		< LOD	7.69	<LOD		416.06	16.54	413	
166	9	RS-9-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:01	< LOD	10.68			< LOD	7.64			438.61	16.85		
167	9	RS-9-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:02	< LOD	10.34			< LOD	7.57			383.19	15.91		
168	9	RS-9-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:08	< LOD	10.92	<LOD		< LOD	7.11	<LOD		99.85	9.42	106	
169	9	RS-9-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:08	< LOD	12.78			< LOD	8.29			107.12	11.30		
170	9	RS-9-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:12	< LOD	10.41			< LOD	6.95			109.81	9.29		
130	9	RS-9-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 17:47	< LOD	10.70	<LOD		48.47	6.77	60		571.58	19.52	585	
131	9	RS-9-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 17:48	< LOD	10.48			88.85	7.86			627.52	20.07		
132	9	RS-9-FL-0-6"	0-6	Front left	Composite	R171092	6/3/2014 17:49	< LOD	11.14			43.96	6.88			555.98	19.94		
133	9	RS-9-FL-6-12"	0-6	Front left	Composite	R171092	6/3/2014 17:55	< LOD	10.39	<LOD		61.63	7.10	94		818.20	22.84	994	
134	9	RS-9-FL-6-12"	0-6	Front left	Composite	R171092	6/3/2014 17:56	< LOD	10.42			66.07	7.12			928.59	23.89		
135	9	RS-9-FL-6-12"	0-6	Front left	Composite	R171092	6/3/2014 17:57	< LOD	10.41			153.45	9.20			1,234.13	27.00		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium XRF Result (ppm)	Cadmium XRF Error (± equals 2 std dev)	Cadmium Average XRF Reading (ppm)	Cadmium Lab Result (mg/kg)	Lead XRF Result (ppm)	Lead XRF Error (± equals 2 std dev)	Lead Average XRF Reading (ppm)	Lead Lab Result (mg/kg)	Zinc XRF Result (ppm)	Zinc XRF Error (± equals 2 std dev)	Zinc Average XRF Reading (ppm)	Zinc Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
141	9	RS-9-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 8:17	< LOD	10.88	<LOD		27.88	6.21	31		913.62	25.04	961	
142	9	RS-9-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 8:18	< LOD	10.68			34.35	6.20			1,185.07	27.16		
143	9	RS-9-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 8:20	< LOD	11.75			31.17	6.68			783.87	24.41		
144	9	RS-9-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 8:26	< LOD	11.17	<LOD		< LOD	7.74	<LOD		496.18	18.62	459	
145	9	RS-9-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 8:27	< LOD	13.57			< LOD	9.29			394.31	20.78		
146	9	RS-9-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 8:28	< LOD	11.01			< LOD	7.92			487.15	18.90		
147	9	RS-9-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 10:04	< LOD	10.65	<LOD	9.8 B	175.08	10.02	162	230	2,516.05	39.66	2,610	2,500
148	9	RS-9-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 10:05	< LOD	10.38			155.22	9.38			2,885.67	41.56		
149	9	RS-9-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 10:06	< LOD	10.16			155.64	9.16			2,428.89	37.23		
150	9	RS-9-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 10:12	< LOD	10.13	<LOD		9.44	5.01	28		832.38	21.94	838	
151	9	RS-9-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 10:13	< LOD	10.18			36.47	5.96			814.09	21.71		
152	9	RS-9-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 10:14	< LOD	10.01			39.45	6.06			867.83	22.39		
153	9	RS-9-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 10:21	< LOD	10.38	<LOD		8.16	5.17	8		209.78	12.11	177	
154	9	RS-9-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 10:22	< LOD	9.52			< LOD	6.85			162.07	9.98		
155	9	RS-9-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 10:24	< LOD	10.27			< LOD	7.22			158.25	10.69		
156	9	RS-9-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 10:32	< LOD	10.16	<LOD		< LOD	6.81	<LOD		66.44	7.72	72	
157	9	RS-9-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 10:33	< LOD	10.81			< LOD	7.09			79.45	8.44		
158	9	RS-9-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 10:35	< LOD	12.42			< LOD	8.09			69.55	9.73		
348	10	RS-10-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 8:06	< LOD	8.92	<LOD		67.85	6.39	69		1,029.18	22.59	1,010	
349	10	RS-10-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 8:09	< LOD	9.11			66.15	6.52			915.40	21.93		
350	10	RS-10-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 8:11	< LOD	8.82			72.02	6.48			1,084.22	23.07		
351	10	RS-10-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 8:14	< LOD	9.29	<LOD		38.33	5.68	58		725.51	19.54	937	
352	10	RS-10-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 8:17	< LOD	8.69			92.06	6.84			1,272.33	24.36		
353	10	RS-10-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 8:20	< LOD	8.11			44.16	5.25			813.03	18.53		
354	10	RS-10-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 8:23	< LOD	8.97	<LOD		< LOD	6.60	<LOD		307.53	12.80	261	
355	10	RS-10-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 8:26	< LOD	8.52			< LOD	6.25			348.97	12.92		
356	10	RS-10-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 8:29	< LOD	8.46			< LOD	5.70			125.17	8.22		
357	10	RS-10-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 8:32	< LOD	10.08	<LOD		< LOD	7.06	<LOD		109.73	9.42	90	
358	10	RS-10-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 8:34	< LOD	8.24			< LOD	5.66			66.13	6.35		
359	10	RS-10-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 8:36	< LOD	8.33			< LOD	6.02			95.10	7.48		
299	10	RS-10-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 15:45	< LOD	8.07	<LOD		106.32	6.71	106		1,195.71	22.23	1,324	
300	10	RS-10-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 15:47	< LOD	8.54			114.34	7.30			1,322.16	24.66		
301	10	RS-10-BR-0-6"	0-6	Back right	Composite	R184142	6/3/2014 15:49	< LOD	8.31			96.22	6.74			1,454.40	25.37		
302	10	RS-10-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 15:54	< LOD	8.80	<LOD		80.93	6.71	95		939.56	21.51	1,087	
303	10	RS-10-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 15:56	< LOD	8.27			119.40	7.13			1,248.93	23.10		
304	10	RS-10-BR-6-12"	6-12	Back right	Composite	R184142	6/3/2014 15:59	< LOD	8.97			83.74	6.82			1,071.34	23.07		
305	10	RS-10-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 16:02	< LOD	8.50	<LOD		< LOD	6.18	<LOD		437.92	14.75	415	
306	10	RS-10-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 16:04	< LOD	8.05			< LOD	5.78			379.39	12.95		
307	10	RS-10-BR-12-18"	12-18	Back right	Composite	R184142	6/3/2014 16:06	< LOD	8.30			< LOD	6.10			428.65	14.02		
308	10	RS-10-BR-12-18"-FD	12-18	Back right	Composite	R184142	6/3/2014 16:10	< LOD	8.48	<LOD		< LOD	5.93	13		466.17	14.88	500	
309	10	RS-10-BR-12-18"-FD	12-18	Back right	Composite	R184142	6/3/2014 16:12	< LOD	8.10			12.93	4.30			516.76	15.03		
310	10	RS-10-BR-12-18"-FD	12-18	Back right	Composite	R184142	6/3/2014 16:14	< LOD	8.36			< LOD	5.98			517.00	15.38		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
311	10	RS-10-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 16:17	< LOD	9.25	<LOD		< LOD	6.32	<LOD		104.04	8.59	112	
312	10	RS-10-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 16:18	< LOD	8.85			< LOD	6.32			88.47	7.62		
313	10	RS-10-BR-18-24"	18-24	Back right	Composite	R184142	6/3/2014 16:22	< LOD	8.33			< LOD	5.82			142.38	8.61		
329	10	RS-10-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 17:16	< LOD	9.03	<LOD		86.45	6.99	97		977.07	22.43	1,066	
330	10	RS-10-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 17:19	< LOD	8.95			100.61	7.27			1,102.52	23.53		
331	10	RS-10-FL-0-6"	0-6	Front left	Composite	R184142	6/3/2014 17:21	< LOD	8.60			104.97	6.97			1,117.31	22.33		
332	10	RS-10-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 17:25	< LOD	9.20	<LOD		52.13	6.19	63		659.04	18.84	770	
333	10	RS-10-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 17:27	< LOD	8.54			55.68	5.91			720.75	18.58		
334	10	RS-10-FL-6-12"	6-12	Front left	Composite	R184142	6/3/2014 17:29	< LOD	9.07			81.06	6.88			931.10	21.90		
335	10	RS-10-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 17:33	< LOD	8.40	<LOD		21.05	4.75	37		229.19	10.71	379	
336	10	RS-10-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 17:36	< LOD	8.76			43.00	5.76			407.91	14.69		
339	10	RS-10-FL-12-18"	12-18	Front left	Composite	R184142	6/3/2014 17:40	< LOD	9.26			46.25	6.12			499.73	16.83		
340	10	RS-10-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 17:44	< LOD	8.76	<LOD		< LOD	6.35	10		77.78	7.17	87	
341	10	RS-10-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 17:46	< LOD	8.75			10.27	4.53			104.01	7.99		
342	10	RS-10-FL-18-24"	18-24	Front left	Composite	R184142	6/3/2014 17:48	< LOD	8.74			< LOD	6.39			78.75	7.22		
314	10	RS-10-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 16:27	< LOD	8.91	<LOD	29 BV	147.40	8.17	154	330	1,458.86	26.44	1,693	4,100
315	10	RS-10-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 16:29	< LOD	8.52			152.18	8.08			1,795.89	28.62		
316	10	RS-10-BL-0-6"	0-6	Back left	Composite	R184142	6/3/2014 16:31	< LOD	8.99			161.64	8.49			1,825.52	29.63		
317	10	RS-10-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 16:34	< LOD	8.78	<LOD		72.25	6.44	100		847.76	20.42	1,289	
318	10	RS-10-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 16:36	< LOD	8.42			102.86	6.83			1,185.93	22.79		
319	10	RS-10-BL-6-12"	6-12	Back left	Composite	R184142	6/3/2014 16:38	< LOD	9.04			125.48	7.76			1,833.63	29.74		
320	10	RS-10-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 16:41	< LOD	8.77	<LOD		159.03	8.46	70		1,548.92	27.41	813	
321	10	RS-10-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 16:43	< LOD	8.51			24.74	4.92			519.88	15.76		
322	10	RS-10-BL-12-18"	12-18	Back left	Composite	R184142	6/3/2014 16:45	< LOD	8.44			24.96	4.86			368.75	13.20		
323	10	RS-10-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 16:51	< LOD	8.35	<LOD		< LOD	5.94	<LOD		194.03	9.81	152	
327	10	RS-10-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 17:06	< LOD	8.57			< LOD	6.05			119.31	8.27		
328	10	RS-10-BL-18-24"	18-24	Back left	Composite	R184142	6/3/2014 17:09	< LOD	7.57			< LOD	5.36			141.77	7.81		
187	11	RS-11-FR-0-6"	0-6	Front right	Composite	R171092	6/4/2014 14:26	< LOD	10.29	<LOD	8.5 B	286.50	11.90	275	210	3,340.11	44.44	2,820	1,900
188	11	RS-11-FR-0-6"	0-6	Front right	Composite	R171092	6/4/2014 14:27	< LOD	11.38			326.54	13.75			2,703.51	43.60		
189	11	RS-11-FR-0-6"	0-6	Front right	Composite	R171092	6/4/2014 14:28	< LOD	10.22			212.81	10.45			2,416.80	37.54		
190	11	RS-11-FR-6-12"	6-12	Front right	Composite	R171092	6/4/2014 14:32	< LOD	10.41	<LOD		< LOD	7.40	<LOD		349.95	15.63	326	
191	11	RS-11-FR-6-12"	6-12	Front right	Composite	R171092	6/4/2014 14:33	< LOD	11.42			< LOD	7.73			268.38	14.70		
192	11	RS-11-FR-6-12"	6-12	Front right	Composite	R171092	6/4/2014 14:35	< LOD	10.34			< LOD	7.42			360.15	15.69		
193	11	RS-11-FR-12-18"	12-18	Front right	Composite	R171092	6/4/2014 14:41	< LOD	10.52	<LOD		< LOD	6.91	<LOD		116.66	9.89	103	
194	11	RS-11-FR-12-18"	12-18	Front right	Composite	R171092	6/4/2014 14:42	< LOD	11.62			< LOD	7.59			95.37	10.00		
195	11	RS-11-FR-12-18"	12-18	Front right	Composite	R171092	6/4/2014 14:43	< LOD	10.75			< LOD	7.35			95.97	9.11		
196	11	RS-11-FR-18-24"	18-24	Front right	Composite	R171092	6/4/2014 14:49	< LOD	11.36	<LOD		< LOD	7.35	<LOD		152.04	11.80	130	
197	11	RS-11-FR-18-24"	18-24	Front right	Composite	R171092	6/4/2014 14:51	< LOD	10.69			< LOD	6.71			72.86	8.14		
198	11	RS-11-FR-18-24"	18-24	Front right	Composite	R171092	6/4/2014 14:52	< LOD	10.32			< LOD	6.52			164.28	11.01		
171	11	RS-11-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 11:27	< LOD	7.92	<LOD		111.36	6.44	113		856.59	17.77	866	
172	11	RS-11-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 11:29	< LOD	9.89			120.52	8.23			877.48	22.31		
173	11	RS-11-BR-0-6"	0-6	Back right	Composite	R171092	6/4/2014 11:30	< LOD	10.26			108.26	8.16			863.46	22.82		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
174	11	RS-11-BR-0-6"-FD	0-6	Back right	Composite	R171092	6/4/2014 11:32	< LOD	10.15	<LOD		106.71	8.01	116		899.59	22.90	902	
175	11	RS-11-BR-0-6"-FD	0-6	Back right	Composite	R171092	6/4/2014 11:33	< LOD	10.06			114.03	8.15			925.18	23.15		
176	11	RS-11-BR-0-6"-FD	0-6	Back right	Composite	R171092	6/4/2014 11:35	< LOD	9.83			127.81	8.35			880.33	22.22		
180	11	RS-11-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 11:51	< LOD	10.18	<LOD		10.80	5.22	15		380.95	15.67	370	
181	11	RS-11-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 11:52	< LOD	10.60			14.48	5.54			348.78	15.47		
182	11	RS-11-BR-6-12"	6-12	Back right	Composite	R171092	6/4/2014 11:53	< LOD	10.14			19.50	5.50			379.27	15.46		
177	11	RS-11-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:43	< LOD	10.48	<LOD		< LOD	6.91	<LOD		116.40	9.60	117	
178	11	RS-11-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:44	< LOD	10.14			< LOD	6.76			126.09	9.57		
179	11	RS-11-BR-12-18"	12-18	Back right	Composite	R171092	6/4/2014 11:45	< LOD	10.87			< LOD	7.49			107.10	9.69		
183	11	RS-11-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:58	< LOD	11.32	<LOD		< LOD	7.49	<LOD		64.02	8.39	60	
184	11	RS-11-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 11:59	< LOD	12.00			< LOD	7.94			50.74	8.17		
185	11	RS-11-BR-18-24"	18-24	Back right	Composite	R171092	6/4/2014 12:00	< LOD	11.38			< LOD	7.49			65.86	8.50		
199	11	RS-11-FL-0-6"	0-6	Front left	Composite	R171092	6/4/2014 14:58	< LOD	10.22	<LOD		157.15	9.30	165		1,564.28	30.35	1,630	
200	11	RS-11-FL-0-6"	0-6	Front left	Composite	R171092	6/4/2014 14:59	< LOD	9.93			182.16	9.66			1,730.33	31.34		
201	11	RS-11-FL-0-6"	0-6	Front left	Composite	R171092	6/4/2014 15:00	< LOD	10.07			154.51	9.19			1,595.93	30.48		
202	11	RS-11-FL-0-6"-FD	0-6	Front left	Composite	R171092	6/4/2014 15:03	< LOD	10.13	<LOD		173.49	9.54	143		1,691.22	31.13	1,523	
203	11	RS-11-FL-0-6"-FD	0-6	Front left	Composite	R171092	6/4/2014 15:04	< LOD	10.67			113.17	8.74			1,373.06	30.03		
204	11	RS-11-FL-0-6"-FD	0-6	Front left	Composite	R171092	6/4/2014 15:05	< LOD	9.86			143.15	8.88			1,505.47	29.51		
205	11	RS-11-FL-6-12"	6-12	Front left	Composite	R171092	6/4/2014 15:09	< LOD	9.90	<LOD		45.86	6.26	42		629.57	19.11	604	
206	11	RS-11-FL-6-12"	6-12	Front left	Composite	R171092	6/4/2014 15:11	< LOD	10.51			36.10	6.44			565.30	19.73		
207	11	RS-11-FL-6-12"	6-12	Front left	Composite	R171092	6/4/2014 15:12	< LOD	9.89			44.83	6.20			616.43	18.86		
208	11	RS-11-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 15:18	< LOD	10.08	<LOD		< LOD	6.73	<LOD		141.69	10.06	161	
209	11	RS-11-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 15:19	< LOD	10.28			< LOD	7.18			206.79	11.96		
210	11	RS-11-FL-12-18"	12-18	Front left	Composite	R171092	6/4/2014 15:20	< LOD	10.77			< LOD	7.27			134.62	10.46		
211	11	RS-11-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 15:25	< LOD	10.32	<LOD		< LOD	6.99	<LOD		79.36	8.15	77	
212	11	RS-11-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 15:27	< LOD	10.63			< LOD	6.70			58.14	7.82		
213	11	RS-11-FL-18-24"	18-24	Front left	Composite	R171092	6/4/2014 15:28	< LOD	10.80			< LOD	7.09			92.88	8.99		
214	11	RS-11-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 15:35	< LOD	9.72	<LOD		86.80	7.43	75		1,132.63	25.41	979	
215	11	RS-11-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 15:39	< LOD	8.60			68.92	6.00			917.06	19.82		
216	11	RS-11-BL-0-6"	0-6	Back left	Composite	R171092	6/4/2014 15:40	< LOD	9.41			69.18	6.64			886.38	21.57		
217	11	RS-11-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 15:44	< LOD	10.10	<LOD		8.66	5.20	10		278.45	13.86	281	
218	11	RS-11-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 15:46	< LOD	9.98			8.25	4.97			297.83	13.58		
219	11	RS-11-BL-6-12"	6-12	Back left	Composite	R171092	6/4/2014 15:47	< LOD	10.55			13.98	5.54			266.23	13.83		
220	11	RS-11-BL-6-12"-FD	6-12	Back left	Composite	R171092	6/4/2014 15:48	< LOD	9.68	<LOD		13.65	5.26	13		275.12	13.48	293	
221	11	RS-11-BL-6-12"-FD	6-12	Back left	Composite	R171092	6/4/2014 15:49	< LOD	10.34			11.45	5.35			260.93	13.53		
222	11	RS-11-BL-6-12"-FD	6-12	Back left	Composite	R171092	6/4/2014 15:50	< LOD	10.11			< LOD	7.14			342.03	14.69		
223	11	RS-11-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 16:01	< LOD	12.05	<LOD		< LOD	8.77	<LOD		71.09	10.21	78	
224	11	RS-11-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 16:02	< LOD	12.52			< LOD	8.93			74.69	9.60		
225	11	RS-11-BL-12-18"	12-18	Back left	Composite	R171092	6/4/2014 16:04	< LOD	9.85			< LOD	6.23			89.34	8.25		
226	11	RS-11-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 16:10	< LOD	11.55	<LOD		< LOD	7.66	<LOD		46.87	7.80	44	
227	11	RS-11-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 16:11	< LOD	10.94			< LOD	7.74			43.27	7.16		
228	11	RS-11-BL-18-24"	18-24	Back left	Composite	R171092	6/4/2014 16:12	< LOD	12.03			< LOD	7.87			40.56	7.81		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
440	12	RS-12-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 14:14	< LOD	7.66	<LOD		94.72	6.15	72		792.35	17.27	743	
441	12	RS-12-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 14:17	< LOD	8.19			61.08	5.79			727.21	17.89		
442	12	RS-12-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 14:20	< LOD	8.30			61.06	5.88			710.69	17.93		
443	12	RS-12-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 14:33	< LOD	7.99	<LOD		< LOD	5.89	7		259.43	10.74	254	
444	12	RS-12-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 14:38	< LOD	8.29			6.90	4.14			263.30	11.14		
445	12	RS-12-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 14:40	< LOD	9.25			< LOD	6.72			239.72	12.05		
446	12	RS-12-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 14:47	< LOD	10.19	<LOD		< LOD	7.13	<LOD		95.06	9.21	114	
447	12	RS-12-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 14:50	< LOD	8.56			< LOD	6.34			153.87	9.18		
448	12	RS-12-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 14:53	< LOD	8.79			< LOD	5.98			92.82	7.81		
449	12	RS-12-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 15:00	< LOD	8.92	<LOD		< LOD	6.44	<LOD		83.29	7.68	60	
450	12	RS-12-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 15:06	< LOD	10.86			< LOD	7.51			50.02	7.85		
451	12	RS-12-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 15:08	< LOD	9.44			< LOD	6.47			46.66	6.60		
452	12	RS-12-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/4/2014 15:12	< LOD	10.11	<LOD		< LOD	6.91	<LOD		75.76	8.11	61	
453	12	RS-12-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/4/2014 15:14	< LOD	8.77			< LOD	6.04			57.08	6.49		
454	12	RS-12-FR-18-24"-FD	18-24	Front right	Composite	R184142	6/4/2014 15:16	< LOD	10.15			< LOD	6.95			49.10	7.25		
455	12	RS-12-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 15:29	< LOD	8.86	<LOD	4.1 B	188.19	9.56	159	180	819.59	21.34	842	870
456	12	RS-12-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 15:32	< LOD	8.64			143.70	8.23			840.21	20.56		
457	12	RS-12-BR-0-6"	0-6	Back right	Composite	R184142	6/4/2014 15:35	< LOD	8.51			146.26	8.06			866.08	20.26		
458	12	RS-12-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 15:39	< LOD	6.93	<LOD		23.53	3.93	49		349.27	10.50	441	
459	12	RS-12-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 15:42	< LOD	8.32			83.64	6.43			586.96	16.28		
460	12	RS-12-BR-6-12"	6-12	Back right	Composite	R184142	6/4/2014 15:45	< LOD	7.17			39.05	4.54			385.58	11.56		
461	12	RS-12-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 15:51	< LOD	13.05	<LOD		< LOD	10.62	23		123.30	13.76	174	
462	12	RS-12-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 15:53	< LOD	9.13			< LOD	6.82			183.57	10.73		
463	12	RS-12-BR-12-18"	12-18	Back right	Composite	R184142	6/4/2014 15:55	< LOD	9.98			23.34	5.72			215.02	12.27		
467	12	RS-12-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 16:12	< LOD	13.28	<LOD		< LOD	10.14	<LOD		55.18	10.62	65	
468	12	RS-12-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 16:15	< LOD	15.07			< LOD	12.06			46.21	11.82		
469	12	RS-12-BR-18-24"	18-24	Back right	Composite	R184142	6/4/2014 16:17	< LOD	9.82			< LOD	7.00			94.52	8.56		
425	12	RS-12-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 13:24	< LOD	8.93	<LOD		61.94	6.34	49		716.76	19.33	683	
426	12	RS-12-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 13:26	< LOD	8.46			56.66	5.91			781.36	19.28		
427	12	RS-12-FL-0-6"	0-6	Front left	Composite	R184142	6/4/2014 13:28	< LOD	8.34			29.88	4.95			552.19	15.90		
428	12	RS-12-FL-0-6"-FD	0-6	Front left	Composite	R184142	6/4/2014 13:31	< LOD	8.22	<LOD		116.29	7.17	91		951.34	20.52	859	
429	12	RS-12-FL-0-6"-FD	0-6	Front left	Composite	R184142	6/4/2014 13:33	< LOD	7.52			89.16	5.96			846.38	17.66		
430	12	RS-12-FL-0-6"-FD	0-6	Front left	Composite	R184142	6/4/2014 13:38	< LOD	8.62			67.31	6.28			778.15	19.43		
431	12	RS-12-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 13:41	< LOD	8.36	<LOD		30.81	5.04	23		264.21	11.40	265	
432	12	RS-12-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 13:43	< LOD	8.70			25.57	5.07			259.23	11.70		
433	12	RS-12-FL-6-12"	6-12	Front left	Composite	R184142	6/4/2014 13:45	< LOD	8.83			12.82	4.70			272.39	12.06		
434	12	RS-12-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 13:51	< LOD	10.59	<LOD		< LOD	7.69	<LOD		82.63	8.91	68	
435	12	RS-12-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 13:53	< LOD	8.52			< LOD	5.71			60.06	6.35		
436	12	RS-12-FL-12-18"	12-18	Front left	Composite	R184142	6/4/2014 13:55	< LOD	9.47			< LOD	6.59			60.57	7.17		
437	12	RS-12-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 14:05	< LOD	9.64	<LOD		< LOD	6.19	<LOD		34.92	6.21	42	
438	12	RS-12-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 14:07	< LOD	9.15			< LOD	5.98			39.24	6.06		
439	12	RS-12-FL-18-24"	18-24	Front left	Composite	R184142	6/4/2014 14:09	< LOD	9.26			< LOD	6.14			51.19	6.70		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium XRF Result (ppm)	Cadmium XRF Error (± equals 2 std dev)	Cadmium Average XRF Reading (ppm)	Cadmium Lab Result (mg/kg)	Lead XRF Result (ppm)	Lead XRF Error (± equals 2 std dev)	Lead Average XRF Reading (ppm)	Lead Lab Result (mg/kg)	Zinc XRF Result (ppm)	Zinc XRF Error (± equals 2 std dev)	Zinc Average XRF Reading (ppm)	Zinc Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
411	12	RS-12-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 11:31	< LOD	8.39	<LOD		137.58	7.60	141		1,163.49	22.59	1,234	
412	12	RS-12-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 11:35	< LOD	8.01			127.35	7.17			1,252.43	22.74		
413	12	RS-12-BL-0-6"	0-6	Back left	Composite	R184142	6/4/2014 11:38	< LOD	8.26			158.17	7.81			1,287.40	23.19		
414	12	RS-12-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 11:42	< LOD	10.20	<LOD		13.93	5.63	52		219.67	13.04	498	
415	12	RS-12-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 11:45	< LOD	8.91			89.35	7.14			727.68	19.60		
416	12	RS-12-BL-6-12"	6-12	Back left	Composite	R184142	6/4/2014 11:49	< LOD	8.18			52.46	5.48			548.04	15.35		
417	12	RS-12-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:56	< LOD	10.20	<LOD		< LOD	7.22	<LOD		88.91	8.85	70	
418	12	RS-12-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 11:59	< LOD	9.55			< LOD	6.49			62.01	7.42		
419	12	RS-12-BL-12-18"	12-18	Back left	Composite	R184142	6/4/2014 12:01	< LOD	9.88			< LOD	6.95			58.08	7.48		
420	12	RS-12-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 12:58	< LOD	10.36	<LOD		8.91	5.17	9		223.49	12.59	185	
421	12	RS-12-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 13:00	< LOD	10.55			< LOD	7.71			123.21	10.21		
422	12	RS-12-BL-18-24"	18-24	Back left	Composite	R184142	6/4/2014 13:03	< LOD	8.88			< LOD	6.36			207.56	10.87		
470	13	RS-13-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 16:24	< LOD	8.63	<LOD	6.4 B	266.41	10.31	286	310	2,221.90	32.41	2,190	2,200
471	13	RS-13-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 16:26	< LOD	9.11		5.8 B	310.39	11.49		230	2,191.83	33.59		1,800
472	13	RS-13-FR-0-6"	0-6	Front right	Composite	R184142	6/4/2014 16:31	< LOD	8.74			281.94	10.62			2,156.78	32.13		
473	13	RS-13-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 16:34	< LOD	8.34	<LOD		49.69	5.55	66		395.93	13.48	509	
474	13	RS-13-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 16:36	< LOD	8.99			85.09	6.96			670.66	18.69		
475	13	RS-13-FR-6-12"	6-12	Front right	Composite	R184142	6/4/2014 16:39	< LOD	8.75			62.46	6.17			459.63	15.18		
476	13	RS-13-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 16:44	< LOD	9.09	<LOD		16.43	5.04	19		215.62	11.38	297	
477	13	RS-13-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 16:46	< LOD	9.46			22.30	5.44			373.10	15.04		
478	13	RS-13-FR-12-18"	12-18	Front right	Composite	R184142	6/4/2014 16:55	< LOD	9.19			18.62	5.27			301.71	13.58		
479	13	RS-13-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 16:57	< LOD	11.10	<LOD		< LOD	7.82	16		78.27	9.13	85	
480	13	RS-13-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 16:59	< LOD	8.93			16.13	4.91			111.37	8.53		
481	13	RS-13-FR-18-24"	18-24	Front right	Composite	R184142	6/4/2014 17:01	< LOD	9.35			< LOD	7.04			66.63	7.36		
499	13	RS-13-BR-0-6"	0-6	Back right	Composite	R184142	6/5/2014 9:14	< LOD	8.64	<LOD	6.7 B	127.78	7.69	171	310	974.63	21.50	1,692	1,500
500	13	RS-13-BR-0-6"	0-6	Back right	Composite	R184142	6/5/2014 9:15	< LOD	8.19		5.6 B	136.06	7.64		280	840.74	19.49		1,400
501	13	RS-13-BR-0-6"	0-6	Back right	Composite	R184142	6/5/2014 9:17	< LOD	8.77			248.31	10.18			3,259.24	39.82		
502	13	RS-13-BR-6-12"	6-12	Back right	Composite	R184142	6/5/2014 9:21	< LOD	9.47	<LOD		41.82	6.21	54		373.42	15.45	498	
503	13	RS-13-BR-6-12"	6-12	Back right	Composite	R184142	6/5/2014 9:22	< LOD	8.76			64.16	6.35			607.44	17.64		
504	13	RS-13-BR-6-12"	6-12	Back right	Composite	R184142	6/5/2014 9:23	< LOD	8.72			55.33	6.11			513.93	16.32		
505	13	RS-13-BR-12-18"	12-18	Back right	Composite	R184142	6/5/2014 9:27	< LOD	9.42	<LOD		< LOD	7.07	17		72.02	7.67	94	
506	13	RS-13-BR-12-18"	12-18	Back right	Composite	R184142	6/5/2014 9:29	< LOD	9.35			22.14	5.38			119.90	9.11		
507	13	RS-13-BR-12-18"	12-18	Back right	Composite	R184142	6/5/2014 9:30	< LOD	12.57			11.91	6.78			89.80	11.27		
508	13	RS-13-BR-18-24"	18-24	Back right	Composite	R184142	6/5/2014 9:34	< LOD	10.23	<LOD		< LOD	6.97	9		32.53	6.53	43	
509	13	RS-13-BR-18-24"	18-24	Back right	Composite	R184142	6/5/2014 9:35	< LOD	10.17			< LOD	6.93			50.52	7.42		
510	13	RS-13-BR-18-24"	18-24	Back right	Composite	R184142	6/5/2014 9:36	< LOD	9.63			8.87	5.08			44.70	6.85		
511	13	RS-13-FL-0-6"	0-6	Front left	Composite	R184142	6/5/2014 9:41	< LOD	9.19	<LOD		70.33	6.67	76		753.79	20.04	736	
512	13	RS-13-FL-0-6"	0-6	Front left	Composite	R184142	6/5/2014 9:42	< LOD	9.16			80.47	6.91			745.32	19.87		
513	13	RS-13-FL-0-6"	0-6	Front left	Composite	R184142	6/5/2014 9:44	< LOD	9.21			76.94	6.86			708.39	19.48		
514	13	RS-13-FL-6-12"	6-12	Front left	Composite	R184142	6/5/2014 9:48	< LOD	9.53	<LOD		41.83	6.09	38		565.45	18.11	524	
515	13	RS-13-FL-6-12"	6-12	Front left	Composite	R184142	6/5/2014 9:49	< LOD	8.99			32.02	5.37			489.72	15.95		
516	13	RS-13-FL-6-12"	6-12	Front left	Composite	R184142	6/5/2014 9:50	< LOD	9.06			40.57	5.78			516.06	16.67		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
517	13	RS-13-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/5/2014 9:54	< LOD	9.01	<LOD		34.23	5.48	37		494.29	16.07	526	
518	13	RS-13-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/5/2014 9:55	< LOD	9.68			37.12	5.97			522.34	17.61		
519	13	RS-13-FL-6-12"-FD	6-12	Front left	Composite	R184142	6/5/2014 9:56	< LOD	10.08			40.90	6.30			561.43	18.82		
520	13	RS-13-FL-12-18"	12-18	Front left	Composite	R184142	6/5/2014 10:00	< LOD	10.33	<LOD		< LOD	6.91	<LOD		129.84	10.35	124	
521	13	RS-13-FL-12-18"	12-18	Front left	Composite	R184142	6/5/2014 10:01	< LOD	11.00			< LOD	8.50			125.75	10.90		
522	13	RS-13-FL-12-18"	12-18	Front left	Composite	R184142	6/5/2014 10:02	< LOD	9.85			< LOD	7.37			116.28	9.57		
523	13	RS-13-FL-18-24"	18-24	Front left	Composite	R184142	6/5/2014 10:06	< LOD	10.81	<LOD		< LOD	7.64	<LOD		37.50	7.08	46	
524	13	RS-13-FL-18-24"	18-24	Front left	Composite	R184142	6/5/2014 10:07	< LOD	10.45			< LOD	7.84			59.45	8.06		
525	13	RS-13-FL-18-24"	18-24	Front left	Composite	R184142	6/5/2014 10:08	< LOD	12.24			< LOD	9.03			41.64	8.38		
487	13	RS-13-BL-0-6"	0-6	Back left	Composite	R184142	6/5/2014 8:34	< LOD	9.18	<LOD		69.22	6.67	81		577.90	17.67	574	
488	13	RS-13-BL-0-6"	0-6	Back left	Composite	R184142	6/5/2014 8:36	< LOD	9.72			80.51	7.47			580.92	19.03		
489	13	RS-13-BL-0-6"	0-6	Back left	Composite	R184142	6/5/2014 8:38	< LOD	9.65			93.17	7.61			564.61	18.28		
490	13	RS-13-BL-6-12"	6-12	Back left	Composite	R184142	6/5/2014 8:41	< LOD	10.09	<LOD		56.69	7.00	49		486.61	18.12	495	
491	13	RS-13-BL-6-12"	6-12	Back left	Composite	R184142	6/5/2014 8:43	< LOD	8.97			31.94	5.48			362.35	14.10		
492	13	RS-13-BL-6-12"	6-12	Back left	Composite	R184142	6/5/2014 8:45	< LOD	10.27			57.65	7.06			637.52	20.64		
493	13	RS-13-BL-12-18"	12-18	Back left	Composite	R184142	6/5/2014 8:50	< LOD	13.00	<LOD		< LOD	9.93	14		55.96	10.12	70	
494	13	RS-13-BL-12-18"	12-18	Back left	Composite	R184142	6/5/2014 8:53	< LOD	10.17			< LOD	7.61			69.86	8.42		
495	13	RS-13-BL-12-18"	12-18	Back left	Composite	R184142	6/5/2014 8:55	< LOD	9.03			13.74	4.86			84.90	7.67		
496	13	RS-13-BL-18-24"	18-24	Back left	Composite	R184142	6/5/2014 9:04	< LOD	9.57	<LOD		< LOD	6.88	<LOD		51.78	6.97	50	
497	13	RS-13-BL-18-24"	18-24	Back left	Composite	R184142	6/5/2014 9:08	< LOD	12.19			< LOD	9.16			37.24	8.55		
498	13	RS-13-BL-18-24"	18-24	Back left	Composite	R184142	6/5/2014 9:10	< LOD	10.05			< LOD	7.42			59.52	7.75		
230	14	RS-14-S-A-0-6"	0-6	Surface A	Discrete	R171092	6/4/2014 16:54	< LOD	9.67	<LOD	11 B	295.69	11.31	301	380	2,798.84	38.19	2,825	3,100
231	14	RS-14-S-A-0-6"	0-6	Surface A	Discrete	R171092	6/4/2014 16:55	< LOD	9.98			282.00	11.47			2,803.05	39.57		
232	14	RS-14-S-A-0-6"	0-6	Surface A	Discrete	R171092	6/4/2014 16:56	< LOD	9.98			324.31	12.23			2,873.00	40.24		
238	14	RS-14-S-B-0-6"	0-6	Surface B	Discrete	R171092	6/5/2014 8:39	< LOD	10.38	<LOD	9.2 B	387.78	13.42	415	470	2,214.42	35.91	2,618	2,400
239	14	RS-14-S-B-0-6"	0-6	Surface B	Discrete	R171092	6/5/2014 8:40	< LOD	9.48			423.62	13.57			2,495.22	37.08		
240	14	RS-14-S-B-0-6"	0-6	Surface B	Discrete	R171092	6/5/2014 8:41	< LOD	10.35			432.44	13.96			3,145.10	42.33		
241	14	RS-14-S-C-0-6"	0-6	Surface C	Discrete	R171092	6/5/2014 8:45	< LOD	10.07	<LOD		337.03	12.41	339		3,093.31	41.66	3,465	
242	14	RS-14-S-C-0-6"	0-6	Surface C	Discrete	R171092	6/5/2014 8:46	< LOD	10.11			350.63	12.51			4,193.27	47.94		
243	14	RS-14-S-C-0-6"	0-6	Surface C	Discrete	R171092	6/5/2014 8:47	< LOD	10.65			330.70	12.88			3,107.50	43.69		
244	14	RS-14-SB1-0-6"	0-6	Boring 1	Discrete	R171092	6/5/2014 8:52	< LOD	11.14	14	43 B	977.70	21.43	990	1,000	13,133.71	90.71	13,170	9,500
245	14	RS-14-SB1-0-6"	0-6	Boring 1	Discrete	R171092	6/5/2014 8:53	< LOD	11.12			956.97	21.30			12,244.32	87.98		
246	14	RS-14-SB1-0-6"	0-6	Boring 1	Discrete	R171092	6/5/2014 8:54	14.38	7.99			1,034.69	23.09			14,130.70	98.67		
250	14	RS-14-SB1-6-12"	6-12	Boring 1	Discrete	R171092	6/5/2014 9:11	< LOD	10.53	<LOD		< LOD	7.69	<LOD		204.58	12.03	219	
251	14	RS-14-SB1-6-12"	6-12	Boring 1	Discrete	R171092	6/5/2014 9:12	< LOD	10.69			< LOD	7.66			243.78	13.30		
252	14	RS-14-SB1-6-12"	6-12	Boring 1	Discrete	R171092	6/5/2014 9:13	< LOD	10.60			< LOD	7.65			207.22	12.29		
253	14	RS-14-SB1-12-18"	12-18	Boring 1	Discrete	R171092	6/5/2014 9:17	< LOD	10.87	<LOD		10.52	5.51	19		225.86	13.06	316	
254	14	RS-14-SB1-12-18"	12-18	Boring 1	Discrete	R171092	6/5/2014 9:18	< LOD	10.58			28.19	6.02			535.12	18.70		
255	14	RS-14-SB1-12-18"	12-18	Boring 1	Discrete	R171092	6/5/2014 9:22	< LOD	11.15			< LOD	8.14			187.23	12.26		
256	14	RS-14-SB1-18-24"	18-24	Boring 1	Discrete	R171092	6/5/2014 9:28	< LOD	11.30	<LOD		10.55	5.67	11		279.78	14.71	210	
257	14	RS-14-SB1-18-24"	18-24	Boring 1	Discrete	R171092	6/5/2014 9:29	< LOD	12.34			< LOD	9.04			169.18	12.79		
258	14	RS-14-SB1-18-24"	18-24	Boring 1	Discrete	R171092	6/5/2014 9:30	< LOD	11.50			< LOD	8.08			179.71	12.55		

Table 1: XRF and Laboratory Soil Sample Results
Former Owens Zinc Smelter Site / Caney, Kansas

XRF Reading No.	ENTACT Property ID	Sample ID No.	Depth Interval (inch bgs)	Quadrant	Type	XRF Unit No.	Date/Time of XRF Rdg	Cadmium				Lead				Zinc			
								XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)	XRF Result (ppm)	XRF Error (± equals 2 std dev)	Average XRF Reading (ppm)	Lab Result (mg/kg)
Kansas RSK								**39**		**39**	**39**	**400**		**400**	**400**	**23,500**		**23,500**	**23,500**
259	14	RS-14-SB2-0-6"	0-6	Boring 2	Discrete	R171092	6/5/2014 9:36	< LOD	11.89	<LOD		140.95	10.20	140		1,908.58	38.00	2,108	
260	14	RS-14-SB2-0-6"	0-6	Boring 2	Discrete	R171092	6/5/2014 9:37	< LOD	10.70			141.59	9.33			2,420.67	39.09		
261	14	RS-14-SB2-0-6"	0-6	Boring 2	Discrete	R171092	6/5/2014 9:38	< LOD	10.79			136.40	9.25			1,993.51	35.72		
262	14	RS-14-SB2-0-6"-FD	0-6	Boring 2	Discrete	R171092	6/5/2014 9:39	< LOD	11.30	<LOD		109.05	8.78	112		1,961.65	36.32	1,927	
263	14	RS-14-SB2-0-6"-FD	0-6	Boring 2	Discrete	R171092	6/5/2014 9:41	< LOD	10.69			108.72	8.36			1,881.35	34.02		
264	14	RS-14-SB2-0-6"-FD	0-6	Boring 2	Discrete	R171092	6/5/2014 9:42	< LOD	10.72			117.09	8.78			1,937.04	35.37		
247	14	RS-14-SB2-6-12"	6-12	Boring 2	Discrete	R171092	6/5/2014 9:00	< LOD	11.96	<LOD		27.13	6.78	33		923.37	27.43	914	
248	14	RS-14-SB2-6-12"	6-12	Boring 2	Discrete	R171092	6/5/2014 9:01	< LOD	10.53			< LOD	7.45			589.80	19.55		
249	14	RS-14-SB2-6-12"	6-12	Boring 2	Discrete	R171092	6/5/2014 9:03	< LOD	10.98			38.48	6.66			1,228.33	29.08		
265	14	RS-14-SB2-12-18"	12-18	Boring 2	Discrete	R171092	6/5/2014 9:49	< LOD	12.87	<LOD		< LOD	8.82	<LOD		106.97	11.30	118	
266	14	RS-14-SB2-12-18"	12-18	Boring 2	Discrete	R171092	6/5/2014 9:50	< LOD	10.89			< LOD	7.40			118.76	10.00		
267	14	RS-14-SB2-12-18"	12-18	Boring 2	Discrete	R171092	6/5/2014 9:51	< LOD	10.95			< LOD	7.28			127.52	10.24		
268	14	RS-14-SB2-18-24"	18-24	Boring 2	Discrete	R171092	6/5/2014 9:55	< LOD	11.61	<LOD		< LOD	7.78	<LOD		84.53	9.43	75	
269	14	RS-14-SB2-18-24"	18-24	Boring 2	Discrete	R171092	6/5/2014 9:56	< LOD	11.57			< LOD	7.74			72.65	8.87		
270	14	RS-14-SB2-18-24"	18-24	Boring 2	Discrete	R171092	6/5/2014 9:58	< LOD	11.58			< LOD	7.68			68.62	8.68		
271	14	RS-14-SB3-0-6"	0-6	Boring 3	Discrete	R171092	6/5/2014 10:03	< LOD	12.02	<LOD		909.09	22.26	681		8,672.85	79.27	7,395	
272	14	RS-14-SB3-0-6"	0-6	Boring 3	Discrete	R171092	6/5/2014 10:04	< LOD	11.57			501.19	16.28			6,278.58	64.97		
273	14	RS-14-SB3-0-6"	0-6	Boring 3	Discrete	R171092	6/5/2014 10:05	< LOD	10.95			633.76	17.54			7,232.13	67.55		
274	14	RS-14-SB3-6-12"	6-12	Boring 3	Discrete	R171092	6/5/2014 10:09	< LOD	10.40	<LOD		16.50	5.40	21		230.86	12.43	288	
275	14	RS-14-SB3-6-12"	6-12	Boring 3	Discrete	R171092	6/5/2014 10:10	< LOD	10.38			37.00	6.19			420.03	16.35		
276	14	RS-14-SB3-6-12"	6-12	Boring 3	Discrete	R171092	6/5/2014 10:11	< LOD	10.36			8.79	5.16			214.29	12.24		
277	14	RS-14-SB3-12-18"	12-18	Boring 3	Discrete	R171092	6/5/2014 10:15	< LOD	11.20	<LOD		< LOD	7.94	19		198.23	12.72	144	
278	14	RS-14-SB3-12-18"	12-18	Boring 3	Discrete	R171092	6/5/2014 10:16	< LOD	10.31			< LOD	7.50			109.21	9.27		
279	14	RS-14-SB3-12-18"	12-18	Boring 3	Discrete	R171092	6/5/2014 10:17	< LOD	10.64			18.63	5.64			125.90	9.98		
280	14	RS-14-SB3-18-24"	18-24	Boring 3	Discrete	R171092	6/5/2014 10:20	< LOD	10.73	<LOD		17.04	5.62	22		250.56	13.34	232	
281	14	RS-14-SB3-18-24"	18-24	Boring 3	Discrete	R171092	6/5/2014 10:21	< LOD	11.40			35.54	6.80			254.42	14.46		
282	14	RS-14-SB3-18-24"	18-24	Boring 3	Discrete	R171092	6/5/2014 10:22	< LOD	14.13			12.39	7.36			192.50	15.97		
283	14	RS-14-SB3-18-24"-FD	18-24	Boring 3	Discrete	R171092	6/5/2014 10:24	< LOD	10.47	<LOD		105.92	8.38	52		644.77	20.48	439	
284	14	RS-14-SB3-18-24"-FD	18-24	Boring 3	Discrete	R171092	6/5/2014 10:25	< LOD	11.60			29.99	6.60			396.52	17.61		
285	14	RS-14-SB3-18-24"-FD	18-24	Boring 3	Discrete	R171092	6/5/2014 10:26	< LOD	11.20			19.14	6.19			276.07	15.04		

Notes:
Red indicates concentration exceeds Kansas RSK
Orange highlight indicates concentration exceeds XRF calculated number
<LOD: Less than the level of detection
B: Compound found in the blank and sample

TABLE 2: LIST OF PARAMETERS AND TEST METHODS BY TASK
RESIDENTIAL SOIL REMOVAL ACTION, CANEY, KANSAS

Test Description	Test Method	Extraction Method	Matrix	Frequency	Container	Preservative/ Sample Size	Maximum Holding Time	Reporting Limit
Post-Excavation Confirmation Soil Sampling								
Total Lead	XRF[1]	NA[2]	Soil	Random locations per removal area for in-situ field screening purposes only. Three (3) XRF measurements per each composited bottom or sidewall soil sample	Field Test	NA / NA	NA	NA
Total Lead, Cadmium and Zinc	SW-6010B[3] SW-70	SW-3050	Soil	One (1) 5-part composite confirmation sample per excavation bottom for every 5,000 sq ft area. One (1) 4-part composite confirmation sample per each sidewall for excavation areas > 1 ft	P / G[4]	None / 100 g	6 months	4.0 mg/kg
Imported Backfill Material								
TAL Metals	SW-6010/ SW-7000 series	SW-3050	Soil	One (1) 5-part composite sample per 5,000 cy	P / G	Cool / 4 oz jar	6 months / 28 days for Hg	10 mg/kg
Volatile Organic Compounds (VOCs)	SW-8260B	SW-5030	Soil	Four (4) grab samples per 5,000 cy	G	Cool to 4°C, HCl / 3 – 40 ml vials	14 days	Varies
Total Petroleum Hydrocarbons (TPH)	SW-8015 Modified DRO	SW-3054, 3055,5030	Soil	One (1) 5-part composite sample per 5,000 cy	G	Cool to 4°C / 250 g	Ext -14 days Anal – 40 day	50 mg/kg
Pesticides and PCBs	SW-8081 SW-8082	SW-3540/50	Soil	One (1) 5-part composite sample per 5,000 cy	P/G	Cool to 4°C / 250g	14 days	Varies

Notes:
(1) XRF – X-Ray Fluorescence Instrument
(2) Not applicable
(3) Sample Test Method designated as SW-xxxx is from EPA SW-846.
(4) P/G - Plastic or Glass

APPENDIX A

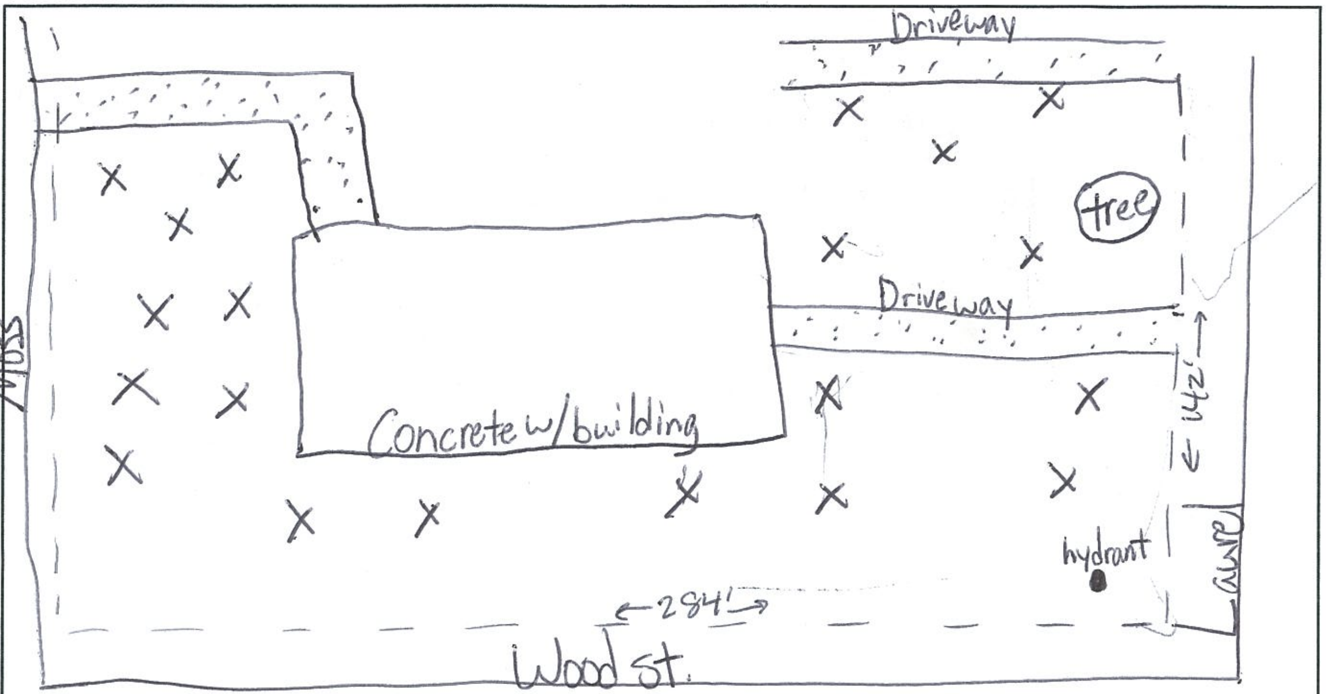
2014 RESIDENTIAL SOIL SAMPLING PROPERTY SKETCHES

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 1
Owner Name: Arthur Stark
Property Address: 1202 N. Wood St
Phone No: ______ ______

Date/Time: 6/3/14 9:55 a.m.
Property Size: ☐ ≤ 5,000 sf or ☑ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-01-002.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 11:52 RS- -1 FL 0-6"	June 3 / 11:10 RS- -1 FR 0-6"	June 3 / 1:05 RS- -1 BL 0-6"	June 3 / 10:48 RS- 1 BR 0-6"	____ / ____ RS- - -0-6"
6-12"	June 3 / 11:56 RS- -1 FL 6-12"	June 3 / 11:14 RS- -1 FR 6-12"	June 3 / 1:08 RS- -1 BL 6-12"	June 3 / 10:51 RS- 1 BR 6-12"	____ / ____ RS- -6-12"
12-18"	June 3 / 11:58 RS- -1 FL 12-18"	June 3 / 11:16 RS- -1 FR 12-18"	June 3 / 1:12 RS- -1 BL 12-18"	June 3 / 10:53 RS- 1 BR 12-18"	____ / ____ RS- - -12-18"
18-24"	June 3 / 12:00 RS- -1 FL 18-24"	June 3 / 11:18 RS- 1 FR 18-24"	June 3 / 1:14 RS- -1 BL 18-24"	June 3 / 10:55 RS- 1 BR 18-24"	____ / ____ RS- - -18-24"

NOTES:
No garden

Team Initials: JS SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 2

Owner Name: Earl Lawrence Metcalf

Property Address: 1108 N. Wood St

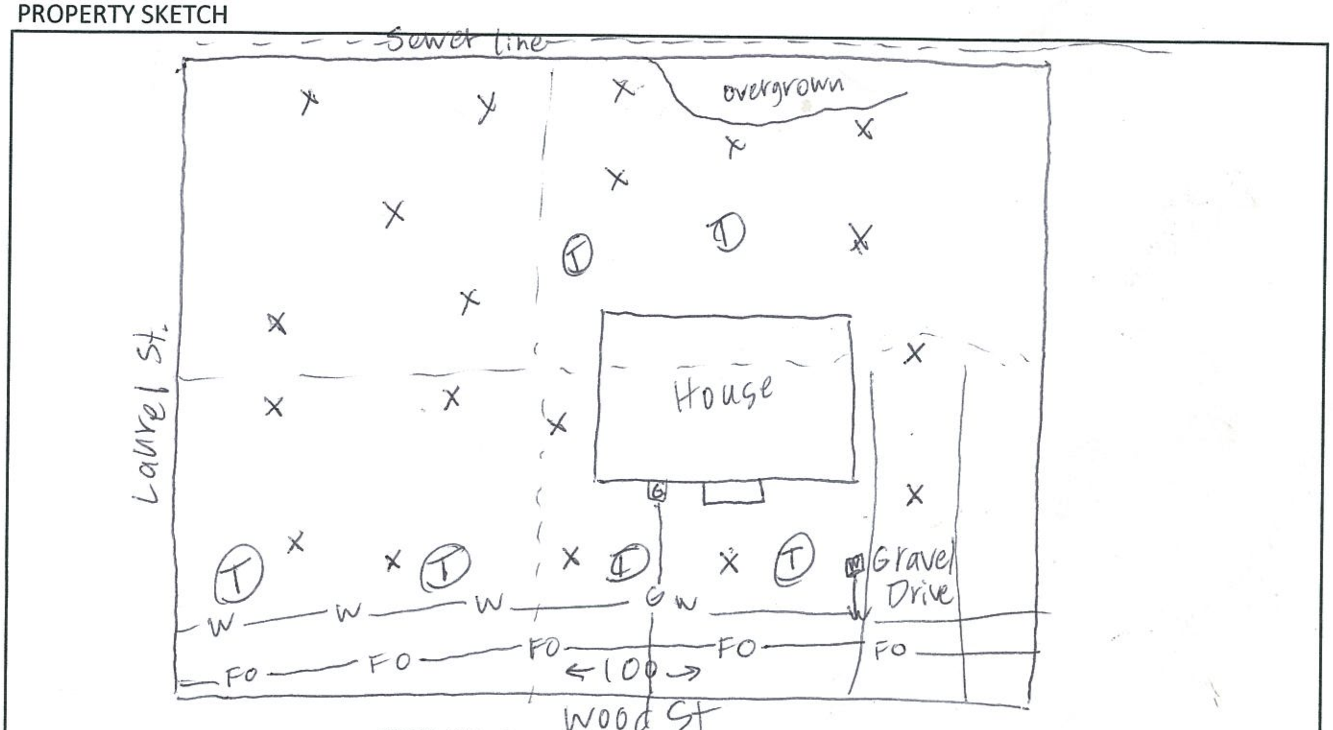
Phone No: ______

Date/Time: 06/02/14

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-07-002.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 5:32 RS- 2FL-0-6"	June 2 / 5:43 RS- 2FR-0-6"	June 2 / 5:06 RS- 2BL-0-6"	June 2 / 4:45 RS- 2BR-0-6"	~~___ / ___ RS- - -0-6"~~
6-12"	June 2 / 5:34 RS- 2FL-6-12"	June 2 / 5:46 RS- 2FR-6-12"	June 2 / 5:09 RS- 2BL-6-12"	June 2 / 4:48 RS- 2BR-6-12"	~~___ / ___ RS- - -6-12"~~
12-18"	June 2 / 5:35 RS- 2FL-12-18"	June 2 / 5:48 RS- 2FR-12-18"	June 2 / 5:11 RS- 2BL-12-18"	June 2 / 4:49 RS- 2BR-12-18"	~~___ / ___ RS- - -12-18"~~
18-24"	June 2 / 5:37 RS- 2FL-18-24"	June 2 / 5:49 RS- 2FR-18-24"	June 2 / 5:13 RS- 2BL-18-24"	June 2 / 4:51 RS- 2BR-18-24"	~~___ / ___ RS- - -18-24"~~

NOTES:

Sampled quadrants as 50' wide lots

No garden

Team Initials: JS SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 3

Owner Name: Margaret Metcalf

Property Address: 1106 N. Wood

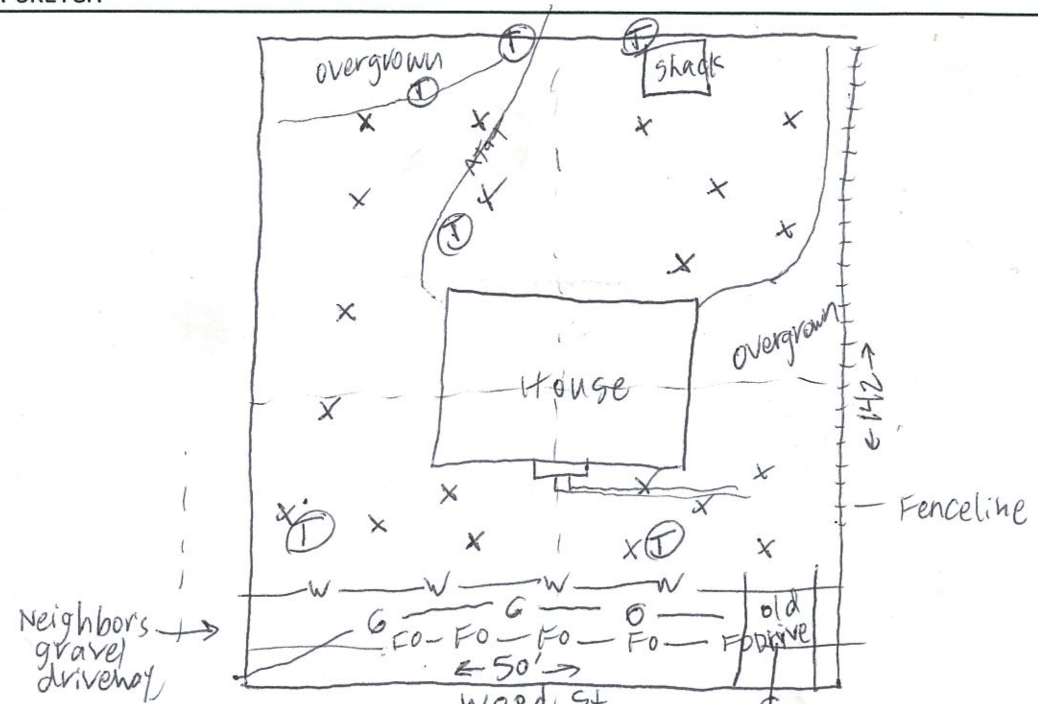
Phone No:

Date/Time: 6/2/14 1435

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-07-003.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 3:45 RS-3FL-0-6"	June 2 / 3:27 RS-3FR-0-6"	June 2 / 4:23 RS-3BL-0-6"	June 2 / 4:06 RS-3BR-0-6"	~~/ RS- - -0-6"~~
6-12"	June 2 / 3:47 RS-3FL-6-12"	June 2 / 3:29 RS-3FR-6-12"	June 2 / 4:25 RS-3BL-6-12"	June 2 / 4:09 RS-3BR-6-12"	~~/ RS- -6-12"~~
12-18"	June 2 / 3:49 RS-3FL-12-18"	June 2 / 3:31 RS-3FR-12-18"	June 2 / 4:27 RS-3BL-12-18"	June 2 / 4:12 RS-3BR-12-18"	~~/ RS- - -12-18"~~
18-24"	June 2 / 3:51 RS-3FL-18-24"	June 2 / 3:33 RS-3FR-18-24"	June 2 / 4:29 RS-3BL-18-24"	June 2 / 4:14 RS-3BR-18-24"	~~/ RS- - -18-24"~~

NOTES:
No garden

Team Initials: JG SR

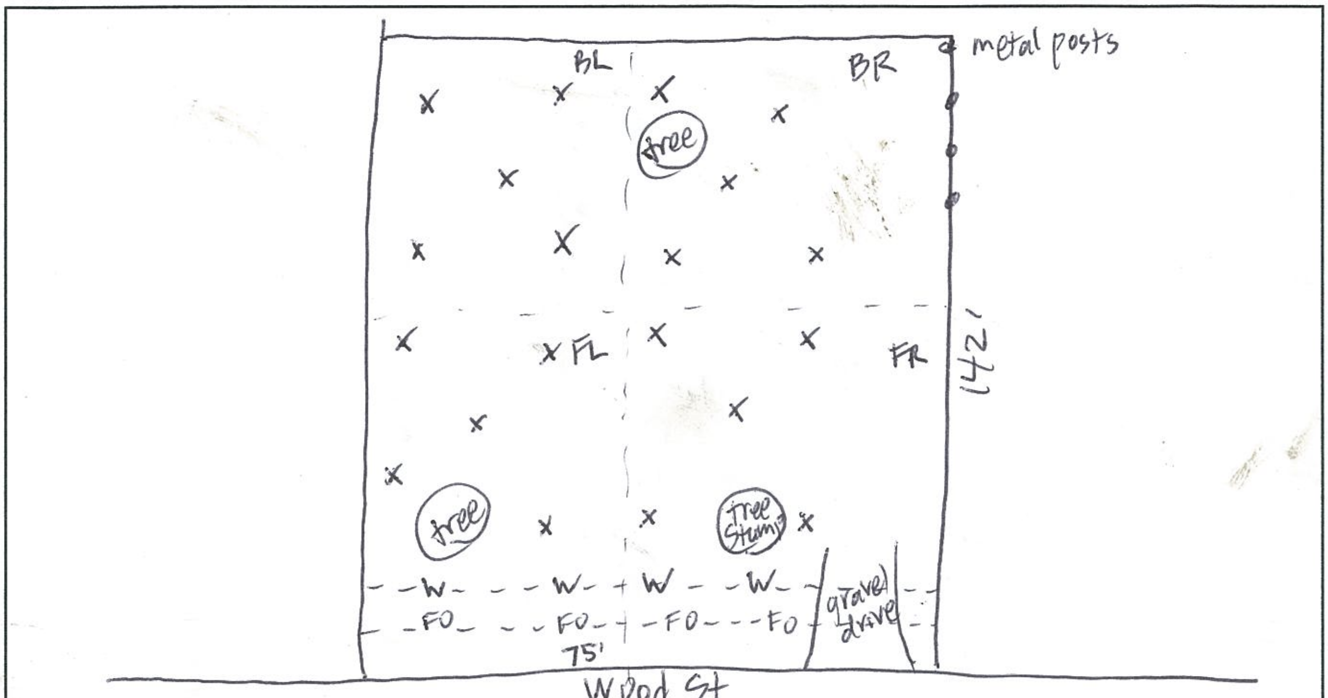
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 4
Owner Name: Everett & Shirley Davis
Property Address: 1104 N. Wood St
Phone No: ______

Date/Time: 06/02/14
Property Size: ☐ ≤ 5,000 sf or ☑ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-07-004.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 2:58 RS-4FL-0-6"	June 2 / 2:11 RS-4FR-0-6"	June 2 / 2:42 RS-4BL-0-6"	June 2 / 1:55 RS-4BR-0-6"	~~/ RS- - -0-6"~~
6-12"	June 2 / 3:01 RS-4FL-6-12"	June 2 / 2:13 RS-4FR-6-12"	June 2 / 2:44 RS-4BL-6-12"	June 2 / 1:58 RS-4BR-6-12"	~~/ RS- - -6-12"~~
12-18"	June 2 / 3:02 RS-4FL-12-18"	June 2 / 2:17 RS-4FR-12-18"	June 2 / 2:46 RS-4BL-12-18"	June 2 / 2:00 RS-4BR-12-18"	~~/ RS- - -12-18"~~
18-24"	June 2 / 3:04 RS-4FL-18-24"	June 2 / 2:10 RS-4FR-18-24"	June 2 / 2:48 RS-4BL-18-24"	June 2 / 2:02 RS-4BR-18-24"	~~/ RS- - -18-24"~~

NOTES:
measurements exclude utility easement. otherwise ~~90'~~ 75' × 162'
No garden

Team Initials: SS SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 5

Owner Name: Everett & Shirley Davis

Property Address: N. Wood St

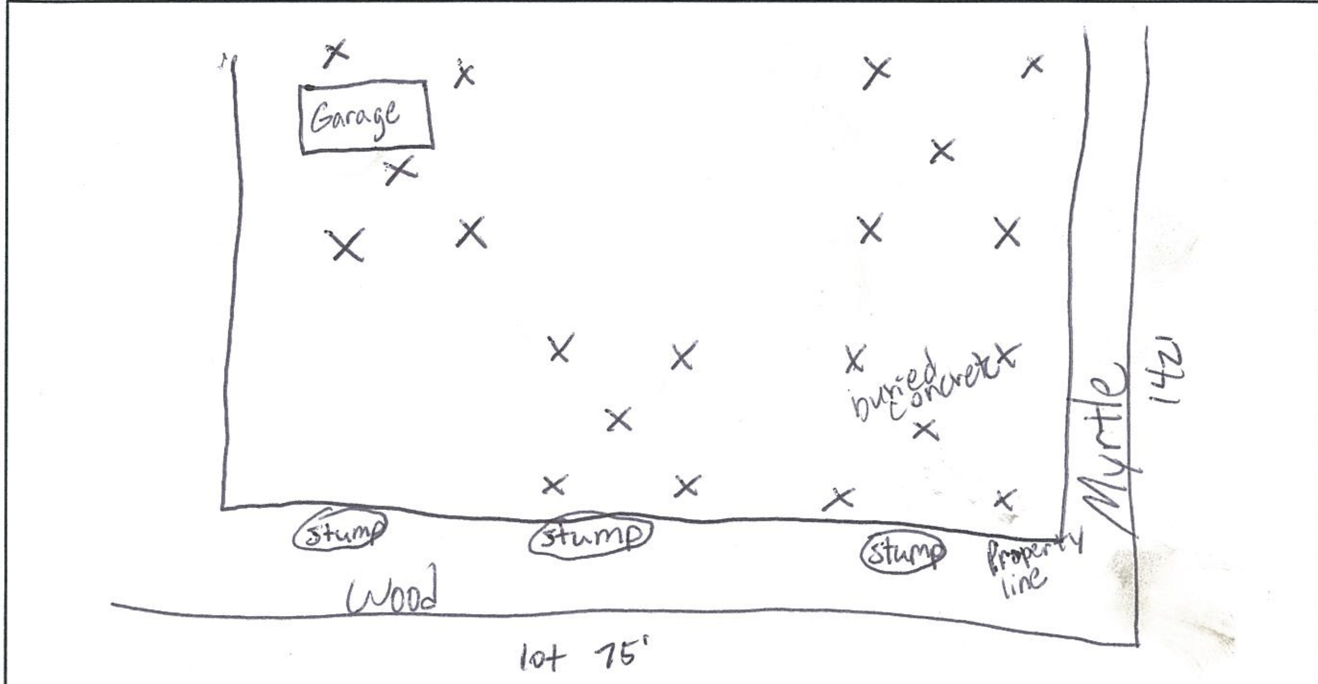
Phone No: ______

Date/Time: 6/2/14

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-07-005.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 11:38 RS- 5FL-0-6"	June 2 / 11:15 RS- 5FR0-6"	June 2 / 12:20 RS- 5BL0-6"	June 2 / 12:02 RS- 5BR0-6"	~~/ RS- - -0-6"~~
6-12"	June 2 / 11:42 RS- 5FL-6-12"	June 2 / 11:19 RS- 5FR6-12"	June 2 / 12:22 RS- 5BL6-12"	June 2 / 12:06 RS- 5BR6-12"	~~/ RS- - -6-12"~~
12-18"	June 2 / 11:46 RS- 5FL12-18"	June 2 / 11:22 RS- 5FR12-18"	June 2 / 12:25 RS- 5BL12-18"	June 2 / 12:08 RS- 5BR12-18"	~~/ RS- - -12-18"~~
18-24"	June 2 / 11:52 RS- 5FL18-24"	June 2 / 11:25 RS- 5FR18-24"	June 2 / 12:26 RS- 5BL18-24"	June 2 / 12:10 RS- 5BR18-24"	~~/ RS- - -18-24"~~

NOTES:
FR
Concrete In
6"-12" found

BR
18"-24"
med red
color

measurement street to fence
90' x 162'
No garden

Team Initials: JW SR

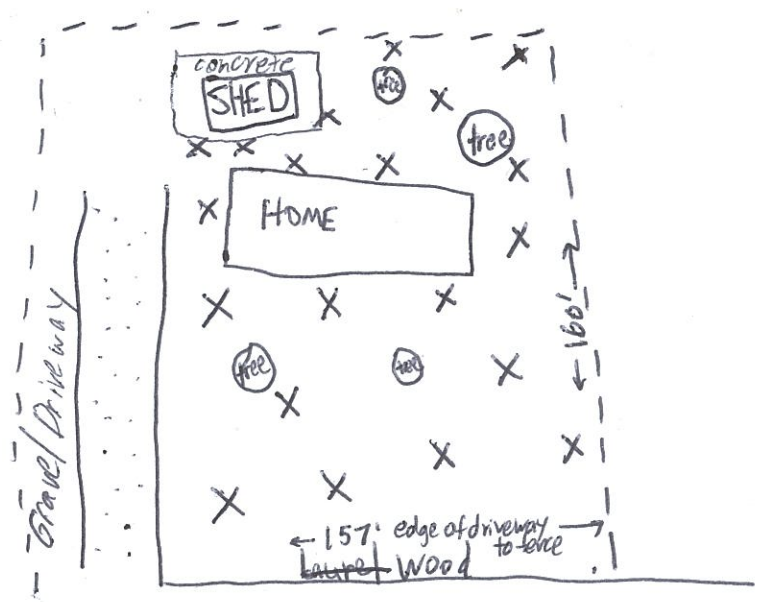
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 6
Owner Name: Ralph Anthony/Kennen Simmons
Property Address: 1111 N. Wood St
Phone No: ______

Date/Time: 7:35 a.m. 06/03/14
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-06-001.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 8:28 RS- 6FL-0-6"	June 3 / 8:53 RS- 6FR-0-6"	June 3 / 9:51 RS- 6BL-0-6"	June 3 / 9:25 RS- 6BR-0-6"	~~/~~ ~~RS- - -0-6"~~
6-12"	June 3 / 8:31 RS- 6FL-6-12"	June 3 / 8:56 RS- 6FR-6-12"	June 3 / 9:54 RS- 6BL-6-12"	June 3 / 9:28 RS- 6BR-6-12"	~~/~~ ~~RS- - -6-12"~~
12-18"	June 3 / 8:34 RS- 6FL-12-18"	June 3 / 8:58 RS- 6FR-12-18"	June 3 / 9:57 RS- 6BL-12-18"	June 3 / 9:30 RS- 6BR-12-18"	~~/~~ ~~RS- - -12-18"~~
18-24"	June 3 / 8:36 RS- 6FL-18-24"	June 3 / 9:00 RS- 6FR-18-24"	June 3 / 9:58 RS- 6BL-18-24"	June 3 / 9:33 RS- 6BR-18-24"	~~/~~ ~~RS- - -18-24"~~

NOTES: Dark Brown soil
soil is moist thru
24"

No garden

Team Initials: JG SR

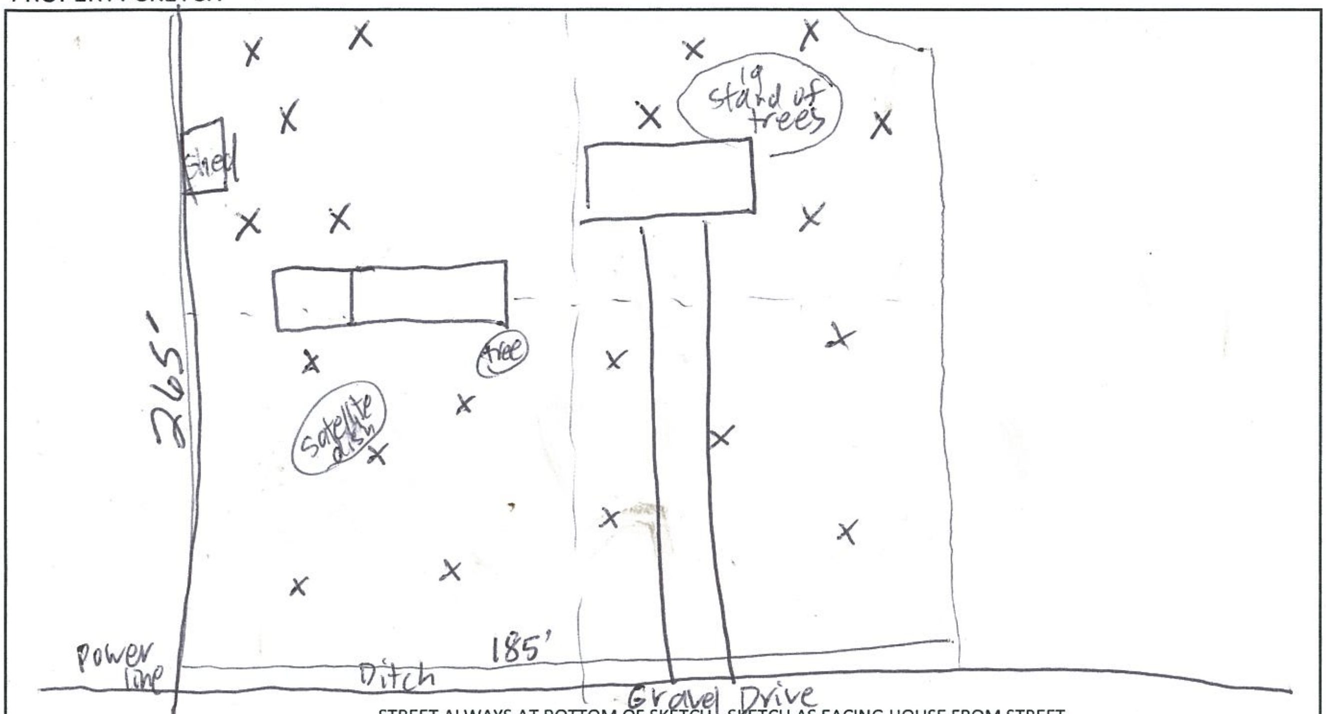
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 7
Owner Name: Joel + Tammy Gaff
Property Address: 600 Myrtle
Phone No:

Date/Time: 6/2/14
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-05-001.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 2 / 9:36 RS- 7 FL 0-6"	June 2 / 10:22 RS- 7 FR 0-6"	June 2 / 9:33 RS- 7 BL 0-6"	June 2 / 8:45 RS- 7 BR 0-6"	~~/~~ ~~RS- - 0-6"~~
6-12"	June 2 / 10:00 RS- 7 FL 6-12"	June 2 / 10:26 RS- 7 FR 6-12"	June 2 / 9:35 RS- 7 BL 6-12"	June 2 / 9:10 RS- 7 BR 6-12"	~~/~~ ~~RS- - 6-12"~~
12-18"	June 2 / 10:03 RS- 7 FL 12-18"	June 2 / 10:32 RS- 7 FR 12-18"	June 2 / 9:38 RS- 7 BL 12-18"	June 2 / 9:12 RS- 7 BR 12-18"	~~/~~ ~~RS- - 12-18"~~
18-24"	June 2 / 10:05 RS- 7 FL 18-24"	June 2 / 10:35 RS- 7 FR 18-24"	June 2 / 9:40 RS- 7 BL 18-24"	June 2 / 9:16 RS- 7 BR 18-24"	~~/~~ ~~RS- - 18-24"~~

NOTES:
BR
Moist Dark Brown
18"-24" Red orange color

FR
12-18
sandy

FL
18-24
medium orange color

No garden

Team Initials: JG SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 8

Owner Name: Jerry + Rose Hocker

Property Address: 1101 N. State St

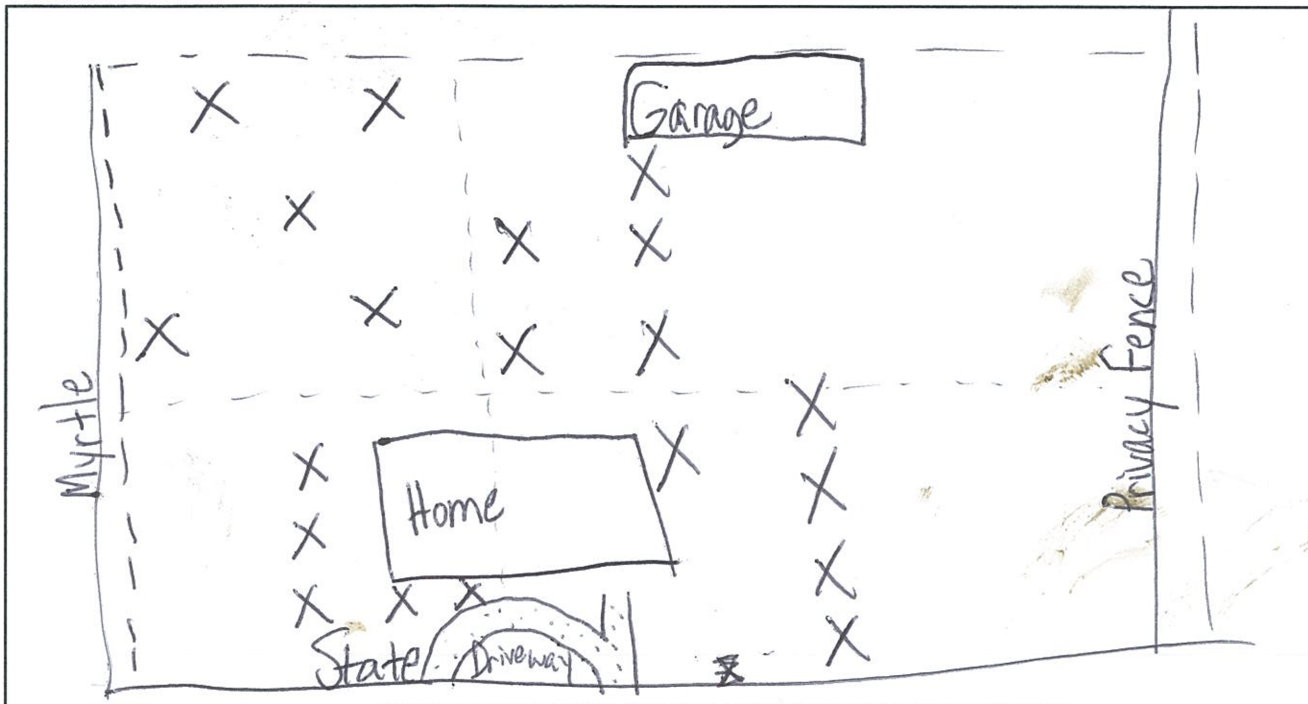
Phone No:

Date/Time: 6/3/14 3:25 p.m.

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-20-07-006.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 5:52 RS- 8 FL-0-6"	June 3 / 5:31 RS- 8 FR-0-6"	June 3 / 6:01 RS- 8 BL-0-6"	June 3 / 5:42 RS- 8 BR-0-6"	/ RS- - -0-6"
6-12"	June 3 / 5:54 RS- 8 FL-6-12"	June 3 / 5:34 RS- 8 FR-6-12"	June 3 / 6:03 RS- 8 BL-6-12"	June 3 / 5:43 RS- 8 BR-6-12"	/ RS- - -6-12"
12-18"	June 3 / 5:55 RS- 8 FL-12-18"	June 3 / 5:36 RS- 8 FR-12-18"	June 3 / 6:04 RS- 8 BL-12-18"	June 3 / 5:44 RS- 8 BR-12-18"	/ RS- - -12-18"
18-24"	June 3 / 5:56 RS- 8 FL-18-24"	June 3 / 5:38 RS- 8 FR-18-24"	June 3 / 6:05 RS- 8 BL-18-24"	June 3 / 5:45 RS- 8 BR-18-24"	/ RS- - -18-24"

NOTES:

No garden

Team Initials: JY SR

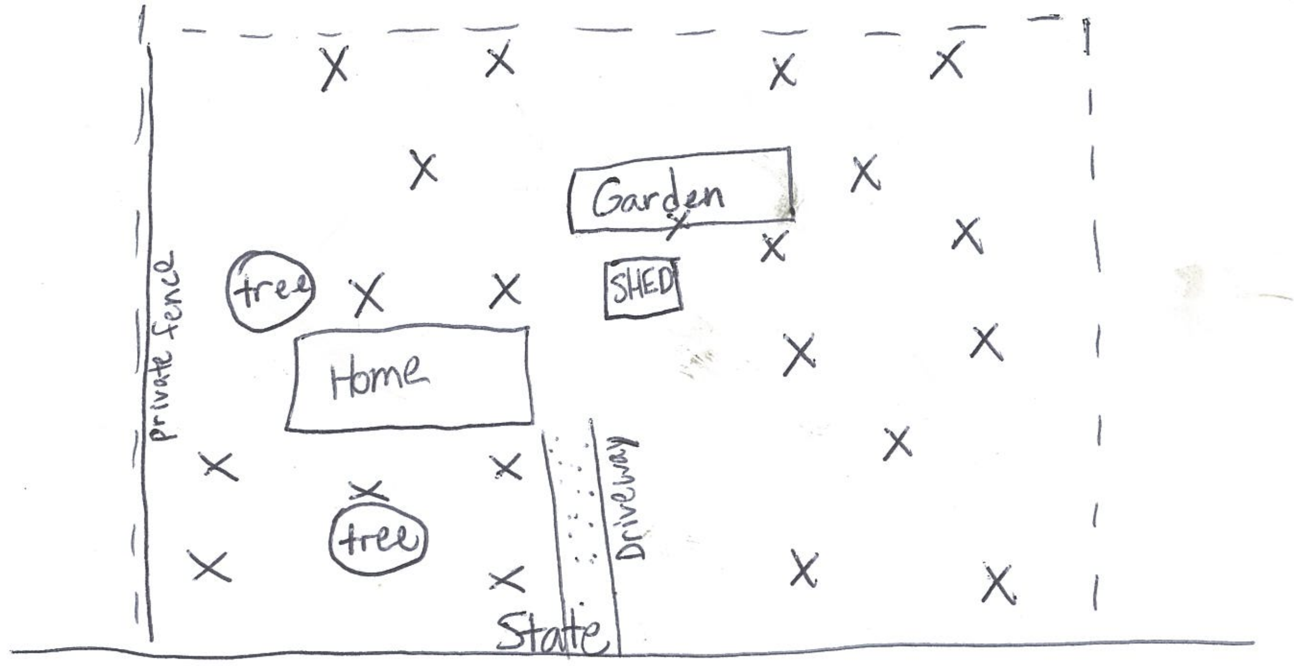
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 9
Owner Name: Dale + Margaret Duncan
Property Address: 1105 N. State St
Phone No:

Date/Time: 6/3/14 1:48 p.m.
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-007-001.00-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/Quad	**FY (or FL)**	**SY (or FR)**	**BY (or BL)**	**BR**	**G**
0-6"	June 3 / 5:02 RS-9-FL-0-6"	June 3 / 4:15 RS-9-FR-0-6"	June 3 / 4:42 RS-9-BL-0-6"	June 3 / 5:15 RS-9-BR-0-6"	June 3 / 4:07 RS-9-G-0-6"
6-12"	June 3 / 5:05 RS-9-FL-6-12"	June 3 / 4:18 RS-9-FR-6-12"	June 3 / 4:44 RS-9-BL-6-12"	June 3 / 5:17 RS-9-BR-6-12"	June 3 / 4:08 RS-9-G-6-12"
12-18"	June 3 / 5:06 RS-9-FL-12-18"	June 3 / 4:20 RS-9-FR-12-18"	June 3 / 4:46 RS-9-BL-12-18"	June 3 / 5:17 RS-9-BR-12-18"	June 3 / 4:09 RS-9-G-12-18"
18-24"	June 3 / 5:07 RS-9-FL-18-24"	June 3 / 4:21 RS-9-FR-18-24"	June 3 / 4:49 RS-9-BL-18-24"	June 3 / 5:19 RS-9-BR-18-24"	June 3 / 4:10 RS-9-G-18-24"

NOTES:

Team Initials: JY SR

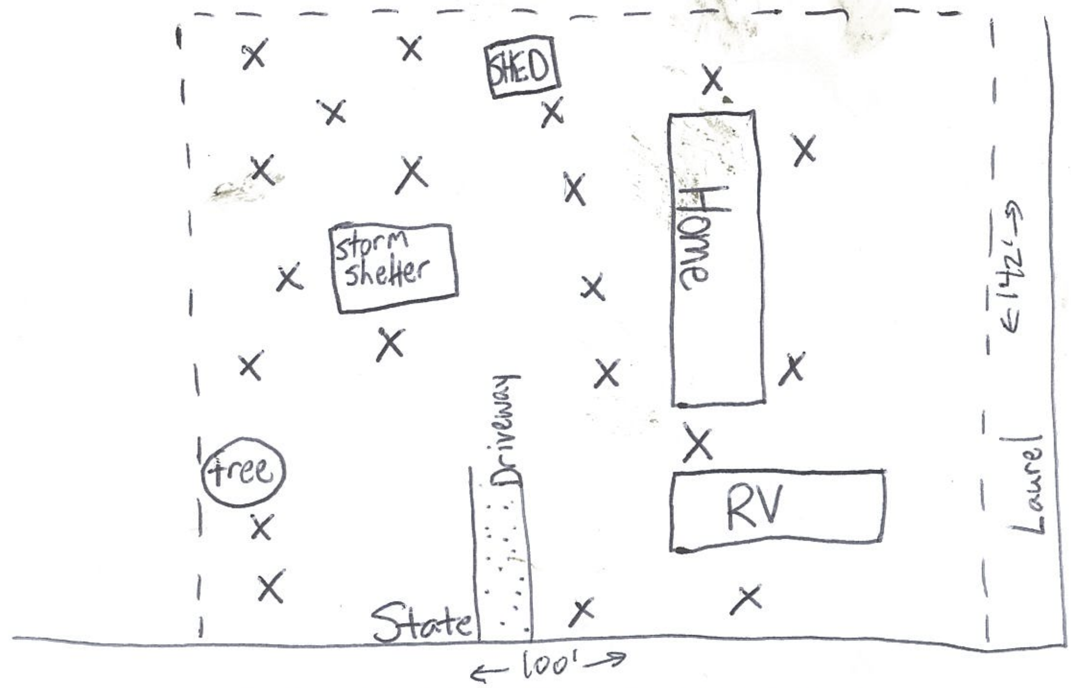
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 10
Owner Name: Cotton Family Trust
Property Address: 1111 N. State St
Phone No: ______

Date/Time: 6/3/14 11:10 a.m.
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-20-07-001.01-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 3 / 3:23 RS- 10 FL -0-6"	June 3 / 1:46 RS- 10 FR -0-6"	June 3 / 2:52 RS- 10 BL -0-6"	June 3 / 2:04 RS- 10 BR -0-6"	~~/ RS- - -0-6"~~
6-12"	June 3 / 3:25 RS- 10 FL -6-12"	June 3 / 1:49 RS- 10 FR -6-12"	June 3 / 2:54 RS- 10 BL -6-12"	June 3 / 2:11 RS- 10 BR -6-12"	~~/ RS- -6-12"~~
12-18"	June 3 / 3:26 RS- 10 FL -12-18"	June 3 / 1:51 RS- 10 FR -12-18"	June 3 / 2:57 RS- 10 BL -12-18"	June 3 / 2:13 RS- 10 BR -12-18"	~~/ RS- - -12-18"~~
18-24"	June 3 / 3:30 RS- 10 FL -18-24"	June 3 / 1:52 RS- 10 FR -18-24"	June 3 / 2:58 RS- 10 BL -18-24"	June 3 / 2:16 RS- 10 BR -18-24"	~~/ RS- - -18-24"~~

NOTES:
No garden

Team Initials: JJ SK

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 11

Owner Name: Larry & Susan Crowe

Property Address: 1101 N. Spring St

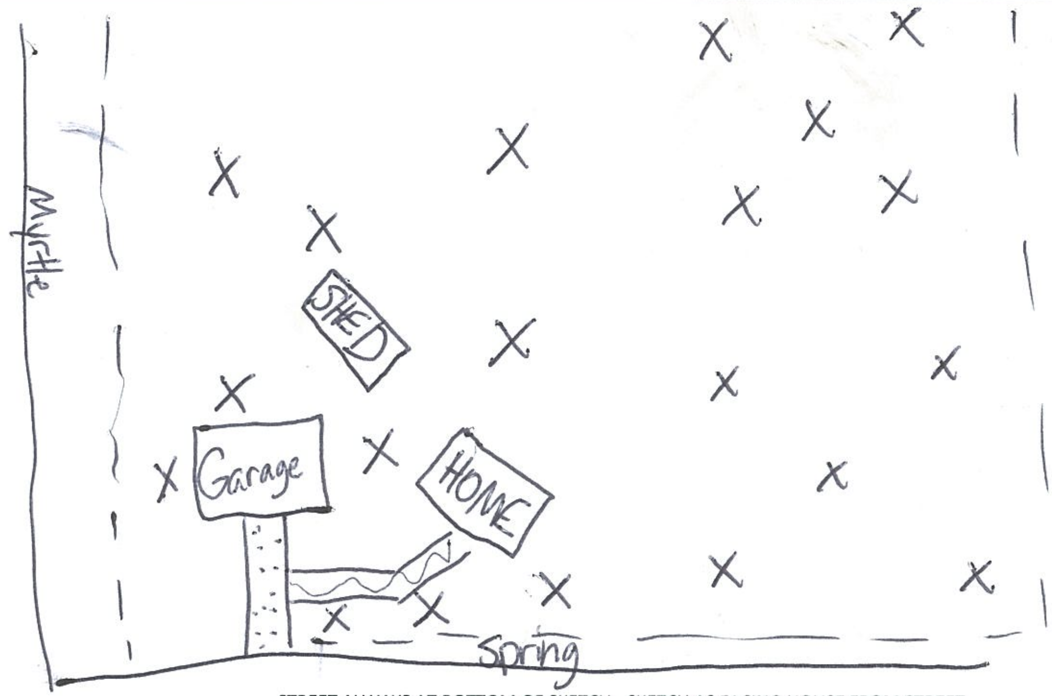
Phone No: ______ ______

Date/Time: 9:30 6/4/14

Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf

Parcel ID No.: 063-251-12-0-10-02-005.00-0
063-251-12-0-10-02-001.02-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 4 / 1:12 RS-11-FL-0-6"	June 4 / 11:20 RS-11-FR-0-6"	June 4 / 1:30 RS-11-BL-0-6"	June 4 / 10:55 RS-11-BR-0-6"	___ / ___ RS- - -0-6"
6-12"	June 4 / 1:14 RS-11-FL-6-12"	June 4 / 11:22 RS-11-FR-6-12"	June 4 / 1:32 RS-11-BL-6-12"	June 4 / 11:00 RS-11-BR-6-12"	___ / ___ RS- - -6-12"
12-18"	June 4 / 1:16 RS-11-FL-12-18"	June 4 / 11:25 RS-11-FR-12-18"	June 4 / 1:34 RS-11-BL-12-18"	June 4 / 11:02 RS-11-BR-12-18"	___ / ___ RS- - -12-18"
18-24"	June 4 / 1:18 RS-11-FL-18-24"	June 4 / 11:27 RS-11-FR-18-24"	June 4 / 1:39 RS-11-BL-18-24"	June 4 / 11:04 RS-11-BR-18-24"	___ / ___ RS- - -18-24"

NOTES:

Team Initials: SR

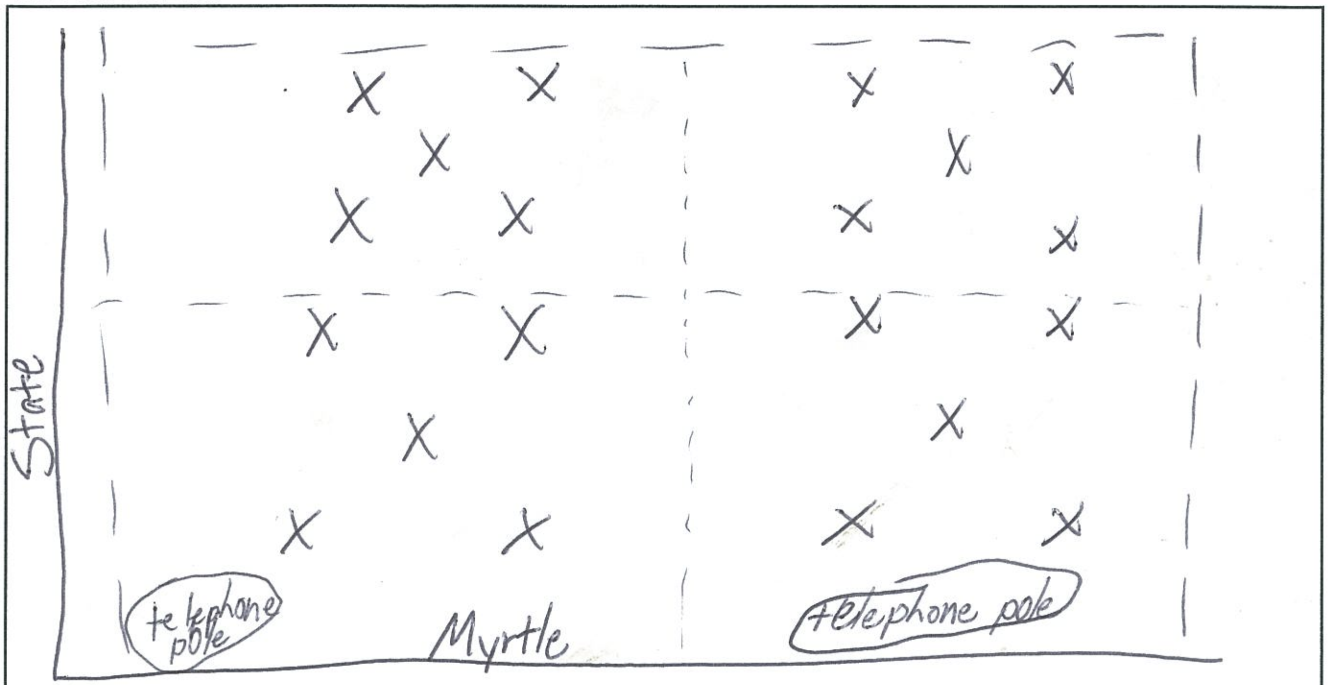
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 12
Owner Name: Larry & Susan Crowe
Property Address: N. State St
Phone No: ______ ______

Date/Time: 6/4/14 8:15 a.m.
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-12-0-10-02-001.01-0

PROPERTY SKETCH



STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June 4 / 9:16 RS-12-FL-0-6"	June 4 / 8:46 RS-12-FR-0-6"	June 4 / 10:16 RS-12-BL-0-6"	June 4 / 9:36 RS-12-BR-0-6"	___ / ___ RS- - -0-6"
6-12"	June 4 / 9:18 RS-12-FL-6-12"	June 4 / 8:49 RS-12-FR-6-12"	June 4 / 10:18 RS-12-BL-6-12"	June 4 / 9:39 RS-12-BR-6-12"	___ / ___ RS- - -6-12"
12-18"	June 4 / 9:20 RS-12-FL-12-18"	June 4 / 8:50 RS-12-FR-12-18"	June 4 / 10:19 RS-12-BL-12-18"	June 4 / 9:41 RS-12-BR-12-18"	___ / ___ RS- - -12-18"
18-24"	June 4 / 9:22 RS-12-FL-18-24"	June 4 / 8:52 RS-12-FR-18-24"	June 4 / 10:21 RS-12-BL-18-24"	June 4 / 9:43 RS-12-BR-18-24"	___ / ___ RS- - -18-24"

NOTES:
0-6" Dk brown/black soil
6-12" red-orange mottling
12-24" change to yellow brown clayey silt

Team Initials: SR

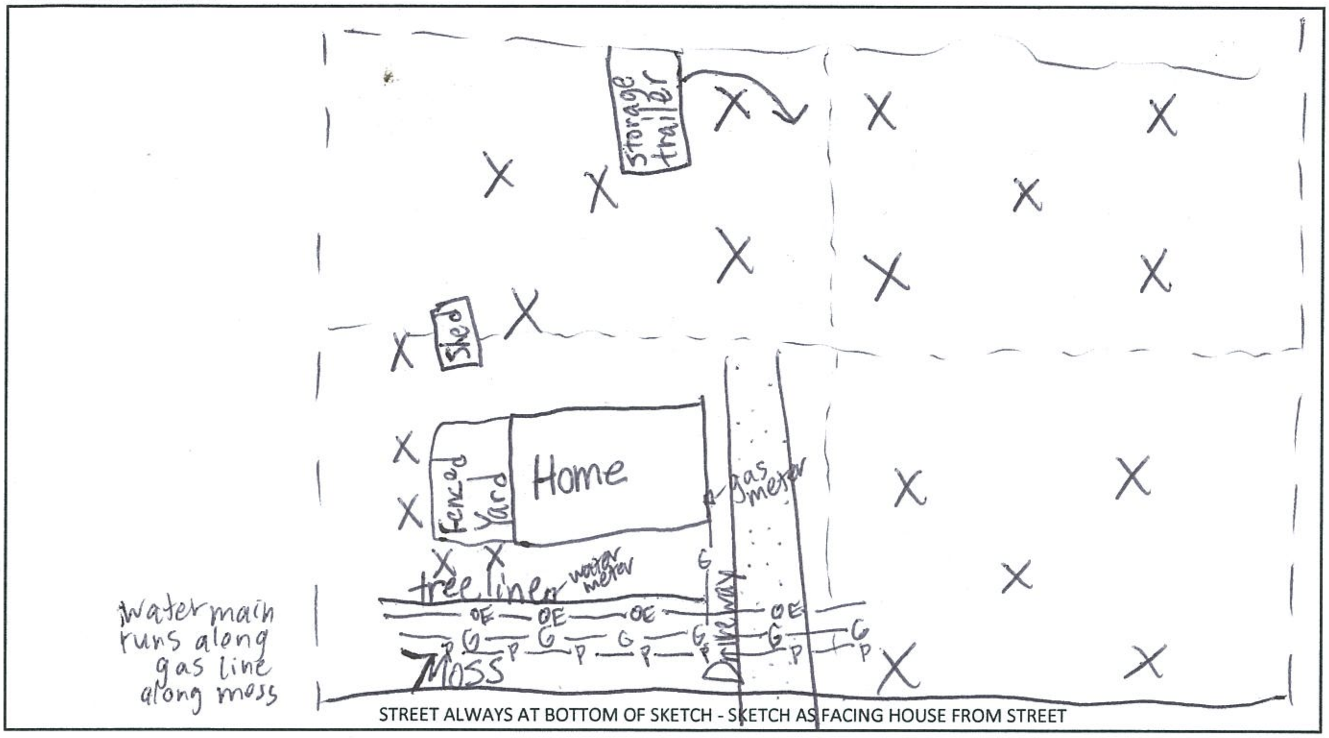
Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: 13
Owner Name: Willis Wilkerson
Property Address: 1360 CR 1600
Phone No:

Date/Time: 6/4/14 1:20 p.m
Property Size: ☐ ≤ 5,000 sf or ☒ > 5,000 sf
Parcel ID No.: 063-251-01-0-00-00-017

PROPERTY SKETCH



Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	FY (or FL)	SY (or FR)	BY (or BL)	BR	G
0-6"	June4 / 3:42 RS-13-FL-0-6"	June4 / 3:10 RS-13-FR-0-6"	June4 / 3:31 RS-13-BL-0-6"	June4 / 3:52 RS-13-BR-0-6"	/ RS- - -0-6"
6-12"	June4 / 3:44 RS-13-FL-6-12"	June4 / 3:12 RS-13-FR-6-12"	June4 / 3:34 RS-13-BL-6-12"	June4 / 3:56 RS-13-BR-6-12"	/ RS- - -6-12"
12-18"	June4 / 3:45 RS-13-FL-12-18"	June4 / 3:14 RS-13-FR-12-18"	June4 / 3:35 RS-13-BL-12-18"	June4 / 3:57 RS-13-BR-12-18"	/ RS- - -12-18"
18-24"	June4 / 3:46 RS-13-FL-18-24"	June4 / 3:16 RS-13-FR-18-24"	June4 / 3:36 RS-13-BL-18-24"	June4 / 3:59 RS-13-BR-18-24"	/ RS- - -18-24"

NOTES:
BR one 12"-18" sample point All Concrete
2 dog In Fenced Area In ~~Back~~ Left yard Front

Team Initials: RG SPC

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

FIELD DATA SHEET - RESIDENTIAL SOIL SAMPLING
FORMER OWENS SMELTER, SITE CANEY, KS

ENTACT ID No.: Bunch Property 14
Owner Name: Fred Bunch
Property Address: 1202 N. State
Phone No: ________________ ________________

Date/Time: ____________________
Property Size: ☐ ≤ 5,000 sf or ☐ > 5,000 sf
Parcel ID No.: ____________________

PROPERTY SKETCH

STREET ALWAYS AT BOTTOM OF SKETCH - SKETCH AS FACING HOUSE FROM STREET

Depth Interval	SAMPLE DATE / SAMPLE TIME				
Yard/ Quad	Sample #1 ~~FY (or FL)~~	Sample #2 ~~SY (or FR)~~	Sample #3 ~~BY (or BL)~~	BR	G
0-6"	June 4 / 2:15 RS-14-1-0-6"	June 4 / 2:31 RS-14-2-0-6"	June 4 / 2:43 RS-14-3-0-6"	____ / ____ RS- - -0-6"	____ / ____ RS- - -0-6"
6-12"	June 4 / 2:17 RS-14-1-6-12"	June 4 / 2:32 RS-14-2-6-12"	June 4 / 2:45 RS-14-3-6-12"	____ / ____ RS- - -6-12"	____ / ____ RS- - -6-12"
12-18"	June 4 / 2:19 RS-14-1-12-18"	June 4 / 2:34 RS-14-2-12-18"	June 4 / 2:46 RS-14-3-12-18"	____ / ____ RS- - -12-18"	____ / ____ RS- - -12-18"
18-24"	June 4 / 2:21 RS-14-1-18-24"	June 4 / 2:36 RS-14-2-18-24"	June 4 / 2:47 RS-14-3-18-24"	____ / ____ RS- - -18-24"	____ / ____ RS- - -18-24"

NOTES:

Team Initials: SR

Yard/Quad Description: FY = Front Yard; BY = Back Yard; SY = Side Yard; G = G; FR = Front Right; FL = Front Left; BR = Back Right; BL = Back Left

APPENDIX B

SAMPLE ACCESS AGREEMENT

SAMPLE ACCESS AGREEMENT FOR
REMOVAL ACTIVITIES ON PRIVATE PROPERTY

THIS AGREEMENT is entered into this ____ day of ____________, 200__, by and between the undersigned property owner (the "Owner") and [Removal Action Contractor ("RAC")] and its agents, employees, contractors, and subcontractors.

An Amended Consent Order (ACO) is being negotiated between the Kansas Department of Health and Environment and Blue Tee Corp. (Blue Tee) to conduct certain soil removal activities at properties in proximity to the former Owens Zinc Smelter Site (the Site). Blue Tee Corp. has retained [RAC] as the primary entity to conduct the sampling activities under the oversight of KDHE.

The property identified below is one of the properties identified for soil removal action during previous sampling investigations conducted either by the KDHE or Blue Tee. Soils with lead concentrations over 400 mg/kg will be excavated and removed prior to being be backfilled and restored. In order to perform the removal action work, [RAC] requires access to the property.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, Owner and [RAC] agree as follows:

Identification of Owner:

1.1 Name of Owner: ____________________________________
Property Address: ____________________________________
City, State, Zip: ____________________________________
Parcel ID: ____________________________________
If Different--
Mailing Address: ____________________________________
City, State, Zip: ____________________________________
Telephone: ____________________________________

1.2 Name of Tenant: ____________________________________
Telephone: ____________________________________

Grant of Access. Owner grants [RAC], its agents, employees, contractors and subcontractors; and EPA, its agents, employees, contractors, and subcontractors, the right to enter the above-listed property for the purpose of performing sampling activities.

Availability of Access. [RAC] shall have access to the property at all reasonable times for the duration of this Access Agreement. Access to the property shall be solely for the purpose of carrying out the terms of this Access Agreement.

Duration of Agreement. This Access Agreement shall be effective when both parties have executed it as evidenced by their signatures below and shall remain in effect until sampling activities are complete.

Indemnification: [RAC] agrees to assume all risk of loss and to indemnify and hold Owner harmless from and against all liabilities, costs, and expenses arising out of, or in connection with, third party claims against the Owner based upon the negligent acts of [RAC], its employees, contractors, or subcontractors in carrying out work pursuant to this Access Agreement. In the event that any demand or claim is made, or suit is commenced against Owner by a third party, Owner shall give prompt written notice thereof to [RAC]. [RAC] shall have the right to compromise or defend that demand, claim, or suit.

Independent Contractor: [RAC] warrants that it and any employee, agent, consultant, contractor, or subcontractor retained by [RAC] are independent contractors and are not employees or agents for Owner.

Compliance with Applicable Laws and Regulations. [RAC] agrees that the work to be performed pursuant to this Access Agreement shall be performed in a workman-like-manner and in compliance with the Amended Order and all applicable federal, state, or local laws, ordinances, or regulations.

Expense. The Respondents (Blue Tee Corp) shall pay the expense of performing the sampling work.

[RAC] not an KDHE Representative. [RAC] is not, and shall not be deemed to be, a representative or agent of KDHE with respect to the work.

Consent. [RAC] shall consult residents prior to beginning sampling activities.

Responsibilities of Owner:

Owner agrees to:

- Remove obstructions including boats, trailers, vehicles, pets, etc. that may interfere with sampling activities;

- If the property is rented, Owner shall assist [RAC] in obtaining approval necessary to perform the work from Owner's tenant(s) for access to the property if [RAC] is unable to obtain such access.

Responsibilities of [RAC]:

[RAC] agrees to take the following actions:

- Operate in a safe manner (in accordance with the Site Health & Safety Plan) to prevent damage to Site features or hazards to residents;

- Notify Resident before performing any work on property. (Normal work hours will be 7 a.m. to 7 p.m.)

Entire Agreement: This Access Agreement constitutes the complete agreement between the Parties with respect to the subject matter hereof and supersedes any prior agreements or understandings, written or oral. No waiver under this Access Agreement shall be valid unless it is given in writing and duly executed by the Party to be charged therewith. This Access Agreement may be amended only by a writing signed by each of the Parties hereto. The invalidity or unenforceability of any provision of this Access Agreement shall not affect the other provisions hereof, and this Access Agreement shall be construed as if such invalid or unenforceable provision were omitted. This Access Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assigns.

Jurisdiction. This Access Agreement shall be governed by and interpreted in accordance with the laws of the State of Kansas.

Effective Date. This Access Agreement shall be effective as of the date first above written.

OWNER (S): R A C

By: ______________________________________ By: _____________________________________