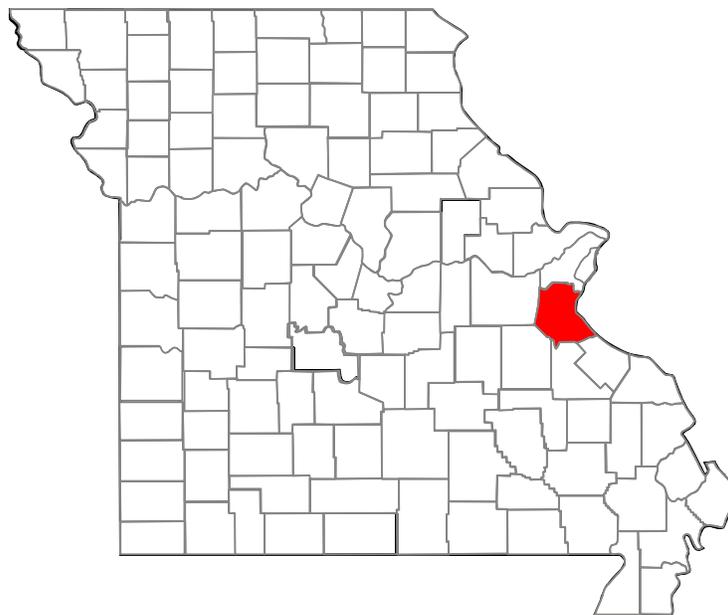


SITE REASSESSMENT REPORT

Shapiro Brothers Salvage
Jefferson County, Missouri

EPA ID: MON000706345

September 30, 2013



Missouri Department of Natural Resources
Division of Environmental Quality
Hazardous Waste Program

This page is intentionally blank

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION	2
2.1 LOCATION	2
2.2 DESCRIPTION	2
2.3 HISTORY/PREVIOUS INVESTIGATION	2
2.3.1 RCRA Facility Inspection	3
2.3.2 Site Inspection/Removal Site Evaluation	3
3.0 WASTE CHARACTERISTICS	4
3.1 LEAD - PROPERTIES AND TOXICITY	4
4.0 CONCEPTUAL SITE MODEL	5
5.0 WASTE SOURCE SAMPLING	7
5.1 <i>Soil Sampling at Facility</i>	7
5.2 <i>Street Sweeper Sampling</i>	7
5.3 <i>Track-Out Roadway Sampling</i>	7
6.0 SOIL EXPOSURE AND AIR PATHWAYS	8
6.1 PHYSICAL CONDITIONS	8
6.2 SOIL AND AIR TARGETS	8
6.3 SAMPLE COLLECTION	8
6.3.1 <i>Soil Sampling at Commercial Properties</i>	8
6.3.2 <i>Dust Wipe Sampling at Location ID 405</i>	10
6.3.3 <i>Ambient Air Sampling</i>	10
6.4 SAMPLE RESULTS	11
6.5 CONCLUSIONS	12
7.0 DATA QUALITY ASSESSMENT	12

7.1	Soil Sampling	12
7.2	<i>Equipment Rinsate Blanks</i>	14
8.0	SUMMARY AND CONCLUSIONS	14
9.0	RECOMMENDATIONS	14
	LIST OF REFERENCES	17

APPENDICES

APPENDIX A

FIGURES

- Figure A1 Site Location Map
- Figure A2 Map of Commercial Properties Sampled
- Figure A3 In-Situ XRF Results, 1302 Kenner Street

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX C

TABLES

- Table C1 Summary of Lead Results for Commercial Properties
- Table C2 XRF Lead Results on Bagged Soil Samples
- Table C3 Calculation of Area-Weighted Lead Averages

APPENDIX D

SAMPLING AND ANALYTICAL DATA

Abbreviated Sampling Report, Shapiro Brothers Salvage Yard

Chain of Custodies

Field Notes

Analytical Laboratory Results

Field Sheets for Commercial Properties

Aerial Photographs of Commercial Properties Showing Sampling Units

Soil Sample Logs

RAW XRF DATA

In-Situ XRF Data Histogram and Statistical Evaluation.XRF Control Charts

APPENDIX E

REFERENCES

2.0 SITE DESCRIPTION

2.1 Location

The site is located at the intersection of 9th and Delmar east-central Festus, MO. It is a rectangular 15-acre area, oriented primarily north-south, along the boundary that separates Festus and Crystal City, MO (Figure 1).

2.2 Description

The site is the location of an unpaved, metal scrap processing and recycling facility in operation since 1946. Prior to September of 2011, the site was owned and operated as Shapiro Brothers Salvage, a family-owned salvage company. In September 2011, the site was purchased by M.W. Recycling, LLC, a wholly owned subsidiary of PSC Metals Inc. which is owned by Icahn Enterprises L.P. The scrap yard is located in a mixed residential/commercial land use area. A preschool is located approximately 200 feet east of the facility. Access to the facility is limited to northern and southern gated entrances, with the remainder surrounded by fencing or concrete block walls. Storm water generally flows toward the southeast entering an unnamed tributary to Platin Creek which flows along the facility's eastern boundary.

2.3 History/Previous Investigation

The site came to the departments' attention in the fall of 2011 following complaints made to the City of Festus by residents living near the scrap yard regarding the dust created at the facility and by trucks hauling material in and out of the facility. The department subsequently conducted a series of investigations including a RCRA facility inspection, a CERCLA Abbreviated Preliminary Assessment, and a Site Inspection/Removal Site Evaluation (MDNR, 2011; MDNR, 2012a; MDNR, 2012b).

2.3.1 RCRA Facility Inspection

The department conducted a facility inspection in September 2011 and identified violations of hazardous waste management and clean water laws at the facility. Several waste streams were being managed and disposed as a solid waste without having been properly characterized as such. Storm water runoff sampling documented levels of facility-related heavy metals in surface water at levels exceeding the Missouri Water Quality Standards.

The department has negotiated an Abatement Order on Consent (AOC) (in draft) with MW Recycling LLC to conduct periodic waste characterization analysis, pay penalties for violating Missouri Clean Water Laws, and institute measures to prevent future releases of heavy metals in storm water runoff. Measures planned by M.W. Recycling, LLC to address storm water include installation of a storm water detention system and pavement of facility areas that are traversed by truck traffic entering and leaving the facility. The pavement is expected to prevent truck track-out of contaminated soil from the facility and reduce fugitive dust emissions.

2.3.2 Site Inspection/Removal Site Evaluation

An SI/RSE Investigation was initiated to assess potential risks to human health and the environment posed by facility activities. The SI/RSE documented releases of lead from facility activities to soil at 15 nearby residences at levels above 400 mg/kg (MDNR, 2012b). The department has negotiated a second AOC (in draft) with M.W. Recycling, LLC requiring the facility to conduct yard cleanups and indoor dust cleanups at these 15 properties, sample at additional yards to further define the extent of contamination, and to conduct additional yard cleanups if warranted. The yard and indoor dust cleanups and additional sampling are described in documents prepared by M.W. Recycling, LLC consultants (AMEC, 2013a, 2013b and 2013c). Cleanup work is expected to begin in the fall of 2013.

3.0 WASTE CHARACTERISTICS

3.1 Lead - Properties and Toxicity

Information in this section was taken from the Toxicological Profile for Lead (ATSDR, 2007). Lead is a naturally occurring bluish-gray metal found in small amounts in the Earth's crust. It has no characteristic taste or smell. Lead has many uses, the most important in production of some types of batteries. It is also used in ammunition and ceramic glazes. Some chemicals containing lead, such as tetraethyl lead and tetramethyl lead, were once used as gasoline additives to increase octane rating. Other chemicals containing lead are used in paint. The amount of lead added to paints and ceramic products, caulking, gasoline, and solder has been reduced in recent years to minimize lead's harmful effects on people and animals. It is used in large variety of medical equipment (radiation shields, fetal monitors, and surgical equipment). Lead is also used in scientific equipment (circuit boards for computers and other electronic circuitry) and military equipment (jet engine turbine blades, military tracking systems). Most lead used by industry comes from mined ores (primary) or from recycled scrap metal or batteries (secondary). Human activities have spread lead and substances that contain lead to all parts of the environment. Lead is in air, drinking water, rivers, lakes, oceans, and soil.

The effects of lead are the same whether it enters the body through breathing or swallowing. The main target for lead toxicity is the nervous system, both in adults and in children. Long-term exposure of adults to lead at work has resulted in decreased performance in some tests that measure functions of the nervous system. Lead exposure may also cause weakness in fingers, wrists, or ankles. Some studies in humans have suggested that lead exposure may increase blood pressure, but the evidence is inconclusive. Lead exposure may also cause anemia; a low number of blood cells. The connection between the occurrence of some of these effects (e.g., increased blood pressure, altered function of the nervous system) and low levels of exposure to lead is not certain. At high levels of exposure, lead can severely damage the brain and kidneys in adults or children. 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.

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. Some of these effects may persist beyond childhood. Lead is considered a hazardous substance by U.S. EPA, and is classified as "probably carcinogenic to humans" by the International Agency for Research on Cancer.

4.0 CONCEPTUAL SITE MODEL

Elevated levels of arsenic, cadmium, copper, lead, nickel, and zinc have been measured in surface and shallow subsurface soils at the facility. These same metals have also been measured in solids collected from the truck washing station near the facility entrance and in street sweepings samples collected from residential roads adjacent to the facility. Based on a comparison of the concentrations measured relative to common screening benchmarks, it is clear that the primary contaminant of concern for the site is lead. Levels of lead exceeding 37,000 mg/kg have been measured in surface soil at the facility, and concentrations up to 4,800 mg/kg have been measured in street sweepings collected from adjacent residential streets. Truck track-out material collected directly from Vine Street as part of this investigation documented a lead level of 7,480 mg/kg. These levels far exceed most screening benchmarks for lead in residential yards which are in the range of 260-400 mg/kg.

Site-related contaminants may have been released in a number of ways. Fine particulates from contaminated soils disturbed at the facility or from the material processing activities themselves

Shapiro Brothers Salvage Site
Site Reassessment Report

could be transported off-site via wind during operations at the facility. Contaminated soils clinging to trucks leaving the facility could be released to roadways in residential areas where it could be transported as dust, or with runoff following rain events. This mechanism of release may have been significantly reduced since the installation of the truck washing station at the south entrance and the initiation of street sweeping, but historical releases via this mechanism would have been likely, and more recent information indicates that the facility is not consistently using the truck wash. Contaminated facility soils transported and released to roadways could be ground down into fine particulates through subsequent truck traffic. Fine particulates could then be deposited on yard soil or on various exterior surfaces, or be transported into residences through open windows or via tracking in on shoes or other means.

The facility is located directly across from residential housing to the east, west, and south. Residents could be exposed to contaminated particulates through direct contact with contaminated yard soil, dust on surfaces, or inhalation of particulates in ambient air. Contaminants deposited on residential yard soils through air deposition would be expected to show a spatial pattern with higher concentrations nearer to the facility or haul road, and this pattern of contamination was documented as part of the 2012 SI/RSE Investigation.

Lead poses some unique challenges since it may also be present near residential structures due to past use of lead paint, and near roadways due to fallout from vehicle exhaust during the period when leaded fuel was used. It has been suggested by M.W. Recycling, LLC that lead smelter slag waste may have been used in the past as road base or for traction control on streets of the City of Festus and Crystal City in the winter. All of these other potential regional sources of lead contamination in yard soils would be expected to exhibit a similar spatial pattern and concentration range both at residences near the Shapiro facility and at residences slightly further away, beyond the influence of the facility.

Background residence and city park soil sampling conducted during the SI/RSE Investigation discounted these as other significant lead sources showing that lead concentrations in yards and parks further from the Shapiro facility, where these other regional sources would be expected to be active,

have lead concentrations far below those levels measured in yards near the facility. Based on the SI/RSE findings, the department considers lead contamination in soil at residences and commercial properties near the Shapiro facility and along haul roads leading into and out of the facility to be attributable to facility activities.

5.0 WASTE SOURCE SAMPLING

5.1 *Soil Sampling at Facility*

Soil sampling was conducted previously at the facility and is described in the RCRA/Superfund Site Investigation Report (MDNR, 2012). Lead concentrations exceeding 37,000 mg/kg have been documented in soil at the Shapiro Brothers Scrap Yard.

5.2 *Street Sweeper Sampling*

Samples of street sweepings collected from residential streets near the facility and from similar streets further away from the facility in 2011 and 2012 as part of the SI/RSE investigation demonstrate that road dust from streets near the facility used by haul trucks contain significantly higher levels of lead (up to 7,480 mg/kg) as compared with road dust from nearby streets not used by haul trucks (190 mg/kg).

5.3 *Track-Out Roadway Sampling*

Roadway track-out was observed by department personnel as part of this investigation (Appendix B, Photograph 16). During a site visit on June 28, 2013, department personnel observed trucks leaving the facility through the south gate without passing through the truck wash station (Appendix B, Photograph 15) (MDNR, 2013b). A sample of the roadway track-out material was collected from Vine Street on June 28, 2013. A second sample was collected of the roadway dust from Delmar Avenue a few houses south of the facility entrance. Both samples were submitted for total lead analysis. The sample from Vine Street was also submitted for TCLP lead analysis. Results are summarized in Table C1. The Delmar Avenue sample contained 1,240 mg/kg lead, and the Vine

Street sample contained 7,480 mg/kg lead. TCLP analysis of the Vine Street sample resulted in 65 mg/l lead, documenting that the roadway material is a characteristically hazardous waste.

6.0 SOIL EXPOSURE AND AIR PATHWAYS

6.1 Physical Conditions

Soil conditions in the Festus/Crystal City area are discussed in a Hydrogeology Summary Report prepared by the department (MDNR, 2012). The soil under the Shapiro Brothers Salvage site is the Menfro silt loam. The soil, which can be up to 65 feet thick in some areas, is composed of roughly 18 to 30 percent clay. Menfro silt loam is acidic to neutral (pH 5.1 to 7.3) and hydraulic conductivity is roughly 1.4×10^{-3} to 4×10^{-4} centimeters per second (cm/sec). Soils in the residential areas surrounding the facility are expected to be similar.

6.2 Soil and Air Targets

The Shapiro Brothers Salvage Yard facility is located in a densely populated urbanized area. The population living within one mile of the facility is approximately 6,500. The population expected to be most affected by releases from the facility are those residents living adjacent to it or along haul routes used by trucks entering and leaving the facility. Soil sampling was conducted at these residences as part of the SI/RSE Investigation. The Phase I SR Investigation focused on soil at commercial properties located nearest the facility.

6.3 Sample Collection

6.3.1 Soil Sampling at Commercial Properties

Access was requested for sampling at ten commercial properties located nearest the Shapiro facility (Figure A2). On June 13, 2013, surface soil sampling was conducted at the seven commercial properties where access was obtained in accordance with the Phase I Site Reassessment Sampling and Analysis Plan (SAP) (MDNR, 2013a). The sampled properties were each assigned a Location

Shapiro Brothers Salvage Site
Site Reassessment Report

ID number for tracking, and these are listed in the table below.

Commercial Properties Sampled in the Site Reassessment/Phase I Sampling	
Business Name/Address	Location ID
Advanced Mold and Tool, Inc., 1101 Vine Street, Festus, MO 63028	400
Smile Learning Center LLC, 1302 Kenner St., Crystal City, MO 63019	405
Martin Twin Town Auto Sales, 1201 &1203 N. Truman Blvd., Crystal City, MO 63019	406
Blackwell Motors, 1223 N. Truman Blvd., Crystal City, MO 63019	403
Crystal Clean Laundry, 1225-1231 N. Truman Blvd., Crystal City, MO 63019	404
Joachim Platting Ambulance District, 1235 N. Truman Blvd., Crystal City, MO 63019	402
Jones Animal Health Clinic, 1237 N. Truman Blvd., Crystal City, MO 63019	401

At each property, unpaved areas were sampled together as one sampling unit (SU). Photographs of the sampled properties are included Photos 1-12 of Appendix B. Some properties contained gravel-covered areas and these were sampled as a second sampling unit. In each sampling unit, an incremental composite soil sample (ICS) was collected consisting of thirty 30-gram increments of surface soil (0-1”) collected from across the SU. Location ID 405 was a preschool play area which is covered with pea gravel (Appendix B, Photographs 21-27). At this property, the ICS consisted of 30 increments of soil collected from just below the pea gravel at the pea gravel/soil interface. Field replicates were collected at two commercial properties (Location IDs 401 and 405). One June 28, 2013, staff returned to Location ID 405 and collected a sample of the pea gravel dust material.

As described in Section 6.4, lead was detected above 400 mg/kg in the play area at Location ID 405.

M.W. Recycling, LLC will conduct a cleanup at this property, but requested that they be allowed to resample the play area after dividing it up into smaller sampling units to determine whether all portions of the play area require cleanup. On August 22, 2013, department staff returned to Location ID 405 and collected additional ICS and in-situ XRF readings within the SUs formed by subdividing the play area. MW Recycling LLC consultants conducted similar soil sampling and XRF analyses concurrently. Field replicates were collected in two of the SUs at Location ID 405 during the August sampling event.

A total of 21 soil samples and one rinsate blank were collected as part of the Phase I Site Reassessment, including field replicates.

All samples were processed as described in the SAP and analyzed for metals by XRF. Four of the 21 soil samples collected and analyzed by XRF were submitted to the department's Environmental Services Program's laboratory for confirmatory analysis of lead, arsenic and cadmium. One sample submitted to the lab was analyzed in duplicate to assess laboratory precision.

6.3.2 Dust Wipe Sampling at Location ID 405

On June 24, 2013, staff from the Department of Health and Senior Services conducted dust wipe sampling from inside the building and from exterior surfaces of playground equipment at Location ID 405. Five wipes were collected from the floor inside the building, two from the play area equipment, and one field blank was collected. The dust wipe samples were submitted to the State Public Health Laboratory for lead analysis.

6.3.3 Ambient Air Sampling

The Department submitted a list of questions to MW Recycling LLC regarding operations at the Shapiro Brothers facility in June 2013. The responses indicate that the facility has discontinued the use of the shredder and reduced the use of torch cutting by over half (MW, 2013). These changes would be expected to reduce particulate emissions from the facility. The planned paving of all

facility surfaces traversed by truck traffic should further reduce particulate emission. Further, the responses indicate that stainless steel materials are not cut with a torch at the facility, and no melting of aluminum materials occurs there.

These findings are significant because the cutting of stainless steel has been shown to cause air releases of the carcinogen hexavalent chromium, and recovery of aluminum through smelting has been shown to release heavy metals and dioxins to air. Based on these changes to site operations, the planned Phase II ambient air sampling was suspended.

6.4 Sample Results

Complete laboratory analytical results, chain of custodies, site sketches, sample log forms, raw XRF data, ProUCL output, and field notes are provided in Appendix D. A summary of the lead results for the commercial properties and truck track-out material is provided in Table C1. A summary of the XRF analyses on bagged soil samples is provided in Table C2. Table C3 shows the calculations of area-weighted upper confidence limits (UCLs) for each commercial property. Figure A3 provides a summary of the in-situ XRF analysis conducted at Location ID 405.

UCLs were calculated using the Student's *t* approach described in the ITRC Incremental Sampling Methodology Guidance, and calculator tools provided in that guidance (ITRC, 2012a). Data from the 18 in-situ XRF analysis conducted at Location ID 405 in the strip of soil between the fence and the curb follow a near-normal distribution with a low level of skewness as shown in the histogram of Figure A4. The ProUCL software program was used to calculate a 95% upper confidence limit (UCL) of 420 mg/kg for this sampling unit. Data from the August 22 soil sampling conducted at Location ID 405 by MW Recycling LLC's consultants were not provided to the department.

As shown in Table C1, results for the commercial properties show elevated levels of lead in soil relative to background measured during the SI/RSE Investigation. UCLs vary between 330 mg/kg (Location ID 403) and 1,070 mg/kg (Location ID 404).

Dust wipe samples collected from inside floors and from exterior playground equipment surfaces at Location ID 405 contained lead in varying concentrations from $<20 \text{ ug/ft}^2$ to 39 ug/ft^2 (Table C1).

6.5 Conclusions

Based on a review of the data by the Department of Health and Senior Services, the levels of lead present at most of the commercial properties, while elevated above background and the EPA Industrial Soil Regional Screening Level of 800 mg/kg , do not pose a risk using the typical exposure assumptions used for commercial land use.

Location ID 405 however is currently used as a preschool; therefore exposure assumptions for that property would be similar as those used at residential properties. Lead concentrations for that property were compared to the 400 mg/kg criteria typically used for residential yards by EPA. Samples collected from all portions of outdoor play area at the preschool during both sampling events exceed 400 mg/kg lead, the EPA action level for lead in residential yard soils.

Inside dust wipe sample results from the preschool were all below the 40 ug/ft^2 HUD criteria typically applied for floors. There are no criteria for lead in dust on an external play equipment surface at a preschool. Therefore, surface wipe samples collected from the play equipment at Location ID 405 were also compared to the HUD indoor dust criteria for floors of 40 ug/ft^2 , and all results were below this criterion.

7.0 DATA QUALITY ASSESSMENT

7.1 Soil Sampling

XRF accuracy was evaluated using control charts and standard reference materials (SRMs) containing known concentrations of lead as described in the Standard Operating Procedure included in the SAP. Analyzer precision was evaluated by charting results from daily analysis of SRMs on a previously established control chart. Results for the SRMs were generally within two standard deviations established as the control chart criteria for precision indicating that the analyzers were

operating properly (Control Chart Graphs provided in Appendix D).

XRF precision was assessed by conducting seven replicate analyses each day on a processed soil sample, without manual mixing of the bag between analyses. These results are included in Table C2. Precision, measured as the percent relative standard deviation (%RSD) among the seven replicate analyses, was below 1.3% indicating very high precision.

Replicate analyses were conducted on each bagged soil sample to improve the estimate of the mean lead concentration. Variability, measured by %RSD between the replicate analyses, is a measure of both analytical precision and sample heterogeneity. The %RSD on replicate analyses conducted on samples that were processed through drying and sieving varied between 0.9% and 8.3% indicating that the sieved samples were relatively homogenous with respect to lead concentration. The %RSD for replicate analyses conducted on the truck track-out samples collected from the roadways, which were not sieved, was higher at 34% and 44%, indicating a higher degree of heterogeneity which is expected with unsieved soil samples.

Four sets of three field replicate ICS samples were collected; three sets from Location ID 405 and one set from Location ID 401. The %RSD in lead concentrations was calculated for each set of three field replicates as a measure of overall sampling and analysis precision (Table C2). Calculated RSDs varied between 4.5% and 45%. Higher standard deviations indicate that the lead concentration in some of the SUs samples is more heterogeneous and that additional increments (>30) may be necessary to capture the heterogeneity present. The use of 95% UCL as the estimate of the SU mean protects against underestimating the true mean in these instances.

One sample submitted to the laboratory for confirmatory lead analysis was analyzed as a lab duplicate to assess lab precision and sample heterogeneity. The lead results for the duplicate lab analyses conducted on the ICS collected from Location ID 400, SU2 were 1,110 mg/kg and 1,030 mg/kg with a relative percent difference of 7.5% indicating high lab precision.

7.2 *Equipment Rinse Blanks*

A rinse blank was collected following decontamination of the soil sampling tools on June 13, 2013. The rinse water was analyzed for arsenic, cadmium, and lead. Lead was measured in the rinse blank at 1.54 micrograms per liter (ug/l). No other metals were detected. Ideally no amount of lead would be measured in the rinse blank. However, the level of lead detected in the rinse blank is very low and does not pose an interference or carry-over problem with the decontamination procedure used.

8.0 SUMMARY AND CONCLUSIONS

The Shapiro Brothers Salvage Site is a 15-acre metal scrap and recycling facility located in a residential area of Festus, Missouri. The operation has been active since the 1940s, and is currently owned by MW Recycling LLC, a wholly-owned subsidiary of PSC Metals Inc. which is owned by Icahn Enterprises L.P. The salvage yard is unpaved, and lead concentrations up to 37,000 mg/kg have been measured in facility soils. A SI/RSE investigation completed in 2012 documented elevated levels of lead in surface soil of 15 residential properties located adjacent to the facility and along haul roads used by trucks entering and leaving the scrap yard.

A Site Reassessment was initiated to assess lead levels in the surface soil of commercial properties near the scrap yard. Seven commercial properties were sampled including one preschool. Lead levels in surface soil at six of the properties were determined to be below levels of concern for commercial property use. Results from the preschool were compared to lead screening levels for residential property use, and were found to exceed the level of concern.

9.0 RECOMMENDATIONS

Soil at the preschool commercial property warrants cleanup action under CERCLA. MW Recycling LLC, the current owner of Shapiro Brothers Salvage, conducted a soil cleanup at the property on September 21 & 22, 2013 under department oversight. The cleanup was conducted as part of an

Shapiro Brothers Salvage Site
Site Reassessment Report

Abatement Order on Consent (in draft) that also requires MW Recycling LLC to conduct soil cleanup at 15 residential properties, offer indoor dust cleanup at those properties and conduct further sampling at additional properties to further define the extent of contamination. The residential cleanups are expected to begin in the fall of 2013. The AOC also requires MW Recycling LLC to resample all yards where a cleanup was conducted one year following the cleanup to assess whether significant recontamination is occurring.

Based on the facility's response to department questions regarding recent changes to their operations, no ambient air monitoring is planned at this time. However, should facility operations change significantly or should the post-residential yard cleanup resampling indicate there is an ongoing source of lead contamination in the vicinity, the department may initiate such monitoring in the future.

Shapiro Brothers Salvage Site
Site Reassessment Report

Prepared by

 9/30/13

Michael Stroh
Environmental Specialist
Site Assessment Unit

Reviewed by

 9/30/13

Valerie Wilder
Chief
Site Assessment Unit

Approved by

 9/30/13

Dennis Stinson
Chief
Superfund Section

LIST OF REFERENCES

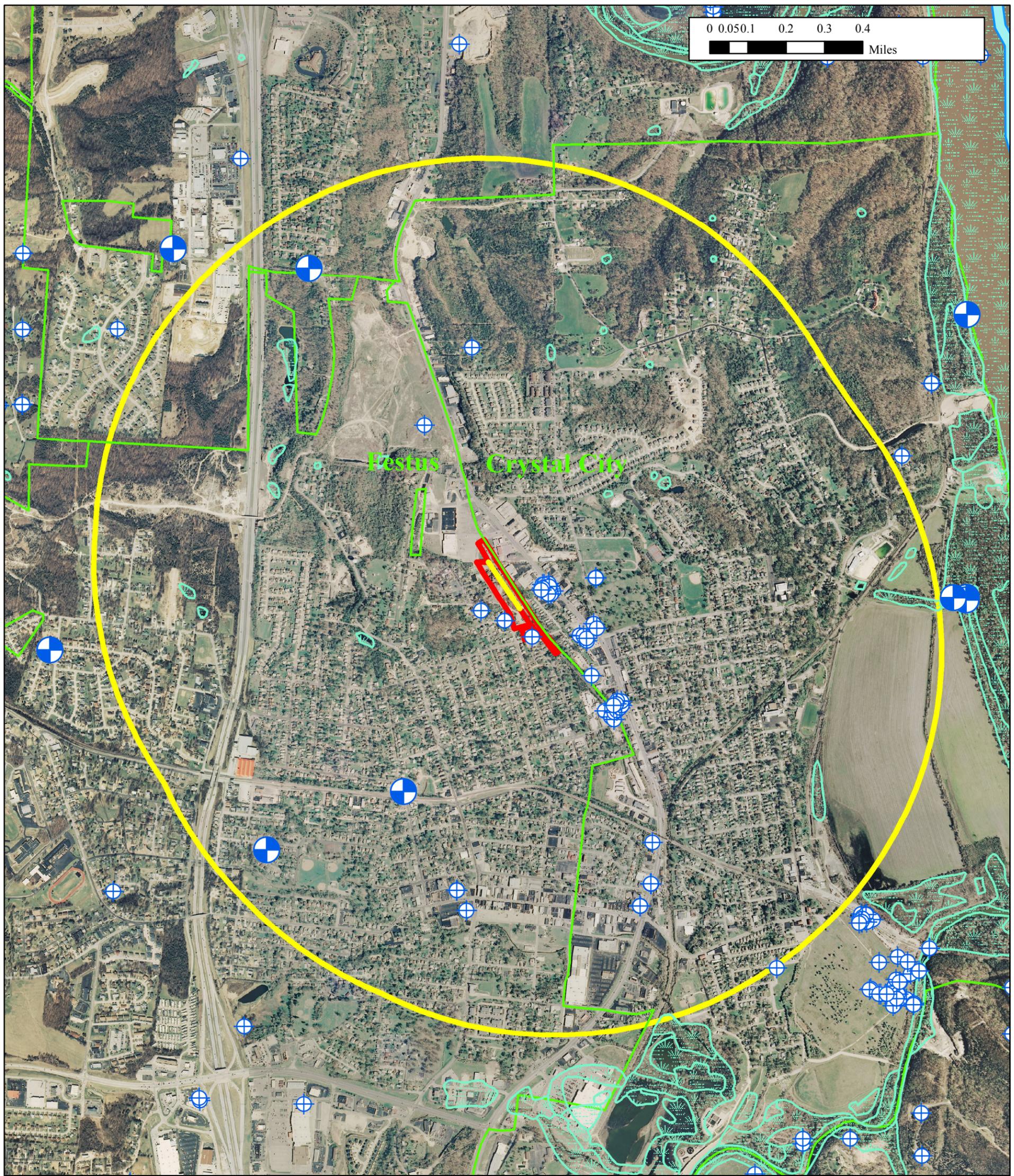
- AMEC, 2013a AMEC Environment & Infrastructure, Inc., Remedial Action Plan/Sampling and Analysis Plan for Residential Area Near the Shapiro Brothers Festus Site, September 2013. <http://dnr.mo.gov/env/hwp/docs/shapiro-rycp.pdf>
- AMEC, 2013b AMEC Environment & Infrastructure, Inc., Interior Dust Cleaning Work Plan for Residential Area near the Shapiro Brothers Festus Site, September, 2013. <http://dnr.mo.gov/env/hwp/docs/shapiro-idcp.pdf>
- AMEC, 2013c AMEC Environment & Infrastructure, Inc., Remedial Action Plan/Sampling and Analysis Plan for Voluntary Action and the Smile Learning Center near the MW Recycling LLC Festus Site, September, 2013. <http://dnr.mo.gov/env/hwp/docs/shapiro-slccp.pdf>
- ATSDR, 2007 U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry (ATSDR), Toxicological Profile for Lead, August 2007. <http://www.atsdr.cdc.gov/toxprofiles/tp13.pdf>
- ITRC, 2012a Interstate Technical Regulatory Council, Incremental Sampling Methodology Guidance Document. Calculator for Weighted 95% UCL for a Combined DU from Several Smaller DUs, 2012. http://www.itrcweb.org/ISM-1/documents/Weighted_DU_Calculator_15Feb12.xls
- ITRC, 2012b Interstate Technical Regulatory Council, Incremental Sampling Methodology Guidance Document. UCL Calculation Method. No date? http://www.itrcweb.org/ISM-1/4_2_2_UCL_Calculation_Method.html
- MDNR, 2006 Missouri Department of Natural Resources, Missouri Risk Based Corrective Action Guidance Document, April 2006. <http://www.dnr.mo.gov/env/hwp/mrbca/docs/mrbca-append6-06.pdf>
- MDNR, 2011 Missouri Department of Natural Resources, RCRA Site Inspection Report, Shapiro Brothers Inc. Scrap Yard, September, 14, 2011. <http://dnr.mo.gov/env/hwp/sfund/1112-shapiro-sitereport.pdf>

Shapiro Brothers Salvage Site
Site Reassessment Report

- MDNR, 2012a Missouri Department of Natural Resources, Integrated Site Inspection/Removal Site Evaluation Report, September 25, 2012. <http://dnr.mo.gov/env/hwp/sfund/shapiro.htm>
- MDNR, 2012b Bachle, Peter, Missouri Department of Natural Resources, Memorandum to Julieann Warren, Missouri Department of Natural Resources, Geohydrologic Summary of Shapiro Brothers Salvage Site, March 14, 2012.
- MDNR, 2013a Missouri Department of Natural Resources, Sampling and Analysis Plan, Site Reassessment Phase I, Shapiro Brothers Salvage Site, June 12, 2103. <http://dnr.mo.gov/env/hwp/docs/sr-phase-1-sap.pdf>
- MDNR, 2013b Missouri Department of Natural Resources, Abbreviated Sampling Report, Shapiro Brothers Salvage Yard, September 12, 2013.
- Forystek, 2013 Steve, Forystek, MW Recycling LLC, Response to MDNR Questions Regarding MW Recycling Festus, MO Scrap Yard, August 20, 2013.
- USEPA, 1990 U.S. Environmental Protection Agency. Hazard Ranking System, 40 CFR Part 300, Appendix A, 55 FR 51583, December 14, 1990. <http://www.epa.gov/superfund/sites/npl/hrsres/index.htm#HRS Rule>
- USEPA, 2004 U.S. Environmental Protection Agency. Superfund Chemical Data Matrix (SCDM) January 2004, 53 pages with appendices. <http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm>
- USEPA, 2010 U.S. Environmental Protection Agency. Regional Screening Levels, May 2010. <http://www.epa.gov/region9/superfund/prg/>

APPENDIX A

FIGURES



**Figure A1: Site Location Map
Shapiro Brothers Salvage Site
Festus, Jefferson County, MO
Legend**

	Shapiro Brothers Salvage Yard Boundary
	1 Mile Radius of Shapiro Facility
	Municipal Boundary
	Wetland
	Private Drinking Water, Irrigation or Monitoring Well
	Public Water Well

Created on: September 16, 2013 by Michael Stroh
This map is located at M/Superfund/Shapiro Brothers/
Figure1A_SiteLocationMap1.mxd

Base Map: 2007 Missouri State Leaf-Off Imagery Program.
Flight Date: 2007

Additional Layers: Missouri Department of Transportation, U.S. Census Bureau.

Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.



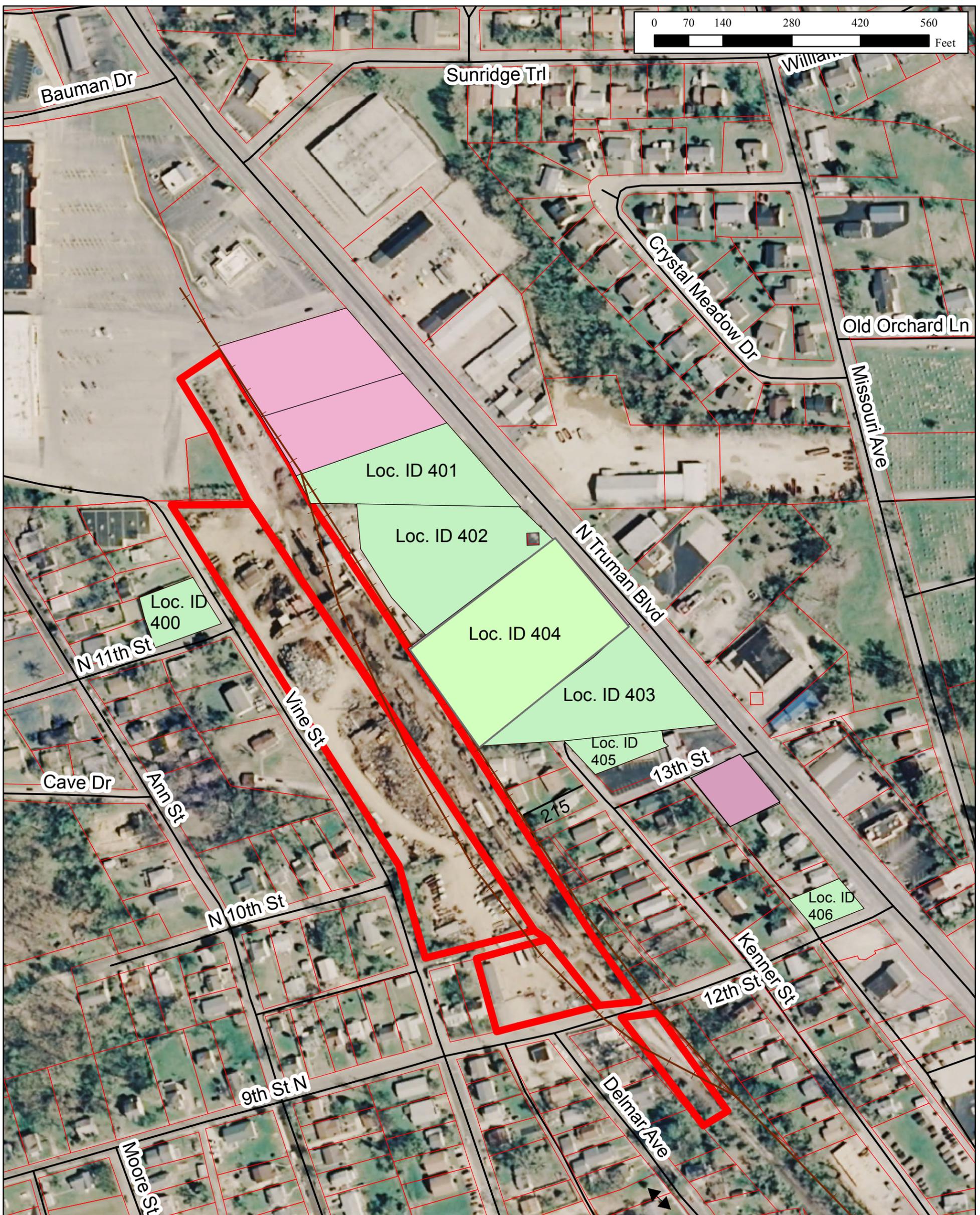


Figure A2
Commercial Properties Identified for Sampling
Shapiro Brothers Salvage Site
9th & Delmar
Festus, Jefferson County, MO



- Legend**
- Shapiro Brothers Salvage Yard Boundary
 - Road
 - + Railroad
 - Access Requested; Not Granted
 - Access Granted

Created on: June 11, 2013 by Michael Stroh, MDNR
 This map is located at M/Superfund/Shapiro Brothers/
 SRCommProp.mxd

Base Map: 2007 Missouri State Leaf-Off Imagery Program.
 Flight Date: 2007

Additional Layers: Missouri Department of Transportation, U.S. Census Bureau.

Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

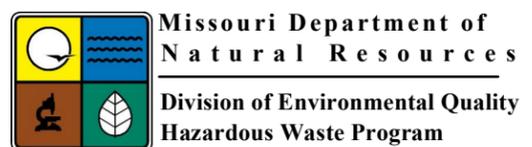
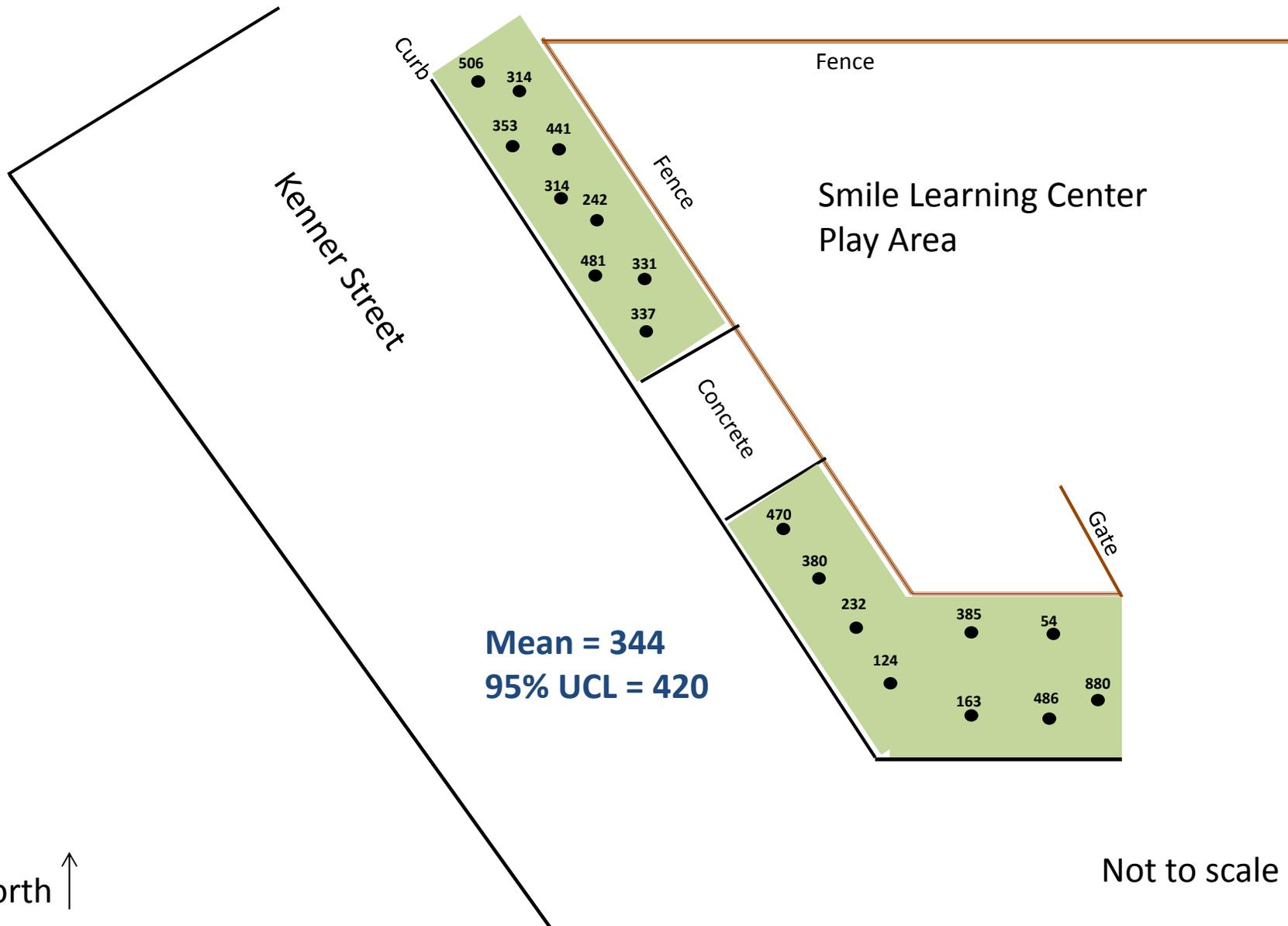


Figure A3
In-Situ XRF Results, Surface Soil, Lead mg/kg, August 22, 2013
Smile Learning Center, Area Between Fence and Curb



North ↑

Not to scale



APPENDIX B
PHOTOGRAPHS

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 1
Taken June 13, 2013
by Michael Stroh, DNR

Commercial Property
Location ID 400, view
looking northeast. Grassy
area and gravel lot sampled
as separate sampling units.



Photograph 2
Taken June 13, 2013
by Michael Stroh, DNR

Commercial Property
Location ID 401, view
looking northeast. Grassy
area near Truman Blvd.
sampled together with
grassy area in Photo. 3.



Photograph 3
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 401, view
looking west. Grassy area
south of building sampled
together with grassy area in
Photo 2.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 4
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 401. Foam,
plastic and metal debris on
top of a low concrete block
retaining wall located along
western property boundary
adjacent to Shapiro Salvage
yard.



Photograph 5
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 402. Mixed
gravel/vegetation sampling
area along western property
boundary adjacent to
Shapiro Salvage yard.



Photograph 6
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 403. Grassy
area on western property
boundary sampled together
with grassy area in
Photograph 7.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 7
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 403. Grassy
area on eastern property
boundary sampled together
with grassy area in
Photograph 6.



Photograph 8
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 404. Grassy
area near center of property
sampled together with
grassy areas in Photographs
9 & 10.



Photograph 9
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 404. Grassy
area along southwest
boundary of property
sampled together with
grassy areas in Photographs
8 & 10.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 10
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 404. Grassy
area behind building
sampled together with
grassy areas in Photographs
8 & 9.



Photograph 11
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 406. Grassy
area along south side of
building sampled together
with grassy area in
Photograph 12.



Photograph 12
Taken June, 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 406. Grassy
area west of building
sampled together with
grassy area in Photograph
11.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 13
Taken June 13, 2013 by
Michael Stroh, DNR

Commercial Property
Location ID 405. Daycare
play area showing 0-1”
depth of pea gravel beneath
the slide.



Photograph 14
Taken June 13, 2013 by
Sean Counihan, DNR

Scrap metal haul truck
parked at property owned
by M. W. Recycling
located at southwest corner
of 9th and Delmar.
Residential Location ID
143 visible behind wood
fence in background. View
looking southeast.



Photograph 15
Taken June 28, 2013 Sean
Counihan, DNR

Truck exiting Shapiro
facility without passing
through the truck wash,
then turning north onto
Vine Street.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 16
Taken June 28, 2013 Sean
Counihan, DNR

Trail of soil track-out deposits in roadway. Vine Street facing south, stop sign is at 9th Street. Sample collected from roadway at this location.



Photograph 17
Taken June 28, 2013 Sean
Counihan, DNR

Shapiro facility street sweeper operating on residential street near the facility. Dust cloud can be observed.



Photograph 18
Taken June 28, 2013 Sean
Counihan, DNR

Layer of dust/soil observed beneath vehicles parked along east and west sides of Delmar Avenue where street sweeper is unable to pass.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 19
Taken August 22, 2013
Michael Stroh, DNR

Southeastern view of the Shapiro facility northern entrance showing soil track-out from trucks.



Photograph 20
Taken August 22,
2013 Michael Stroh, DNR

Eastern view of the Shapiro facility northern entrance showing soil track-out from trucks.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 21
Taken August 22,
2013 Michael Stroh, DNR

Commercial Property
Location ID 405. Grassy
area between fence and
Kenner Street. View
looking south.



Photograph 22
Taken August 22,
2013 Michael Stroh, DNR

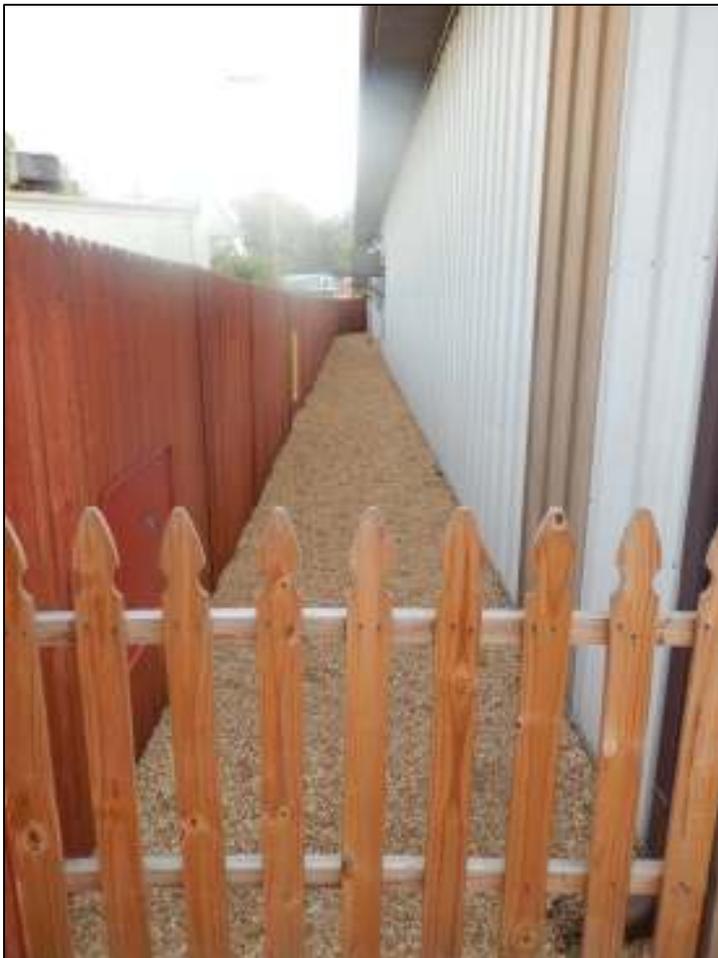
Commercial Property
Location ID 405. Grassy
area between fence and
Kenner Street. View
looking east.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 23
Taken August 22,
2013 Michael Stroh, DNR

Commercial Property
Location ID 405. Main
play area sampled as
separate sampling unit.



Photograph 24
Taken August 22,
2013 Michael Stroh, DNR

Commercial Property
Location ID 405. Walkway
along north side of daycare
building leading into the
main play area. Sampled as
separate sampling unit.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 25
Taken August 22,
2013 Michael Stroh, DNR

Commercial Property
Location ID 405. Southern
portion of play area
proposed to be covered
with concrete. Sampled as
separate sampling unit.



Photograph 26
Taken August 22,
2013 Michael Stroh, DNR

Commercial Property
Location ID 405. Three
replicate incremental
composite samples
collected from walkway
sampling unit.



Photograph 27
Taken August 22,
2013 Michael Stroh, DNR

Commercial Property
Location ID 405. Three
replicate incremental
composite samples
collected from main play
area sampling unit.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 28
Taken August 22,
2013 Michael Stroh, DNR

Commercial Property
Location ID 405. Grassy
area between the fence and
Kenner Street showing
divot where an in-situ XRF
reading was taken by
Environmental Restoration
personnel and the location
where an in-situ XRF
reading was taken by DNR
staff.

Photograph Log
Shapiro Brothers Salvage Site
Site Reassessment



Photograph 29
Taken August 19,
2013 Michael Stroh, DNR

Incremental composite soil samples collected from commercial properties being spread out to air dry in the laboratory.



Photograph 30
Taken August 19,
2013 Michael Stroh, DNR

Disaggregation of an air-dried incremental composite soil sample prior to sieving in the laboratory.



Photograph 31
Taken August 19,
2013 Michael Stroh, DNR

Sieving an air-dried, disaggregated soil sample in the laboratory prior to XRF analysis.

APPENDIX C
TABLES

Table 1
Summary of Lead Results, Commercial Properties
Shapiro Brothers Salvage Site, Jefferson County, Missouri

Loc ID	Date Collected	Sampling Unit	Area, square feet	Lead Concentration, mg/kg				Lead Concentration, ug/ft ²	TCLP Lead, mg/l	
				XRF ¹	Lab Confirmation	DU Mean ²	DU UCL ³			
400	6/13/2013	1	3,630	330	--	700	780	--	--	
		2	4,880	970	1,110					
401	6/13/2013	1, Repl. 1	8,850	150	--	190	340	--	--	
		1, Repl. 2		290	--					
		1, Repl. 3		130	125					
402	6/13/2013	1	5,420	340	--	280	390	--	--	
		2	2,660	160	--					
403	6/13/2013	1	9,320	310	--	240	330	--	--	
		2	5,250	130	--					
404	6/13/2013	1	10,200	930	--	930	1,070	--	--	
405	6/13/2013	1, Repl. 1	1,020	570	540	580	870	--	--	
	6/13/2013	1, Repl. 2		750	--					
	6/13/2013	1, Repl. 3		400	--					
	6/28/2013	1 (pea gravel) ⁴	1,020	190	210	190	330	--	--	
	6/24/2013	Dust Wipes	floor entry	--	--	--	--	8.6	--	
	6/24/2013		floor 3/4 side A	--	--	--	--	6.9	--	
	6/24/2013		floor 5's Side A	--	--	--	--	8	--	
	6/24/2013		Floor 5's Side C	--	--	--	--	19	--	
	6/24/2013		Floor 3/4 Side C	--	--	--	--	19	--	
	6/24/2013		Climber	--	--	--	--	39	--	
	6/24/2013		Slide	--	--	--	--	13	--	
	6/24/2013		Blank	--	--	--	--	<5	--	
	8/22/2013		Walkway, Repl. 1	66	500	--	490	770	--	--
	8/22/2013		Walkway, Repl. 2		650	--				
	8/22/2013	Walkway, Repl. 3	310		--					
	8/22/2013	Main Play Area, Repl. 1	910	460	--	490	530	--	--	
	8/22/2013	Main Play Area, Repl. 2		510	--					
8/22/2013	Main Play Area, Repl. 3	490		--						
8/22/2013	"Concrete Area"	45	310	--	313	480	--	--		
8/22/2013	Area Between Fence & Kenner	60	344 ⁵	--	344 ⁵	420 ⁵	--	--		
406	6/13/2013	1	1,100	480	--	480	620	--	--	
--	6/28/2013	Truck Track-Out, 900 block Vine Street	--	7,480	9,740	--	--	--	65	
--	6/28/2013	Truck Track-Out, 800 block Delmar Ave.	--	1,240	--	--	--	--	--	

All XRF data >1,000 mg/kg rounded to 3 significant digits; data <1,000 mg/kg rounded to 2 significant digits

¹ Estimate of average lead concentration in bagged surface soil sample composed of 30 increments collected across the SU

² DU-wide mean lead concentration; area-weighted where >1 sampling unit sampled

³ DU-wide area-weighted 95% upper confidence limit of lead concentration calculated from field replicate samples using the Student's t method

⁴ Incremental composite sample composed of 50 increments; no replicates collected. UCL & LCL based on SD derived from 30-increment replicates collected from Loc ID 401

⁵ Based on 18 in-situ XRF readings collected from surface soil across the sampling unit.

Table C2

C2 Summary of XRF Lead Results From Replicate Analyses of Bagged Incremental Composite Samples Collected June 13, June 28, and August 22, 2013

This spreadsheet summarizes replicate XRF analyses on individual bagged soil samples and calculates means, standard deviations, percent relative standard deviations and upper and lower 95% confidence limits. Field Replicate data are summarized in the far right-most columns.

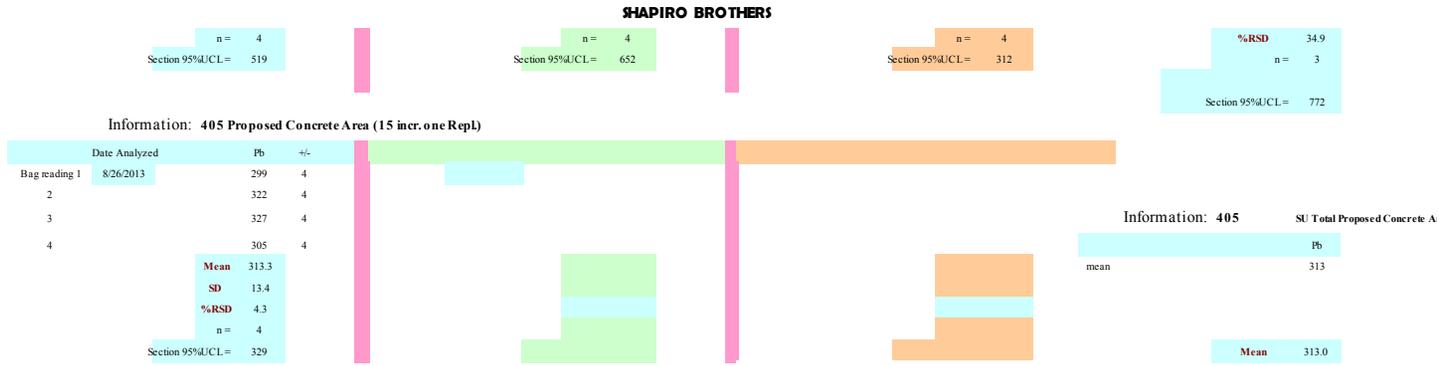


Table C2

C2 Summary of XRF Lead Results From Replicate Analyses of Bagged Incremental Composite Samples Collected June 13, June 28, and August 22, 2013

This spreadsheet summarizes replicate XRF analyses on individual bagged soil samples and calculates means, standard deviations, percent relative standard deviations and upper and lower 95% confidence limits. Field Replicate data are summarized in the far right-most columns.

SHAPIRO BROTHERS

Information: 400 1				Information: 400 2			
Date Analyzed				Date Analyzed			
Bag reading 1	6/17/2013	328	4	Bag reading 1	6/17/2013	1087	7
2		332	4	2		957	7
3		321	4	3		900	7
4				4		942	7
		Mean	327.0			Mean	971.5
		SD	5.6			SD	80.7
		%RSD	1.7			%RSD	8.3
		n =	3			n =	4
		Section 95%UCL=	336			Section 95%UCL=	1066

Information: 401 1 1				Information: 401 1 2				Information: 401 1 3				Information: 401 SU1		
Date Analyzed				Date Analyzed				Date Analyzed						
Bag reading 1	6/17/2013	147	3	Bag reading 1	6/17/2013	301	3	Bag reading 1	6/17/2013	130	3	Rep1	152.3	
2		158	3	2		281	3	2		133	3	Rep2	291.3	
3		152	3	3		292	3	3		134	3	Rep3	132	
		Mean	152.3			Mean	291.3			Mean	132.3		Mean	191.9
		SD	5.5			SD	10.0			SD	2.1		SD	86.7
		%RSD	3.6			%RSD	3.4			%RSD	1.6		%RSD	45.2
		n =	3			n =	3			n =	3		n =	3
		Section 95%UCL=	162			Section 95%UCL=	308			Section 95%UCL=	136		Section 95%UCL=	338

Information: 402 1				Information: 402 2				Information: 403 1			
Date Analyzed				Date Analyzed				Date Analyzed			
Bag reading 1	6/17/2013	328	3	Bag reading 1	6/17/2013	161	2	Bag reading 1	6/17/2013	303	3
2		344	3	2		160	2	2		310	3
3		364	3	3		164	2	3		302	3
		Mean	345.3			Mean	161.7			Mean	305.0
		SD	18.0			SD	2.1			SD	4.4
		%RSD	5.2			%RSD	1.3			%RSD	1.4
		n =	3			n =	3			n =	3
		Section 95%UCL=	376			Section 95%UCL=	165			Section 95%UCL=	312

Information: 403 2				Information: 404 1				Information: 406 1			
Date Analyzed				Date Analyzed				Date Analyzed			
Bag reading 1	6/17/2013	147	2	Bag reading 1	6/17/2013	923	7	Bag reading 1	6/17/2013	479	5
2		153	2	2		942	7	2		476	5
3		158	2	3		912	7	3		476	5
		Mean	152.7			Mean	925.7			Mean	477.0

Table C2

C2 Summary of XRF Lead Results From Replicate Analyses of Bagged Incremental Composite Samples Collected June 13, June 28, and August 22, 2013

This spreadsheet summarizes replicate XRF analyses on individual bagged soil samples and calculates means, standard deviations, percent relative standard deviations and upper and lower 95% confidence limits. Field Replicate data are summarized in the far right-most columns.

SHAPIRO BROTHERS

SD	5.5
%RSD	3.6
n =	3
Section 95%UCL=	162

SD	15.2
%RSD	1.6
n =	3
Section 95%UCL=	951

SD	1.7
%RSD	0.4
n =	3
Section 95%UCL=	480

Information: Loc.ID 405 Pea Gravel dust

Date Analyzed			
Bag reading 1	6/28/2013	149	3
2		193	3
3		213	3
4			

Mean	185.0
SD	32.7
%RSD	17.7
n =	3
Section 95%UCL=	240

Information: Track-Out material from 800 block of Delmar Rd

Date Analyzed			
Bag reading 1	6/28/2013	1018	7
2		836	7
3		1852	7
4			

Mean	1235.3
SD	541.7
%RSD	43.9
n =	3
Section 95%UCL=	2149

Information: Track-out material from 900 block of Vine St.

Date Analyzed			
Bag reading 1	6/28/2013	6031	10
2		10377	11
3		6016	10
4			

Mean	7474.7
SD	2513.5
%RSD	33.6
n =	3
Section 95%UCL=	11712

Table C2

C2 Summary of XRF Lead Results From Replicate Analyses of Bagged Incremental Composite Samples Collected June 13, June 28, and August 22, 2013

This spreadsheet summarizes replicate XRF analyses on individual bagged soil samples and calculates means, standard deviations, percent relative standard deviations and upper and lower 95% confidence limits. Field Replicate data are summarized in the far right-most columns.

SHAPIRO BROTHERS

Information: Loc ID 404 SU1

Precision Check	Date Analyzed	Pb	+/-
Bag reading 1	6/17/2013	923	7
2		920	7
3		938	7
4		936	7
5		926	7
6		928	7
7		929	7

Mean	928.6
SD	6.5
%RSD	0.7
n =	7

Information: Loc. ID 405 Main Play Area Rep.3

Precision Check	Date Analyzed	Pb	+/-
Bag reading 1	8/26/2013	486	5
2		480	5
3		474	5
4		492	5
5		484	5
6		478	5
7		490	5

Mean	483.4
SD	6.5
%RSD	1.3
n =	7

TABLE C3
Calculation of Weighted 95% UCLs & LCLs for a Combined Decision Unit (DU) from Several Smaller Sampling Units (SUs)
Commercial Properties
Shapiro Brothers Site, Jefferson County, Missouri

More than One Sampling Unit; Weighted Averages; No Replicates

SU	Loc ID	SU Area (ft ²)	Estimate of Mean	Number of Replicates	Weight	Arithmetic Mean	SD of replicates	SE of DU	95% UCL	95% LCL
1	400	3634.00	327	3	0.43	327.0	86.6	50.0	473.0	181.0
2		4880.00	972	3	0.57	972.0	86.6	50.0	1118.0	826.0
Combined SUs Weighted by Area		8514.00	--	6	1.00	696.7	61.9	35.7	780.8	612.6

Degrees of freedom by Welch-Satterthwaite approximation **3.70**

SU	Loc ID	SU Area (ft ²)	Estimate of Mean	Number of Replicates	Weight	Arithmetic Mean	SD of replicates	SE of DU	95% UCL	95% LCL
2	402	5424.00	343	3	0.67	343.0	86.6	50.0	489.0	197.0
3		2661.00	162	3	0.33	162.0	86.6	50.0	308.0	16.0
Combined SUs Weighted by Area		8085.00	--	6	1.00	283.4	64.7	37.4	392.5	174.3

Degrees of freedom by Welch-Satterthwaite approximation **2.91**

SU	Loc ID	SU Area (ft ²)	Estimate of Mean	Number of Replicates	Weight	Arithmetic Mean	SD of replicates	SE of DU	95% UCL	95% LCL
2	403	9315.00	305	3	0.64	305.0	86.6	50.0	451.0	159.0
3		5248.00	133	3	0.36	133.0	86.6	50.0	279.0	-13.0
Combined SUs Weighted by Area		14563.00	--	6	1.00	243.0	63.6	36.7	329.4	156.6

Degrees of freedom by Welch-Satterthwaite approximation **3.15**

Single Sampling Unit; Not Weighted Averages; No Replicates

SU	Loc ID	SU Area (ft ²)	Estimate of Mean	Number of Replicates	Weight	Arithmetic Mean	SD of replicates	SE of DU	95% UCL	95% LCL
1	404	10203.00	926	3	1.00	926.0	86.6	50.0	1072.0	780.0
2					3		0.0			
Combined SUs Weighted by Area		10203.00	--	6	1.00	926.0	86.6	50.0	1072.0	780.0

Degrees of freedom by Welch-Satterthwaite approximation **2.00**

SU	Loc ID	SU Area (ft ²)	Estimate of Mean	Number of Replicates	Weight	Arithmetic Mean	SD of replicates	SE of DU	95% UCL	95% LCL
1	406	1104.00	477	3	1.00	477.0	86.6	50.0	623.0	331.0
2					3		0.0			
Combined SUs Weighted by Area		1104.00	--	6	1.00	477.0	86.6	50.0	623.0	331.0

Degrees of freedom by Welch-Satterthwaite approximation **2.00**

SU	Loc ID	SU Area (ft ²)	Estimate of Mean	Number of Replicates	Weight	Arithmetic Mean	SD of replicates	SE of DU	95% UCL	95% LCL
1	405 Pea Gravel Dust		185	3		185.0	86.6	50.0	311.0	39.0
2										
Combined SUs Weighted by Area			--							

Degrees of freedom by Welch-Satterthwaite approximation **2.00**

Single Sampling Unit; Not Weighted Averages; Replicates Collected

Replicate Number	Loc. ID 401 Lead, mg/kg	Loc. ID 405 Lead, mg/kg	Loc. ID 405 Lead, mg/kg laboratory
Rep 1	152	573	536
Rep 2	291	750	719
Rep 3	132	403	373
arithmetic mean	192	575	543
standard deviation	86.6	173.5	173.1
CV = SD / mean	0.452	0.302	0.319
count (n)	3	3	3
alpha (95% = 0.05)	0.05	0.05	0.05
t(alpha, df=n-1)	2.92	2.92	2.92
Student's t UCL	338	868	834
Student's t LCL	46	283	251

Values in yellow cells are user-entered
 Values in green cells are recommended UCLs

TABLE C3
Calculation of Weighted 95% UCLs & LCLs for a Combined Decision Unit (DU) from Several Smaller Sampling Units (SUs)
Commercial Properties
Shapiro Brothers Site, Jefferson County, Missouri

Notes

DU Decision unit
SD Standard deviation
SE Standard error
UCL Upper confidence limit
User entered SD of replicates obtained from SUs in which replicates were collected (see Table Cxxx)

References

ITRC. 2012. Technical and Regulatory Guidance, Incremental Sampling Methodology. February.
EPA. 2010. "ProUCL Version 4.1.00 Technical Guide (Draft)." Prepared by Singh, A. and A.K. Singh. EPA/600/R07/041. May. Available online at:

When there are multiple samples in each strata, the overall mean of the larger DU can be estimated using the following formulae. Let n_i represent the number of samples from region i , \bar{x}_i represent the mean of the ISM samples from region i , s_i represent the SD of the replicate ISM samples from region i , and w_i represent the weight, i.e., the relative size associated with region i . Note that if all strata are of the same size, the w_i are equal, and these equations simplify to the more common calculation methods for the mean and standard deviation. The relative size is the percentage of the larger DU that is made up of region i . The weighted mean is thus:

$$\text{Weighted Mean} = \sum_i w_i \bar{x}_i$$

The standard error associated with the weighted mean is:

$$\text{Standard Error} = \sqrt{\sum_i w_i^2 \frac{s_i^2}{n_i}}$$

which has degrees of freedom approximated by the Welch-Satterthwaite approximation (Cochran, 1977):

$$df \approx \frac{\left(\sum_i \frac{w_i^2 s_i^2}{n_i} \right)^2}{\sum_i \frac{w_i^2 s_i^2}{n_i - 1}}$$

APPENDIX D
SAMPLING AND ANALYTICAL DATA

ABBREVIATED SAMPLING REPORT
Shapiro Brothers Salvage Yard
Jefferson County, MO
CAS Order Number: 130617008, 130618001, 130703004

Site Information:

ESP LDPR Code: FEPA5 ESP Staff: Sean Counihan
Job Code: NJ13SHAP Investigation Date: 06/13/2013 & 6/28/2013

Introduction:

At the request of the Hazardous Waste Program (HWP), on June 13, 2013 and June 28, 2013, the Field Services Unit of the Environmental Services Program (ESP) conducted a sampling event at the former Shapiro Brothers Scrap Yard site (now PSC Metals, Inc.) located in Festus, Jefferson County, Missouri. The primary objective of the June 13, 2013 sampling event was estimate the mean lead concentration in surface soil at seven surrounding commercial properties from which the department gained access. The primary contaminant of concern is lead based on analysis of soil samples collected at the facility and from the surrounding residential properties. The objective of the return trip on June 28, 2013 was to estimate the mean lead concentration in fine particle fractions of a pea gravel surface coverage one of the previous commercial locations.

Field Methods:

Each property was divided up into sampling units (SUs). A large portion of these commercial properties' ground surface was paved. SU-1 was comprised of the all combined grass portions of the property. If a graveled surface of the same property was present, that would be labeled SU-2. The only exception was location ID 405, where the only SU (SU-1) was a gravel-covered play area. All sample locations and descriptions and field notes were recorded on field sheet forms and in a bound field log book.

Surface soil incremental composite samples (ICS) were collected as follows. An EVS or EnviroStat stainless steel incremental sampling tool was used to collect equal-mass increments of soil at equal spacing across each SU. Each tool was adjusted to collect a core from 0-1". The sampling core was advanced into the soil and ejected into a 2-gallon size heavy duty sealable plastic bag. This process was repeated at each increment collection location, and all increments were combined together into one bag. Bags were labeled with the Location ID, SU#, date, time, & sampler's initials. Thirty increments were collected from each SU. The soil samples were returned to the ESP where they were air dried. The air dried soil samples were passed through a 0.25mm sieve to obtain the target particle size. The soil was then placed inside a thin-walled re-sealable plastic baggie. X-ray florescence (XRF) analysis was conducted on the dried/sieved soil samples following SOP. Ten percent of the samples were submitted to the lab for confirmatory analysis of lead, cadmium, iron, aluminum, and copper. In the gravel-covered play area, a stainless steel hand trowel was used to move aside the pea gravel exposing the gravel/soil interface and then a 30-gram increment of soil was collected at the gravel/soil interface. A total of 30 increments were collected from the play area and combined together to form the ICS.

The pea gravel sample collected on June 28, 2013 was collected with a stainless steel spoon. Fifty increments were collected across the selected Location ID in a grid like fashion. The pea gravel sample was dried, sieved, and analyzed by XRF as described above.

QA/QC Samples:

Replicate ICS were collected to measure the precision of the overall soil sampling and analysis process. A total of three ICS were collected in an identical manner, except the increment locations were off-set as much as possible from each within the SU. The replicate samples were labeled with the SU name and “replicate 1”, “replicate 2”, and “replicate 3”. SUs were chosen for replicate sampling based on the proximity of the yard to the facility, and other field observations. Replicate ICS were collected at Location IDs 401 and 405 during the 6/13/13 event.

One equipment rinsate blank was collected after decontaminating the soil coring tool between SUs. Following decontamination of the ICS tool, deionized water was rinsed over the core cylinder and into a sample container which traveled with the other samples back to the laboratory for analysis.

Observations:

The weather during the 6/13/13 sampling event was cloudy, and temperatures around 80 degrees Fahrenheit, with winds out of the northwest at around 10 mph.

ESP personnel arrived on site around 1000 hours and sampling was completed around 1430 hours. Michael Stroh with the HWP was also present on 6/13/13 for sampling.

No issues to report in regards to sampling. Everything went smoothly. The scrap yard facility did not have any major processes in operation while sampling took place. The shredders were not running, truck activity entering and leaving the facility was minimal. A couple of trucks were seen leaving the facility along Delmar Avenue. It was also observed that Delmar Avenue had a layer of soil/dust along the roadside edge several hundred feet leading from the facility. The Shapiro Brothers Facility residential street sweeper was not observed in operation on 6/13/13.

Environmental Specialist Sean Counihan returned to the site on June 28, 2013 to collect an additional sample from Location ID 405. The initial sample of the soil (collected on 6/13/2013) had indicated elevated levels of lead; therefore a sample of the pea gravel on top of the soil was requested. No issues were experienced with the sampling.

Allegations, by residents, that the street sweeper, used by PSC Metals was creating a dust cloud in an effort to clean the road were confirmed with photographs taken by the ESP representative. The street sweeper was observed operating on 06/28/13 along 9th St. and Vine. However, there was no water being used in the cleaning process, and the brushes on the front of the machine did create a visible dust cloud (Photograph 6). Any time the State vehicle was spotted by the

sweeper driver, he would shut down his machine and head back towards the south PSC entrance. In order to obtain a photograph of the dust cloud the State vehicle was parked a block from the facility and the photograph was obtained by the ESP representative on foot.

Other allegations of the trucks entering and leaving the facility without passing through the truck wash were also confirmed (Photograph 1). Two trucks were observed exiting the facility through the 9th St. location. The truck exited onto 9th St. west and turned north onto Vine Street. Tracks of soil were observed leading out of the facility at the 9th St. location and heading north on Vine. The second truck observed leaving the facility pulled partially out until the driver spotted the State vehicle, then slowly backed the truck back through the entrance, back into the facility. The truck wash was not in operation during the exiting of these trucks.

Significant amounts of soil were observed tracked out onto the road. A soil sample was collected from the soil deposits in the roadway along Vine St (Photographs 2-5). The sample was collected from the middle of the roadway where the tracks leading from the facility were located.

ESP personnel also investigated an allegation by PSC metals that a resident along Delmar Avenue is contributing to the roadway contamination by washing a “monster truck” and several ATVs in the street on Delmar Ave. A Jeep Cherokee with a lift kit and larger than normal tires was observed in the back yard of a residence on the west side of Delmar near the facility entrance (Photograph 7). There did not appear to be any appreciable amount, or larger amount of soil/dust in front of this location than was observed on the rest of Delmar Avenue. This location is near the 9th St. exit of PSC and is also near the base of the down slope of Delmar Ave. from both the north and the south and most likely collects street debris during heavy rain events. A small amount of sand/silt was observed near the residence (at the bottom of the down slope) north of the driveway in the street. A sample of this material was collected for XRF analysis.

Submitted by:



Sean Counihan
Environmental Specialist
Field Services Unit
Environmental Services Program

Approved by:

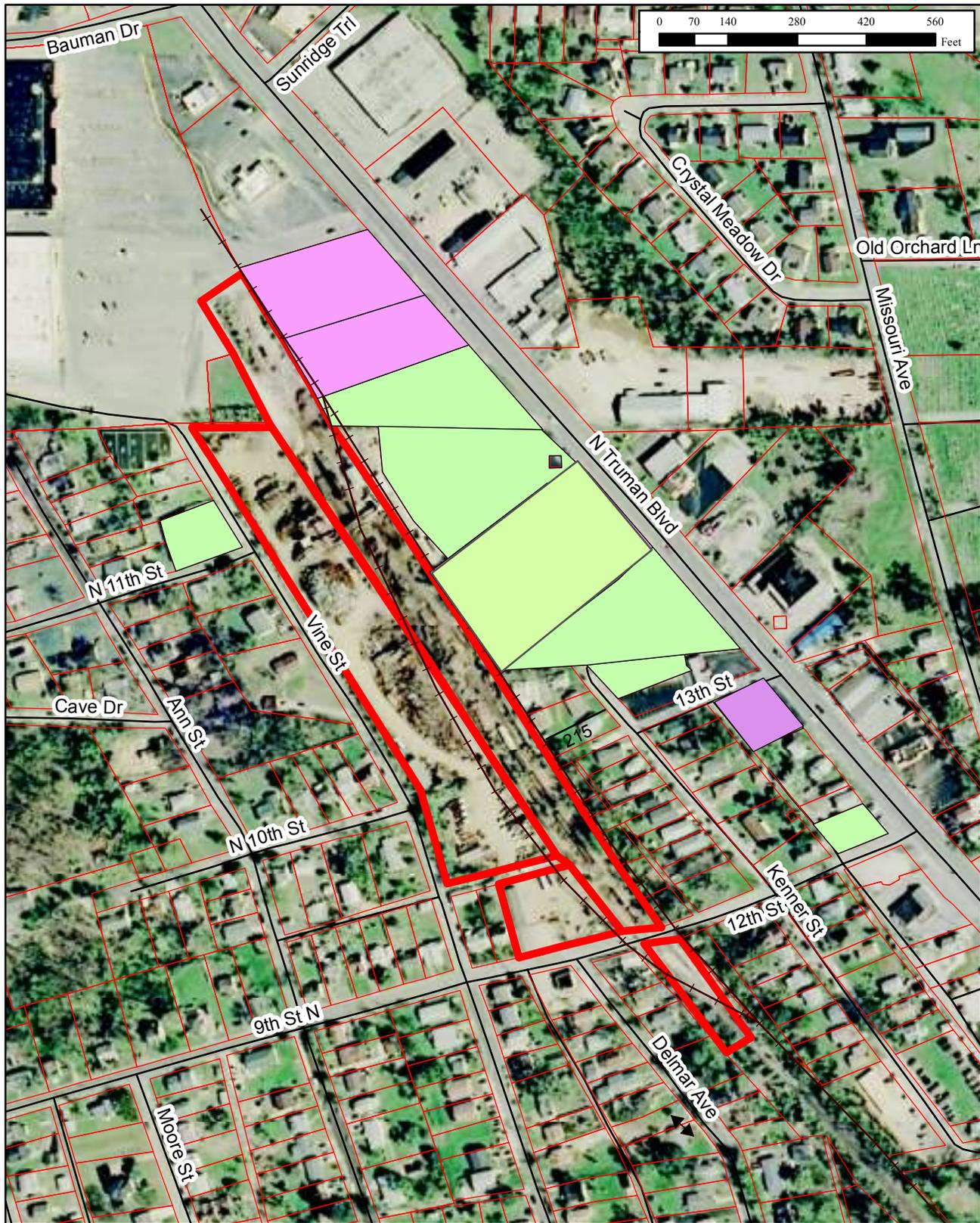
**Eric
Sappington**

Digitally signed by Eric Sappington
DN: cn=Eric Sappington, o=Missouri
Department of Natural Resources,
ou=ESP-EER,
email=eric.sappington@dnr.mo.gov,
c=US
Date: 2013.09.12 07:24:19 -05'00'

Eric Sappington
Chief
Field Services Unit
Environmental Services Program

c: Michael Stroh, HWP

Site Map(s)



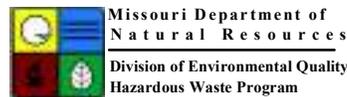
**Commercial Properties Identified for Sampling
Shapiro Brothers Salvage Site
9th & Delmar
Festus, Jefferson County, MO**

- Legend**
- Shapiro Brothers Salvage Yard Boundary
 - Road
 - Railroad
 - Access Requested; Not Granted
 - Access Granted

Created on: June 11, 2013 by Michael Stroh, MDNR
This map is located at M:\Superfund\Shapiro Brothers/
SRCommProp.mxd

Base Map: 2007 Missouri State Leaf-Off Imagery Program.
Flight Date: 2007

Additional Layers: Missouri Department of Transportation, U.S. Census Bureau.
Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.





Google earth

miles
km

200

400



APPENDIX A

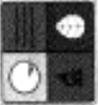
Chain of Custody

Shapiro Brothers Scrap Yard Site

Festus, Jefferson County, MO



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Tape sealed and initialed
Shipped
X Hand Delivered

Description of Delivery
Total No. Of Containers: 1

Carrier:
By:

Collector's Name: Sean Coughlin
(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one)

Sample Number		Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters	Matrix	Container Type	Preservative Type	Number of Containers
130925 (Sample A) For Lab Use Only	Date: 6/13/2013 Time: 1020	Total Metals (Pb, Cd, As)	None Cl ₂ UV Ozone Other: 5	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:	250 CN	HNO ₃	1	
(Sample B) For Lab Use Only	Date:		None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:				
(Sample C) For Lab Use Only	Date:		None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:				
(Sample D) For Lab Use Only	Date:		None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:				
Relinquished By:		Received By: <i>Ant King</i>		Date: 6-14-13		Time: 0927			
Relinquished By:		Received By:		Date:		Time:			
Relinquished By:		Received By:		Date:		Time:			



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEPAS	Job Code:	NJ13SHAP	Sample Reference ID:	
Facility ID:	Site/Study Name:		Shapiro Brothers		County:	Jefferson
Sample Comment (where and how the sample was collected): Rinsate Sample collected after decon of sampling tool. Collected after Location ID 400.						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

- Sample Event Type: (circle one)
- Bypass/SSO
 - Complaint
 - Emergency Response
 - Inspection
 - Investigation
 - Monitoring
 - Special Project
- Sample Type: (circle one)
- Air
 - Container
 - Discharge
 - Groundwater
 - Organic
 - Sediment
 - Sludge
 - Drinking Water Supply
 - Soil
 - Spill
 - Storm Water
 - Surface Water
 - Wipes
 - Rinsate Water

Sample B	LDPR:		Job Code:		Sample Reference ID:	
Facility ID:	Site/Study Name:				County:	
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

- Sample Event Type: (circle one)
- Bypass/SSO
 - Complaint
 - Emergency Response
 - Inspection
 - Investigation
 - Monitoring
 - Special Project
- Sample Type: (circle one)
- Air
 - Container
 - Discharge
 - Groundwater
 - Organic
 - Sediment
 - Sludge
 - Drinking Water Supply
 - Soil
 - Spill
 - Storm Water
 - Surface Water
 - Wipes

Sample C	LDPR:		Job Code:		Sample Reference ID:	
Facility ID:	Site/Study Name:				County:	
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

- Sample Event Type: (circle one)
- Bypass/SSO
 - Complaint
 - Emergency Response
 - Inspection
 - Investigation
 - Monitoring
 - Special Project
- Sample Type: (circle one)
- Air
 - Container
 - Discharge
 - Groundwater
 - Organic
 - Sediment
 - Sludge
 - Drinking Water Supply
 - Soil
 - Spill
 - Storm Water
 - Surface Water
 - Wipes

Sample D	LDPR:		Job Code:		Sample Reference ID:	
Facility ID:	Site/Study Name:				County:	
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

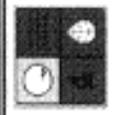
- Sample Event Type: (circle one)
- Bypass/SSO
 - Complaint
 - Emergency Response
 - Inspection
 - Investigation
 - Monitoring
 - Special Project
- Sample Type: (circle one)
- Air
 - Container
 - Discharge
 - Groundwater
 - Organic
 - Sediment
 - Sludge
 - Drinking Water Supply
 - Soil
 - Spill
 - Storm Water
 - Surface Water
 - Wipes

Remarks:

5.7°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed
Shipped
X Hand Delivered
Carrier: By: Michael Stroh

Total No. Of Containers: 4

Collector's Name: Michael Stroh		LAB USE ONLY!	
(Please Print)		Laboratory ID:	
Affiliation: (for use only)		Location: B-24	
KERO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT		Matrix (for use only)	
MDC DHSS Other:		Container Type: Bag	
Analyses Requested		Preservative Type: 4C	
Lead, Cadmium, Iron, Aluminum, Copper		Number of Containers: 1	
Sample Number	Sample Collected	Disinfect. Type (circle one)	Field Parameters (include units)
H1000183 (Sample A)	Date: 6/13/2013 Time: 1040	None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:
For Lab Use Only AC03850			
H1000184 (Sample B)	Date: 6/13/2013 Time: 1030	None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:
For Lab Use Only AC03851			
H1000185 (Sample C)	Date: 6/13/2013 Time: 1015	None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:
For Lab Use Only AC03852			
(Sample D)	Date: _____ Time: 1025	None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:
For Lab Use Only			
Relinquished By: <i>Michael Stroh</i>	Received By: <i>Valius Weller</i>	Date: 6/17/13	Time: 1630
Relinquished By: <i>Valius Weller</i>	Received By: <i>R. J. Jundt</i>	Date: 6/15/13	Time: 0810
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEPAS	Job Code:	NJ12SHAP	Sample Reference ID:	405
Facility ID:	Site/Study Name:		Shapiro Brothers Scrapyard		County:	Jefferson
Sample Comment (where and how the sample was collected):						
SUI, Replicate 3			Grab <u>Composite</u> Modified Other:			
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters)	PDOP	
Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation <u>W</u> Monitoring Special Project						
Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply						

Sample B	LDPR:	FEPAS	Job Code:	NJ12SHAP	Sample Reference ID:	405
Facility ID:	Site/Study Name:		Shapiro Brothers Scrapyard		County:	Jefferson
Sample Comment (where and how the sample was collected):						
SUI, Replicate 2			Grab <u>Composite</u> Modified Other:			
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters)	PDOP	
Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation <u>W</u> Monitoring Special Project						
Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply						

Sample C	LDPR:	FEPAS	Job Code:	NJ12SHAP	Sample Reference ID:	405
Facility ID:	Site/Study Name:		Shapiro Brothers Scrapyard		County:	Jefferson
Sample Comment (where and how the sample was collected):						
SUI, Replicate 1			Grab <u>Composite</u> Modified Other:			
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters)	PDOP	
Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation <u>W</u> Monitoring Special Project						
Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply						

Sample D	LDPR:	FEPAS	Job Code:	NJ12SHAP	Sample Reference ID:	405
Facility ID:	Site/Study Name:		Shapiro Brothers Scrapyard		County:	Jefferson
Sample Comment (where and how the sample was collected):						
SUI, Replicate 1			Grab <u>Composite</u> Modified Other:			
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters)	PDOP	
Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation <u>W</u> Monitoring Special Project						
Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply						

Please expedite these analyses.

23.2°C

ENVIRONMENTAL SERVICES LABORATORY

SAMPLE CONDITION UPON RECEIPT ANOMALY REPORT (SCUR)

Client Name: Michael Strub Date Received: 6/18/13

Sample(s): AC03849 = H1000181

Courier: Client UPS Fed Ex USPS Other Hand delivered

Date and Initials of person examining contents: 6/18/13 cup

The condition of these samples were not acceptable because (check all that apply):

- Coolers**
 - Samples were not received on ice
- Sample Temperature**
 - Sample temperature greater than 6 °C
 - Bacteriological sample temperature greater than 10 °C
- Containers**
 - Without Labels
 - VOA vials with headspace
- Container Labels**
 - Not the same info. as on CoC
 - Incomplete
 - Sample ID
 - Collect Date
 - Collect Time
 - Collected By
 - Preservative
 - Illegible
- Samples**
 - Holding time expired
 - Improper container used
 - Insufficient quantity for analysis
 - Samples received but not listed on CoC
 - Sample not received but listed on CoC
- Chain of Custody**
 - No Chain of Custody
 - No LDPR
 - No date/time relinquished
 - No signature
 - Incomplete information Date on CoC reads (4/9/2012), which is wrong
- Other (specify):** _____

Corrective Action:

- Sample(s) processed "as is" at the request of the Client
 - Client Notification: _____
 - Person Contacted: _____ Date/Time: _____

Comments/Resolution: Gave 3rd new order # sep from last 3rd.
Valerie Wilder confirmed ^{tag} change.

- Samples rejected by ESP Laboratory. Authorized by: _____

Mace, Brenda

From: Dunmire, Lori
Sent: Monday, August 19, 2013 10:11 AM
To: Mace, Brenda
Subject: FW: AC06622

FYI

From: Counihan, Sean
Sent: Monday, August 19, 2013 9:03 AM
To: Dunmire, Lori
Subject: RE: AC06622

I spoke the HWP this morning and they gave it the ok to add to TCLP analysis

Sean Counihan
Environmental Specialist, State On-Scene Coordinator
Field Services, Environmental Emergency Response
Missouri Department of Natural Resources
Office (573) 522-9279
Mobile (573) 644-3697
sean.counihan@dnr.mo.gov

From: Dunmire, Lori
Sent: Thursday, August 15, 2013 1:48 PM
To: Counihan, Sean
Subject: AC06622

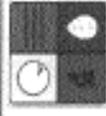
This sample was high for Pb as well but TCLP was not requested. Do you want TCLP on this sample as well?

Lori L. Dunmire

Missouri Dept. of Natural Resources
Environmental Services Program
Chemist IV, Inorganic Section Chief
2710 W. Main St.
Jefferson City, MO 65109
573-526-3326 (Office)
573-526-3350 (Fax)



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FERN	Job Code:	NJ12 SHAP	Sample Reference ID:	
Facility ID:	Site/Study Name:		County:		Jefferson	
Sample Comment (where and how the sample was collected): Sample # 130892 Program Sample collected from LOC. 10405						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

Sample B	LDPR:	FERN	Job Code:	NJ12 SHAP	Sample Reference ID:	
Facility ID:	Site/Study Name:		County:		Jefferson	
Sample Comment (where and how the sample was collected): Sample # 130893 Soil collected from tracks in roadway along 900 block of Vine St.						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

Sample C	LDPR:		Job Code:		Sample Reference ID:	
Facility ID:	Site/Study Name:		County:			
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

Sample D	LDPR:		Job Code:		Sample Reference ID:	
Facility ID:	Site/Study Name:		County:			
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:						
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	EPE (meters) PDOP		

Remarks:

Sample Event Type: (circle one)
 Bypass/SSO
 Complaint
 Emergency Response
 Inspection
 Investigation
 Monitoring
 Special Project

Sample Type: (circle one)
 Air
 Container
 Discharge
 Groundwater
 Organic
 Sediment
 Sludge
 Drinking Water Supply

Sample Event Type: (circle one)
 Bypass/SSO
 Complaint
 Emergency Response
 Inspection
 Investigation
 Monitoring
 Special Project

Sample Type: (circle one)
 Air
 Container
 Discharge
 Groundwater
 Organic
 Sediment
 Sludge
 Drinking Water Supply

Sample Event Type: (circle one)
 Bypass/SSO
 Complaint
 Emergency Response
 Inspection
 Investigation
 Monitoring
 Special Project

Sample Type: (circle one)
 Air
 Container
 Discharge
 Groundwater
 Organic
 Sediment
 Sludge
 Drinking Water Supply

Sample Event Type: (circle one)
 Bypass/SSO
 Complaint
 Emergency Response
 Inspection
 Investigation
 Monitoring
 Special Project

Sample Type: (circle one)
 Air
 Container
 Discharge
 Groundwater
 Organic
 Sediment
 Sludge
 Drinking Water Supply

Scan into 130703004
AC06622
AC06623

Mace, Brenda

From: Boldt, Chris
Sent: Wednesday, August 21, 2013 4:41 PM
To: Reinkemeyer, Alan
Cc: Wilson, Jeff; Jackson, Stephen; Dunmire, Lori; Lueckenhoff, Curt; Mace, Brenda
Subject: RE: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

No problem. I just told Jeff to go ahead and prep this morning and if need be we could stop the process. I really don't like doing it but will this time with a qualifier and a scanned copy of the email below; stating it will not be defensible in court. Thanks, Chris.

Brenda, As discussed. Make sure Valerie's email is scanned. Thanks, Chris.

From: Reinkemeyer, Alan
Sent: Wednesday, August 21, 2013 4:34 PM
To: Boldt, Chris
Subject: RE: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

Been tied up all day. Do what you feel is best.

From: Boldt, Chris
Sent: Wednesday, August 21, 2013 8:02 AM
To: Reinkemeyer, Alan
Subject: RE: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

There plans are to batch it with other TCLP samples today. We need to make a decision ASAP. Thanks, Chris.

From: Reinkemeyer, Alan
Sent: Tuesday, August 20, 2013 5:06 PM
To: Boldt, Chris
Subject: RE: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

Let's discuss again tomorrow. Thanks

From: Boldt, Chris
Sent: Tuesday, August 20, 2013 5:02 PM
To: Reinkemeyer, Alan
Subject: FW: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

FYI. As we discussed. Chris.

From: Stroh, Michael
Sent: Tuesday, August 20, 2013 3:04 PM
To: Dunmire, Lori; Wilder, Valerie; Boldt, Chris
Cc: Stinson, Dennis; Bryant, Evan; 'Eppley, Daren'; Hinkson, Robert; Counihan, Sean
Subject: RE: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

Yes that's fine, we have no interest in TCLP result on the pea gravel.
Thanks.

Michael Stroh

DEQ - HWP
Environmental Specialist III
DNR

(573) 522-9902 Work
Michael.Stroh@dnr.mo.gov
1730 East Elm Street
Jefferson City, MO 65101

From: Dunmire, Lori
Sent: Tuesday, August 20, 2013 3:00 PM
To: Wilder, Valerie; Boldt, Chris
Cc: Stroh, Michael; Stinson, Dennis; Bryant, Evan; 'Eppley, Daren'; Hinkson, Robert; Counihan, Sean
Subject: RE: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

I know I called Sean and told him that the pea gravel sample (AC06622) tripped for TCLP for Pb even though TCLP wasn't requested. He sent an email in order to add TCLP to that sample but now with the knowledge of insufficient sample (approx. 30g) can we just proceed with TCLP analysis for just AC06623?

Lori L. Dunmire

Missouri Dept. of Natural Resources
Environmental Services Program
Chemist IV, Inorganic Section Chief
2710 W. Main St.
Jefferson City, MO 65109
573-526-3326 (Office)
573-526-3350 (Fax)

From: Wilder, Valerie
Sent: Tuesday, August 20, 2013 1:42 PM
To: Dunmire, Lori; Boldt, Chris
Cc: Stroh, Michael; Stinson, Dennis; Bryant, Evan; 'Eppley, Daren'; Hinkson, Robert; Counihan, Sean
Subject: TCLP Analysis for soil sample from street near Shapiro site - CONFIDENTIAL

Lori and Chris, you had asked for an explanation for the request to analyze the soil sample deposited on Vine St. from a truck exiting the Shapiro facility without washing. Sean Counihan collected the sample on 6/28/13. We are aware that the sample does not contain the minimum amount required (100 grams) for the TCLP analysis according to the method – there is only 80 grams – and the results would not hold up in court, but the information gathered from the results can still be useful in negotiations currently underway with the responsible party. The sample cannot be recreated and offers proof that the facility was not using the truck wash the day the sample was collected. We know the sample is extremely high in lead and suspect that it will fail TCLP analysis, classifying it as a hazardous waste. This could have significant impact on the negotiations for the Administrative Orders on Consent – both Superfund and RCRA.

Daren, Dennis suggested I copy you on this email since this sample result could have an impact on our Superfund order negotiations as it would show the potential for recontamination if the facility continues to be tracking leaded soil with levels so high they qualify as hazardous waste (assuming it fails TCLP) off the facility and onto the streets in front of the residences they are negotiating a cleanup order for. Obviously the results would impact the RCRA order as well since it shows they are not using the truck wash on a regular basis and potentially have releases of hazardous waste from their facility. I discussed this with Evan and he mentioned that RCRA doesn't have a new Department attorney assigned yet

since Steve Ratky has left. Maybe we could discuss having you, Daren, take over negotiation for both orders. Seems logical since it's the same facility and all the actions we're asking them to take tie together to reduce releases, but just a suggestion.

Please let me know if there is anything else you need. Thanks for your help on this issue.

Valerie Wilder

Chief, Site Assessment Unit, Superfund Section

Missouri Department of Natural Resources

Hazardous Waste Program

P.O. Box 176 Jefferson City, MO 65102-0176

Phone 573 751-7880/Fax 573 751-7869

APPENDIX B

Analytical Results

Shapiro Brothers Salvage Yard Site

Festus, Jefferson County, MO

Table 1
Summary of Lead Results, Commercial Properties
Shapiro Brothers Salvage Site, Jefferson County, Missouri

Loc ID	Date Collected	Sampling Unit	Area, square feet	Lead Concentration, mg/kg			TCLP Lead, mg/l	
				XRF ¹	Lab Confirmation	DU Mean ²		DU UCL ³
400	6/13/2013	1	3,630	330	--	700	780	--
		2	4,880	970	1,110			
401	6/13/2013	1, Repl. 1	8,850	150	--	190	340	--
		1, Repl. 2		290	--			
		1, Repl. 3		130	125			
402	6/13/2013	1	5,420	340	--	280	390	--
		2	2,660	160	--			
403	6/13/2013	1	9,320	310	--	240	330	--
		2	5,250	130	--			
404	6/13/2013	1	10,200	930	--	930	1,070	--
		1, Repl. 1	1,020	570	540	580	870	--
		1, Repl. 2		750	--			
405	6/13/2013	1, Repl. 3	1,020	400	--	190	330	--
		1 (pea gravel) ⁴		190	210			
				480	--			
406	6/28/2013	Truck Track-Out, 900 block Vine Street	1,100	480	--	480	620	--
--	6/28/2013	Truck Track-Out, 800 block Delmar Ave.	--	7,480	9,740	--	--	65
--	6/28/2013		--	1,240	--	--	--	--

All XRF data > 1,000 mg/kg rounded to 3 significant digits; data < 1,000 mg/kg rounded to 2 significant digits

¹ Estimate of average lead concentration in bagged surface soil sample composed of 30 increments collected across the SU

² DU-wide mean lead concentration; area-weighted where >1 sampling unit sampled

³ DU-wide area-weighted 95% upper confidence limit of lead concentration calculated from field replicate samples using the Student's t method

⁴ Incremental composite sample composed of 50 increments; no replicates collected. UCL & LCL based on SD derived from 30-increment replicates collected from Loc ID 401



Environmental Services Program

Order ID 130617008 Program, Contact: HWP Julieann Warren
Report Date: 08/07/2013 LDPR/JobCode: FEPA5 / NJ13SHAP



Sample: AC03799



Customer #: 130925

Facility ID: Site: Shapiro Brothers
County: Jefferson Sample Reference ID:
Collector: SEAN COUNIHAN Affiliation: ESP Collect Date: 6/13/2013 10:20:00AM
Entry Point:
Sample Comment: Grab, rinsate sample collected after decon of sampling tool. Collected after Location ID 400.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	22,424	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	22,424	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.54		µg/L	22,424	SW 846 6020

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

Qualifier Descriptions

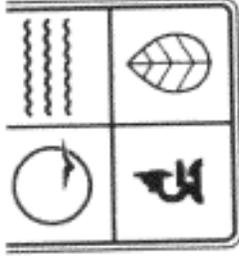
- 01 Improper collection method
- 02 Improper preservation
- 03 Exceeded holding time
- 04 Analyzed by Contract Laboratory
- 05 Estimated value, detected below PQL
- 06 Estimated value, QC data outside limits
- 07 Estimated value, analyte outside calibration range
- 08 Analyte present in blank at > 1/2 reported value
- 09 Sample was diluted during analysis
- 10 Laboratory error
- 11 Estimated value, matrix interference
- 12 Insufficient quantity
- 13 Estimated value, true result is >= reported value
- 14 Estimated value, non-homogeneous sample
- 15 No Result - Failed Quality Controls Requirements
- 16 Not analyzed - related analyte not detected
- 17 Results in dry weight
- 18 Sample pH is outside the acceptable range
- 19 Estimated value
- 20 Not analyzed - instrument failure
- 21 No result - spectral interference
- 22 pH was performed at the Laboratory
- 23 Contract Lab specific qualifier - see sample comments
- 24 No result - matrix interference
- 25 No Result: Excessive Chlorination
- 26 No Result: Excessive Dechlorination
- ND Not detected at reported value

Chris Boldt for Chris Boldt

Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



Environmental Services Program



Order ID 130618001 Program, Contact: HWP Julieann Warren
Report Date: 06/21/2013 LDPR/JobCode: FEPA5 / NJ12SHAP



Sample: AC03850



Customer #: H1000183

Facility ID: Jefferson Site: Shapiro Brothers Scrapyard
County: Jefferson Sample Reference ID: 405 Collect Date: 6/13/2013 10:40:00AM
Collector: MICHAEL STROH Affiliation: HWP
Entry Point: Composite, SU1, Replicate 3
Sample Comment:

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Aluminum	6900000	09	µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	3430		µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Copper	51400		µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Iron	14900000	09	µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Lead	373000		µg/kg	21,736	SW 846 6010B
Percent Moisture	Percent Moisture	2.7		%	21,676	Infrared Drying

Sample: AC03851



Customer #: H1000184

Facility ID: Jefferson Site: Shapiro Brothers Scrapyard
County: Jefferson Sample Reference ID: 405 Collect Date: 6/13/2013 10:30:00AM
Collector: MICHAEL STROH Affiliation: HWP
Entry Point: Composite, SU1, Replicate 2
Sample Comment:

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Aluminum	6240000	09	µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	4310		µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Copper	91300		µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Iron	22300000	09	µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Lead	718000		µg/kg	21,736	SW 846 6010B
Percent Moisture	Percent Moisture	2.0		%	21,676	Infrared Drying

Sample: AC03852



Customer #: H1000185

Facility ID:

County: Jefferson

Collector: MICHAEL STROH

Entry Point:

Sample Comment: Composite, SU1, Replicate 1

Site: Shapiro Brothers Scrapyard

Sample Reference ID: 405

Affiliation: HWP

Collect Date: 6/13/2013 10:15:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Aluminum	8220000	09	µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	4330		µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Copper	67600		µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Iron	18200000	09	µg/kg	21,736	SW 846 6010B
6010B Metals-Total Recoverable	Lead	536000		µg/kg	21,736	SW 846 6010B
Percent Moisture	Percent Moisture	2.6		%	21,676	Infrared Drying

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

Qualifier Descriptions

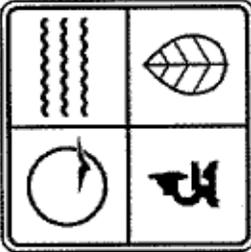
- 01 Improper collection method
- 03 Exceeded holding time
- 05 Estimated value, detected below PQL
- 07 Estimated value, analyte outside calibration range
- 09 Sample was diluted during analysis
- 11 Estimated value, matrix interference
- 13 Estimated value, true result is >= reported value
- 15 No Result - Failed Quality Controls Requirements
- 17 Results in dry weight
- 19 Estimated value
- 21 No result - spectral interference
- 23 Contract Lab specific qualifier - see sample comments
- 25 No Result: Excessive Chlorination
- ND Not detected at reported value
- 02 Improper preservation
- 04 Analyzed by Contract Laboratory
- 06 Estimated value, QC data outside limits
- 08 Analyte present in blank at > 1/2 reported value
- 10 Laboratory error
- 12 Insufficient quantity
- 14 Estimated value, non-homogeneous sample
- 16 Not analyzed - related analyte not detected
- 18 Sample pH is outside the acceptable range
- 20 Not analyzed - Instrument failure
- 22 pH was performed at the Laboratory
- 24 No result - matrix interference
- 26 No Result: Excessive Dechlorination

Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



Environmental Services Program

Order ID 130703004 Program, Contact: HWP Valerie Wilder
Report Date: 08/27/2013 LDPR/JobCode: FEPA5 / NJ12SHAP



Sample: AC06622



Customer #: 130892

Facility ID: Jefferson Site: Shapiro Brothers
County: Jefferson Sample Reference ID:
Collector: SEAN COUNIHAN Affiliation: ESP Collect Date: 6/28/2013 12:40:00PM
Entry Point:
Sample Comment: Composite, Sample # 130892 Pea gravel sample collected from Loc. ID 405.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Aluminum	3600000	09	µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	1610		µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Copper	32100		µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Iron	11000000	09	µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Lead	207000		µg/kg	22,570	SW 846 6010B
Percent Moisture	Percent Moisture	1.7		%	22,319	Infrared Drying

Sample: AC06623



Customer #: 130893

Facility ID: Jefferson Site: Shapiro Brothers
County: Jefferson Sample Reference ID:
Collector: SEAN COUNIHAN Affiliation: ESP Collect Date: 6/28/2013 1:00:00PM
Entry Point:
Sample Comment: Composite, Sample # 130893 Soil collected from tracks in roadway along 900 block of Vine St.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Aluminum	7770000	09	µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Arsenic	24800		µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Barium	1220000		µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	48400		µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Chromium	90500		µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Copper	712000		µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Iron	65500000	09	µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Lead	9740000	09	µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Selenium	<1000	ND	µg/kg	22,570	SW 846 6010B
6010B Metals-Total Recoverable	Silver	11900	09	µg/kg	22,570	SW 846 6010B

Sample: AC06623



Customer #: 130893

Facility ID: Shapiro Brothers
County: Jefferson
Collector: SEAN COUNIHAN
Entry Point: ESP
Sample Comment: Composite, Sample # 130893 Soil collected from tracks in roadway along 900 block of Vine St.

Site: Shapiro Brothers
Sample Reference ID:
Affiliation: ESP
Collect Date: 6/28/2013 1:00:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B TCLP	Cadmium	0.64		ppm	22,740	SW 846 6010B
6010B TCLP	Chromium	<0.1	ND	ppm	22,740	SW 846 6010B
6010B TCLP	Lead	65.1	09	ppm	22,740	SW 846 6010B
Mercury-Total Recoverable	Mercury-Total Recoverable	<4	03, 06, ND	µg/kg	22,587	SW 846 - 7471A
Percent Moisture	Percent Moisture	0.8		%	22,319	Infrared Drying

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S. Environmental Protection Agency.

Qualifier Descriptions

- 01 Improper collection method
- 03 Exceeded holding time
- 05 Estimated value, detected below PQL
- 07 Estimated value, analyte outside calibration range
- 09 Sample was diluted during analysis
- 11 Estimated value, matrix interference
- 13 No Result - Failed Quality Controls Requirements
- 15 Results in dry weight
- 19 Estimated value
- 21 No result - spectral interference
- 23 Contract Lab specific qualifier - see sample comments
- 25 No Result: Excessive Chlorination
- ND Not detected at reported value
- 02 Improper preservation
- 04 Analyzed by Contract Laboratory
- 06 Estimated value, QC data outside limits
- 08 Analyte present in blank at > 1/2 reported value
- 10 Laboratory error
- 12 Insufficient quantity
- 14 Estimated value, non-homogeneous sample
- 16 Not analyzed - related analyte not detected
- 18 Sample pH is outside the acceptable range
- 20 Not analyzed - Instrument failure
- 22 pH was performed at the Laboratory
- 24 No result - matrix interference
- 26 No Result: Excessive Dechlorination

Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality

APPENDIX C

Field Notes/Photographs

Shapiro Brothers Salvage Yard Site

Festus, Jefferson County, MO

Shapiro Brothers
 Soil Sampling of business
 and facility
 6/13/13
 Arrive on site 1000 hrs
 Sean Conahan
 Michael Stroh

Loc. ID 400
 1101 Vine
 SU1 Soil Sample from yard and
 building
 SU2 - Sample from gravel parking lot
 RinSale Blank Sample collected at 1020
 Sample # ~~1020~~ 130925

Loc. ID 401
 1237 Truman
 SU1 - Soil and parking lot
 & building
 collected at 1040
 Triplicate collected

loc 1D 402
1235 Truman

- Su1 Along back side of building
+ parking lot - against Shapiro fence
collected at 1100 SE
- Su2 edge of west parking lot
where pines were planted
collected at 1100 MS

loc. 1D 403
1223 Truman

- Su1 - comprised of all grassy
areas of property
collected at 1115
- Su2 - gravel area behind building
collected at 1135

loc. 1D 404
1225-1231

- Su1 grassy areas surrounding
all buildings on property
collected at 1145

loc 405

1302 13th Ave.

Day care Play area in back
they have ~~excavated~~ ~~not~~ gravelled surface

Su1 soil collected at

1230

Triplicate collected

loc. 406

1201 + 1203 Truman

Su1 collected

at 1300

~~FND~~

6/28/13 Shapiro Brothers

Gravel sample collected from
loc. 1D 405 at 1240

Sample # 130892

Spoke w/ tenants - when they started leaving - no excavation done to play area location - only digging that occurred was when fence was installed to place posts. They covered the grass area with a plastic weed preventer/barrier and placed pea gravel over top.

Allegations of dust cloud from Street Sweeper Confirmed.

- no water being used, dust cloud created at front of machine as while brushes are going.

- Truck entering & leaving South entrance. While in the area, two trucks were observed leaving South ^{main} entrance to 9th St. then turning onto Vine St.

- Road way had noticeable mud tracks from trucks from entrance/exit location
- on 9th st continuing on Vine through 900-1000 Block up hill (A sample of this soil collected) #130892

No large soil deposits were observed on Delmar Ave. near 9th St., ^{West side} although a significant dust layer was observed under several parked cars on the East side of Delmar near 9th St.

The "monster truck" at one residence was observed in back of property. It was no more than a Bronco-like vehicle with small lift kit and oversized tires.

A small amount of appreciable sand was in front of this residence, probably due to the pitch of the road & rain collecting it there. A sample was collected from this material at 1340



Photograph 1 - Truck exiting south entrance left (west) onto (9th St.), no wash, then turning right (north) onto Vine St.

Picture taken by Sean Counihan, 6/28/2013



Photograph 2 - Soil deposits left in the roadway (9th St.) by trucks leaving the facility. Picture taken by Sean Counihan, 6/28/2013



Photograph 3 - Trail of soil deposits in roadway (Vine St. facing south, stop sign is 9th. St.) Sample collected from these soil deposits in the road.

Picture taken by Sean Counihan, 6/28/2013



Photograph 4 - Tracks in road (Vine St. facing north)
Picture taken by Sean Counihan, 6/28/2013



Photograph 5 - Street sweeper (on 9th St.) Operator would stop the machine any time I went by.

Picture taken by Sean Counihan, 6/28/2013



Photograph 6 - Street sweeper from a distance (dust cloud can be observed)

Picture taken by Sean Counihan, 6/28/2013



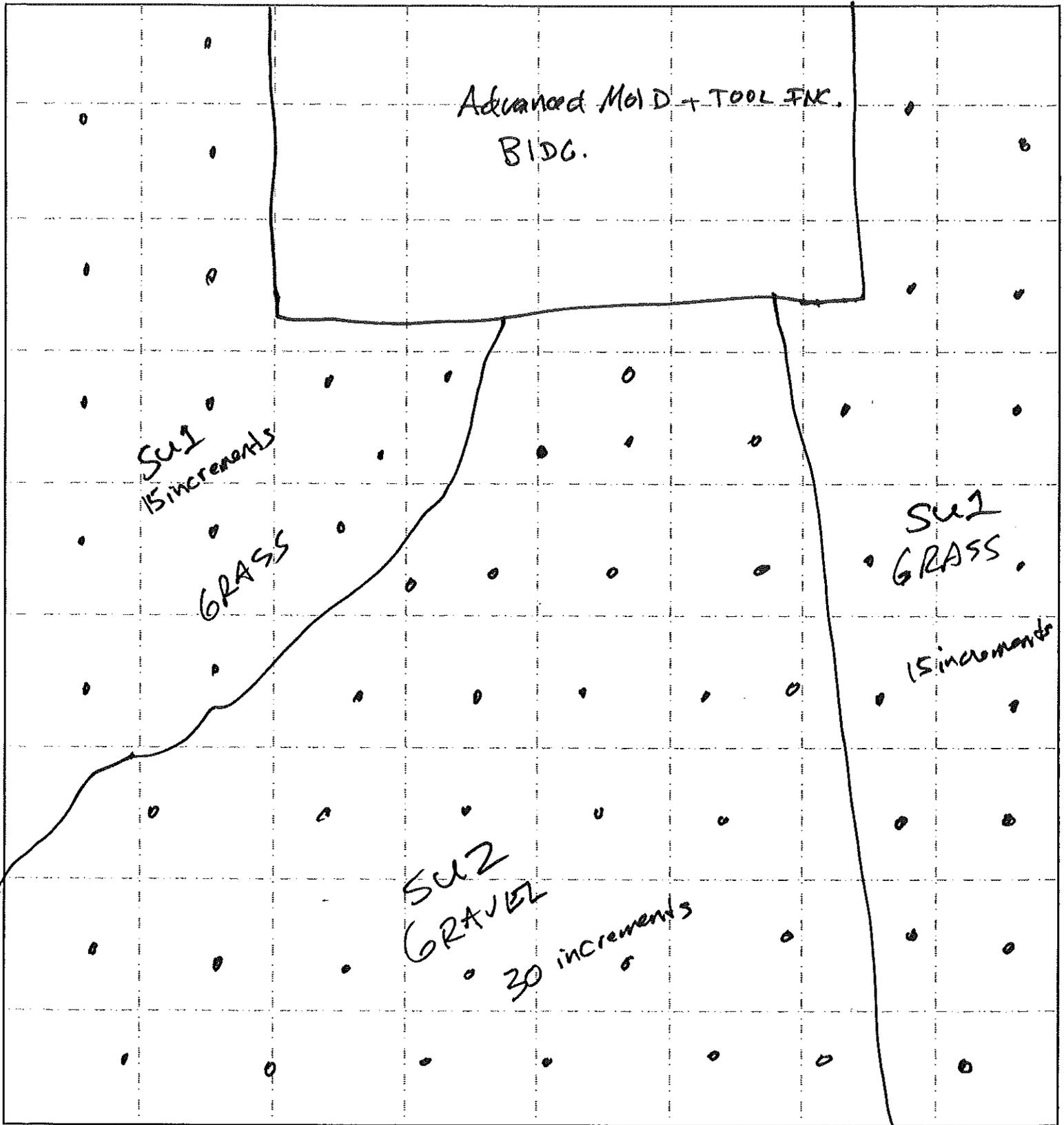
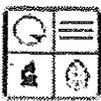
Photograph 7 - [“Monster Truck” at residence three doors south of facility on west side (851 Delmar)of Delmar Avenue. No appreciable soil in front of this residence.

Picture taken by Sean Counihan, 6/28/2013



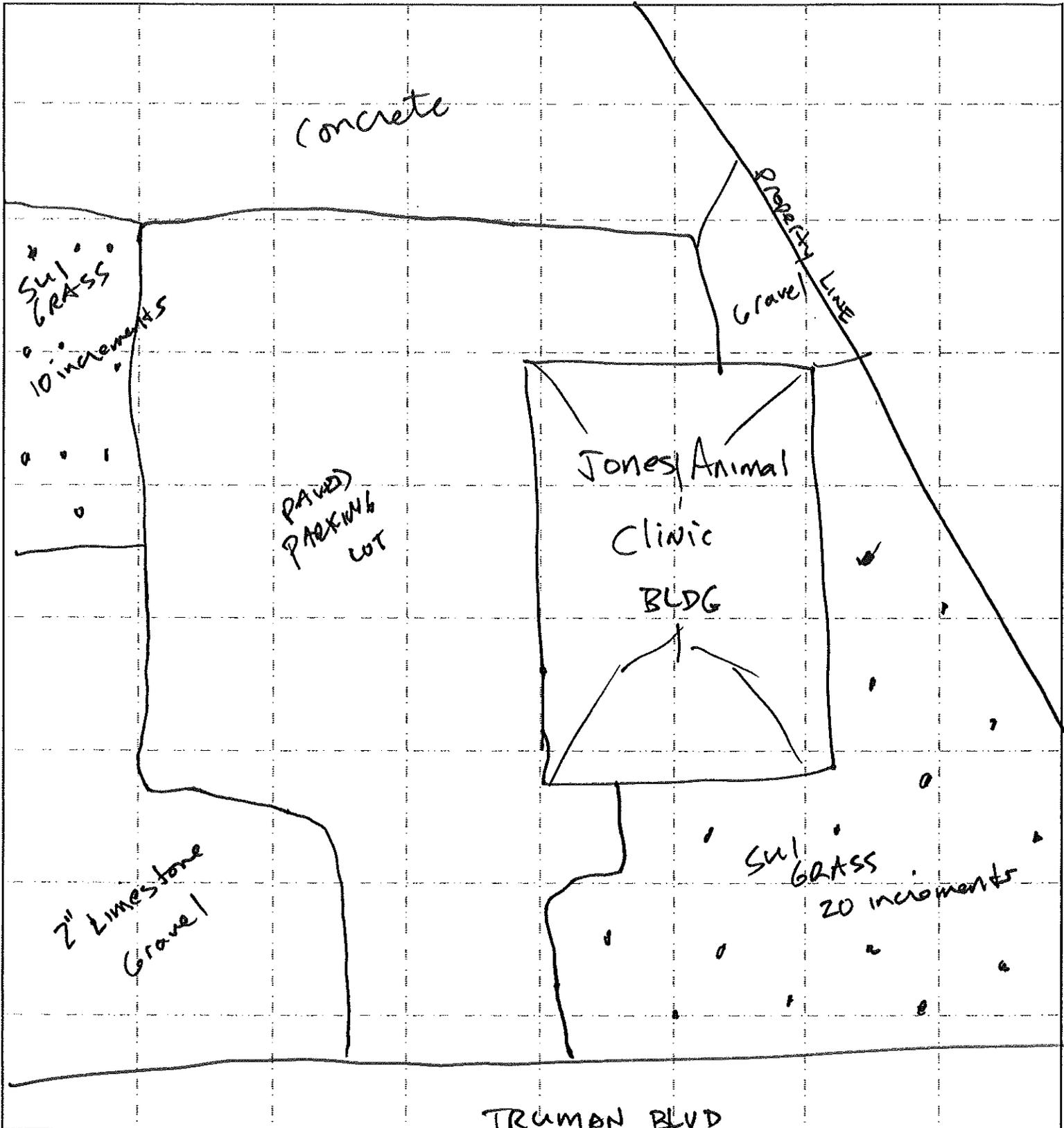
Photograph 8 - Layer of soil/dust can be observed under vehicles and along east and west sides of road on Delmar Avenue.

Picture taken by Sean Counihan, 6/28/2013



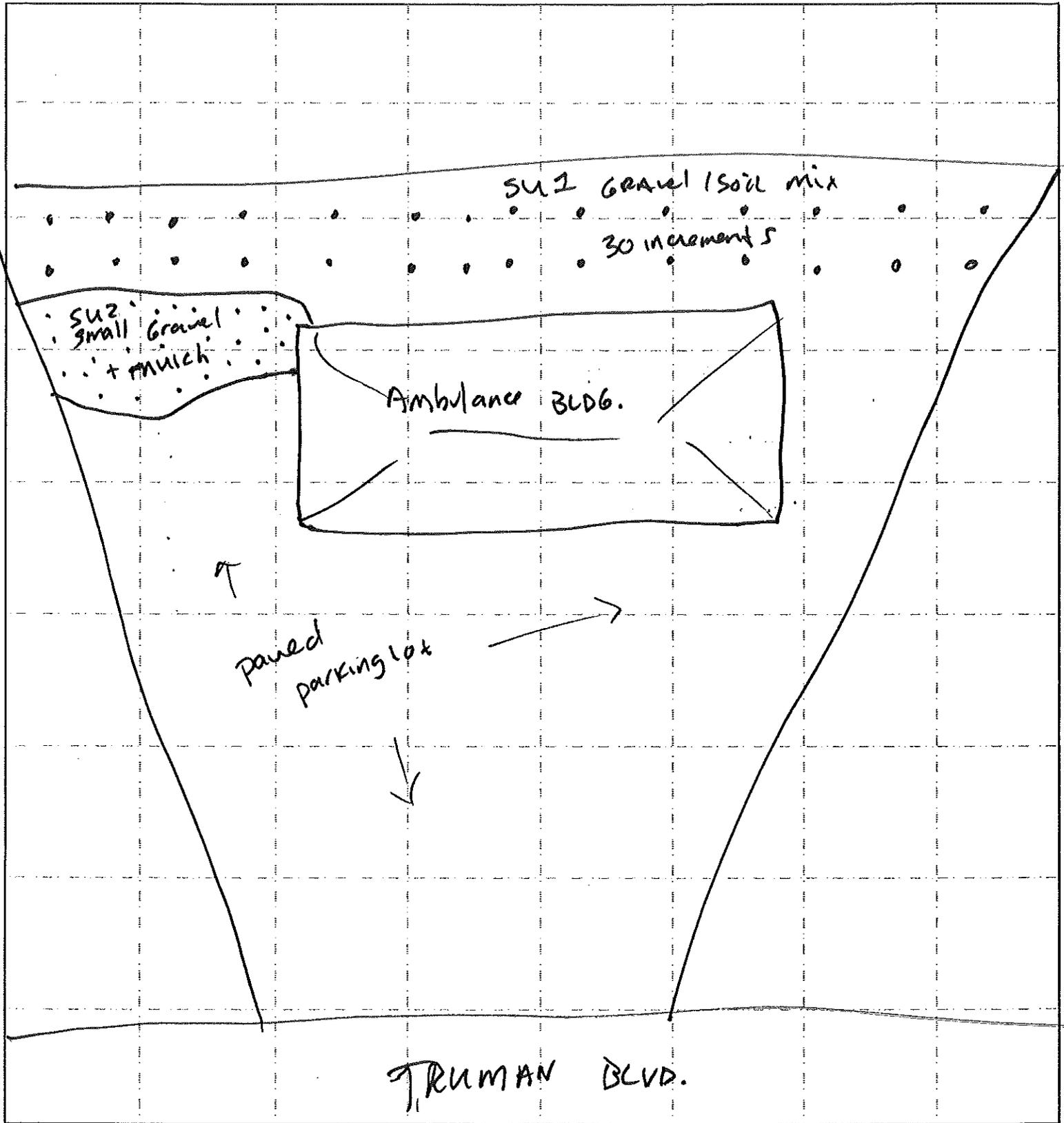
Date Screened/Sampled 6-13-13

Team Member(s): SC, MS



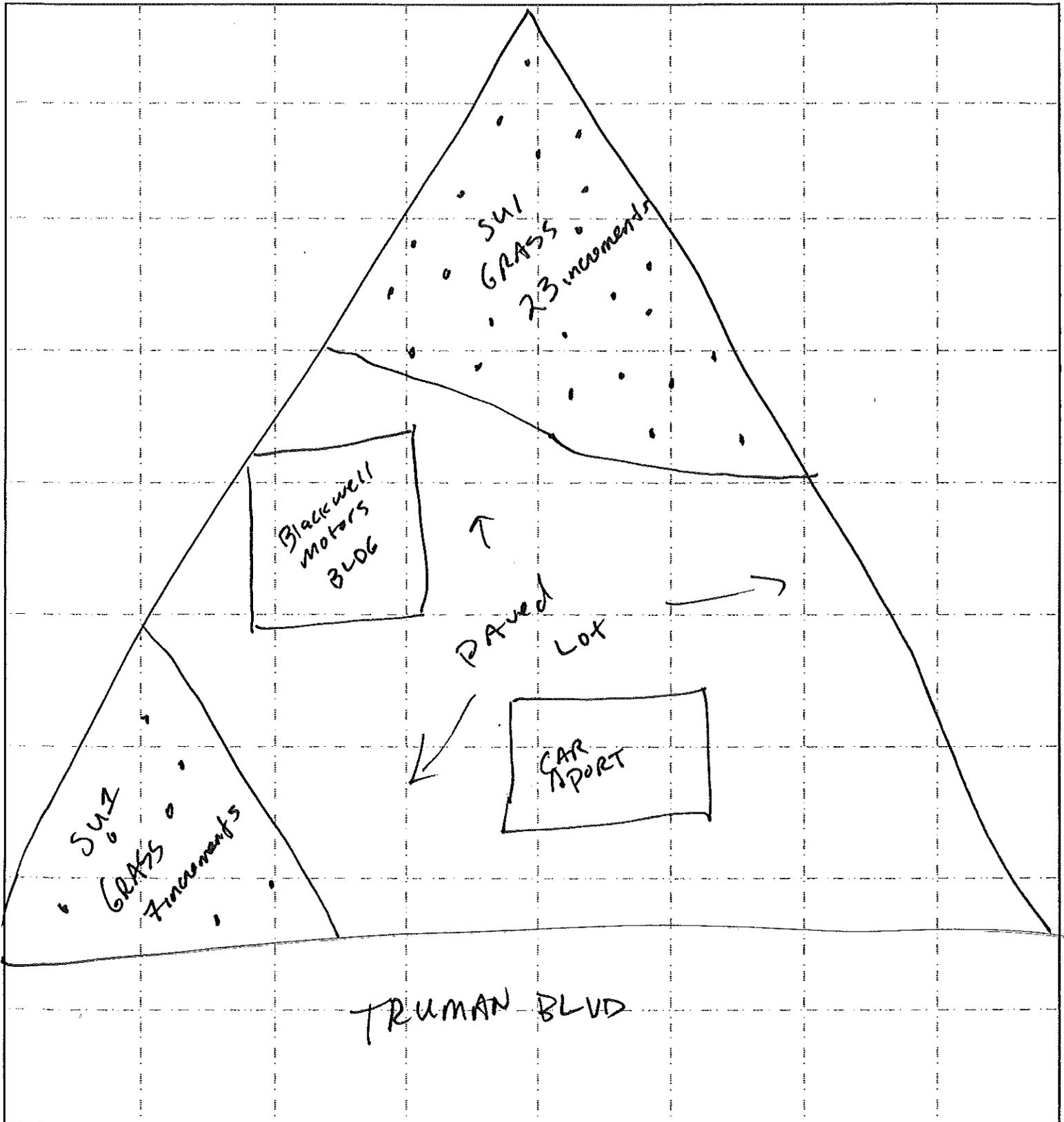
Date Screened/Sampled 6-13-13

Team Member(s): GB, MS



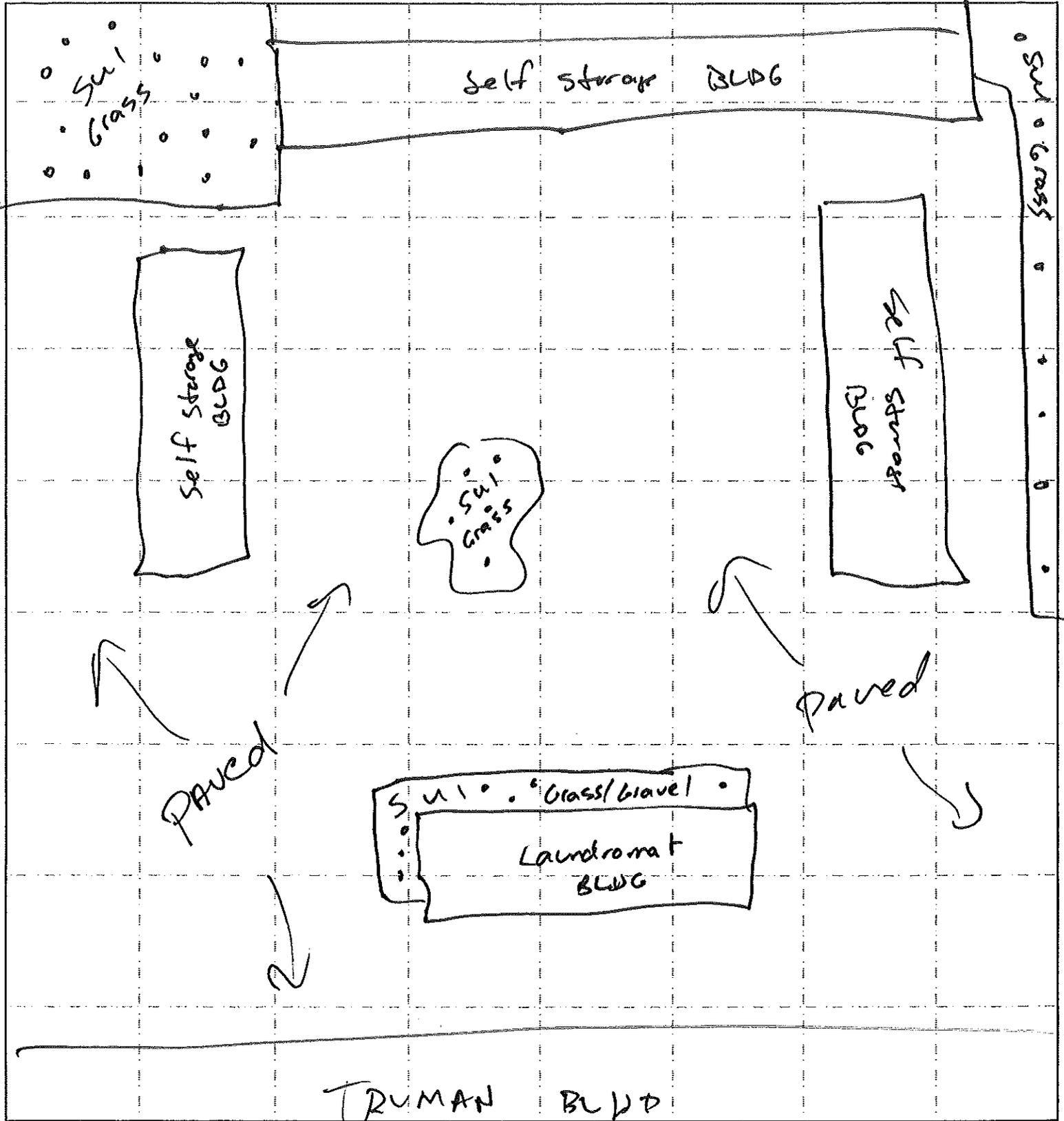
Date Screened/Sampled 6-13-13

Team Member(s): SC, MS



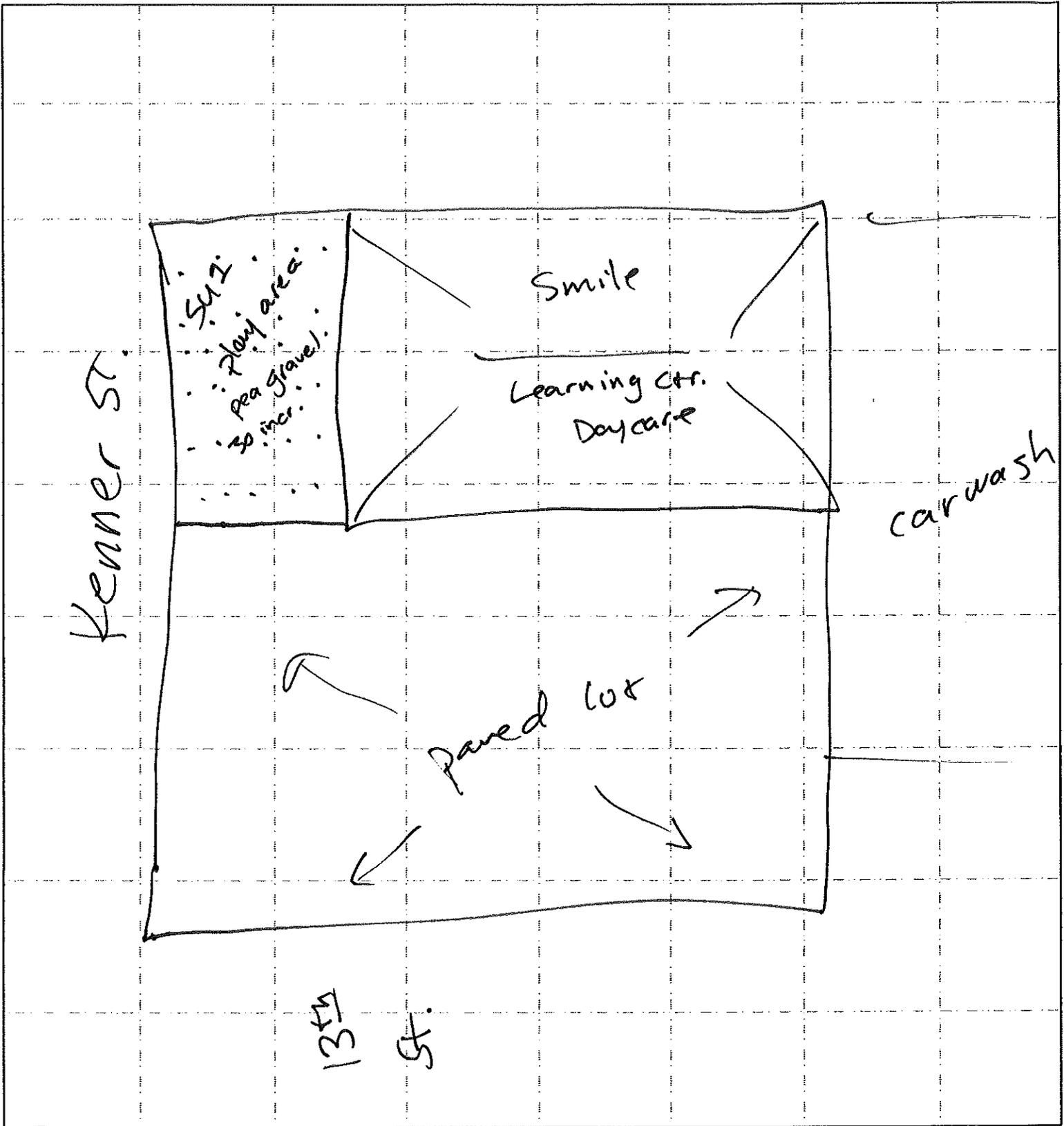
Date Screened/Sampled 6-13-13

Team Member(s): SC, MS



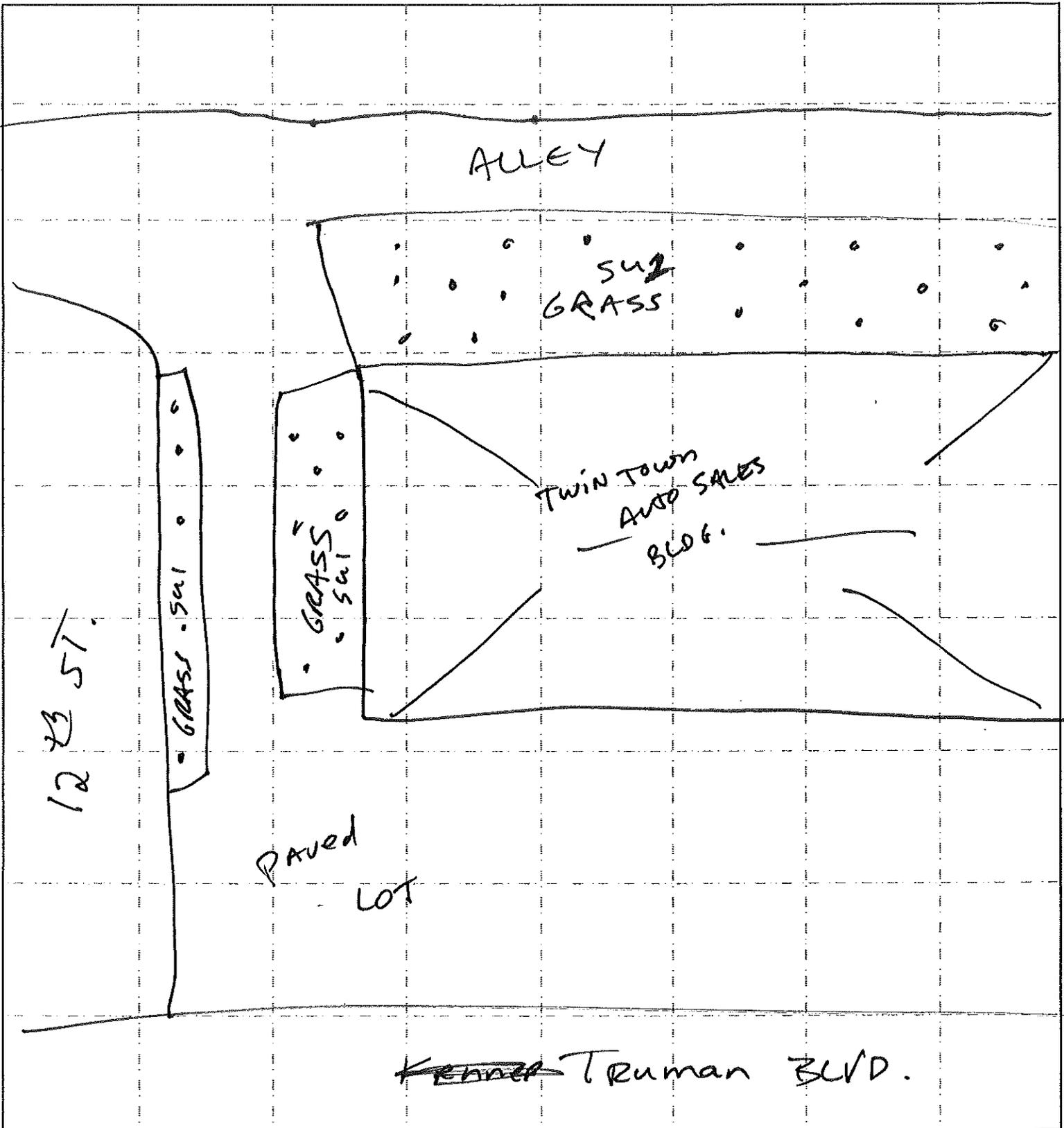
Date Screened/Sampled 6-13-13

Team Member(s): SC, MS



Date Screened/Sampled 6-13-13

Team Member(s): SC, MS



12th ST.

GRASS - 5' x 1'

GRASS
5' x 1'

ALLEY

5' x 2'
GRASS

TWIN TOWN
AUTO SALES
BLDG.

PAVED
LOT

~~KENNER~~ Truman BLVD.

Date Screened/Sampled 6-13-12

Team Member(s): SC, MS



SU1

SU2=4880 ft²

Loc ID 400
1101 Vine Street

SU1=3634 ft²



SU1=8852 ft²

Loc ID 401
1237 Truman Blvd.

SU1



SU1=5424 ft²

Loc ID 402
1235 Truman Blvd.

SU2=2661 ft²



Loc ID 403
1223 Truman Blvd.

SU1=9315 ft²

SU2=5248 ft²

SU1



SU1

SU1

Loc ID 404
1225 -1231 Truman Blvd.

SU1=10203ft²



SU1=1065ft²

Loc ID 405
1302 Kenner St.



SU1=1104ft²

Loc ID 406
1201-1203 Truman Blvd.

SU1

Report No: 13-06-01044
Issue No: 1

Date Received: 6/24/2013
Date Reported: 6/25/2013

Missouri Department of Health & Senior Services
 Dale Lindberg
 Eastern District
 220 S. Jefferson Street
 St. Louis, MO 63103

PO Number:
Date Collected: 6/24/2013
Collected by: Dale Lindberg
Project No.: 0624
Project Name: Smile Learning Center LLC
Project Location: 1302 Kenner St., Crystal City, MO

LABORATORY REPORT

Result

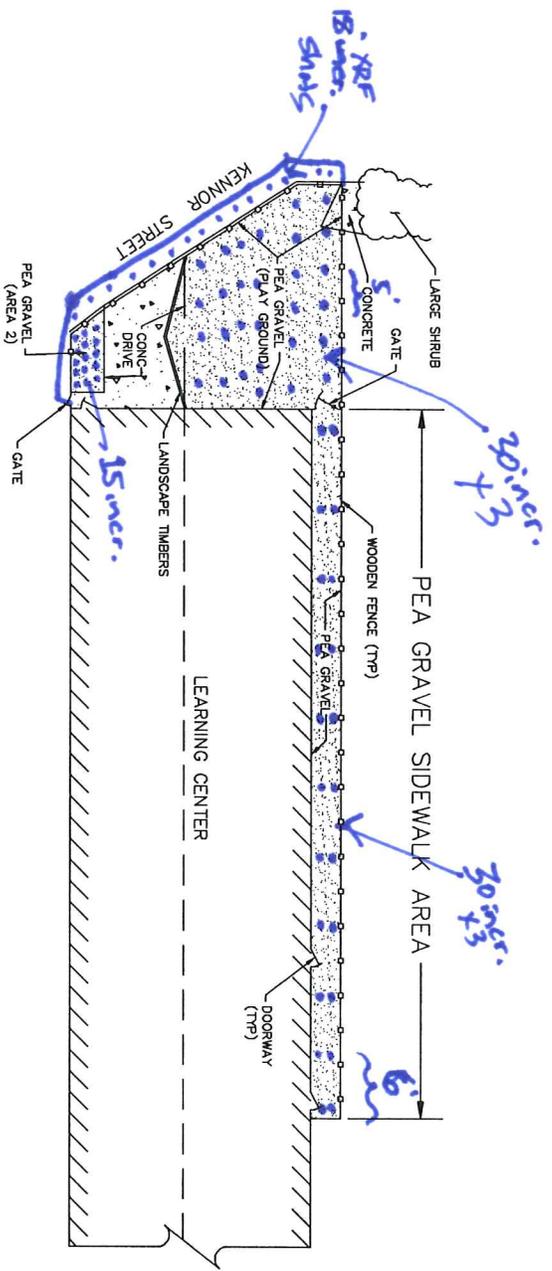
<u>EHT No.</u>	<u>Customer Sample Number</u>	<u>Sample Size</u>	<u>Analysis</u>	<u>Mass</u>	<u>Concentration</u>
454089	0624-01, FL, Entry, Side A	144 in2	Lead - Wipe	8.6 µg	8.6 µg/ft2
454090	0624-02, FL, 3/4 / Side A	144 in2	Lead - Wipe	6.9 µg	6.9 µg/ft2
454091	0624-03, FL, 5's, Side A	144 in2	Lead - Wipe	8.0 µg	8.0 µg/ft2
454092	0624-04, FL, 5's, Side C	144 in2	Lead - Wipe	19 µg	19 µg/ft2
454093	0624-05, FL, 3/4, Side C	144 in2	Lead - Wipe	19 µg	19 µg/ft2
454094	0624-06, Climber	144 in2	Lead - Wipe	39 µg	39 µg/ft2
454095	0624-07, Slide	144 in2	Lead - Wipe	13 µg	13 µg/ft2
454096	0624-08, Blank	--- in2	Lead - Wipe	<5.0 µg	--- µg/ft2

<u>Analysis</u>	<u>Method Reference</u>	<u>Reporting Limit</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Lead - Wipe	NIOSH Method 7082	5.0 µg	6/25/2013	PS

- Comments:**
- Results are not blank corrected unless otherwise noted.
 - Calculations of concentrations are based on sampling information submitted to EnviroHealth Technologies.
 - Test reports are considered to be pending review until final audit of data is conducted as indicated by the signed copy issued to the customer.
 - The results expressed in this report relate only to the samples tested.

Approved: _____
William J. Lowry, CIH
President

8-22-13



VOLUME CALCULATION

PEA GRAVEL AREA [CY] (PLAY GROUND)	PEA GRAVEL AREA [CY] (AREA 2)	PEA GRAVEL AREA [CY] (SIDEWALK)
$(911 \times 0.5) / 27 = 16.9$	$(66 \times 0.5) / 27 = 1.2$	$(593 \times 0.5) / 27 = 11.0$



AMEC Environment & Infrastructure, Inc.

15933 CLAYTON ROAD, SUITE 215
 BALLWIN, MISSOURI 63011
 PHONE: 636-200-5100
 Fax: 636-386-3804



SMILE LEARNING CENTER

DRAWN BY:	MJC	DATE:	08-08-13
REVIEWED BY:	EMW	DATE:	08-09-13
CHECKED BY:	KLN	DATE:	08-09-13

FIGURE 1

8/22/13 Smita Learning Center, Crystal City

11:20 Arrived + met Gene W. and saw Adam Env. Restoration.

Discussed sample collection tools. we'll use spoons.

AMEE Does not plan to excavate beyond fence.

photo

- 1 N side of fence
- 2 W side fence
- 3 S. Side fence
- 4 Small "concrete" pile area
- 5 larger play area
- 6 walkway.
- 7 bags of walkway soil
- 8 bags of play area soil
- 9 AMEE inside XAF vs DNR XAF
- 10 Shapiro northern exit
- 11 "
- 12 "

4
Smith Learning Ctr 8-23-83

12:00 collected 3^{1/2} in. from SA 1
(walkway) + from SU 2 (play area)

1300 collected 3 x 30 in. from
SU 2 (main play area)

1355 collected 15 in. from
"concrete" area where Anne does
not plan to excavate.

Observations:

walkway area per ground varying
in depth from 1" to 8" near
fence. mostly underlain w/ land-
scape fabric and in some areas
wood mulch beneath the fabric.
collected 0-1" from just below
land scape fabric / wood mulch or
beneath dry free-flowing pea gravel
in areas where fabric absent.

5
Sanku Learning Ctr. 8-25-13

main play area Travel Depth
varied between 2-6".
concrete beneath, 50' from end
some landscape fabric near fence
at Northern end, gravel more
mixed into soil here vs.
walkway due to lack of fabric.

"concrete" area had more
sand mixed in than other
areas. Per ground depth
uniform @ 5".

collected in - 5th & XRF readings
out side fence between curb
and fence.

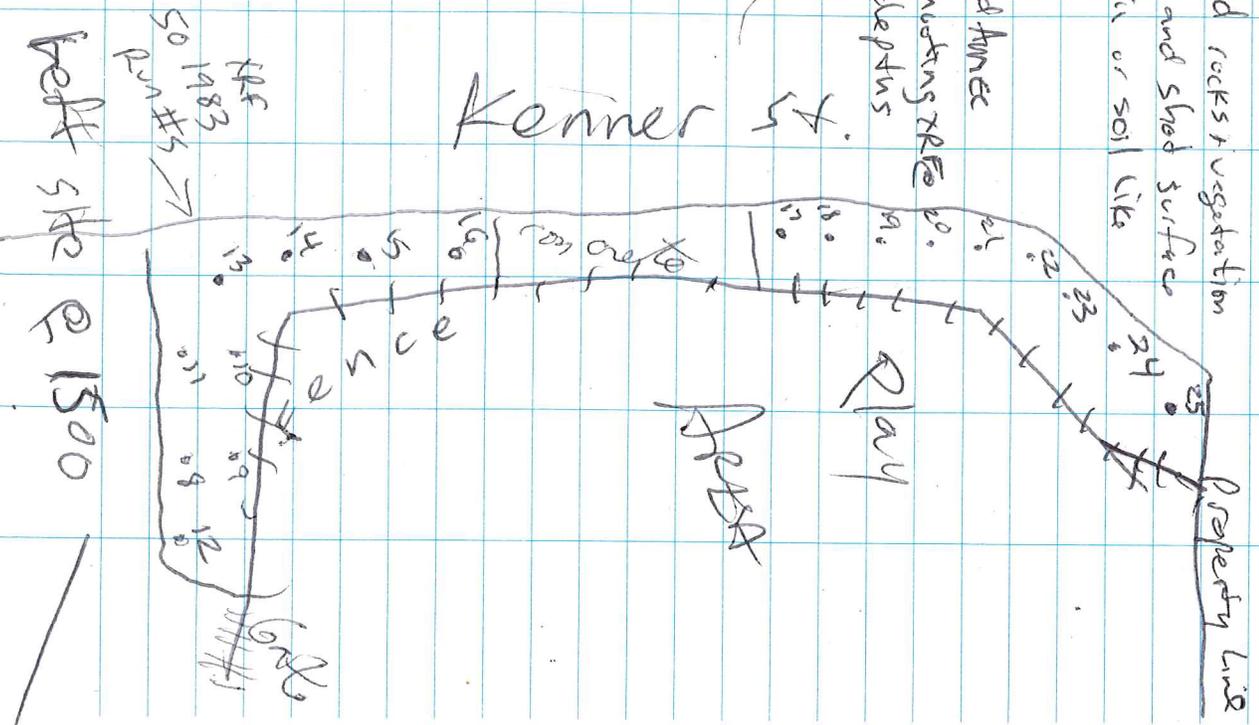
6 Snake Learning Center 8-23-13

Mound rocks + vegetation
 aside and shed surface
 of soil or soil like
 layer.

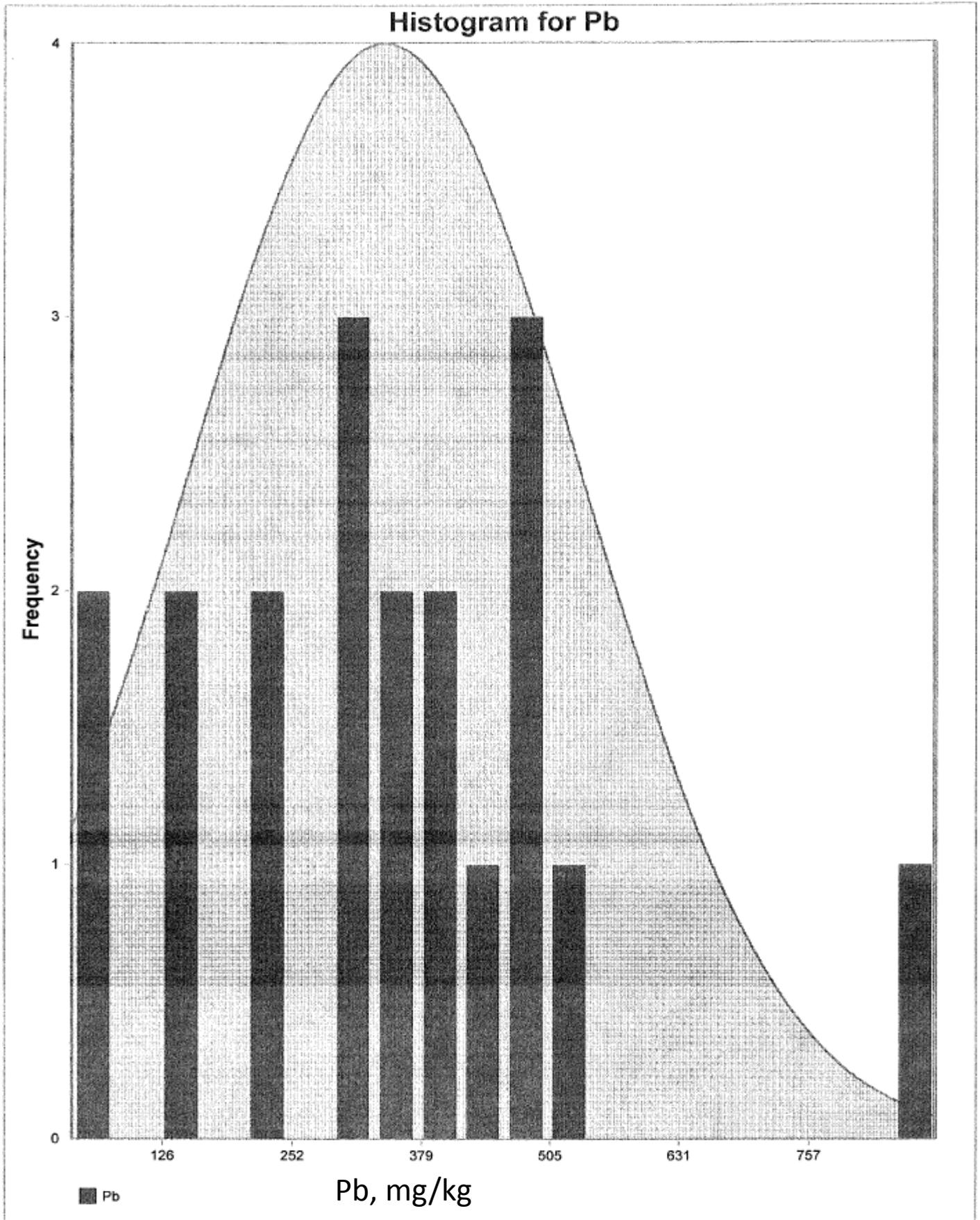
Noted Anne
 was shuffling
 2-3" depths



Kenner St.



In-Situ XRF Analyses Conducted at Location ID 405 Between Fence and Curb



General UCL Statistics for Full Data Sets

User Selected Options

From File	H:\Sections\Superfund\Site Files\Shapiro Brothers Salvage Yard\Technical\XRF\ProUCL\SmileData.xls.w
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Pb

General Statistics

Number of Valid Observations	19	Number of Distinct Observations	18
------------------------------	----	---------------------------------	----

Raw Statistics

Minimum	38.4
Maximum	880
Mean	343.8
Median	337
SD	192.1
Coefficient of Variation	0.559
Skewness	0.833

Log-transformed Statistics

Minimum of Log Data	3.648
Maximum of Log Data	6.78
Mean of log Data	5.63
SD of log Data	0.772

Relevant UCL Statistics

Normal Distribution Test

Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical Value	0.901

Data appear Normal at 5% Significance Level

Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.853
Shapiro Wilk Critical Value	0.901

Data not Lognormal at 5% Significance Level

Assuming Normal Distribution

95% Student's-t UCL	420.2
95% UCLs (Adjusted for Skewness)	
95% Adjusted-CLT UCL (Chen-1995)	425.3
95% Modified-t UCL (Johnson-1978)	421.6

Assuming Lognormal Distribution

95% H-UCL	571.8
95% Chebyshev (MVUE) UCL	674.7
97.5% Chebyshev (MVUE) UCL	807.3
99% Chebyshev (MVUE) UCL	1068

Gamma Distribution Test

k star (bias corrected)	2.175
Theta Star	158.1
MLE of Mean	343.8
MLE of Standard Deviation	233.1
nu star	82.64
Approximate Chi Square Value (.05)	62.69
Adjusted Level of Significance	0.0369
Adjusted Chi Square Value	61.17

Data follow Appr. Gamma Distribution at 5% Significance Level

Assuming Gamma Distribution

95% Approximate Gamma UCL	453.2
---------------------------	-------

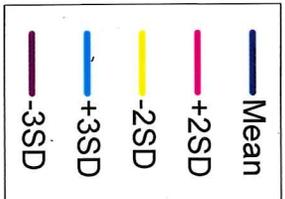
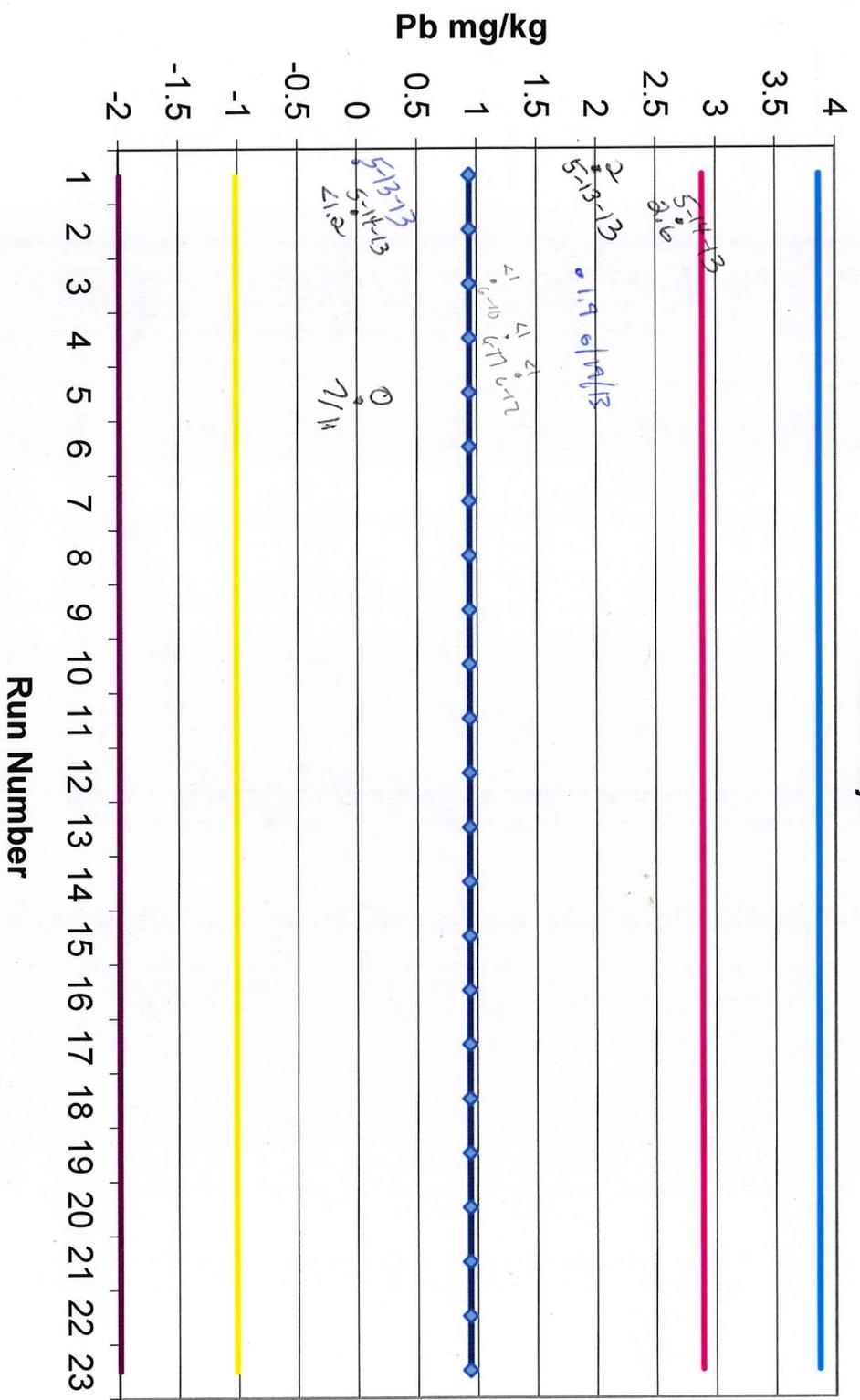
Data Distribution

Data appear Normal at 5% Significance Level

Nonparametric Statistics

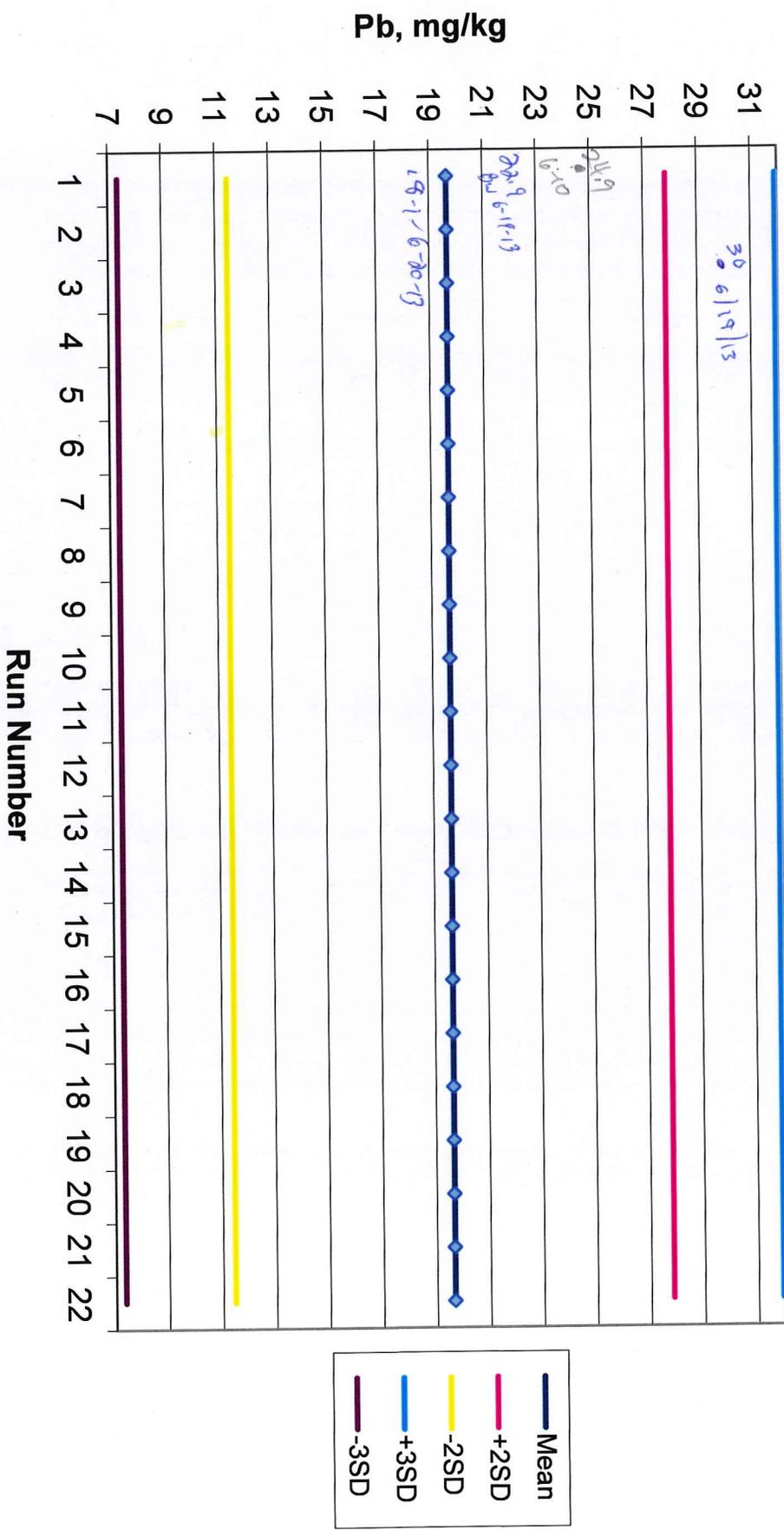
95% CLT UCL	416.3
95% Jackknife UCL	420.2
95% Standard Bootstrap UCL	414.2
95% Bootstrap-t UCL	429.3
95% Hall's Bootstrap UCL	446.6
95% Percentile Bootstrap UCL	416
95% BCA Bootstrap UCL	422
95% Chebyshev(Mean, Sd) UCL	535.9
97.5% Chebyshev(Mean, Sd) UCL	619
99% Chebyshev(Mean, Sd) UCL	782.3

Control Chart Lead XRF SN 1984 Blank Spring 2013
 All Charts Are Based On
 45 Second Runtimes
 Beam 2 Only



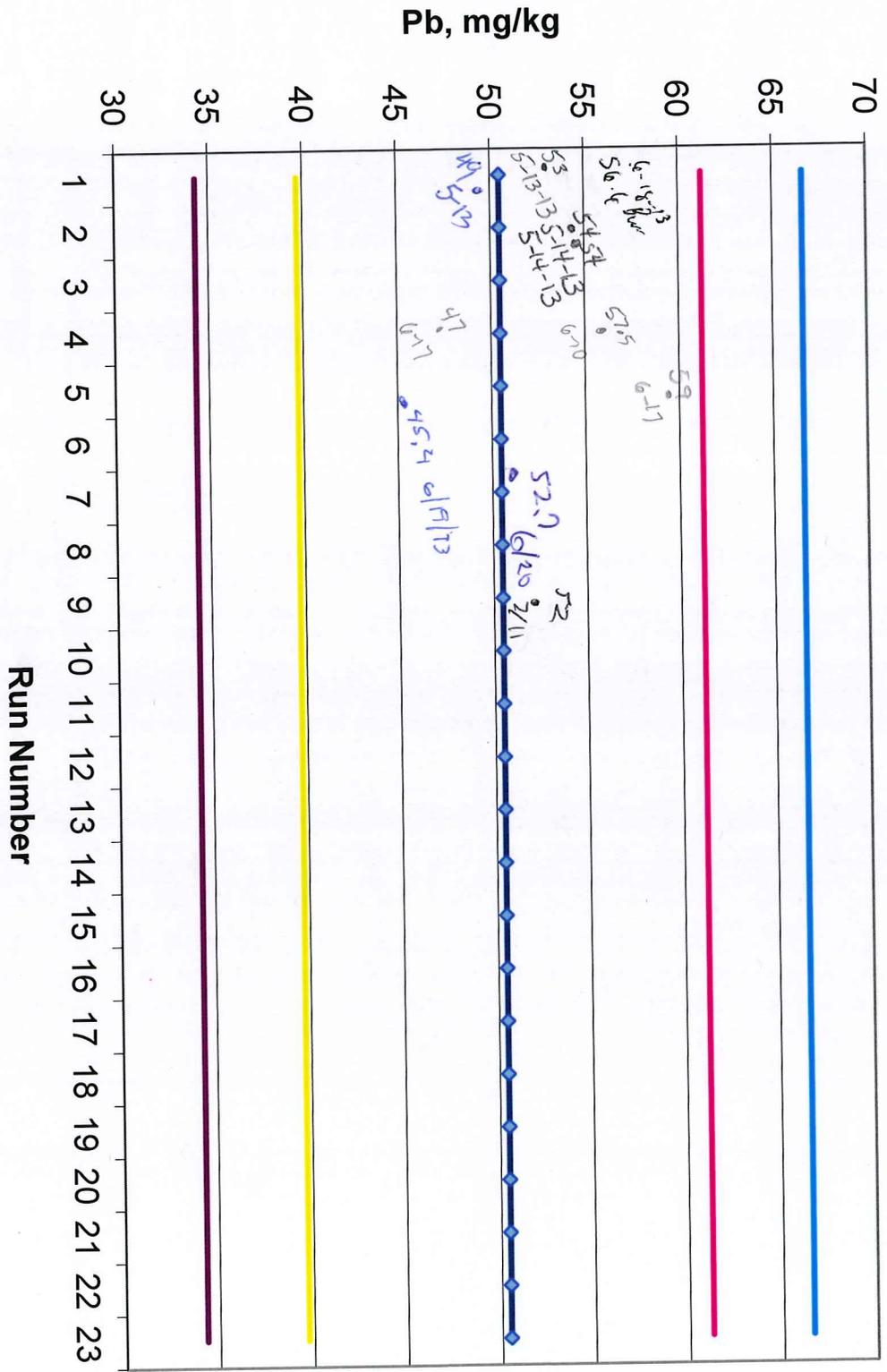
Run Number

Control Chart Lead XRF SN 1984 SRM 27090 True= 18.9+- 0.5 mg/kg Spring 2013



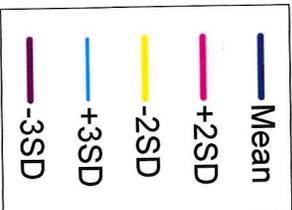
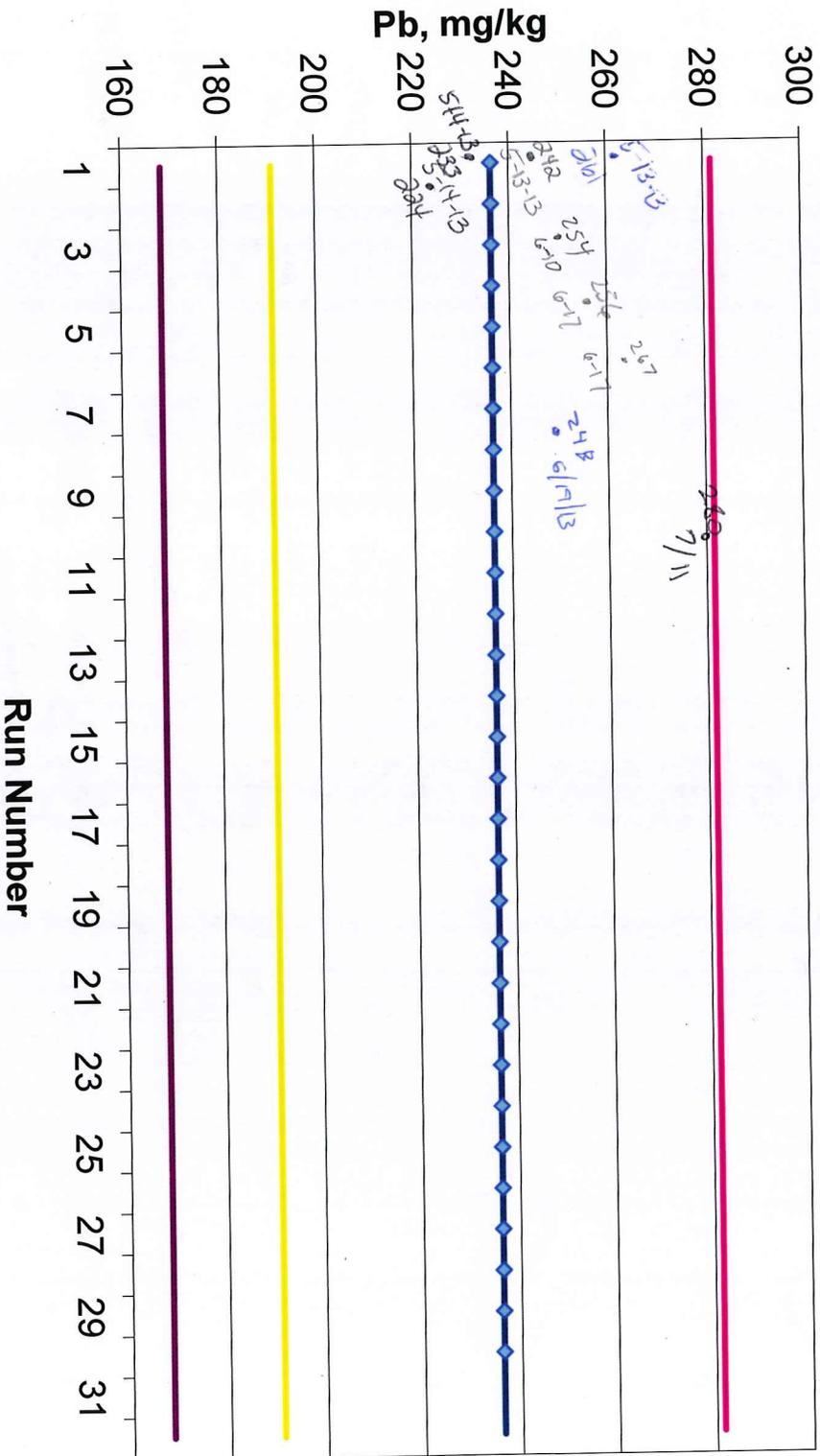
— Mean
 — +2SD
 — -2SD
 — +3SD
 — -3SD

Control Chart Lead XRF SN 1984 SRM 5861 True= 40.6
 +8.3 mg/kg Spring 2013

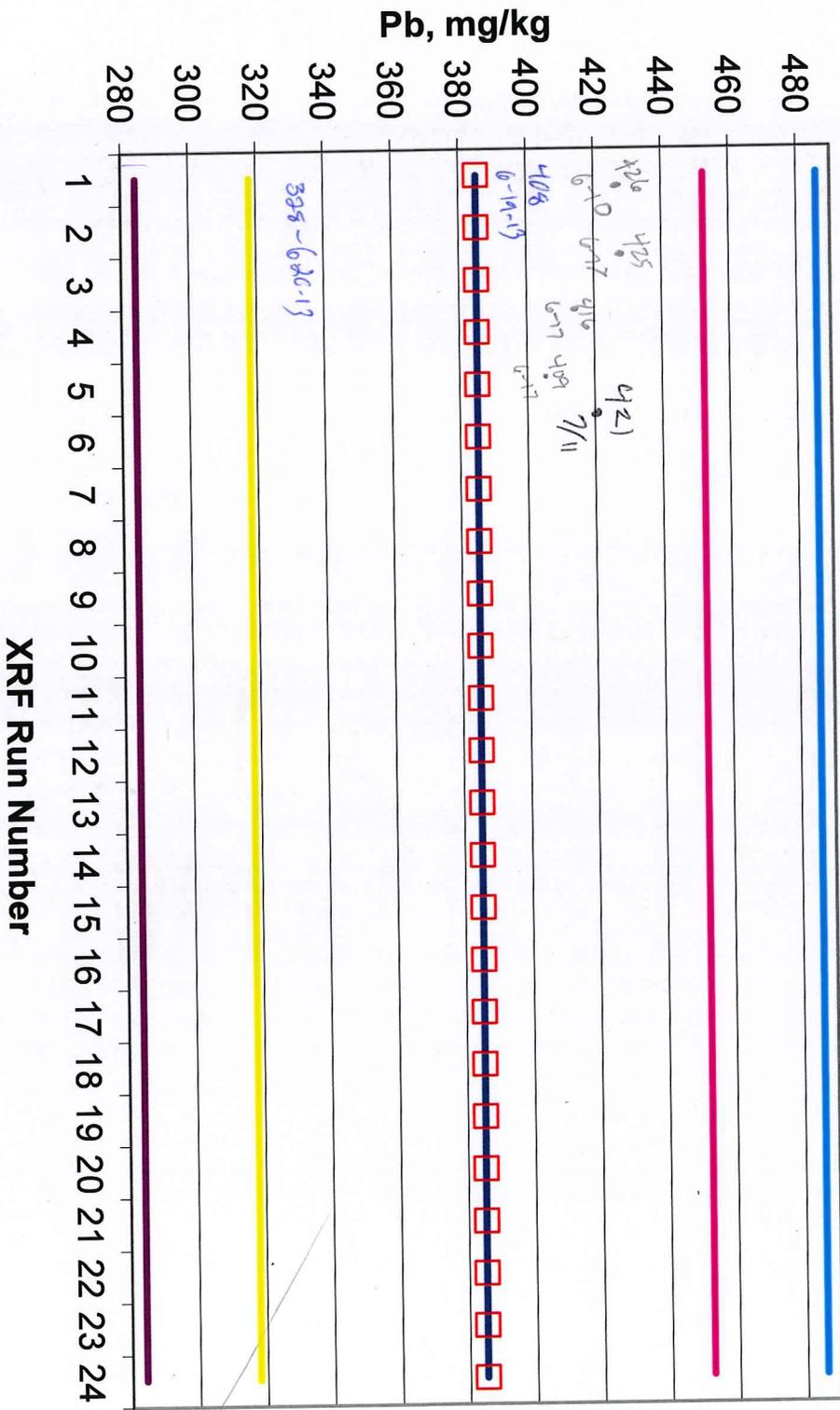


Legend:
 — Mean
 — +2SD
 — -2SD
 — +3SD
 — -3SD

Control Chart For Lead in NIST SRM 4315, True = 244+- 17 mg/kg SN: 1984 Spring 2013



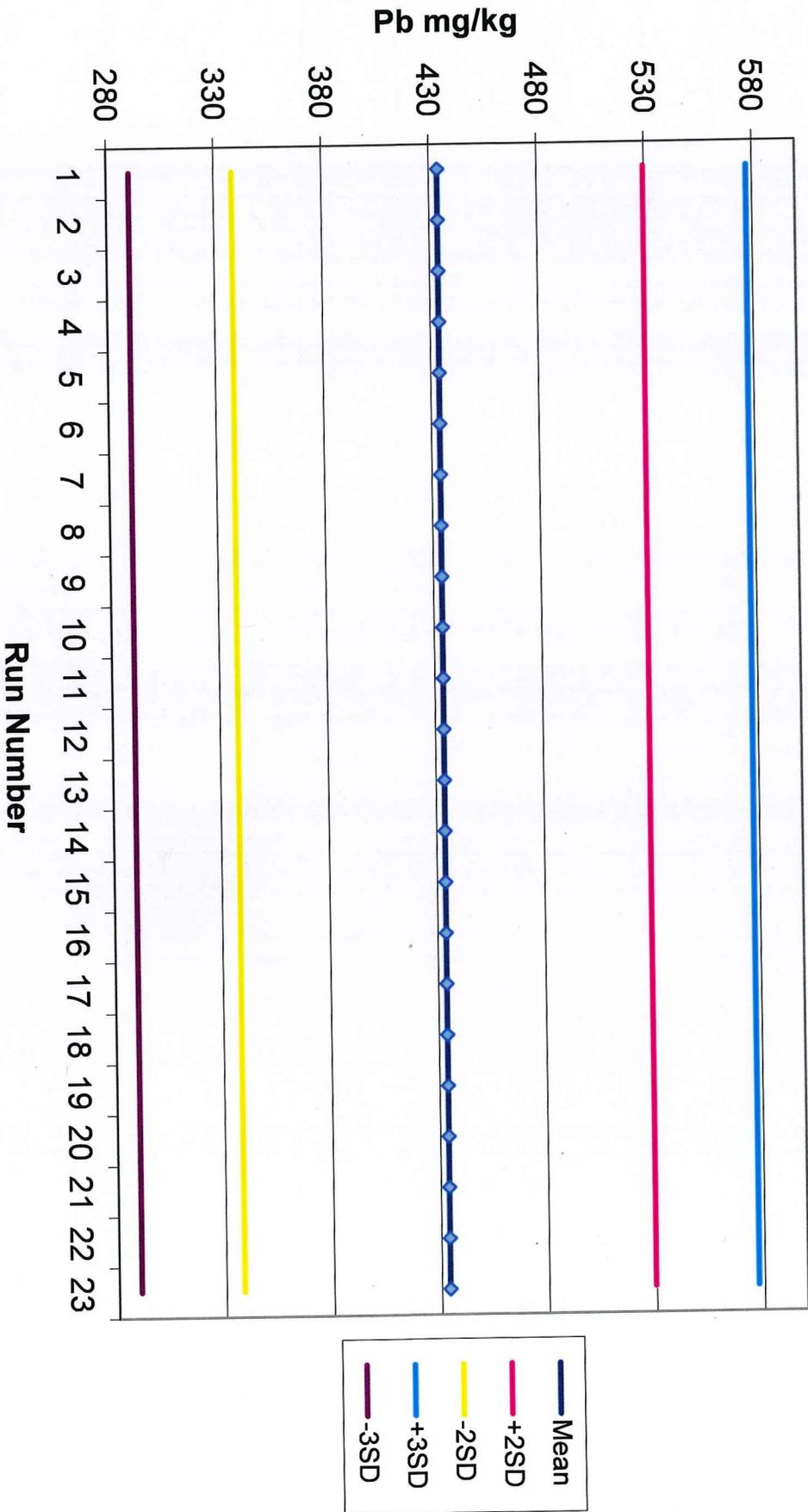
Control Chart Lead XRF SN 1984 2686 True=432 +/- 17 Spring 2013



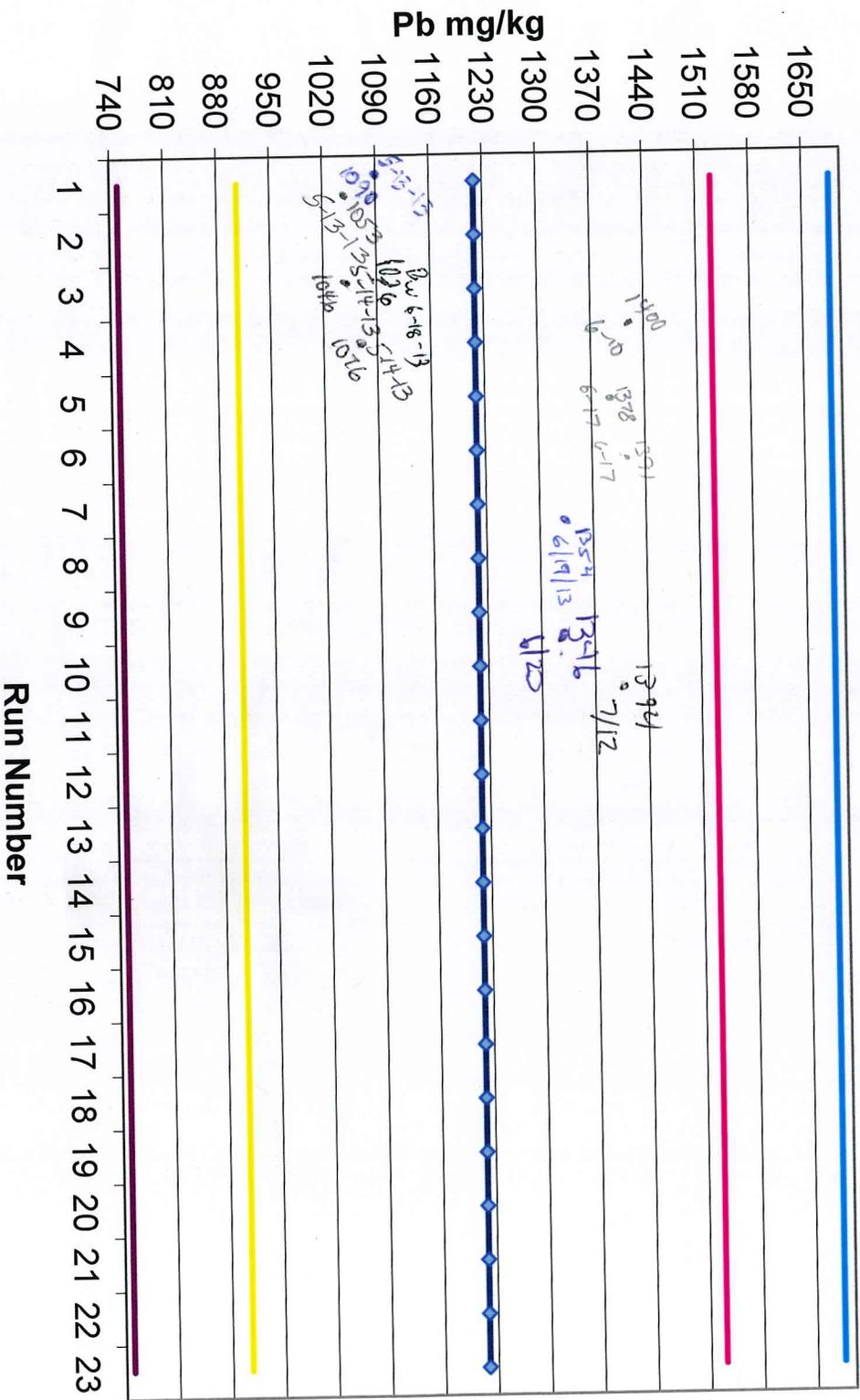
— Mean
 — +2SD
 — -2SD
 — +3SD
 — -3SD

XRF Run Number

Control Chart Lead XRF SN 1984 SRM 3212 True= 695+- 131 mg/kg Spring 2013

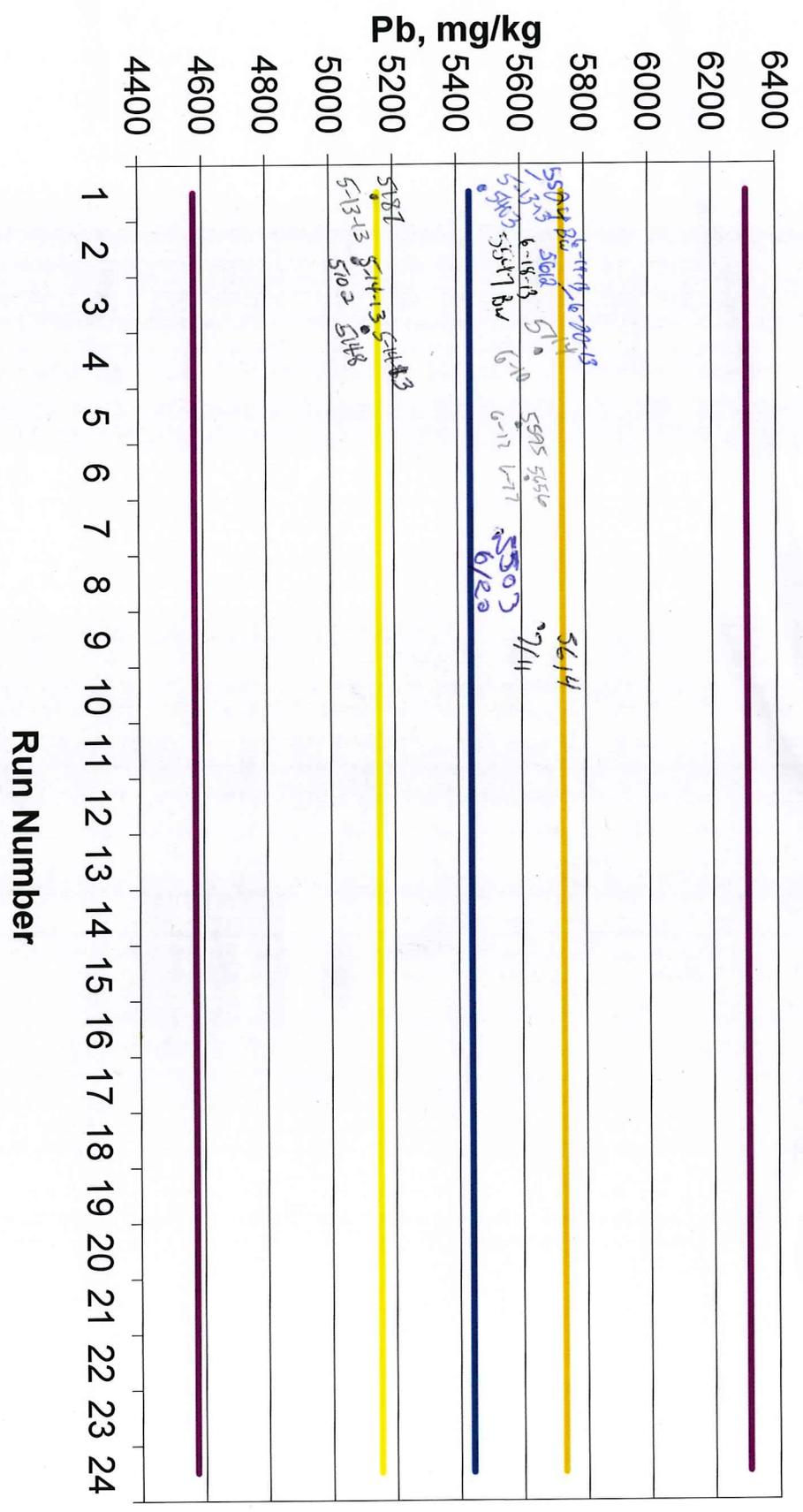


Control Chart Lead XRF SN 1984 SRM 2711 True = 1162 +/- 31 mg/kg Spring 2013



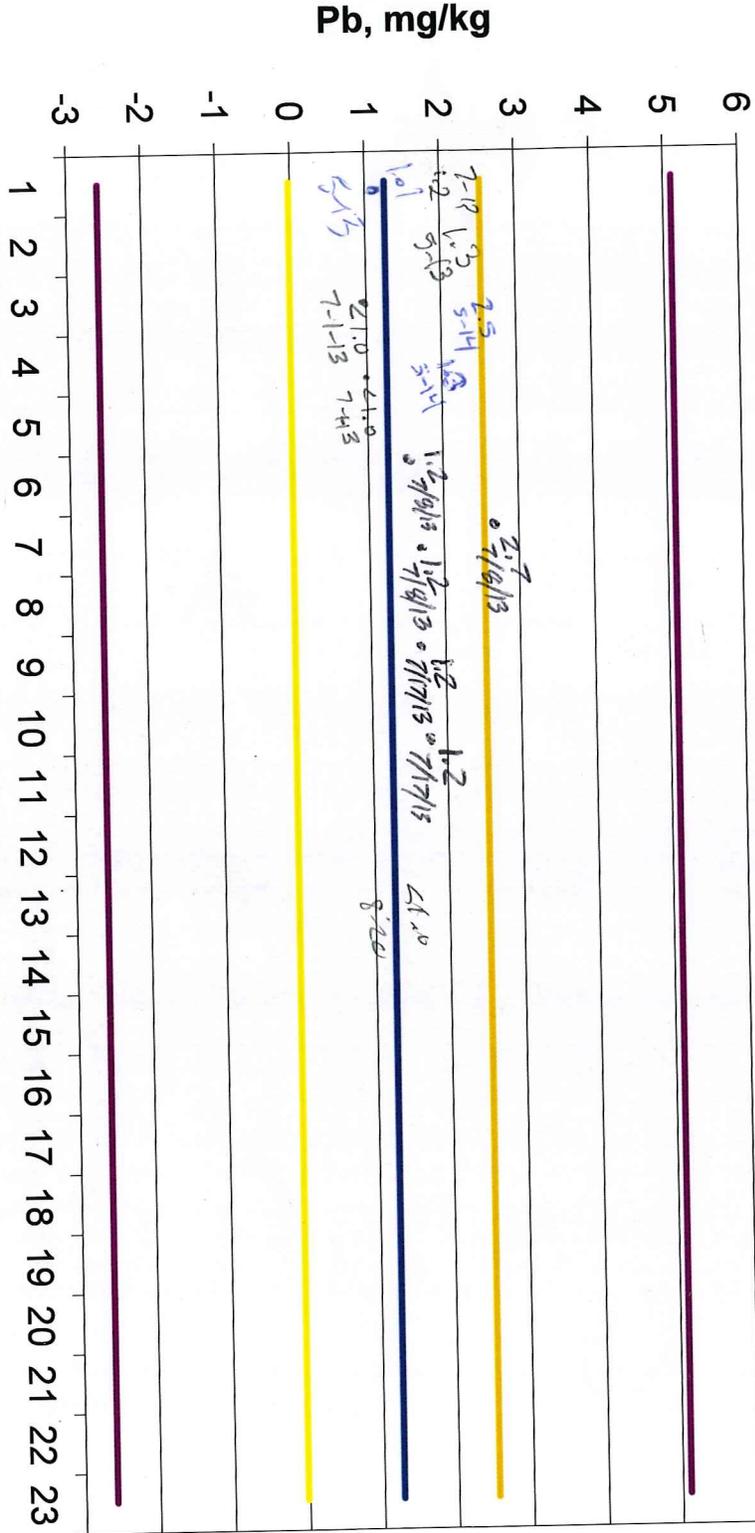
— Mean
 — +2SD
 — -2SD
 — +3SD
 — -3SD

Control Chart Lead XRF SN 1984 SRM 2710 True= 5532 +-80 mg/kg Spring 2013



— Mean
 — +2SD
 — -2SD
 — +3SD
 — -3SD

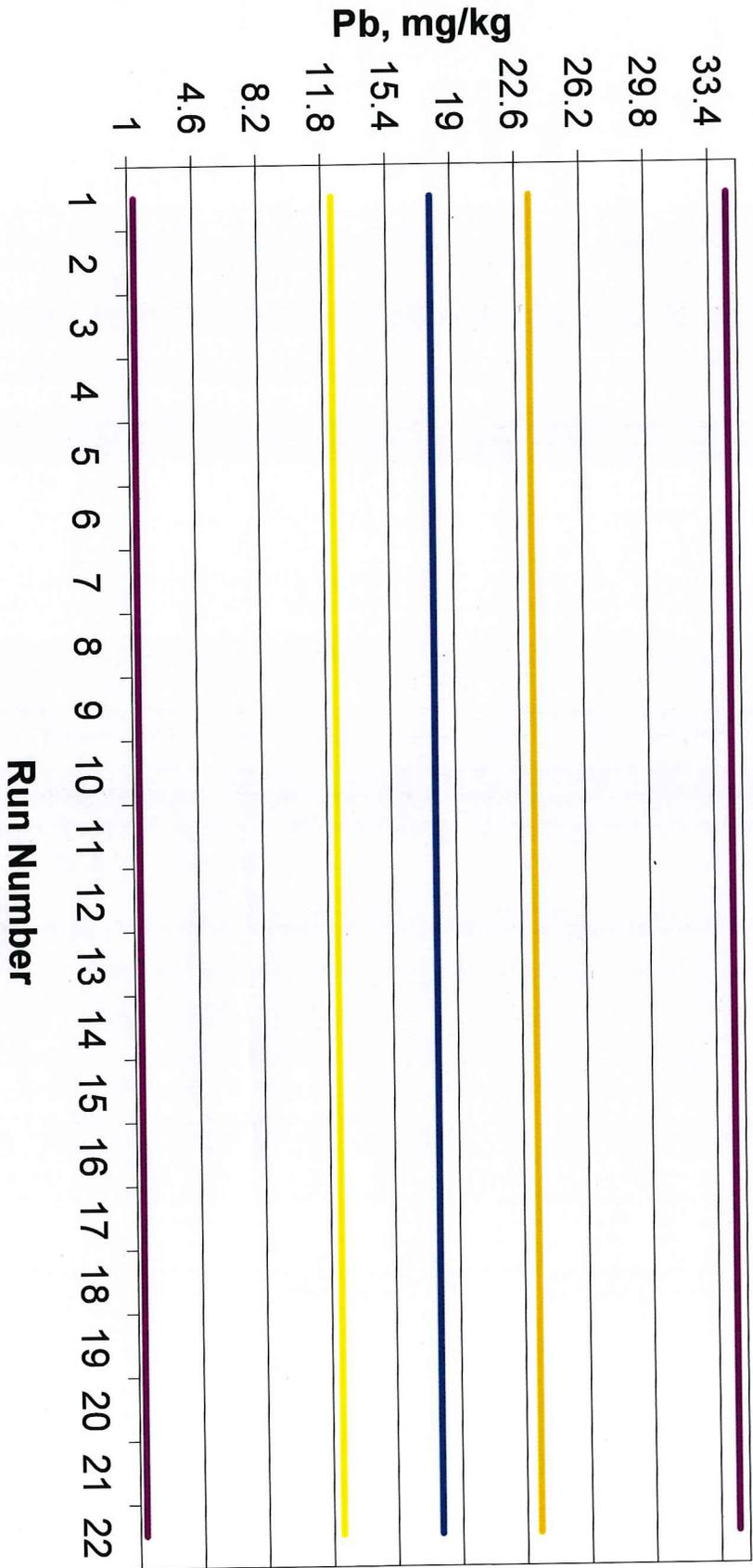
Control Chart Lead XRF SN 1983 Blank Spring 2013
 All Charts Are Based On
 45 Second Runtimes
 Beam 2 Only



At least last 5-14 was from 1984

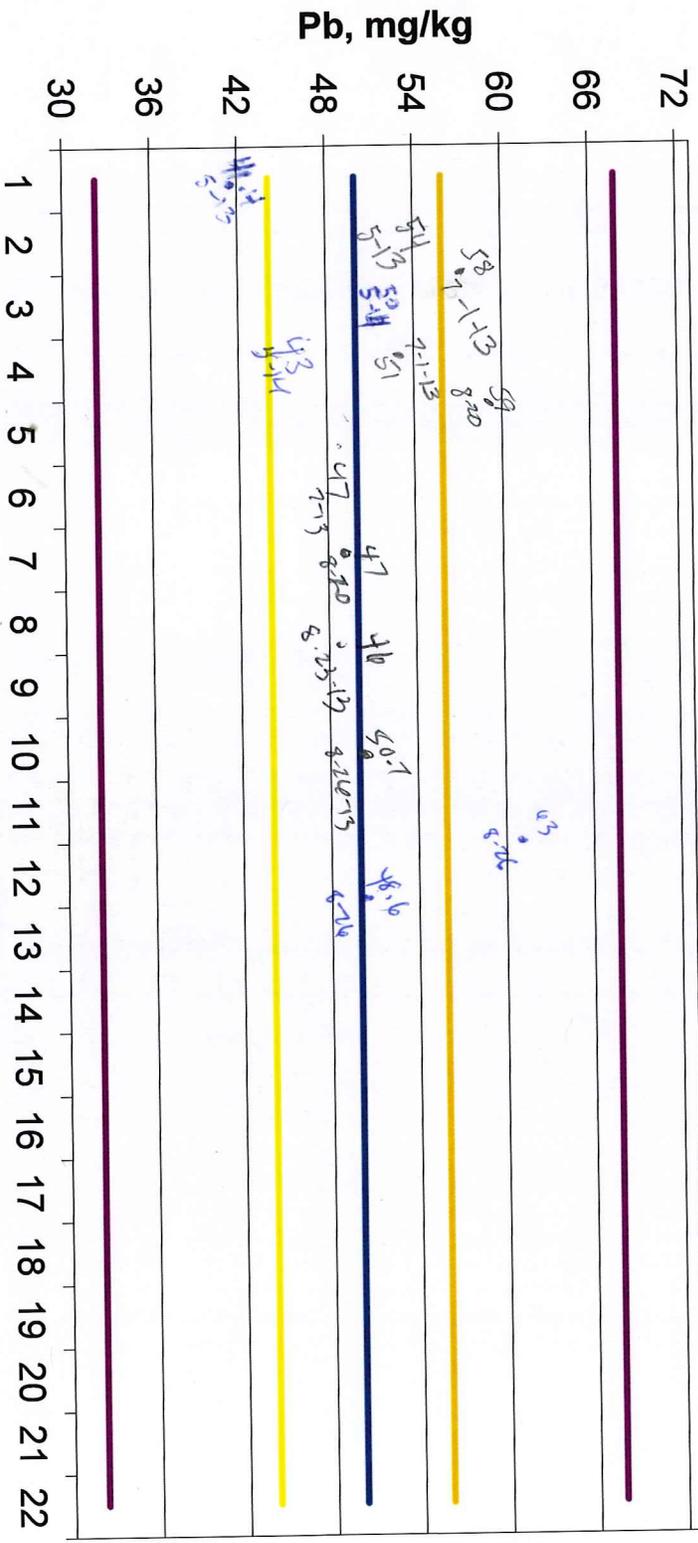


Control Chart Lead XRF SN 1983 SRM 2709 True= 18.9 +/-0.5 mg/kg April 2013



— Mean
— +2SI
— -2SD
— +3SI
— -3SD

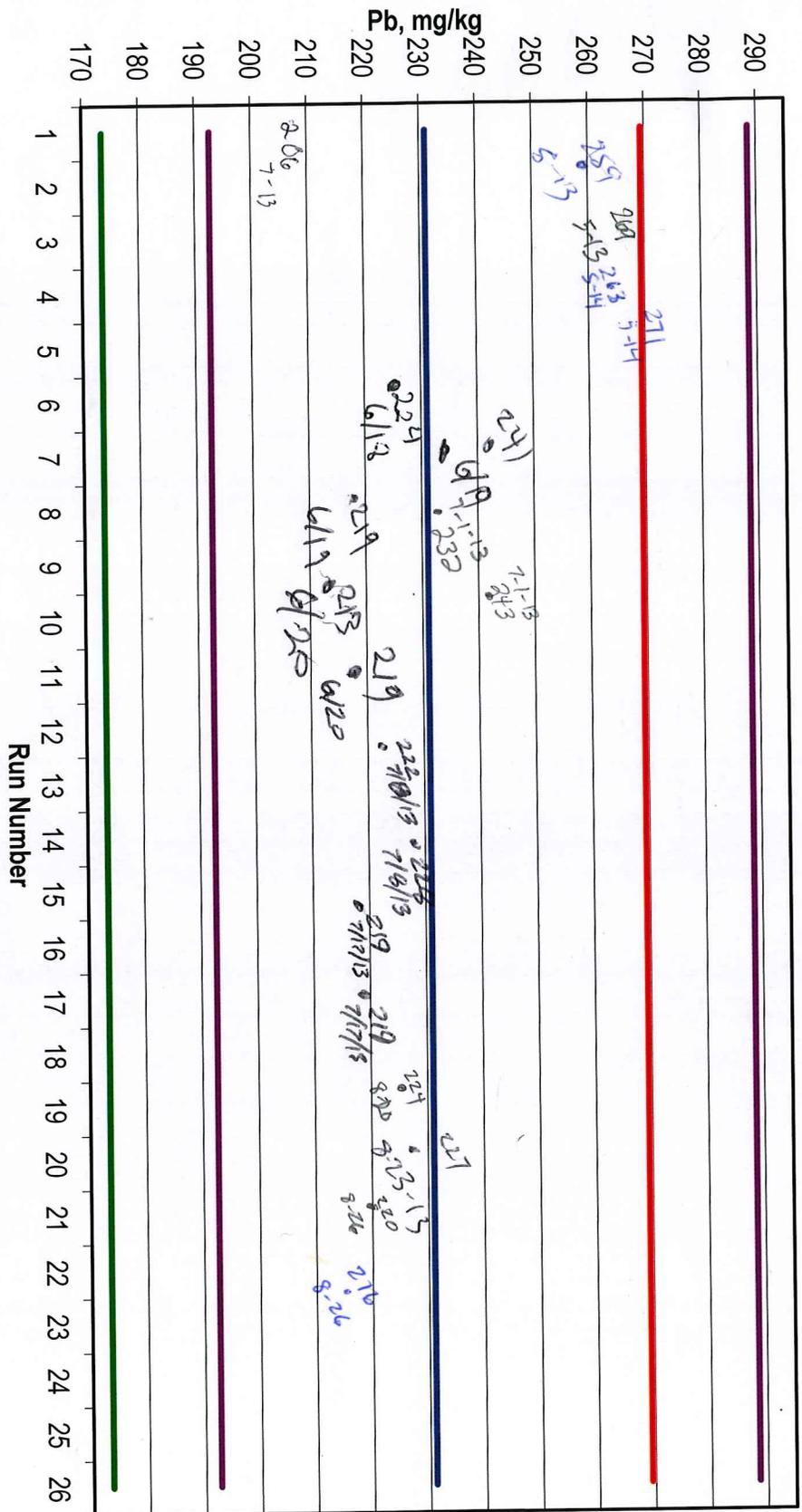
Control Chart Lead XRF SN 1983 SRM 5861 True= 40.6 +-8.3 mg/kg Spring 2013



— Mean
— +2SD
— -2SD
— +3SD
— -3SD

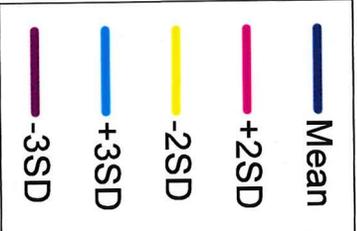
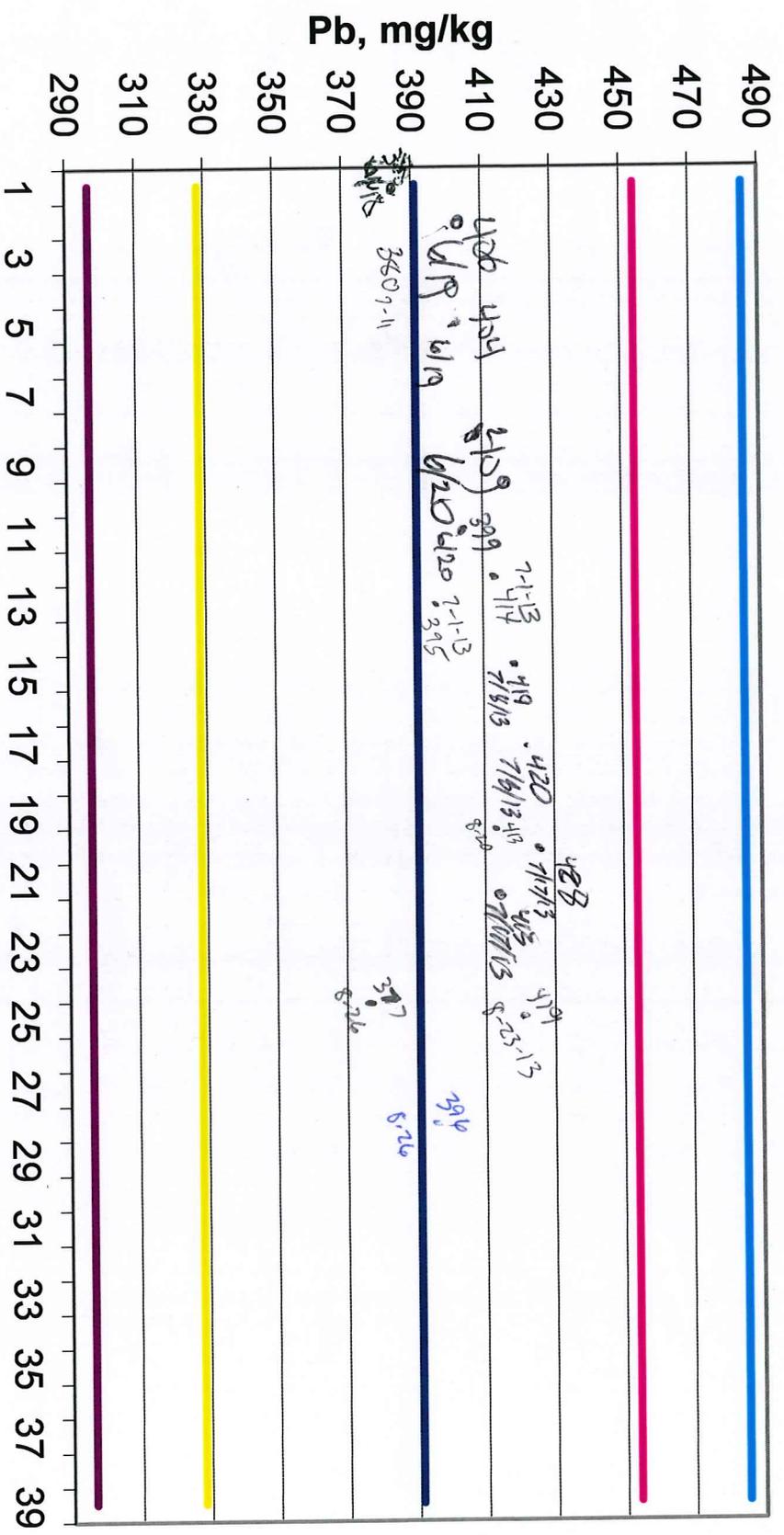
Run Number

Control Chart For Lead in NIST SRM 4315, True = 244+-17 mg/kg SN: 1983 April 2013



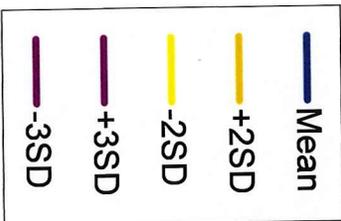
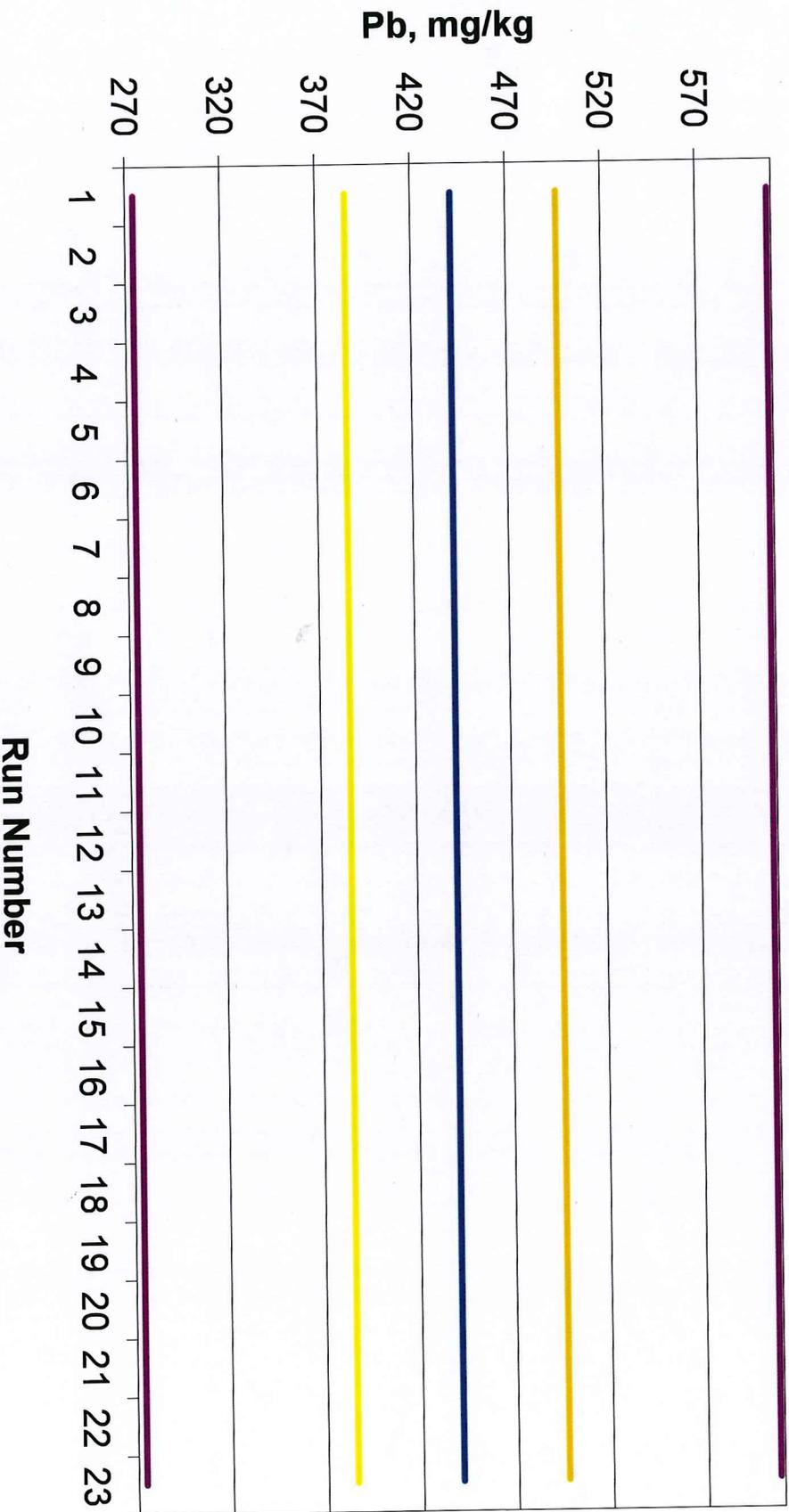
— mean
 — +2SD
 — -2SD
 — +3SD
 — -3SD

Control Chart Lead XRF SN 1983 2586 True=432 +- mg/kg Spring 2013

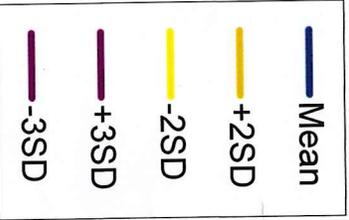
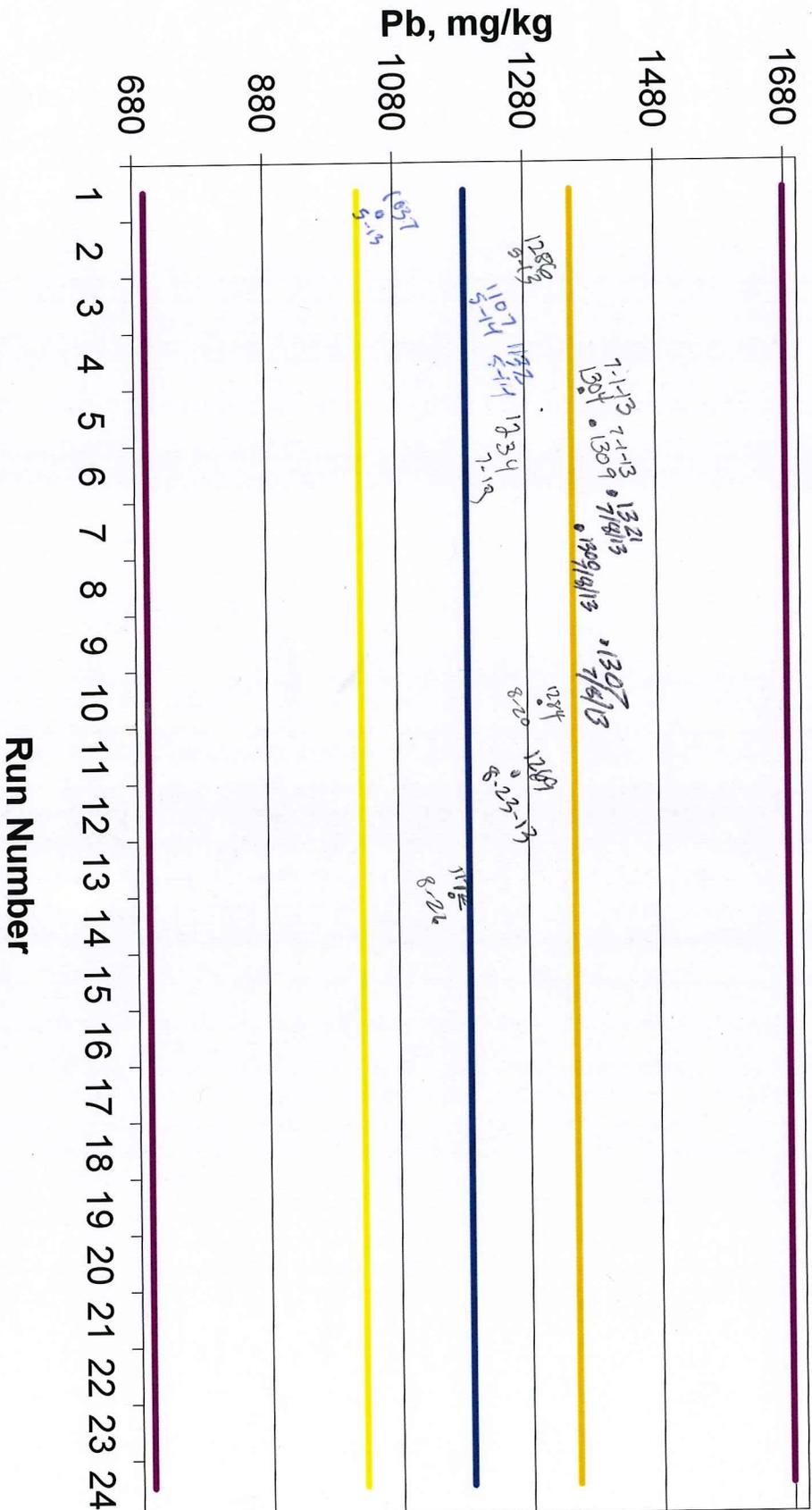


XRF Run Number

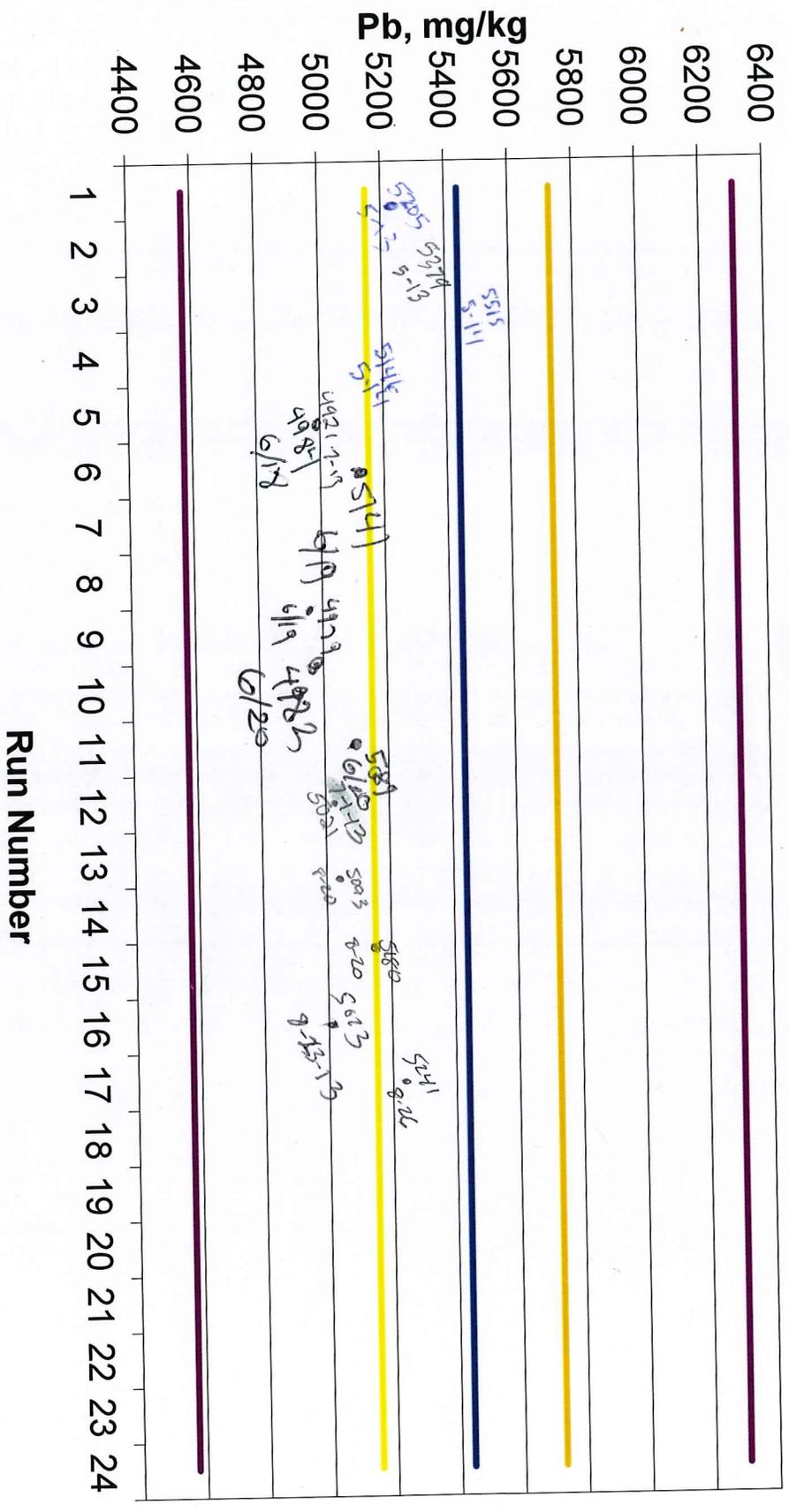
Control Chart Lead XRF SN 1983 SRM 3212 True=695 +/-131 mg/kg Spring 2013



Control Chart Lead XRF SN 1983 SRM 2711 True= 1162 +-31 mg/kg April 2013



Control Chart Lead XRF SN 1983 SRM 2710 True= 5532 +-80 mg/kg Spring 2013



— Mean
 — +2SD
 — -2SD
 — +3SD
 — -3SD

APPENDIX E

REFERENCES

(includes only references not readily available online – urls provided in table of references at end of report narrative)

August 20, 2013

VIA EMAIL

Mr. Dennis Stinson
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Re: Response to MDNR Questions Regarding
M W Recycling Festus, MO Scrap Yard

Dear Mr. Stinson:

Enclosed please find responses to your questions regarding the Festus site. If you have any questions regarding this response, please contact me at (440) 753-5351.

Sincerely,



Steve Forystek
Director, Health Safety Environment & Transportation

Cc: Joe King, M W Recycling
Festus Facility Environmental File

MDNR Questions / Responses August 2013

Please provide a detailed description of facility operations including:

Days and hours of facility operations

M-Th 8 to 4.

F 8 to 3:30.

Sat 8 to Noon

These are our present hours and are subject to periodic revisions.

Specifics about the types of materials processed and the type of processing

All types of metals meeting our Company's scrap metal requirements, including ferrous, copper, brass, aluminum, etc. (see Scrap Quality Management Program). The site conducts sorting, rail car dismantling, and shearing, and torching of other metals. The site has a shredder, but it was idled during 2013, and M W Recycling has no plans to restart it.

Are rail cars being processed?

Yes. We dismantle them, sell some parts for re-use, and tear apart / shear other parts.

Are they inspected to verify that all contents have been removed?

Yes. The railroad tags cars for recycling at its shop as being out of service and ensures the cars are empty. M W Recycling inspects each car visually inspected upon arrival. Railroad cars that are received and processed normally last contained lime or grain.

If contents remain what is your procedure?

If not empty, sent back to the sender of the rail cars to be cleaned before M W Recycling will process them.

Is there a contractual obligation (in writing) that railcars are delivered empty?

There is no written contractual obligation, but it is M W Recycling's expectation that the railcars will arrive empty. When cars do not come in empty, they are sent back as described above.

We noticed blocks of aluminum material being created from scrap at the facility when we toured it in December 2011. Please describe the aluminum scrap processing operations at the facility.

The blocks of aluminum material are collected and transferred off-site. They are not smelted or processed at the site, only sorted and shipped.

Is aluminum scrap shredded at the facility?

The alum discussed in the prior response was never shredded at the Festus yard. Additionally, the Shredder has been idled, so no shredding of any material is presently occurring.

Is a sweat furnace used to recover aluminum?

No sweat furnace is in use at the facility.

Are any furnaces used to process metals?

No.

Are cutting torches used to process metals?

Yes.

What metals and how often are they used?

Currently Up to 2 days per week. Heavy iron pieces are cut to size with torches, as well as plate and structural steel and number 1 and 2 heavy melt scrap.

Are torches used to process stainless steel material? Has this been done at the facility in the past?

No. M W Recycling does not torch cut stainless steel scrap. M W Recycling does not have any information regarding historical use prior to MW, but no torching of stainless steel has occurred since M W Recycling acquired the operation.

If stainless steel is cut with torches, please specify the type(s) of torches used.

N/A

If stainless steel is not cut with torches, please describe how it is processed.

Stainless steel is not processed, rather it is shipped to other affiliated facilities.

Type of equipment is used at the facility (shredders, torches, etc.)

Shredder (idled in early 2013), guillotine shear, mobile shear, torches for cutting. Grapples are also used on material handlers for loading materials to be shipped outbound.

Have there been any major changes in operations at the facility in the past year, particularly with the volume of material being shredded or cut with torches?

No longer shredding. Torch cutting at the yard has been reduced from 5 days to 2 on average.

How many hours per week is the shredder operating?

The shredder has been idled.

If material is not shredded at this facility where is it taken?

To other locations affiliated with MW Recycling or PSC Metals in the Saint Louis area.

Type of environmental controls in place to prevent releases, e.g. the on-site sprinkler system (how often is it run)

Roadways are sprinkled with water during dry conditions and runs at 30 minute intervals. Tire wash is used on every vehicle leaving the yard. A hose is used at the north exit for trucks exiting there, but since no fluff or shredded metal is being generated, this exit is not being used on a regular basis. Silt fencing is in place along the edge of the yard adjacent to the creek. Incoming scrap is inspected and rejected if it is not consistent with Company policy limiting what can be brought to the facility. Additionally, PSC Metals has proposed and is awaiting MDNR approval for the installation of a storm water treatment system.

How often does the street sweeper run?

The sweeper is run on average of 5-6 times per day. One employee is dedicated to ensure that tires are washed on vehicles exiting the yard and to run the sweeper.

What streets are currently being swept?

Vine Street, part of Big Lots parking lot, and part of 9th Street, and on the portion of the facility that is paved -- from the end of the scale to the street.

Can you provide info on street sweeper specifications and any other info (engineer review, etc.) that would help us ensure that it is applicable to this situation?

M W Recycling Engineer Brent Williams provided a summary of the sweeper selection process shortly after the public meeting in May 2013. The summary is included as **Attachment A**.

Are all trucks being washed prior to departing the facility?

Yes.

What is the schedule for constructing a concrete roadway through the facility?

M W Recycling is awaiting approval from MDNR to proceed.

When this concrete work starts the HWP would appreciate a copy of the analytical results from any testing on the removed soils?

OK.

Do you now or have you in the past conducted any air monitoring within the facility?

Industrial hygiene monitoring is conducted at the facility in accordance with OSHA requirements. Contractors currently provide this service and have since mid-2012. M W Recycling employees were tested for industrial hygiene exposure in May 2012, and the results are included as **Attachment B**. The results of the monitoring revealed all 4 torching employees monitored had exposures to lead in excess of the permissible exposure limit (PEL) of 50 micrograms per cubic meter of air. No other metals tested (including arsenic and cadmium) revealed exposures above PELs. This type of result is typical for this activity in scrap metal recycling operations. The company has implemented protective measures to minimize these exposures, including conducting training on exposure minimization, and implementation of the requirements of the OSHA including obtaining a hygiene facility which includes separate clean and dirty rooms as well as showers for its employees.

There was monitoring conducted in the area where metal is cut with torches for personnel safety concerns. Can that data be included as well as what personal safety measures are currently being instituted for these employees?

M W Recycling implemented procedures consistent with the guidelines contained in the OSHA Lead Standard, including obtaining a hygiene facility which includes separate clean and dirty rooms and showers for its employees. In addition, respiratory protection is utilized by personnel using cutting torches at the yard. Training on exposure minimization is conducted, and medical monitoring is conducted as required. In addition, employees are required to wear uniforms that are laundered professionally.

Can we get the analytical results from the 'official' fluff analysis?

See **Attachment C**.

Please provide a site facility map that details site structures and what type of operations are conducted in each area of the site.

See **Attachment D**.

Attachment A

Sweeper Selection Discussion

Festus Sweeper Operation Discussion

During the public meeting in May 2013, residents brought to the attention of PSC Metals concerns for the effectiveness of the sweeper in use at the Festus yard on neighborhood streets. Residents complained that the dry sweeper was blowing dust into the air when it was run on City streets. Accordingly, PSC Metals initiated an investigation into the sweeper being utilized in Festus.

PSC Metals Engineer Brent Williams, who was involved in the selection of the sweeper, a Tenant S30 dry sweeper designed specifically to pick up small particles on flat surfaces, visited the operation to determine the effectiveness of the sweeper. Mr. Williams had the sweeper's operator clean the dust canister prior to initiating street sweeping. The weather was windy with no precipitation.

The Tenant S30 sweeper is designed with 2 side brushes, one center brush, and a HEPA filter prior to exhaust of the air used for suction/cleaning. A canister on the unit requires periodic cleaning to prevent bypass of solids. During his visit, Mr. Williams viewed the sweeper and determined it to be working as expected, and that it was being maintained as expected to perform its functional purpose. The company purchased a service contract which includes monthly maintenance visits. Repairs recommended during these monthly visits by Tenant are completed as recommended.

Second, Mr. Williams investigated the source of the "kicking up dust" comments that were relayed to PSC. While in operation, the machine's two circular front brooms funnel debris into the mouth of the machine where it is collected. These two brooms contact the pavement, and in doing so create dust. It was a pretty calm day during Mr. Williams' visit with slight gusts, so while the sweeper was operating, a dust cloud was noticeable, albeit small in nature. It appears the higher the winds the more noticeable the dust is as the machine can't counteract the forces of wind on the dust. The machine is incapable of pulling all dust through high winds, so some of the dust becomes airborne.

The machine collects a good amount of dirt/dust while sweeping even when it doesn't appear there is much dust/dirt to pick up. If a person were to go out to the street with a broom in hand and made a sweeping action, the same amount of dust would be kicked up as it is a mechanical action required to collect dirt.

The Tenant S30 machine is an ideal machine for flat surfaces (i.e. warehouse floors, flat pavement), however does not collect dirt and debris well that lie in crevices or uneven surfaces. This can be compared to a loader bucket scraping along flat concrete vs. an uneven concrete surface where a large portion of material is collected however some material is left in the gaps.

Photo 1 titled "pavement broken" provides an example of an uneven surface. This uneven surface is from the parking lot of the location, however along the side street heading towards the houses there is a large volume of this broken asphalt. In contrast the street in front of the scale is a very flat, even surface with minor cracks. The sweeper cleans this surface with the highest level of success, as can be seen in Photo 2.

The canister for the sweeper was cleaned prior to the sweeper being used on the day of the visit. It appears that when the sweeper seems to be blowing dust, the canister needs cleaning, and this will be a focus of the sweeper operators going forward. A sweeper inspection and operation log has been developed and will be completed daily by the operator effective June 28, 2013.

Photo 1 – Broken Pavement



Photo 2 – Smooth Pavement



Attachment B

Industrial Hygiene Results

May 2012

June 15, 2012

TO: *Employee 1*

SUBJECT: **Exposure Monitoring Results Notification – Lead, Cadmium, Arsenic**

The OSH Act requires employers, who have a workplace or work operation where there could be exposure to lead, to monitor employees' exposure over an eight-hour period without regard to the use of respiratory protection.

Exposure monitoring results are used: to evaluate the effectiveness of engineering and work practice controls; to determine whether additional controls need to be instituted; and to ascertain whether respiratory protection is required at all, and if so, which respirator is to be selected.

EA Group, an American Industrial Hygiene Association accredited laboratory, has submitted the analysis of the samples collected on May 24, 2012. Your average exposure to airborne concentration of **lead** was 125 micrograms per cubic meter of air averaged over an eight-hour period, which is **above** the permissible exposure limit of 50 micrograms. Your average exposure to airborne concentration of **cadmium** was 1.25 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 5 micrograms. Your average exposure to airborne concentration of **arsenic** was less than 1.9 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 10 micrograms.

Your employer has implemented specific compliance programs to ensure your exposure to lead maintained below the permissible exposure limit. You are encouraged to use approved personal protective equipment and devices assuring additional protection.

There are substantial fluctuations in exposure conditions throughout the day, week to week, etc. Further, employees working in the same area doing the same job may have different exposures. Subsequent monitoring will be conducted periodically to determine your exposure without regard to the use of respiratory protection.

Todd Katz
Yard Manager

cc: Medical/Exposure File

June 15, 2012

TO: *Employee 2*

SUBJECT: **Exposure Monitoring Results Notification – Lead, Cadmium, Arsenic**

The OSH Act requires employers, who have a workplace or work operation where there could be exposure to lead, to monitor employees' exposure over an eight-hour period without regard to the use of respiratory protection.

Exposure monitoring results are used: to evaluate the effectiveness of engineering and work practice controls; to determine whether additional controls need to be instituted; and to ascertain whether respiratory protection is required at all, and if so, which respirator is to be selected.

EA Group, an American Industrial Hygiene Association accredited laboratory, has submitted the analysis of the samples collected on May 24, 2012. Your average exposure to airborne concentration of lead was 53.9 micrograms per cubic meter of air averaged over an eight-hour period, which is **above** the permissible exposure limit of 50 micrograms. Your average exposure to airborne concentration of **cadmium** was 2.7 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 5 micrograms. Your average exposure to airborne concentration of **arsenic** was 0.7 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 10 micrograms.

Your employer has implemented specific compliance programs to ensure your exposure to lead maintained below the permissible exposure limit. You are encouraged to use approved personal protective equipment and devices assuring additional protection.

There are substantial fluctuations in exposure conditions throughout the day, week to week, etc. Further, employees working in the same area doing the same job may have different exposures. Subsequent monitoring will be conducted periodically to determine your exposure without regard to the use of respiratory protection.

Todd Katz
Yard Manager

cc: Medical/Exposure File

June 15, 2012

TO: *Employee 3*

SUBJECT: **Exposure Monitoring Results Notification – Lead, Cadmium, Arsenic**

The OSH Act requires employers, who have a workplace or work operation where there could be exposure to lead, to monitor employees' exposure over an eight-hour period without regard to the use of respiratory protection.

Exposure monitoring results are used: to evaluate the effectiveness of engineering and work practice controls; to determine whether additional controls need to be instituted; and to ascertain whether respiratory protection is required at all, and if so, which respirator is to be selected.

EA Group, an American Industrial Hygiene Association accredited laboratory, has submitted the analysis of the samples collected on May 24, 2012. Your average exposure to airborne concentration of lead was 457.29 micrograms per cubic meter of air averaged over an eight-hour period, which is **above** the permissible exposure limit of 50 micrograms. Your average exposure to airborne concentration of **cadmium** was 2.7 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 5 micrograms. Your average exposure to airborne concentration of **arsenic** was less than 3.0 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 10 micrograms.

Your employer has implemented specific compliance programs to ensure your exposure to lead maintained below the permissible exposure limit. You are encouraged to use approved personal protective equipment and devices assuring additional protection.

There are substantial fluctuations in exposure conditions throughout the day, week to week, etc. Further, employees working in the same area doing the same job may have different exposures. Subsequent monitoring will be conducted periodically to determine your exposure without regard to the use of respiratory protection.

Todd Katz
Yard Manager

cc: Medical/Exposure File

TO: *Employee 4*

SUBJECT: **Exposure Monitoring Results Notification – Lead, Cadmium, and Arsenic**

The OSHA Act requires employers, who have a workplace or work operation where there could be exposure to lead, to monitor employees' exposure over an eight-hour period without regard to the use of respiratory protection.

Exposure monitoring results are used: to evaluate the effectiveness of engineering and work practice controls; to determine whether additional controls need to be instituted; and to ascertain whether respiratory protection is required at all, and if so, which respirator is to be selected.

EA Group, an American Industrial Hygiene Association accredited laboratory, has submitted the analysis of the samples collected on April 23, 2003. The average exposure to airborne concentration of lead was 54.98 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 50 micrograms. The average exposure to airborne concentration of **cadmium** was 0.7 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 5 micrograms. The average exposure to airborne concentration of **arsenic** was 2.8 micrograms per cubic meter of air averaged over an eight-hour period, which is **below** the permissible exposure limit of 10 micrograms.

Your employer has implemented specific compliance programs to ensure your exposure to lead maintained below the permissible exposure limit. You are asked to use approved personal protective equipment and devices assuring adequate protection.

There are substantial fluctuations in exposure conditions throughout the day, week to week, etc. Further, employees working in the same area doing the same job may have different exposures. Subsequent monitoring will be conducted periodically to determine your exposure without regard to the use of respiratory protection.

Todd Katz
Yard Manager



EA GROUP

Environmental Analysis
and Management

PSC Metals - Festus
PO Box 759
Festus, MO 63028
Mark Pfeiffer

Client Project: Festus May 2012 Torch Cutting
EA Group Workorder Number: 120600039
Received on May 30, 2012

The following analytical report contains results as requested for samples submitted to EA Group. The results included in this report have been reviewed for compliance with the analytical methods indicated in this report. All data has been found to be compliant with accepted laboratory protocol, except as noted in the QC narrative. Industrial hygiene reports, air and/or surface concentrations results are based upon sampling information provided by the client. Industrial hygiene results will not be blank corrected. Analyst initials of REF indicate analysis performed at a subcontract facility.

If you have questions, comments or require further assistance regarding this report, please contact your client services representative or one of the individuals listed below.

Data or reporting:

Jeff Herbert - Lab Manager
jherbert@eagroupohio.com

Debbie Lauer - Lab Supervisor
dlauer@eagroupohio.com

Sample tracking, supplies:

Lisa Foose - Sample Control
sreceiving@eagroupohio.com

Mike Herbert - Supervisor
mherbert@eagroupohio.com

Invoice Related:

Bonnie Renbarger - Office Manager
brenbarger@eagroupohio.com

Reproduction of this report is prohibited except in its entirety. Unless noted, soil, sludge and sediment results are reported on dry weight basis. The "Sample Reporting Limit" is based on the method used for analysis and does not refer to any regulatory limit. These results relate only to the items tested.



EA GROUP

Environmental Analysis
and Management

Laboratory Analytical Report

PSC Metals - Festus

PO Box 759

Festus, MO 63028

Attention:

Mark Pfeiffer

Client Project:

Festus May 2012 Torch Cutting

EA Group Workorder:

1206-00039

A handwritten signature in black ink, appearing to read "Jeffrey A. Herbert".

Jeffrey A. Herbert

Technical Manager

June 8, 2012



EA GROUP

Environmental Analysis
and Management

Sample Receive Date 5/30/2012

Sample Listing

<u>EAG</u>		<u>Client</u>		<u>EAG</u>		<u>Client</u>
<u>Sample Identification</u>		<u>Sample Identification</u>		<u>Sample Identification</u>		<u>Sample Identification</u>
120600039	- 001	1		120600039	- 002	2
120600039	- 003	3		120600039	- 004	4
120600039	- 005	5				



EA GROUP

Environmental Analysis
and Management

Project Narrative 1206-00039

All analyses performed by EA Group were done using established laboratory SOPs. Management has reviewed the data for compliance with the laboratory QA/QC plan and data have been found to be compliant with the laboratory protocols unless otherwise noted below. All results listed for this report relate only to the samples submitted on this work order.

The temperature of the sample(s) upon receipt was 25°C.

Misc. QC Comments

Percent Moisture is used to report results on a dry weight basis.

When necessary, reporting limits of individual samples may be raised due to high concentration of interfering compounds or target analytes, or quantity of sample available for analysis.

pH method note: If this analysis was performed in the laboratory, it may not meet the "immediate analysis" requirement that applies to most wastewater monitoring samples. In such cases, analysis for pH should be done at the time of sampling.

The results listed in this report relate only to the samples submitted to EA Group per the chain of custody.

Data Flag Table

B	The method blank contained a standard laboratory contaminant (Methylene Chloride, Acetone, Hexane, Phthalates, etc.) above the standard laboratory method detection limit. If the analyte is present in the sample at a concentration up to ten times the blank level, the result is reported with a "B" indicating method blank contamination. Samples will be reported without a "B" if the analyte concentration in the sample is greater than ten times the blank level.
E	An analytical result marked with an "E" indicates the result reported is above the high end limit of the calibration curve and should be considered an estimated concentration.
DIL	Due to matrix interference or high analyte concentration, a dilution was required. The spikes and/or surrogates results could not be quantitated and therefore marked "DIL".
J	An analytical result marked with a "J" indicates the result reported was below the standard reporting limit and above the method detection limit. As the observed level approaches the MDL there is an increasing probability of a false positive response.
MI	Analytical results marked as "MI" indicate that due to inherent matrix interference, the result could not be quantitated.
#	Results flagged "#" indicate the reported result may be outside allowable permit levels as provided by the client, when applicable.
NA	A result or field marked as "NA" indicates that it was not applicable for this project.
Q	A quality control result flagged with a "Q" indicates the percent recovery was outside the acceptable range as determined by the laboratory.

** Positive results for this analyte represent a probable combination of 3-Methylphenol (m-Cresol) and 4-Methylphenol (p-Cresol).



EA GROUP

Environmental Analysis
and Management

EAG Workorder: 1206-00039

Client Project: Festus May 2012 Torch Cutting

Client ID: 1

Date/Time Sampled: 5/24/2012

Received: 5/30/2012

EAG ID: 1206-00039-1

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Arsenic, Air: NIOSH 7300-Mod	7440-38-2	<0.0031	0.0031	mg/m3	6/07/2012	6/07/2012		CMB
Cadmium, Air: NIOSH 7300-Mod	7440-43-9	0.0015	0.00062	mg/m3	6/07/2012	6/07/2012		CMB
Lead, Air: NIOSH 7300-Mod.	7439-92-1	0.15	0.0016	mg/m3	6/07/2012	6/07/2012		CMB

Client ID: 2

Date/Time Sampled: 5/24/2012

Received: 5/30/2012

EAG ID: 1206-00039-2

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Arsenic, Air: NIOSH 7300-Mod	7440-38-2	0.0028	0.0027	mg/m3	6/07/2012	6/07/2012		CMB
Cadmium, Air: NIOSH 7300-Mod	7440-43-9	0.00072	0.00054	mg/m3	6/07/2012	6/07/2012		CMB
Lead, Air: NIOSH 7300-Mod.	7439-92-1	0.056	0.0014	mg/m3	6/07/2012	6/07/2012		CMB

Client ID: 3

Date/Time Sampled: 5/24/2012

Received: 5/30/2012

EAG ID: 1206-00039-3

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Arsenic, Air: NIOSH 7300-Mod	7440-38-2	0.0033	0.0028	mg/m3	6/07/2012	6/07/2012		CMB
Cadmium, Air: NIOSH 7300-Mod	7440-43-9	0.0030	0.00057	mg/m3	6/07/2012	6/07/2012		CMB
Lead, Air: NIOSH 7300-Mod.	7439-92-1	0.50	0.014	mg/m3	6/07/2012	6/07/2012		CMB

Client ID: 4

Date/Time Sampled: 5/24/2012

Received: 5/30/2012

EAG ID: 1206-00039-4

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Arsenic, Air: NIOSH 7300-Mod	7440-38-2	<0.0028	0.0028	mg/m3	6/07/2012	6/07/2012		CMB
Cadmium, Air: NIOSH 7300-Mod	7440-43-9	0.00081	0.00055	mg/m3	6/07/2012	6/07/2012		CMB
Lead, Air: NIOSH 7300-Mod.	7439-92-1	0.058	0.0014	mg/m3	6/07/2012	6/07/2012		CMB

Client ID: 5

Date/Time Sampled: 5/24/2012

Received: 5/30/2012

EAG ID: 1206-00039-5

<u>Parameter</u>	<u>CAS #</u>	<u>Result</u>	<u>Reporting Limit</u>	<u>Units</u>	<u>Prep Date</u>	<u>Analysis Date</u>	<u>Time</u>	<u>Analyst</u>
Arsenic, Air: NIOSH 7300-Mod	7440-38-2	<0.0025	0.0025	mg/sample	6/07/2012	6/07/2012		CMB
Cadmium, Air: NIOSH 7300-Mod	7440-43-9	<0.00050	0.00050	mg/sample	6/07/2012	6/07/2012		CMB
Lead, Air: NIOSH 7300-Mod.	7439-92-1	<0.0012	0.0012	mg/sample	6/07/2012	6/07/2012		CMB

**AVOID DELAYS - FILL OUT COMPLETELY
RUSH TURNAROUND TIMES MUST BE CONFIRMED BY EAG**



7118 INDUSTRIAL PARK BLVD.
MENTOR, OH 44050-3314
TEL (440) 951-3514
FAX (440) 951-3774
(800) 875-3514
www.eagroup-dita.com
customerservice@eagroup-dita.com

CHAIN OF CUSTODY
PLEASE DO NOT SEPARATE FORMS

EAG WORK ORDER #

39

PAGE 1 OF 1

COOLER TEMP:

Company Name PSC Metals		Report Address 9th and Delmar		City Festus		State MO		Zip 63028	
Billing Address P.O. Box 759		City Festus		State MO		Zip 63028		Matrix Key Water - W Liquid - L Solid/Sol - S Sludge - SL Other - Specify	
Phone 314-541-2600		Fax 636-937-1939		Report Attention MARK Pfeiffer		Project Name Festus May 2012 Ford Catch		P.O. # Quote #	
SAMPLE IDENTIFICATION		MATRIX		COLLECTION TIME		COLLECTION DATE		Grab or Composite (G/C)	
1-52870 - [REDACTED]				5-24-12		5-24-12		1 X	
2-52879 - [REDACTED]				5-24-12		5-24-12		1 X	
3-52869 - [REDACTED]				5-24-12		5-24-12		1 X	
4-52876 - [REDACTED]				5-24-12		5-24-12		1 X	
5- Blank				5-24-12		5-24-12		1 X	
Method of shipment: EAG Client FedEx UPS Other		Date/Time		Received by (Sign)		Date/Time		Additional Comments / Method Protocol	
Retransmitted by (Sign)		5-24-12 9:00 AM		[Signature]		5-30-12 1400		<input checked="" type="checkbox"/> Lead <input type="checkbox"/> Cadmium <input type="checkbox"/> Arsenic <input type="checkbox"/> VAP <input type="checkbox"/> BUSTR <input type="checkbox"/> OTHER	

WHITE - FILE YELLOW - INVOICE PINK - REPORT GREEN - CUSTOMER Rev. 13 3/2006



EAG GROUP

AIR MONITORING REPORT

7118 Industrial Park Blvd., Mentor, Ohio 44060-5314
 440-951-3514 • FAX 440-951-3774
 www.eaggroupohio.com

DESCRIPTIVE INFORMATION

Date 5-24-12
 Client FSC NEGALS, INC
 Project Samus Headers
 EAG W.O. # _____
 Client W.O. # _____

SAMPLE ID.	SAMPLE TYPE	WORKERS NAME	WORKER ID	LOCATION	ACTIVITY	RESPIRATOR TYPE	ANALYTICAL INFORMATION							
							CALLB. FLOW RATE (L/min)	RUNNING TIME (min)	VOLUME (Liters)	FIBERS/ FIELDS	FIBERS/ cm ³ (Blank Cor)	LOG FIBERS/ cm ³	FIBER/cm ³ (Blank Cor)	
1	PRS-Hm				Festas - Torch cutting									
2	PRS-Hm				Festas - Torch cutting									
3	PRS-Hm				Festas - Torch cutting									
4	PRS-Hm				Festas - Torch cutting									
5	PRS-Hm				Festas - Blank									

SAMPLE ID.	PUMP #	CALLB. FLOW RATE (L/min)				RUNNING TIME (min)				VOLUME (Liters)	FIBERS/ FIELDS	FIBERS/ cm ³ (Blank Cor)	LOG FIBERS/ cm ³	FIBER/cm ³ (Blank Cor)
		BEGINNING	END	MINIMUM	START	STOP	DURATION							
1	52870						400	800.1						
2	52879						462	924.4						
3	52869						439	878.6						
4	52867						455	910.7						
5							0	0						

KEY TO ABBREVIATIONS

PRM = personal	RGD = background	REM = removal	PRP = site prep	HM = half mask
PNM = performer	CL = clearance	CLN = clean-up	IC = inside cont.	FF = full face
ENV = environmental	FC = final clearance	GLBG = gloving bag	OC = outside cont.	P = powered
HXC = hose exhaust	EXC = excursion	BGLD = bag load out		APR = air purifying resp.
FB = field blank				SA = supplied air

Comments _____

Sampled by [Signature]

Analyzed by [Signature]

Attachment C

Shredder Fluff Analytical Results

(Shredder Idled Early 2013)

EXHIBIT NO. 1

PSC METALS, INC.
FESTUS, MISSOURI

SUMMARY OF ANALYTICAL DATA
SHREDDER RESIDUE MONITORING

DECEMBER 1, 2011

PARAMETER	CONCENTRATION (mg/L)	EPA LIMIT
TCLP METALS (mg/L) ¹		
Arsenic	<0.100	5.0
Barium	0.961	100.0
Cadmium	0.539	1.0
Chromium, Total	<0.0500	5.0
Lead	1.165	5.0
Mercury	<0.0100	0.2
Selenium	<0.100	1.0
Silver	<0.0500	5.0

¹EPA Method 1311; Analysis according to *SW 846*

W. Z. BAUMGARTNER & ASSOCIATES, INC.
Environmental Engineers & Consultants
P.O. Box 680369
Franklin, TN 37068-0369

11f/31083

W Z B

EXHIBIT NO. 2

**PSC METALS, INC.
FESTUS, MISSOURI**

**SUMMARY OF ANALYTICAL DATA
SHREDDER RESIDUE MONITORING**

DECEMBER 1, 2011

PARAMETER	COMPOSITE 2, 5, 6 (93774)	EPA LIMIT
PCB ¹	40.89	50.0
% Moisture	12.7	N.S.

¹Concentration corrected for moisture content - EPA Method 8082
N.S. - No Standard

W. Z. BAUMGARTNER & ASSOCIATES, INC.
Environmental Engineers & Consultants
P. O. Box 680369
Franklin, TN 37068-0369

11f/31083

W Z B

EXHIBIT NO. 3

**PSC METALS, INC.
FESTUS, MISSOURI**

**SUMMARY OF ANALYTICAL DATA
SHREDDER RESIDUE MONITORING**

DECEMBER 1, 2011

PARAMETER	TCLP - 2 (93771)	TCLP - 5 (93772)	TCLP - 6 (93773)	CONCENTRATION	EPA LIMIT
TCLP METALS (mg/L) ¹					
Arsenic	<0.100	---	---	<0.10	5.0
Barium	0.961	---	---	0.961	100.0
Cadmium	0.631	0.421	0.566	0.539	1.0
Chromium, Total	<0.0500	---	---	<0.0500	5.0
Lead	1.59	0.364	1.54	1.165	5.0
Mercury	<0.0100	---	---	<0.0100	0.2
Selenium	<0.100	---	---	<0.100	1.0
Silver	<0.0500	<0.10	---	<0.0500	5.0

¹EPA Method 1311; Analysis according to *SW 846*

W. Z. BAUMGARTNER & ASSOCIATES, INC.
Environmental Engineers & Consultants
P.O. Box 680369
Franklin, TN 37068-0369

11f/31083

W Z B

CHAIN OF CUSTODY

Page _____ Of _____

PART I - Client: PSC Event ID: 16404
 Proj. No: 31083 City: Festus 1 ST: MO Sampling Point: 31083

PART II - Container Information

Code	Preservative						Plastic Containers							Glass Containers				Notes				
	A	B	C	D	E	F	1	2	3	4	5	6	7	8	9	10	11		12	13	14	
Quantity of Sample Containers Shipped	H ₂ SO ₄	HNO ₃	HCL	NH ₂ S ₂ O ₈	NaOH	Unpreserved	125 ml HDPE	250 ml HDPE	500 ml HDPE	1L HDPE	1gal HDPE	Poly Bag	5 gal. Bucket	40 ml Vial	4 oz Jar	9 oz Jar	16 oz Jar	1L Clear	1L Amber	Trip Blank		

Preservative Added: By Contract Laboratory By WZB Laboratory In Field

PART III - Sample Information

Sample Matrix Codes				Preserv./Container Code	Requested Analysis	Total No. of Containers
DW	Waste Water	SL	Oil			
OL <td>Oil <td>SL <td>Sludge <td></td> <td></td> <td></td> </td></td></td>	Oil <td>SL <td>Sludge <td></td> <td></td> <td></td> </td></td>	SL <td>Sludge <td></td> <td></td> <td></td> </td>	Sludge <td></td> <td></td> <td></td>			
GW <td>Ground Water <td>SO <td>Soil <td></td> <td></td> <td></td> </td></td></td>	Ground Water <td>SO <td>Soil <td></td> <td></td> <td></td> </td></td>	SO <td>Soil <td></td> <td></td> <td></td> </td>	Soil <td></td> <td></td> <td></td>			
SW <td>Storm Water <td>SR <td>Shredder Residue <td></td> <td></td> <td></td> </td></td></td>	Storm Water <td>SR <td>Shredder Residue <td></td> <td></td> <td></td> </td></td>	SR <td>Shredder Residue <td></td> <td></td> <td></td> </td>	Shredder Residue <td></td> <td></td> <td></td>			
SU <td>Surface Water <td>EC <td>Eddy Current <td></td> <td></td> <td></td> </td></td></td>	Surface Water <td>EC <td>Eddy Current <td></td> <td></td> <td></td> </td></td>	EC <td>Eddy Current <td></td> <td></td> <td></td> </td>	Eddy Current <td></td> <td></td> <td></td>			

Sample I. D.	Date	Time	Matrix	Comp.	Grab.
1	12/1/11	3:27p	EC	✓	
2					
3					
4					
5					
6					
7					
8					
9					
10					

Sampler's Name (Print): JCT Hamilton Jr VP

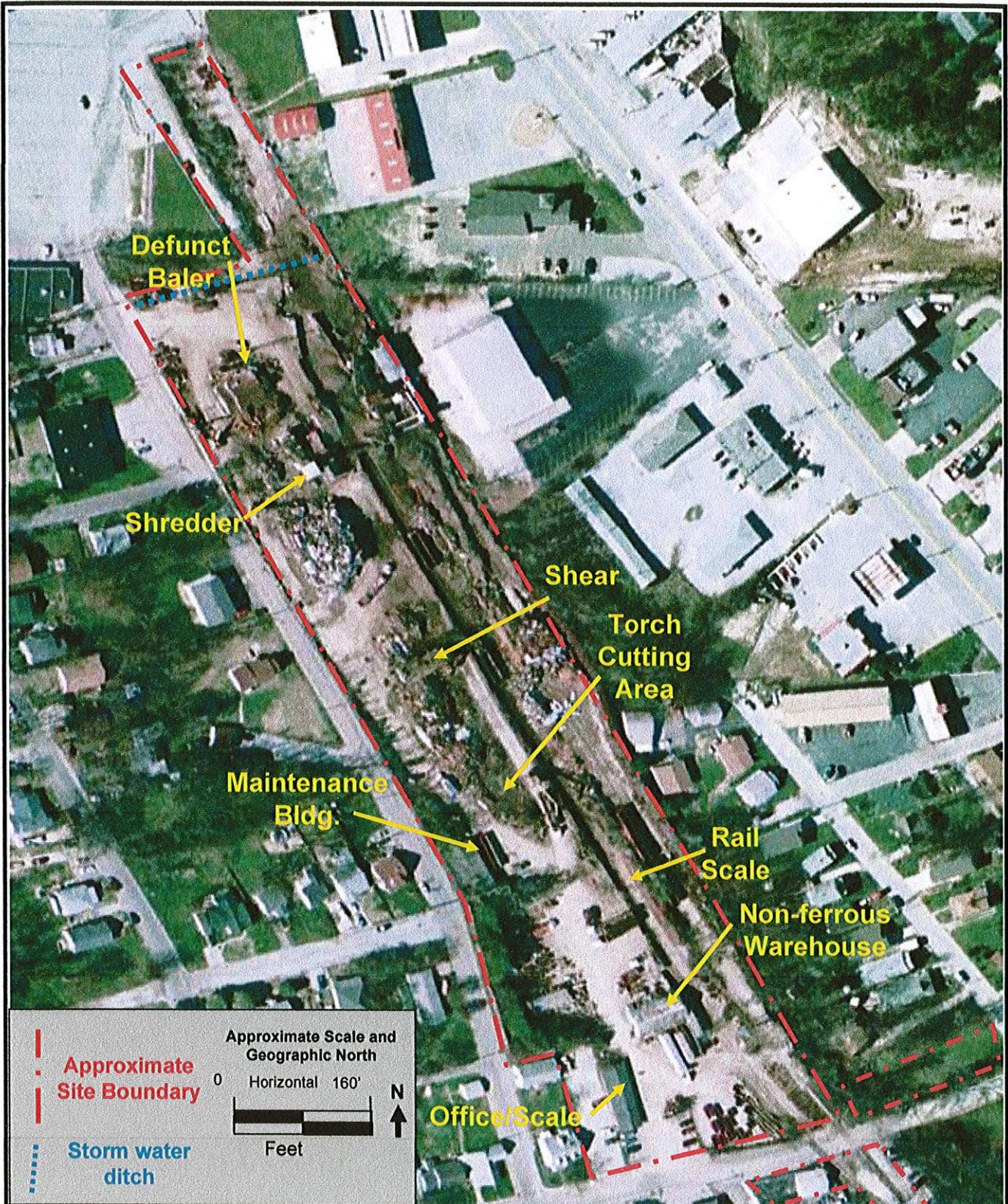
PART IV - Chain of Custody

	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
1	<u>[Signature]</u>	12/1/11	4:06p	
2				
3				
4				
Received for Laboratory By: (Signature)		12/2/11	1335	Custody Seals Intact:
				<input type="checkbox"/> Yes <input type="checkbox"/> No Temperature: (°C) _____

Attachment D

Facility Map

(Shredder Idled Early 2013)



Site Features Map – RECs
9th & Delmar
Festus, Missouri

DWN: JLG	PGRM: APB	Project Number: 624-1104-0030
DATE: 4/28/2011	REV: 0	FIGURE 3-3