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February 6, 2013

Mr. Steven L. Renninger  
On-Scene Coordinator  
Emergency Response Branch  
U.S. Environmental Protection Agency Region V  
26 West Martin Luther King Drive  
Cincinnati, OH 45268

**Subject: Opossum Creek Drum Site Assessment Report**  
**Moraine, Montgomery County, Ohio**  
**Technical Direction Document No.: S05-0001-1211-013**  
**WESTON START Contract No.: EP-S5-06-04**  
**Document Control No.: 2050-2A-BFPT**

Dear Mr. Renninger:

The Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) is submitting the enclosed site assessment report for the Opossum Creek Drum Site in Moraine, Montgomery County, Ohio. If you have any questions or comments regarding the report or require additional copies, please contact me at (513) 703-3092.

Sincerely,  
WESTON SOLUTIONS, INC.

A handwritten signature in blue ink, reading "John Sherrard". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

John Sherrard  
WESTON START Project Manager

Enclosure

cc: WESTON START DCN File

**SITE ASSESSMENT REPORT  
FOR THE  
OPOSSUM CREEK DRUM SITE  
MORaine, MONTGOMERY COUNTY, OHIO  
SITE ID NO. C5Q1**

**NPL STATUS: NON-NPL**

Prepared for:

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
Region V  
Emergency Response Branch  
26 West Martin Luther King Drive  
Cincinnati, OH 45268

Prepared by:

**WESTON SOLUTIONS, INC.**  
4710-A Interstate Drive  
Cincinnati, OH 45246

Date Prepared:	February 6, 2013
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WESTON START Project Manager:	John Sherrard
Telephone No.:	(513) 703-3092
U.S. EPA On-Scene Coordinator:	Steven L. Renninger

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John Sherrard  
WESTON START Project Manager

Date: February 6, 2013

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## CONTENTS

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1.	INTRODUCTION .....	1
2.	SITE BACKGROUND .....	2
2.1	SITE DESCRIPTION .....	2
2.2	SITE HISTORY .....	2
3.	SITE ASSESSMENT ACTIVITIES.....	4
3.1	SITE OBSERVATIONS.....	4
3.2	SAMPLING AND FIELD SCREENING ACTIVITIES.....	5
4.	ANALYTICAL RESULTS .....	8
5.	THREATS TO HUMAN HEALTH AND THE ENVIRONMENT .....	9
6.	CONCLUSIONS.....	12

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## LIST OF FIGURES

---

<b>Figure 2-1</b>	Site Location Map
<b>Figure 2-2</b>	Site Layout Map
<b>Figure 3-1</b>	Drum Burial Map
<b>Figure 3-2</b>	Sampling Location Map

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## LIST OF TABLES

---

<b>Table 3-1</b>	XRF Field Screening Results Summary
<b>Table 3-2</b>	Waste Sampling Summary
<b>Table 4-1</b>	Waste Sampling Results Summary

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## LIST OF APPENDICES

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<b>Appendix A</b>	Photographic Documentation
<b>Appendix B</b>	Data Validation Report and Validated Analytical Results

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## LIST OF ACRONYMS AND ABBREVIATIONS

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°F	Degree Fahrenheit
ALS	ALS Environmental Laboratory
ATSDR	Agency for Toxic Substances and Disease Registry
CFR	<i>Code of Federal Regulations</i>
EPA	U.S. Environmental Protection Agency
MCS	Montgomery County Sheriff
mg/kg	Milligram per kilogram
mg/L	Milligram per liter
mm/s	Millimeter per second
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OCD	Opossum Creek Drum
OEPA	Ohio Environmental Protection Agency
PCB	Polychlorinated biphenyl
PHDMC	Public Health – Dayton Montgomery County
PID	Photoionization detector
Poly	Polyethylene
ppm	Part per million
RCRA	Resource Conservation and Recovery Act
RML	Removal Management Level
START	Superfund Technical Assessment and Response Team
TCLP	Toxicity Characteristic Leaching Procedure
TDD	Technical Direction Document
VOC	Volatile organic compound
WESTON	Weston Solutions, Inc.
XRF	X-ray fluorescence

## 1. INTRODUCTION

The U.S. Environmental Protection Agency tasked the Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) to assist EPA in performing a site assessment at the Opossum Creek Drum (OCD) Site in Moraine, Montgomery County, Ohio (the Site). Specifically, under Technical Direction Document (TDD) No. S05-0001-1211-013, WESTON START was directed to perform the following activities:

- Compile available Site information
- Develop site-specific safety and field sampling plans
- Conduct a site reconnaissance
- Use a Niton x-ray fluorescence (XRF) unit to field screen dried ink solids and on-site soil for heavy metals
- Provide photographic documentation of the Site (see **Appendix A**)
- Procure analytical laboratory services
- Collect liquid waste and solid waste samples
- Validate laboratory analytical data (see **Appendix B**)
- Evaluate potential threats posed by the Site to the public health or welfare of the United States or the environment
- Prepare and deliver this site assessment report

The site assessment was performed to evaluate Site conditions and the potential for imminent and substantial threats to the public health or welfare of the United States or the environment in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Title 40 of the *Code of Federal Regulations* (40 CFR), Part 300.415(b)(2).

This site assessment report is organized into the following sections:

- **Section 1, Introduction** – Provides a brief description of the objective and scope of the site assessment
- **Section 2, Site Background** – Discusses the Site description and history
- **Section 3, Site Assessment Activities** – Discusses Site observations and sampling and field screening methods used during the site reconnaissance and site assessment
- **Section 4, Analytical Results** – Discusses analytical results for samples collected during

the site assessment

- **Section 5, Threats to Human Health and the Environment** – Identifies conditions at the Site that warrant a removal action under the NCP
- **Section 6, Conclusions** – Summarizes the site assessment findings and presents conclusions based on these findings

Figures and tables are presented after the conclusions section. **Appendix A** provides photographic documentation of Site conditions and activities during the site assessment, and **Appendix B** provides the data validation report and validated analytical results for samples collected during the site assessment.

## 2. SITE BACKGROUND

This section discusses the Site description and history.

### 2.1 SITE DESCRIPTION

The Site is located at 4101 Soldiers Home West Carrollton Road in Moraine, Montgomery County, Ohio (zip code 45342) in a mixed residential and commercial area. **Figure 2-1** shows the Site location. The Site's geographical coordinates are 39° 41' 17.9952" North latitude and -84° 16' 25.5072" West longitude. The Site is bordered to the north by a former dump; to the west and south by Opossum Creek, with residential and wooded areas beyond; and to the east by commercial and residential areas, with wooded areas beyond. **Figure 2-2** shows the Site layout. Opossum Creek discharges into the Great Miami River. Commercial businesses are located within 500 feet east of the Site, and the closest residences are located within 300 feet west of the Site.

The Site encompasses an area of approximately 28,100 square feet. Visible drums and containers are partially buried. Some partially buried drums and containers have been observed next to and within Opossum Creek. The property where the drum burial area is located occupies approximately 20 acres.

### 2.2 SITE HISTORY

Historic records indicate that the Site is a former dump that at some point began receiving and



burying 55-gallon drums and containers in an area next to Opossum Creek.

On November 2, 2012, Public Health – Dayton Montgomery County (PHDMC) issued a Notice of Violation letter to the owner of the property, Ms. Lois Gilboy. The letter summarizes the findings of an inspection conducted at the property on October 25, 2012, by PHDMC, the Ohio Environmental Protection Agency (OEPA), Montgomery County Sheriff (MCS), Liberty Tires, and Rumpke. The October 25, 2012, inspection was a follow-up to a previous inspection conducted on June 22, 2012. The purpose of the investigation was to determine if the property still was in violation of Ohio's Solid Waste Regulations as detailed in a guidance letter mailed to Ms. Gilboy on June 18, 2012. The October inspection documented thousands of scrap tires dumped on the ground and burnt scrap tires and miscellaneous solid waste scattered throughout the property. The inspection also documented numerous barrels containing various colored substances believed to be ink or paint.

In an MCS incident report (Incident Report No. 12-10524) dated October 25, 2012, an MCS representative inspected the property owned by Ms. Gilboy and documented the conditions summarized below.

- Approximately 80,000 scrap tires were observed at various locations throughout the property.
- Approximately 100 metal drums containing dye, ink, or paint from a printing company were observed.
- All of the metal drums displayed signs of corrosion.
- The colored substance, believed to be paint, was visible on the ground and in Opossum Creek at multiple locations.
- Several burn piles were observed throughout the property. In these areas, scrap tires had been burned and their rims removed. OEPA determined that burning had been conducted recently in these areas.
- Trespassing was occurring at the Site.

In late November 2012, representatives from the OEPA, PHDMC, and MCS conducted a site inspection of the Site. Hundreds of partially buried and disintegrating drums and containers containing dried ink waste was observed on the property owned by Ms. Gilboy (Parcel

J442041150004) and potentially on properties owned by the Forgotten Breed Motorcycle Club (Parcels J442041150009 and J442041150012). Multi-colored ink waste was observed mixed with on-site soil and within the abandoned and partially buried drums and containers. Some ink waste material was observed in direct contact with Opossum Creek. OEPA personnel used a Thermo Scientific Niton XL3t XRF meter to conduct field screening of the multi-colored ink waste for heavy metals. XRF readings indicated lead and arsenic at concentrations as high as 173,200 and 11,700 parts per million (ppm), respectively. Section 3.1 discusses the OEPA XRF readings.

In a document dated December 3, 2012, the OEPA formally requested assistance from EPA to determine if the Site meets the criteria for a removal action.

In a letter dated December 19, 2012, the PHDMC formally requested assistance from EPA to determine if the Site meets the criteria for a removal action.

### **3. SITE ASSESSMENT ACTIVITIES**

On December 5 and 12, 2012, EPA and WESTON START conducted a site reconnaissance and a site assessment, respectively, to document Site conditions and evaluate the Site for a potential time-critical removal action. The Site observations and sampling and field screening activities are discussed below. **Appendix A** provides photographic documentation of Site conditions and activities during the site reconnaissance and site assessment.

#### **3.1 SITE OBSERVATIONS**

On December 3 and 5, 2012, respectively, EPA obtained signed agreements from Ms. Gilboy and the Forgotten Breed Motorcycle Club to allow EPA and WESTON START access to the properties to conduct site reconnaissance and site assessment activities.

On December 5, 2012, EPA, WESTON START, and OEPA conducted a site reconnaissance. A Ludlum Model 19 Micro-R radiation meter was used to screen gamma radiation levels during the site reconnaissance. No radiation levels exceeded background readings taken from areas outside the Site.

During the site reconnaissance, WESTON START observed hundreds of buried and partially buried and corroded drums and about 50 5-gallon containers at the former dump as well as thousands of tires east of the drum burial area. Some corroded drums and containers had released their contents onto the ground. Most of the drums were next to or within 100 feet of Opossum Creek. Multi-colored, dried ink solid waste was observed within and around the partially buried drums. The Site is unoccupied and unfenced, and evidence of frequent trespassing was observed throughout the Site.

WESTON START used a Thermo Scientific Niton XL3t XRF meter to field screen the dried ink waste for heavy metals. **Table 3-1** summarizes the XRF field screening results and includes the OEPA XRF results for the site inspection conducted in late November 2012 (Section 2.2). OEPA XRF readings indicated total lead at concentrations exceeding EPA's residential lead Removal Management Level (RML) of 400 ppm in 11 solid waste samples. The lead concentrations ranged from 1,282 to 173,200 ppm. OEPA XRF readings also indicated total arsenic at concentrations exceeding EPA's residential arsenic RML of 22 ppm in nine solid waste samples. The arsenic concentrations ranged from 337 to 11,700 ppm. WESTON START XRF readings indicated total lead in 12 solid waste and surficial soil samples at concentrations ranging from 423 to 88,200 ppm and total arsenic in 8 solid waste and surficial soil samples at concentrations ranging from 249 to 4,065 ppm. These results also exceed EPA's residential RMLs for total lead (400 ppm) and arsenic (22 ppm).

### **3.2 SAMPLING AND FIELD SCREENING ACTIVITIES**

This section discusses the sampling and field screening activities conducted on December 12, 2012. **Appendix B** provides the data validation report and validated laboratory analytical results for all samples collected during the site assessment.

To evaluate if the Site poses imminent and substantial threats to the public health or welfare of the United States or the environment, WESTON START collected 1 sludge/liquid waste sample and 10 solid waste samples from partially buried drums and surficial soil around the drum burial area. Sampling activities were conducted in Level D personal protective equipment in accordance with the approved site-specific health and safety plan. Fresh sampling gloves were

donned before sampling activities began at each new sampling location as necessary. Drum and surficial soil samples were collected using a disposable polyethylene (poly) scoop into an 8-ounce, glass sample jar.

WESTON START used a Trimble GeoXH unit to identify the border of the drum burial area and the coordinates of the visible partially buried drums. **Figure 3-1** shows the drum burial area.

WESTON START used the Trimble GeoXH unit to mark the coordinates of the 11 investigative waste sampling locations for samples collected during the site assessment. **Figure 3-2** shows the sampling location map. **Table 3-2** summarizes the investigative waste samples collected from the Site. For each drum or surficial soil sample collected, either the headspace was screened for volatile organic compounds (VOC) using a MultiRAE photoionization detector (PID) or the contents were field screened for heavy metals using an XRF meter. **Table 3-1** summarizes the XRF field screening results for the samples collected from the Site as well as for dried ink waste screened for heavy metals during the site assessment. During the site assessment, the XRF unit documented total lead in 15 solid waste and surficial soil samples at concentrations ranging from 425 to 233,756 ppm and total arsenic in 9 solid waste and surficial soil samples at concentrations ranging from 102 to 15,637 ppm. WESTON START XRF screening results also documented yellow ink solids on the bank of Opossum Creek having a total lead concentration of 27,799 ppm. These results also exceed EPA's residential RMLs for total lead (400 ppm) and arsenic (22 ppm).

Each sample is described below.

Sample S-1 was collected from a partially buried 55-gallon drum using a poly scoop. The sample consisted of a red ink solid, and XRF readings showed a total lead concentration of 93,356 ppm and a total arsenic concentration of 4,471 ppm.

Sample S-2 was collected from the hole in the side of a partially buried, corroded drum using a plastic scoop. The sample consisted of clear liquid mixed with white sludge that had the appearance of white paint. The PID VOC reading for the drum's contents was 3,000 ppm.

Sample S-3 was collected from surficial soil next to Opossum Creek using a poly scoop. The sample consisted of surficial soil mixed with yellow ink solids, and XRF readings showed a total lead concentration of 27,799 ppm.

Sample S-4 was collected from a partially buried 55-gallon drum using a poly scoop. The sample consisted of a yellow ink solid, and XRF readings showed a total lead concentration of 233,756 ppm and a total arsenic concentration of 15,637 ppm.

Sample S-5 was collected from the ground in the drum burial area using a poly scoop. The sample consisted of a mixture of surficial soil and yellow ink solids, and XRF readings showed a total lead concentration of 147,390 ppm.

Sample S-6 was collected from the ground in the drum burial area using a poly scoop. The sample consisted of a mixture of surficial soil and yellow ink solids, and XRF readings showed a total lead concentration of 104,064 ppm.

Sample S-7 was collected from a partially buried 55-gallon drum using a poly scoop. The sample consisted of a red ink solid, and XRF readings showed a total lead concentration of 60,502 ppm and a total arsenic concentration of 4,956 ppm.

Sample S-8 was collected from the ground in the drum burial area using a poly scoop. The sample consisted of a mixture of surficial soil and red ink solids, and XRF readings showed a total lead concentration of 57,516 ppm and a total arsenic concentration of 2,538 ppm.

Sample S-9 was collected from the ground in the drum burial area using a poly scoop. The sample consisted of a mixture of surficial soil and red, yellow, and blue ink solids, and XRF readings showed a total lead concentration of 4,848 ppm and a total arsenic concentration of 301 ppm.

Sample S-10 was collected from the ground in the drum burial area using a poly scoop. The sample consisted of a mixture of surficial soil and red, yellow, and blue ink solids, and XRF readings showed a total lead concentration of 33,456 ppm and a total arsenic concentration of 1,965 ppm.

Sample S-11 was collected from a partially buried 55-gallon drum using a poly scoop. The sample consisted of a green ink solid, and XRF readings showed a total lead concentration of 61,931 ppm and a total arsenic concentration of 1,264 ppm.

All samples were submitted under chain of custody to ALS Environmental Laboratory (ALS) in Cincinnati, Ohio, under analytical TDD No. S05-0001-1211-014. The samples were analyzed for one or more of the following parameters: ignitability (flashpoint), total polychlorinated biphenyls (PCB), Toxicity Characteristic Leaching Procedure (TCLP) VOCs, total Resource Conservation and Recovery Act (RCRA) metals, and TCLP RCRA metals. WESTON START requested a turnaround time of 5 business days. Section 4 discusses the analytical results.

#### 4. ANALYTICAL RESULTS

WESTON START collected 1 sludge/liquid and 10 solid waste samples from the Site for analysis by ALS in Cincinnati, Ohio. Sludge/liquid waste sample S-2 was analyzed for ignitability (flashpoint) using EPA Methods 1010 and 1030. Solid waste samples S-1 and S-3 were analyzed for PCBs using EPA Method 8082. Sludge/liquid waste sample S-2 was analyzed for TCLP VOCs using EPA Methods 1311 and 8260B. Solid waste samples S-9 and S-10 were analyzed for total RCRA metals using EPA Methods 6010B and 7471A. Solid waste samples S-1 and S-3 through S-11 were analyzed for TCLP RCRA metals using EPA Methods 1311, 6010B, and 7470A. **Table 4-1** summarizes the waste sample analytical results. **Appendix B** provides the data validation reports and validated laboratory analytical results for the samples.

Analytical results for ignitability and toxicity were compared to the hazardous waste criteria outlined in 40 CFR, Part 261, Subpart C. Analytical results for total RCRA metals were compared to EPA's residential lead and arsenic RMLs, which are based on the methods used to calculate EPA's Regional Screening Levels. Laboratory analytical results exceeding the hazardous waste criteria and EPA's residential RMLs are summarized below.

- **Ignitability (Flashpoint):** The white sludge material in Sample S-2 showed a burn rate of 3.8 millimeters per second (mm/s). According to 40 CFR 261.21, this result satisfies the criterion for hazardous waste characteristic for ignitability (D001). According to EPA Method 1030 (Ignitability of Solids), a non-metallic sample with a burn rate exceeding 2.2 mm/s is considered to have a positive result for ignitability. According to

EPA Method 1010, the clear liquid in Sample S-2 showed a flashpoint of 130 degrees Fahrenheit (°F), which is less than 140 °F. Therefore, according to 40 CFR 261.21, the liquid waste meets the definition of a hazardous waste by virtue of the characteristic of ignitability.

- **Total RCRA Metals:** The arsenic analytical result for surficial soil and ink solids Sample S-9 was 39 milligrams per kilogram (mg/kg), which exceeds EPA's residential arsenic RML of 22 mg/kg. The lead analytical results for surficial soil and ink solids Samples S-9 and S-10 were 5,100 and 5,600 mg/kg, respectively. These results exceed EPA's residential lead RML of 400 mg/kg.
- **Toxicity - TCLP Lead:** TCLP lead analytical results for dried ink solid waste samples S-1 and S-7 and surficial soil and ink solids samples S-5, S-8, and S-10 ranged from 7.4 to 24 milligrams per liter (mg/L). The TCLP lead concentrations for these five waste samples exceed the TCLP lead regulatory level of 5.0 mg/L, which satisfies the 40 CFR 261.24 criterion for toxic (D008) hazardous waste.

## 5. THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Factors to be considered when determining the appropriateness of a potential removal action at a site are delineated in the NCP at 40 CFR 300.415(b)(2). The factors applicable to the Site are summarized below.

- **Actual or potential exposure of nearby human populations, animals, or the food chain to hazardous substances or pollutants or contaminants**

During OEPA's November 2012 site reconnaissance, OEPA used an XRF unit to conduct field screening of multi-colored ink waste for heavy metals. OEPA XRF readings indicated total lead at concentrations exceeding EPA's residential lead RML of 400 ppm in 11 solid waste samples. The lead concentrations ranged from 1,282 to 173,200 ppm. XRF readings also indicated total arsenic at concentrations exceeding EPA's residential arsenic RML of 22 ppm in nine solid waste samples. The arsenic concentrations ranged from 337 to 11,700 ppm.

During the December 7, 2012, site reconnaissance, WESTON START used an XRF unit and documented total lead in 12 solid waste and surficial soil samples at concentrations ranging from 423 to 88,200 ppm and total arsenic in 8 solid waste and surficial soil samples at concentrations ranging from 249 to 4,065 ppm. These results exceed EPA's residential RMLs for lead and arsenic.

During the site assessment, WESTON START documented the presence of abandoned chemical wastes including buried and partially buried 55-gallon drums and on-site surficial soil containing ignitable, heavy metal (lead and arsenic), and toxic hazardous wastes. Drums and containers were corroded, and some had released their contents onto the ground. Most of the drums were next to or within 100 feet of Opossum Creek.

During the site assessment on December 12, 2012, WESTON START used an XRF unit and documented total lead in 15 solid waste and surficial soil samples at concentrations ranging from 425 to 233,756 ppm and total arsenic in 9 solid waste and surficial soil samples at concentrations ranging from 102 to 15,637 ppm. These results exceed EPA's residential RMLs for lead and arsenic.

The analytical results for waste sample S-2 collected during the site assessment had a burn rate of 3.8 mm/s and a flashpoint of 130 °F. According to 40 CFR 261.21, this sample satisfies the criterion for hazardous waste characteristic for ignitability (D001). In addition, the arsenic analytical result for surficial soil and ink solids Sample S-9 (39 mg/kg) and the lead analytical results for surficial soil and ink solids Samples S-9 (5,100 mg/kg) and S-10 (5,600 mg/kg) exceeded EPA's residential RMLs of 22 and 400 mg/kg for arsenic and lead, respectively. TCLP lead analytical results for dried ink solid waste samples S-1 (16 mg/L) and S-7 (24 mg/L) and surficial soil and ink solids samples S-5 (8.2 mg/L), S-8 (20 mg/L), and S-10 (7.4 mg/L) exceeded the TCLP lead regulatory level of 5.0 mg/L, which satisfies the 40 CFR 261.24 criterion for toxic (D008) hazardous waste.

The Agency for Toxic Substances and Disease Registry (ATSDR) has studied the toxicological effects of lead and arsenic, which are summarized below.

- Lead – The effects of lead are the same whether it enters the body through inhalation or ingestion. Lead can affect almost every organ and system in the body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. Lead exposure also may cause weakness in fingers, wrists, and ankles; small increases in blood pressure, especially in middle-aged and older people; and anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults and children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure of men can damage the organs responsible for sperm production.
- Arsenic – Inhalation of high levels of inorganic arsenic can cause sore throat and irritated lungs. Ingestion of very high levels of arsenic can result in death. Exposure to lower levels can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of “pins and needles” in the hands and feet. Ingestion or inhalation of low levels of inorganic arsenic for a long time can cause a darkening of the skin and the appearance of small “corns” or “warts” on the palms, soles, and torso. Skin contact with inorganic arsenic may cause redness and swelling.

Residences are located within 300 feet of the western perimeter of the Site. The Site is unoccupied and unfenced, and evidence of frequent trespassing was observed throughout the Site during the site reconnaissance on December 7, 2012.

The site assessment documents widespread surficial soil contamination by lead and arsenic within the drum burial area and next to Opossum Creek. Hazardous waste (dried ink waste) is documented in solid waste samples within and leaking from drums and



containers, mixed with surficial soil, and observed along the banks and within the waters of Opossum Creek. Analytical results for samples collected during the site assessment document the on-site presence of hazardous waste characteristic for ignitability (D001), arsenic and lead analytical results exceeding EPA's residential RMLs, and toxic (D008) hazardous waste.

There is actual or potential exposure of nearby human receptors, including residents in their homes, to hazardous substances, pollutants, or contaminants at the Site. Future trespassers could cause an accidental or intentional release of hazardous materials and also could contact hazardous materials. The close proximity of residential areas to the abandoned Site greatly increases the likelihood of human health and environmental impacts if a release occurs. Potential exposure could result in imminent and substantial threats to the public health or welfare of the United States or the environment.

- **Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release**

During the site assessment, WESTON START observed and documented the presence of hundreds of buried and partially buried 55-gallon drums and about 50 5-gallon containers (**Figure 3-1**). Drums and containers were corroded, and some had released their contents onto the ground. WESTON START also observed visible ink waste from the buried drums next to and within the waters of Opossum Creek.

Analytical results for samples collected during the site assessment document the on-site presence of hazardous waste characteristic for ignitability (D001), arsenic and lead analytical results exceeding EPA's residential RMLs, and toxic (D008) hazardous waste. In addition, WESTON START and OEPA XRF results document total lead and arsenic in ink solids and surficial soil throughout the drum burial area at concentrations exceeding EPA's residential RMLs.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released**

Southwestern Ohio receives a substantial amount of precipitation during spring, and winter temperatures are normally below freezing, with regular snowfall. Weather conditions will contribute to the further deterioration of the already severely corroded drums and containers at the Site. There is nothing to prevent the freezing and thawing of the contents in the drums and containers. Analytical results for samples collected during the site assessment document the on-site presence of hazardous waste characteristic for ignitability (D001), arsenic and lead analytical results exceeding EPA's residential RMLs, and toxic (D008) hazardous waste. WESTON START XRF screening results on December 12, 2012, also documented yellow ink solids on the bank of Opossum Creek having a total lead concentration of 27,799 ppm. There is nothing to prevent rainwater from entering the corroded drums and containers and causing the migration of heavy metals-contaminated ink solids from entering the environment and Opossum Creek.

- **Threat of fire or explosion**

Site assessment analytical results indicate that materials in partially buried drums at the Site contain ignitable (flammable) waste and pose a threat of fire or explosion. If a fire or explosion occurs, contaminants could become airborne and affect the nearby population.

- **The availability of other appropriate federal or state response mechanisms to respond to the release**

OEPA does not have the resources to respond to this Site. In a letter dated December 3, 2012, OEPA formally requested assistance from the EPA to determine if the Site meets the criteria for a removal action.

## **6. CONCLUSIONS**

On December 7 and 12, 2012, EPA and WESTON START conducted a site assessment to document Site conditions and evaluate the Site for a potential time-critical removal action. During the site assessment, WESTON START observed hundreds of buried and partially buried 55-gallon drums and about 50 5-gallon containers. WESTON START collected 1 sludge/liquid waste sample and 10 solid waste samples from drums and surficial soil at the Site. Analytical results document the on-site presence of hazardous waste characteristic for ignitability (D001), arsenic and lead analytical results exceeding EPA's residential RMLs, and toxic (D008) hazardous waste. In addition, WESTON START and OEPA XRF readings document widespread heavy metal (lead and arsenic) contamination in surficial soil throughout the Site at concentrations exceeding EPA's residential lead and arsenic RMLs.

Hazardous wastes identified at the Site exhibit the following characteristics:

- Ignitability (D001)
- Toxicity (TCLP lead [D008])

Based on the analytical results and Site conditions observed during the site reconnaissance and site assessment, the Site meets five of the criteria for a removal action pursuant to 40 CFR 300.415(b)(2). Therefore, the Site poses imminent and substantial threats to the public health or welfare of the United States or the environment.

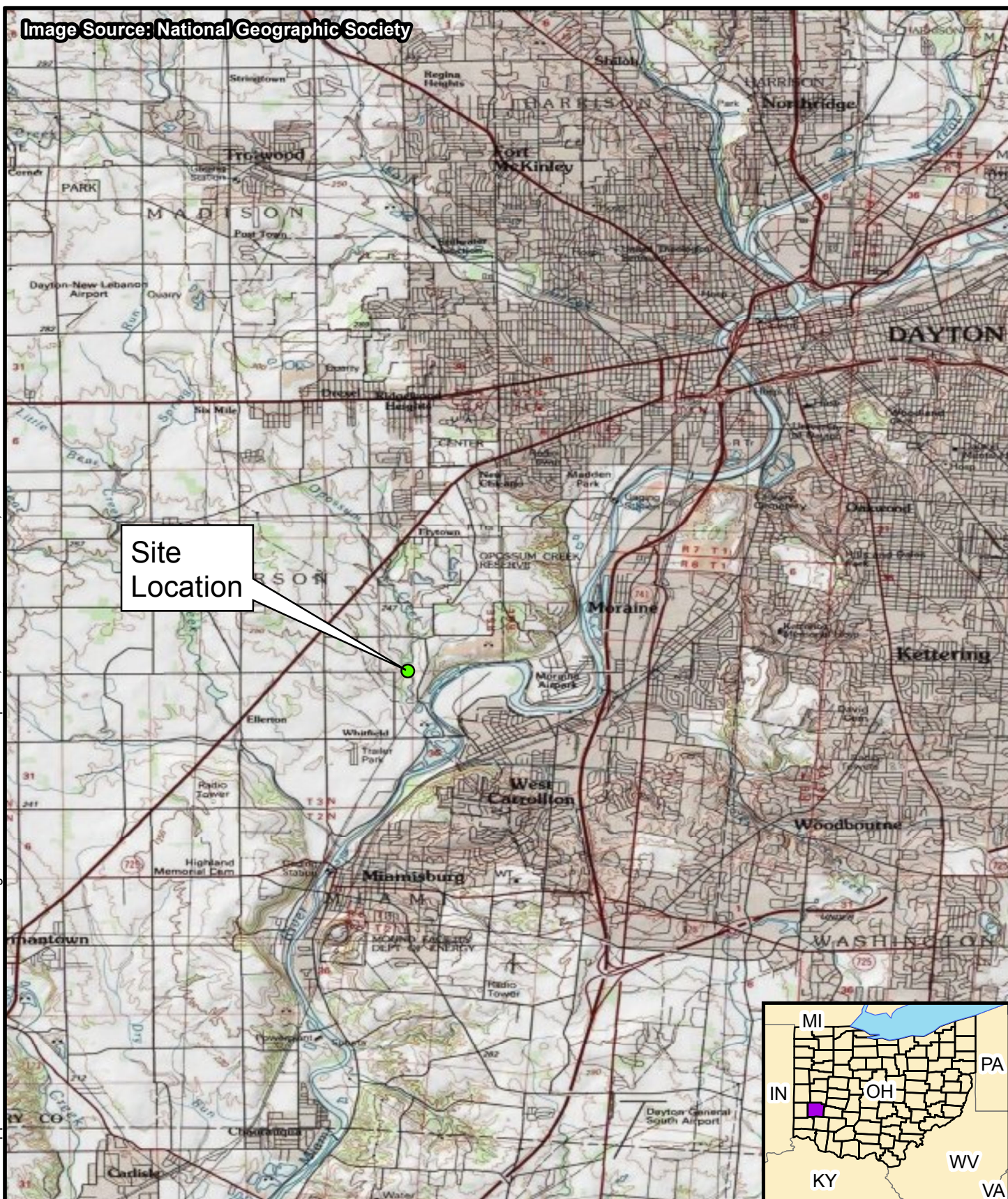
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## FIGURES

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Image Source: National Geographic Society



Site Location

0 2 Miles



Prepared For:  
**U.S. EPA REGION V**

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Cincinnati, Ohio 45246



**Figure 2-1**  
Site Location Map  
Opossum Creek Drum Site  
Moraine, Montgomery County, Ohio





Image Source: ESRI Bing Maps

OPOSSUM CREEK

OPOSSUM CREEK

SOLDIERS HOME WEST CARROLLTON

**Legend**

-  Drum Burial Area
-  Opossum Creek

0 225  
Feet



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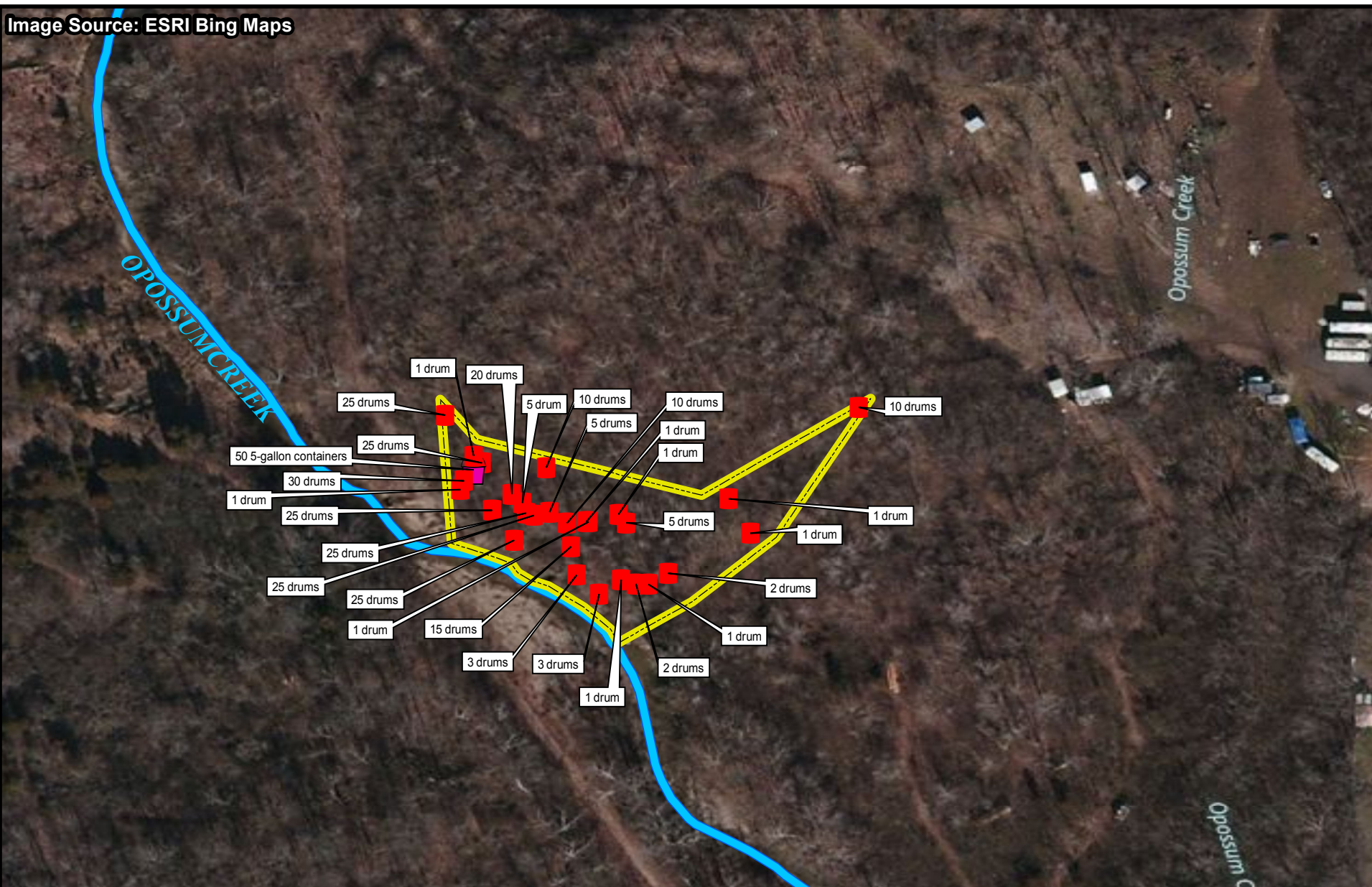
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4710-A Interstate Drive  
Cincinnati, Ohio 45246

**Figure 2-2**  
Site Layout Map  
Opossum Creek Drum Site  
Moraine, Montgomery County, Ohio



Image Source: ESRI Bing Maps



**Legend**

Visible Drum  
 Visible Small Container  
 Drum Burial Area  
 Opossum Creek

0 125 Feet

N

Prepared For:  
**U.S. EPA REGION V**  
 Contract No: EP-S5-06-04  
 TDD No.: S05-0001-1211-013  
 DCN: 2050-2A-BFPT

Prepared By:  
**WESTON SOLUTIONS, INC.**  
 4710-A Interstate Drive  
 Cincinnati, Ohio 45246




**Figure 3-1**  
 Drum Burial Map  
 Opossum Creek Drum Site  
 Moraine, Montgomery County, Ohio



Image Source: ESRI Bing Maps



**Legend**

-  Sampling Location
-  Drum Burial Area
-  Opossum Creek

0 75 Feet



Prepared For:  
**U.S. EPA REGION V**

Contract No: EP-S5-06-04  
TDD No.: S05-0001-1211-013  
DCN: 2050-2A-BFPT



Prepared By:  
**WESTON SOLUTIONS, INC.**

4710-A Interstate Drive  
Cincinnati, Ohio 45246

**Figure 3-2**  
Sampling Location Map  
Opossum Creek Drum Site  
Moraine, Montgomery County, Ohio

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## TABLES

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**Table 3-1**  
**XRF Field Screening Results Summary**  
**Opossum Creek Drum Site**  
**Moraine, Montgomery County, Ohio**

Screening Location No.	Total Lead (ppm)	Total Arsenic (ppm)	Location
<b>OEPA Site Inspection – November 2012</b>			
1	14,200	582	Red ink solid
2	132	< 23	Blue ink solid
3	12,000	1,208	Black goo
4	1,282	< 62	Yellow ink solid
5	116,500	7,389	Yellow ink solid
6	173,200	11,700	Multi-colored ink solid
7	26,400	< 421	Yellow and blue ink solid
8	24	13	Black ink solid
9	3,741	337	Black ink solid
10	18	< 9	Blue ink solid
11	53	< 25	White ink solid
12	3,332	389	White ink solid
13	31,100	1,845	Red ink solid by Opossum Creek
14	62,500	4,786	Yellow ink solid along Opossum Creek
15	68	< 33	Soil along Opossum Creek
16	71,000	6,186	Green ink solid
<b>EPA Site Reconnaissance – December 7, 2012</b>			
17	1,029	249	White ink solid
18	69,500	3,828	Red ink solid
19	79,800	ND	Yellow ink solid
20	932	267	White ink solid
21	54,400	ND	Green ink solid
22	10,400	ND	Red ink solid
23	40,000	1,272	Yellow ink solid next to Opossum Creek
24	423	ND	Blue ink solid
25	1,431	260	Blue and yellow ink solids on surficial soil
26	88,200	4,065	Red ink solid
27	5,723	437	Black goo
28	74,400	1,675	Yellow ink solid

**Table 3-1**  
**XRF Field Screening Results Summary**  
**Opossum Creek Drum Site**  
**Moraine, Montgomery County, Ohio**

Screening Location No.	Total Lead (ppm)	Total Arsenic (ppm)	Location
<b>EPA Site Assessment – December 12, 2012</b>			
29	<b>93,356</b>	<b>4,471</b>	Red ink solid (S-1)
30	152	ND	White ink solid
31	<b>12,890</b>	ND	Yellow ink solid
32	<b>27,799</b>	ND	Surficial soil mixed with yellow ink solids next to water (S-3)
33	<b>233,756</b>	<b>15,637</b>	Yellow ink solid (S-4)
34	<b>147,390</b>	ND	Surficial soil mixed with yellow ink solids (S-5)
35	<b>104,064</b>	ND	Surficial soil mixed with yellow ink solids (S-6)
36	<b>60,502</b>	<b>4,956</b>	Red ink solid (S-7)
37	<b>4,033</b>	ND	Red ink solid
38	<b>57,516</b>	<b>2,538</b>	Surficial soil mixed with red ink solids (S-8)
39	<b>4,848</b>	<b>301</b>	Multi-color ink in soil (S-9)
40	<b>33,456</b>	<b>1,965</b>	Multi-color ink in soil (S-10)
41	<b>2,391</b>	<b>102</b>	Blue ink solid
42	<b>425</b>	ND	Surficial soil
43	<b>15,792</b>	<b>414</b>	Surficial oil
44	<b>61,931</b>	<b>1,264</b>	Green ink solid (S-11)

Notes:

**Shaded and bolded results** exceed either the 400-ppm EPA RML for lead or the 22-ppm EPA RML for arsenic at residential properties.

< = Less than

EPA = U.S. Environmental Protection Agency

ND = Not detected at XRF instrument's minimum detection level

OEPA = Ohio Environmental Protection Agency

ppm = Part per million

RML = Removal Management Level

XRF = X-ray fluorescence

**Table 3-2**  
**Waste Sampling Summary**  
**Opossum Creek Drum Site**  
**Moraine, Montgomery County, Ohio**

Field Sample ID No.	Sampling Date	Sample Type	Sampling Location	Analytical Parameter(s)
S-1	12/12/12	Grab, solid field sample	Drum burial area - partially buried drum	PCBs and TCLP RCRA metals
S-2	12/12/12	Grab, liquid/sludge field sample	Drum burial area - partially buried drum	Flashpoint and TCLP VOCs
S-3	12/12/12	Composite, solid field sample	Drum burial area - soil embankment of Opossum Creek	PCBs and TCLP RCRA metals
S-4	12/12/12	Grab, solid field sample	Drum burial area - partially buried drum	TCLP RCRA metals
S-5	12/12/12	Composite, solid field sample	Drum burial area - surficial soil	TCLP RCRA metals
S-6	12/12/12	Composite, solid field sample	Drum burial area - surficial soil	TCLP RCRA metals
S-7	12/12/12	Grab, solid field sample	Drum burial area - partially buried drum	TCLP RCRA metals
S-8	12/12/12	Composite, solid field sample	Drum burial area - surficial soil	TCLP RCRA metals
S-9	12/12/12	Composite, solid field sample	Drum burial area - surficial soil	Total and TCLP RCRA metals
S-10	12/12/12	Composite, solid field sample	Drum burial area - surficial soil	Total and TCLP RCRA metals
S-11	12/12/12	Grab, solid field sample	Drum burial area - partially buried drum	TCLP RCRA metals

Notes:

ID = Identification

No. = Number

PCB = Polychlorinated biphenyl

RCRA = Resource Conservation and Recovery Act

TCLP = Toxicity Characteristic Leaching Procedure

VOC = Volatile organic compound

**Table 4-1**  
**Waste Sampling Results Summary**  
**Opossum Creek Drum Site**  
**Moraine, Montgomery County, Ohio**

Analysis	Regulatory Limit or RML	Field Sample ID No.	S-1	S-2	S-3	S-4	S-5	S-7	S-8	S-9	S-10	S-11
		Matrix	Solid	Liquid/Sludge	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
		Unit	Result									
Flashpoint - Closed Cup	< 140	°F	NA	130	NA	NA	NA	NA	NA	NA	NA	NA
Ignitability - Burn Rate	2.2	mm/s	NA	3.8	NA	NA	NA	NA	NA	NA	NA	NA
<b>Total PCBs</b>												
PCBs	50	mg/kg	0.6	NA	ND	NA	NA	NA	NA	NA	NA	NA
<b>TCLP VOCs</b>												
2-Butanone (MEK)	200.0	mg/L	NA	54	NA	NA	NA	NA	NA	NA	NA	NA
<b>Total RCRA Metals</b>												
Arsenic	22 (RML)	mg/kg	NA	NA	NA	NA	NA	NA	NA	39	ND	NA
Barium	15,000 (RML)	mg/kg	NA	NA	NA	NA	NA	NA	NA	1,100 J	750	NA
Chromium	None (RML)	mg/kg	NA	NA	NA	NA	NA	NA	NA	640 J	930	NA
Lead	400 (RML)	mg/kg	NA	NA	NA	NA	NA	NA	NA	5,100	5,600	NA
<b>TCLP RCRA Metals</b>												
Arsenic	5.0	mg/L	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
Barium	100.0	mg/L	0.79	NA	ND	0.18	0.49	0.64	1.6	1.9	3.4	0.34
Chromium	5.0	mg/L	ND	NA	ND	0.16	ND	ND	ND	0.11	0.18	0.14
Lead	5.0	mg/L	16	NA	4.3	4.1	8.2	24	20	1.5	7.4	2.1

Notes:

**Shaded and bolded results** exceed either the hazardous waste regulatory limits in Title 40 of the *Code of Federal Regulations*, Part 261, Subpart C, or the EPA RML.

< = Less than

°F = Degree Fahrenheit

EPA = U.S. Environmental Protection Agency

ID = Identification

J = Analyte detected below quantitation limit

MEK = Methyl ethyl ketone

mg/kg = Milligram per kilogram

mg/L = Milligram per liter

mm/s = Millimeter per second

NA = Not analyzed

ND = Not detected at the reporting limit

PCB = Polychlorinated biphenyl

RCRA = Resource Conservation and Recovery Act

RML = Removal Management Level

TCLP = Toxicity Characteristic Leaching Procedure

VOC = Volatile organic compound

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**APPENDIX A**  
**PHOTOGRAPHIC DOCUMENTATION**

---



**Site:** Opossum Creek Drum Site

**Photograph No.:** 1

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Partially buried 55-gallon drums and containers



**Site:** Opossum Creek Drum Site

**Photograph No.:** 2

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Severely corroded 55-gallon drum





**Site:** Opossum Creek Drum Site

**Photograph No.:** 3

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Dried, multi-colored ink waste within partially buried drum



**Site:** Opossum Creek Drum Site

**Photograph No.:** 4

**Date:** 12/12/12

**Direction:** North

**Photographer:** John Sherrard

**Subject:** Buried and partially buried 55-gallon drums and containers



**Site:** Opossum Creek Drum Site

**Photograph No.:** 5

**Direction:** Down

**Subject:** Partially buried drum

**Date:** 12/12/12

**Photographer:** John Sherrard



**Site:** Opossum Creek Drum Site

**Photograph No.:** 6

**Direction:** North

**Subject:** Abandoned, partially buried 55-gallon drums

**Date:** 12/12/12

**Photographer:** John Sherrard





**Site:** Opossum Creek Drum Site

**Photograph No.:** 7

**Direction:** East

**Subject:** Partially buried drums

**Date:** 12/12/12

**Photographer:** John Sherrard



**Site:** Opossum Creek Drum Site

**Photograph No.:** 8

**Direction:** West

**Subject:** Proximity of buried drum area to Opossum Creek

**Date:** 12/12/12

**Photographer:** John Sherrard





**Site:** Opossum Creek Drum Site

**Photograph No.:** 9

**Date:** 12/12/12

**Direction:** North

**Photographer:** John Sherrard

**Subject:** Abandoned drums protruding from ground in the drum burial area



**Site:** Opossum Creek Drum Site

**Photograph No.:** 10

**Date:** 12/12/12

**Direction:** East

**Photographer:** John Sherrard

**Subject:** Severely corroded drum



**Site:** Opossum Creek Drum Site

**Photograph No.:** 11

**Date:** 12/12/12

**Direction:** East

**Photographer:** John Sherrard

**Subject:** Drum from which investigative waste solid sample S-1 was collected



**Site:** Opossum Creek Drum Site

**Photograph No.:** 12

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Containers from which investigative liquid/sludge waste sample S-2 was collected





**Site:** Opossum Creek Drum Site

**Photograph No.:** 13

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Investigative soil and waste solid sample S-3



**Site:** Opossum Creek Drum Site

**Photograph No.:** 14

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Drum from which investigative waste solid sample S-4 was collected



**Site:** Opossum Creek Drum Site

**Photograph No.:** 15

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Investigative soil and waste solid sample S-5



**Site:** Opossum Creek Drum Site

**Photograph No.:** 16

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Yellow ink solids on ground; investigative soil and waste solid sample S-6





**Site:** Opossum Creek Drum Site

**Photograph No.:** 17

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Investigative waste solid sample S-7



**Site:** Opossum Creek Drum Site

**Photograph No.:** 18

**Date:** 12/12/12

**Direction:** Down

**Photographer:** John Sherrard

**Subject:** Red ink solids on ground; investigative soil and waste solid sample S-8



**Site:** Opossum Creek Drum Site

**Photograph No.:** 19

**Direction:** Down

**Subject:** Investigative waste solid sample S-11

**Date:** 12/12/12

**Photographer:** John Sherrard



**Site:** Opossum Creek Drum Site

**Photograph No.:** 20

**Direction:** Down

**Subject:** Partially buried and corroded drums next to Opossum Creek

**Date:** 12/12/12

**Photographer:** John Sherrard

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**APPENDIX B**  
**DATA VALIDATION REPORT AND VALIDATED ANALYTICAL**  
**RESULTS**

---



**OPOSSUM CREEK DRUM  
DAYTON, OHIO  
DATA VALIDATION REPORT**

**Date:** January 8, 2013

**Laboratory:** ALS Environmental (ALS), Cincinnati, Ohio

**Laboratory Project #:** 1212304 and 1301027

**Data Validation Performed By:** Lisa Graczyk, Weston Solutions, Inc. (WESTON) Superfund Technical Assessment and Response Team (START)

**Weston Analytical Work Order #/TDD #:** 20405.016.001.2051.00/S05-0001-1211-014

This data validation report has been prepared by WESTON START under the START III Region V contract. This report documents the data validation for one sludge and ten waste solid samples collected for the Opossum Creek Drum Site Assessment that were analyzed for the following parameters and U.S. Environmental Protection Agency (U.S. EPA) methods:

- Toxicity Characteristic Leaching Procedure (TCLP) Volatile Organic Compounds (VOC) by SW-846 Methods 1311 and 8260
- Polychlorinated Biphenyls (PCB) by SW-846 Method 8082
- Metals by SW-846 Methods 6010B and 7471A
- TCLP Metals by SW-846 Methods 1311, 6010B, and 7470A
- Ignitability by SW-846 Method 1030 and 1010

A level II data package was requested from ALS. The data validation was conducted in general accordance with the U.S. EPA "Contract Laboratory Program National Functional Guidance for Superfund Organic Methods Data Review" dated June 2008 and "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" dated January 2010. The Attachment contains the results summary sheets with the hand-written qualifiers applied during data validation.

## **TCLP VOCs by SW-846 METHODS 1311 AND 8260**

### **1. Samples**

The following table summarizes the samples for which this data validation is being conducted.

<b>Samples</b>	<b>Lab ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Analyzed</b>
S-2	1212304-02	Sludge	12/12/2012	12/17/2012

### **2. Holding Times**

The sample was analyzed within the required holding time limit of 14 days from sample collection.

### **3. Blanks**

A method blank was analyzed with the TCLP VOC analysis. The method blank was free of target compound contamination above the reporting limit.

### **4. Surrogate Results**

The surrogate recovery results were within the laboratory-established quality control (QC) limits.

### **5. Laboratory Control Sample (LCS) Results**

The LCS recoveries were within laboratory QC limits.

### **6. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Results**

A site-specific MS and MSD were not analyzed. No qualifications were applied.

### **7. Overall Assessment**

The TCLP VOC data are acceptable for use based on the information received.

## **PCBs BY U.S. EPA SW-846 METHOD 8082**

### **1. Samples**

The following table summarizes the samples for which this data validation was conducted.

<b>Samples</b>	<b>Lab ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Prepared</b>	<b>Date Analyzed</b>
S-1	1212304-01	Solid	12/12/2012	12/17/2012	12/18/2012
S-3	1212304-03	Solid	12/12/2012	12/17/2012	12/18/2012

### **2. Holding Times**

The holding time limit for PCB analysis for solid samples is 14 days from sample collection to extraction and 40 days from extraction to analysis. Holding times were met.

### **3. Blanks**

A method blank was analyzed with the PCB analyses. The method blank was free of target compound contamination above the reporting limit.

### **4. Surrogates**

The surrogate recoveries were within QC limits.

### **5. LCS Results**

The LCS and LCS duplicate recoveries and RPDs were within the laboratory-established QC limits.

### **6. MS and MSD Results**

A site-specific MS and MSD were not analyzed. No qualifications are required.

### **7. Overall Assessment**

The PCB data are acceptable for use based on the information received.

## **TOTAL METALS BY SW-846 METHODS 6010B AND 7471A**

### **1. Samples**

The following table summarizes the samples for which this data validation is being conducted.

<b>Samples</b>	<b>Lab ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Analyzed</b>
S-9	1212304-09	Solid	12/12/2012	12/14/2012 – 12/17/2012
S-10	1212304-10	Solid	12/12/2012	12/14/2012 – 12/17/2012

### **2. Holding Times**

The samples were analyzed within the required holding time limit of 28 days from sample collection to analysis for mercury and 180 days from sample collection to analysis for all other metals.

### **3. Blank Results**

Method blanks were analyzed with the metals analysis. The blanks were free of target analyte contamination above the reporting limits.

### **4. LCS Results**

The LCS and LCS duplicate recoveries and RPDs were within the laboratory-established QC limits.

### **5. MS and MSD Results**

A site-specific MS and MSD were analyzed using sample S-9 as the spiked sample. The recoveries and RPDs were within QC limits except for as follows.

For lead, the spike amount was more than 4 time lower than the sample concentration and no qualifications were required.

Barium and chromium were detected low, below the QC limit for percent recovery. In sample S-9, the results for barium and chromium were flagged “J” as estimated due to potential matrix interferences.

## **6. Overall Assessment**

The metals data are acceptable for use as qualified based on the information received.

### **TCLP METALS BY SW-846 METHODS 1311, 6010B, AND 7470A**

#### **1. Samples**

The following table summarizes the samples for which this data validation is being conducted.

<b>Samples</b>	<b>Lab ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Analyzed</b>
S-1	1212304-01	Solid	12/12/2012	12/17/2012 – 12/18/2012
S-3	1212304-03	Solid	12/12/2012	12/17/2012 – 12/18/2012
S-4	1212304-04	Solid	12/12/2012	12/17/2012 – 12/18/2012
S-5	1212304-05	Solid	12/12/2012	12/17/2012 – 12/18/2012
S-6	1212304-06	Solid	12/12/2012	12/18/2012
S-7	1212304-07	Solid	12/12/2012	12/18/2012
S-8	1212304-08	Solid	12/12/2012	12/18/2012
S-9	1212304-09	Solid	12/12/2012	12/18/2012
S-10	1212304-10	Solid	12/12/2012	12/18/2012
S-11	1212304-11	Solid	12/12/2012	12/18/2012

#### **2. Holding Times**

The samples were analyzed within the required holding time limit of 28 days from sample collection to analysis for mercury and 180 days from sample collection to analysis for all other metals.

#### **3. Blank Results**

Method blanks were analyzed with the TCLP metals analysis. The blanks were free of target analyte contamination above the reporting limits.

#### **4. LCS Results**

The LCS and LCS duplicate recoveries and RPDs were within the laboratory-established QC limits.

**5. MS and MSD Results**

A site-specific MS and MSD were analyzed using sample S-5 as the spiked sample. The recoveries and RPDs were within QC limits except for as follows.

For lead, the spike amount was more than 4 time lower than the sample concentration and no qualifications were required.

**6. Overall Assessment**

The TCLP metals data are acceptable for use based on the information received.

**GENERAL CHEMISTRY PARAMETERS (Ignitability by 1030)**

**1. Samples**

The following table summarizes the samples for which this data validation is being conducted.

<b>Samples</b>	<b>Lab ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Analyzed</b>
S-2 (solid layer)	1212304-02	Sludge	12/12/2012	12/19/2012
S-2 (liquid layer)	1301027-01	Sludge	12/12/2012	1/8/2013

**2. Holding Times**

The holding times were acceptable.

**3. Overall Assessment**

The ignitability data are acceptable for use based on the information received.

Data Validation Report  
Opossum Creek Drum Site  
ALS Environmental  
Laboratory Project #: 1212304 and 1301027

**ATTACHMENT**

**ALS ENVIRONMENTAL  
RESULTS SUMMARY WITH QUALIFIERS**

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-1

Lab ID: 1212304-01

Collection Date: 12/12/2012 12:12 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
<b>PCBS BULK</b>			<b>SW8082</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>SWS</b>
Aroclor 1016	ND		0.54	mg/Kg	1	12/18/2012
Aroclor 1221	ND		1.1	mg/Kg	1	12/18/2012
Aroclor 1232	ND		0.54	mg/Kg	1	12/18/2012
Aroclor 1242	ND		0.54	mg/Kg	1	12/18/2012
Aroclor 1248	ND		0.54	mg/Kg	1	12/18/2012
<b>Aroclor 1254</b>	<b>0.63</b>		<b>0.54</b>	<b>mg/Kg</b>	1	12/18/2012
Aroclor 1260	ND		0.54	mg/Kg	1	12/18/2012
Aroclor 1262	ND		0.54	mg/Kg	1	12/18/2012
Aroclor 1268	ND		0.54	mg/Kg	1	12/18/2012
Surr: Decachlorobiphenyl	99.0		22-156	%REC	1	12/18/2012
Surr: Tetrachloro-m-xylene	68.6		34-145	%REC	1	12/18/2012
<hr/>						
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/17/2012 11:52 PM
<hr/>						
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 12:52 PM
<b>Barium</b>	<b>0.79</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 12:52 PM
Cadmium	ND		0.10	mg/L	5	12/18/2012 12:52 PM
Chromium	ND		0.10	mg/L	5	12/18/2012 12:52 PM
<b>Lead</b>	<b>16</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 12:52 PM
Selenium	ND		0.10	mg/L	5	12/18/2012 12:52 PM
Silver	ND		0.10	mg/L	5	12/18/2012 12:52 PM

Note:



**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-2

Lab ID: 1212304-02

Collection Date: 12/12/2012 12:20 PM

Matrix: SLUDGE

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TCLP VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260</b>		Prep Date: <b>12/13/2012</b>	Analyst: <b>LAK</b>
1,1-Dichloroethene	ND		0.050	mg/L	10	12/17/2012 04:04 PM
1,2-Dichloroethane	ND		0.050	mg/L	10	12/17/2012 04:04 PM
1,4-Dichlorobenzene	ND		0.050	mg/L	10	12/17/2012 04:04 PM
<b>2-Butanone</b>	<b>54</b>		<b>5.0</b>	<b>mg/L</b>	1000	12/17/2012 02:59 PM
Benzene	ND		0.050	mg/L	10	12/17/2012 04:04 PM
Carbon tetrachloride	ND		0.050	mg/L	10	12/17/2012 04:04 PM
Chlorobenzene	ND		0.050	mg/L	10	12/17/2012 04:04 PM
Chloroform	ND		0.050	mg/L	10	12/17/2012 04:04 PM
Tetrachloroethene	ND		0.050	mg/L	10	12/17/2012 04:04 PM
Trichloroethene	ND		0.050	mg/L	10	12/17/2012 04:04 PM
Vinyl chloride	ND		0.050	mg/L	10	12/17/2012 04:04 PM
Surr: Bromofluorobenzene	88.9		61-131	%REC	10	12/17/2012 04:04 PM
Surr: Dibromofluoromethane	99.2		87-126	%REC	10	12/17/2012 04:04 PM
Surr: Toluene-d8	108		84-111	%REC	10	12/17/2012 04:04 PM
<b>IGNITABILITY</b>			<b>SW1030</b>			Analyst: <b>RDN</b>
Ignitability	3.8			mm/sec	1	12/19/2012

Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-3

Lab ID: 1212304-03

Collection Date: 12/12/2012 12:30 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
<b>PCBS BULK</b>			<b>SW8082</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>SWS</b>
Aroclor 1016	ND		0.52	mg/Kg	1	12/18/2012
Aroclor 1221	ND		1.0	mg/Kg	1	12/18/2012
Aroclor 1232	ND		0.52	mg/Kg	1	12/18/2012
Aroclor 1242	ND		0.52	mg/Kg	1	12/18/2012
Aroclor 1248	ND		0.52	mg/Kg	1	12/18/2012
Aroclor 1254	ND		0.52	mg/Kg	1	12/18/2012
Aroclor 1260	ND		0.52	mg/Kg	1	12/18/2012
Aroclor 1262	ND		0.52	mg/Kg	1	12/18/2012
Aroclor 1268	ND		0.52	mg/Kg	1	12/18/2012
Surr: Decachlorobiphenyl	93.8		22-156	%REC	1	12/18/2012
Surr: Tetrachloro-m-xylene	61.8		34-145	%REC	1	12/18/2012
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/17/2012 11:54 PM
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 12:59 PM
Barium	ND		0.10	mg/L	5	12/18/2012 12:59 PM
Cadmium	ND		0.10	mg/L	5	12/18/2012 12:59 PM
Chromium	ND		0.10	mg/L	5	12/18/2012 12:59 PM
<b>Lead</b>	<b>4.3</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 12:59 PM
Selenium	ND		0.10	mg/L	5	12/18/2012 12:59 PM
Silver	ND		0.10	mg/L	5	12/18/2012 12:59 PM

Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-4

Lab ID: 1212304-04

Collection Date: 12/12/2012 12:35 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>TCLP MERCURY BY CVAA</b>						
Mercury	ND		<b>SW7470A</b> 0.50	µg/L	Prep Date: <b>12/17/2012</b> 1	Analyst: <b>YCL</b> 12/17/2012 11:56 PM
<b>TCLP METALS BY ICP</b>						
Arsenic	ND		<b>SW6010B</b> 0.10	mg/L	Prep Date: <b>12/17/2012</b> 5	Analyst: <b>VAW</b> 12/18/2012 01:05 AM
<b>Barium</b>	<b>0.18</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:05 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 01:05 AM
<b>Chromium</b>	<b>0.16</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:05 AM
<b>Lead</b>	<b>4.1</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:05 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 01:05 AM
Silver	ND		0.10	mg/L	5	12/18/2012 01:05 AM

Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-5

Lab ID: 1212304-05

Collection Date: 12/12/2012 12:45 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/17/2012 11:58 PM
<hr/>						
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 01:12 AM
<b>Barium</b>	<b>0.49</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:12 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 01:12 AM
Chromium	ND		0.10	mg/L	5	12/18/2012 01:12 AM
<b>Lead</b>	<b>8.2</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:12 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 01:12 AM
Silver	ND		0.10	mg/L	5	12/18/2012 01:12 AM

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Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-6

Lab ID: 1212304-06

Collection Date: 12/12/2012 01:00 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/18/2012 12:00 AM
<hr/>						
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 01:31 AM
<b>Barium</b>	<b>0.52</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:31 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 01:31 AM
<b>Chromium</b>	<b>0.30</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:31 AM
<b>Lead</b>	<b>5.6</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:31 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 01:31 AM
Silver	ND		0.10	mg/L	5	12/18/2012 01:31 AM

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Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-7

Lab ID: 1212304-07

Collection Date: 12/12/2012 01:15 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/18/2012 12:02 AM
<hr/>						
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 01:50 AM
<b>Barium</b>	<b>0.64</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:50 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 01:50 AM
Chromium	ND		0.10	mg/L	5	12/18/2012 01:50 AM
<b>Lead</b>	<b>24</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:50 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 01:50 AM
Silver	ND		0.10	mg/L	5	12/18/2012 01:50 AM

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Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-8

Lab ID: 1212304-08

Collection Date: 12/12/2012 01:30 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/18/2012 12:08 AM
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 01:56 AM
<b>Barium</b>	<b>1.6</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:56 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 01:56 AM
Chromium	ND		0.10	mg/L	5	12/18/2012 01:56 AM
<b>Lead</b>	<b>20</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 01:56 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 01:56 AM
Silver	ND		0.10	mg/L	5	12/18/2012 01:56 AM

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Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-9

Lab ID: 1212304-09

Collection Date: 12/12/2012 01:40 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>MOISTURE</b>			<b>SM2540B</b>		Prep Date: 12/13/2012	Analyst: YCL
Moisture	34		0.010	% of sample	1	12/13/2012
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: 12/17/2012	Analyst: YCL
Mercury	ND		0.50	µg/L	1	12/18/2012 12:10 AM
<b>MERCURY BY CVAA</b>			<b>SW7471A</b>		Prep Date: 12/14/2012	Analyst: YCL
Mercury	ND		0.45	mg/Kg-dry	1	12/14/2012 01:55 PM
<b>METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: 12/13/2012	Analyst: VAW
Arsenic	39		7.4	mg/Kg-dry	1	12/17/2012 07:31 PM
Barium	1,100 J		15	mg/Kg-dry	1	12/17/2012 07:31 PM
Cadmium	ND		1.5	mg/Kg-dry	1	12/17/2012 07:31 PM
Chromium	640 J		7.4	mg/Kg-dry	1	12/17/2012 07:31 PM
Lead	5,100		7.4	mg/Kg-dry	1	12/17/2012 07:31 PM
Selenium	ND		4.5	mg/Kg-dry	1	12/17/2012 07:31 PM
Silver	ND		1.5	mg/Kg-dry	1	12/17/2012 07:31 PM
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: 12/17/2012	Analyst: VAW
Arsenic	ND		0.10	mg/L	5	12/18/2012 02:03 AM
Barium	1.9		0.10	mg/L	5	12/18/2012 02:03 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 02:03 AM
Chromium	0.11		0.10	mg/L	5	12/18/2012 02:03 AM
Lead	1.5		0.10	mg/L	5	12/18/2012 02:03 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 02:03 AM
Silver	ND		0.10	mg/L	5	12/18/2012 02:03 AM

Note:

2  
1-8-13



**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-10

Lab ID: 1212304-10

Collection Date: 12/12/2012 02:00 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>MOISTURE</b>			<b>SM2540B</b>		Prep Date: <b>12/13/2012</b>	Analyst: <b>YCL</b>
Moisture	35		0.010	% of sample	1	12/13/2012
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/18/2012 12:12 AM
<b>MERCURY BY CVAA</b>			<b>SW7471A</b>		Prep Date: <b>12/14/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.45	mg/Kg-dry	1	12/14/2012 02:01 PM
<b>METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/13/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		7.6	mg/Kg-dry	1	12/17/2012 08:02 PM
Barium	750		15	mg/Kg-dry	1	12/17/2012 08:02 PM
Cadmium	ND		1.5	mg/Kg-dry	1	12/17/2012 08:02 PM
Chromium	930		7.6	mg/Kg-dry	1	12/17/2012 08:02 PM
Lead	5,600		7.6	mg/Kg-dry	1	12/17/2012 08:02 PM
Selenium	ND		4.6	mg/Kg-dry	1	12/17/2012 08:02 PM
Silver	ND		1.5	mg/Kg-dry	1	12/17/2012 08:02 PM
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 02:09 AM
Barium	3.4		0.10	mg/L	5	12/18/2012 02:09 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 02:09 AM
Chromium	0.18		0.10	mg/L	5	12/18/2012 02:09 AM
Lead	7.4		0.10	mg/L	5	12/18/2012 02:09 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 02:09 AM
Silver	ND		0.10	mg/L	5	12/18/2012 02:09 AM

Note:

**ALS Environmental**

Date: 07-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1212304

Sample ID: S-11

Lab ID: 1212304-11

Collection Date: 12/12/2012 02:15 PM

Matrix: SOLID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<hr/>						
<b>TCLP MERCURY BY CVAA</b>			<b>SW7470A</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>YCL</b>
Mercury	ND		0.50	µg/L	1	12/18/2012 12:14 AM
<b>TCLP METALS BY ICP</b>			<b>SW6010B</b>		Prep Date: <b>12/17/2012</b>	Analyst: <b>VAW</b>
Arsenic	ND		0.10	mg/L	5	12/18/2012 02:16 AM
<b>Barium</b>	<b>0.34</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 02:16 AM
Cadmium	ND		0.10	mg/L	5	12/18/2012 02:16 AM
<b>Chromium</b>	<b>0.14</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 02:16 AM
<b>Lead</b>	<b>2.1</b>		<b>0.10</b>	<b>mg/L</b>	5	12/18/2012 02:16 AM
Selenium	ND		0.10	mg/L	5	12/18/2012 02:16 AM
Silver	ND		0.10	mg/L	5	12/18/2012 02:16 AM

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Note:

## ALS Environmental

Date: 08-Jan-13

Client: Weston Solutions, Inc

Project: Opossum Creek Drum Site; Project No.: 20405.012.00

Work Order: 1301027

Sample ID: S-2

Lab ID: 1301027-01

Collection Date: 12/12/2012 12:20 PM

Matrix: SLUDGE

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>FLASHPOINT</b> Flashpoint	130		E1010	°F	1	Analyst: <b>RDN</b> 1/8/2013

Note:

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**Client:** Weston Solutions, Inc  
**Project:** Opossum Creek Drum Site; Project No.: 20405.012.00  
**WorkOrder:** 1301027

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**QUALIFIERS,  
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SDL	Sample Detection Limit
SW	SW-846 Method

<u>Units Reported</u>	<u>Description</u>
°F	