PHASE II SAMPLING REPORT
FOR
DETROIT LEAD ASSESSMENT PROJECT
DETROIT LEAD PIPE WORKS – 7001 LYNDON
DETROIT, WAYNE COUNTY, MICHIGAN

Prepared for:

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION AND REDEVELOPMENT DIVISION
Southeast Michigan District Office
27700 Donald Court
Warren, Michigan 48092

Prepared by:

WESTON SOLUTIONS OF MICHIGAN, INC.
7800 West Outer Drive, Suite 200
Detroit, Michigan 48235

October 2007

W. O. No. 20083.028.001

PHASE II SAMPLING REPORT
FOR
DETROIT LEAD ASSESSMENT PROJECT
DETROIT LEAD PIPE WORKS – 7001 LYNDON
DETROIT, WAYNE COUNTY, MICHIGAN

Prepared for:

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION AND REDEVELOPMENT DIVISION
Southeast Michigan District Office
27700 Donald Court
Warren, Michigan 48092

_____
Alexandra L.Clark
Project Manager

Prepared by:

WESTON SOLUTIONS OF MICHIGAN, INC
7800 West Outer Drive, Suite 200
Detroit, Michigan 48235

October 2007

W. O. No. 20083.028.001

EXECUTIVE SUMMARY

Weston Solutions of Michigan, Inc. (WESTON®) was contracted by the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD) to conduct a data investigation, Phase I off-site sampling, and Phase II on-site sampling for the Detroit Lead Assessment Project in Detroit, Wayne County, Michigan. The project consisted of evaluating 17 facilities in the Detroit Metropolitan Area that had been identified as potential lead smelters.

The former Detroit Lead Pipe Works (Site) was previously identified as a potential lead smelter by MDEQ. WESTON previously reviewed the available historical information and data pertaining to the Site. Based on this review, WESTON concluded that:

- The former facility was possibly a lead smelter.
- The property is currently used for automotive tire sales.
- Residential areas were located within potential aerial deposition zones.

Based on the historical information review, WESTON performed Phase I sampling that consisted of collection of surface soil samples from six upwind and six downwind properties for lead analysis. Phase I analytical results indicated one downwind sample contained lead above the MDEQ Part 201 Residential/Commercial I Direct Contact Criteria (RCDCC). WESTON subsequently performed Phase II sampling at the Site as the downwind samples were collected at or near the downwind envelope resulting in a potential data gap.

Phase II sampling consisted of the collection of six surface soils samples for lead analysis of total, fine, and coarse fractions of soils. Phase II results indicated five of the six samples exceeded RCDCC and the overall lead concentrations were indicative of lead smelting operations. WESTON performed additional surface soil sampling and collected samples at depth on the Site and neighboring properties to further evaluate the source of lead contamination. The additional sampling results indicated the off-site instances of lead concentrations above the RCDCC were sporadic and not necessarily attributable to the former Site operations. Further, X-ray fluorescence (XRF) screening performed in the residential area most proximal to the Site did not indicate lead concentrations in surface soil were above the screening level. Nor did the XRF screening results indicate decreasing concentrations with increasing distance from the Site.

Based on these conclusions, WESTON recommends that a Due Care Plan be developed and implemented for the Site. MDEQ will issue a Due Care Letter to the current property owner informing them of their due care obligations. Given the low concentrations of lead in the residential neighborhood proximal to the Site and the sporadic instances of lead concentrations above RCDCC off-site, no further action is recommended for the Site provided Due Care obligations are met.

TABLE OF CONTENTS

Section **Page**

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

SECTION 1

INTRODUCTION

Weston Solutions of Michigan, Inc. (WESTON®) was contracted by the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD) to conduct on-site sampling activities at the Former Detroit Lead Pipe Works Site (Site) associated with the Detroit Lead Assessment Project in Detroit, Wayne County, Michigan. This work was performed under WESTON's Level of Effort contract with the State of Michigan (Contract No. 2002). The objective of the previously conducted Phase I sampling efforts was to evaluate off-site conditions near potential lead smelters. The Site (a potential former lead smelter location) was sampled to further characterize the Site (Phase II) and to determine if a remaining source area of lead contamination exists. This Phase II Sampling Report presents a summary of the Phase II analytical results, as well as a recommendation for future activities.

1.1 SITE LOCATION

The Site was located at 7001 Lyndon Street in Detroit, Wayne County, Michigan (Detroit Metropolitan Area Map, **Figure 1**). The address 7001 Lyndon Street is currently the location of a tire warehouse for Pittman Tire. The Site is bounded by Lyndon Street/residential property to the north, to the east, west, and south by commercial/industrial property.

1.2 PREVIOUS WORK

MDEQ previously identified 17 potential lead smelters in the cities of Detroit and Hamtramck, Michigan. Smelting operations often result in the release of airborne particulate matter to off-site locations. This particulate matter may be contaminated with smelting-related chemicals (primarily heavy metals), and deposition of these particles in soil may be of potential concern to human health.

WESTON was contracted by the MDEQ RRD to perform data investigation and eventual off-site sampling activities associated with 12 of the potential smelters as a part of the Detroit Lead Assessment Project. WESTON initially reviewed historical information related to each facility including Bresser's Directory data, Sanborn Fire Insurance Maps from various years, aerial photographs from various years, fire marshal records, Baseline Environmental Assessments (BEAs), and other available information to evaluate the potential for historical smelting activities to have occurred at the facilities. The results of this effort are summarized in the *Summary Report for Data Investigation and Detroit Lead Assessment Project* (WESTON, 2003).

Following the historical data investigation, WESTON worked with MDEQ and the cities of Detroit and Hamtramck to identify city and state owned properties that were available to be sampled upwind and downwind of the suspected former smelting facilities. WESTON, on behalf of MDEQ collected surface samples from six upwind properties and six downwind properties in the vicinity of the Site. The analytical results were reviewed to determine if spatial and statistically valid trends in concentrations of lead were present in the soils that would indicate the potential for aerial release of lead from smelting activities. The results of this effort are detailed in the *Comprehensive Phase I Summary Report for Detroit Lead Assessment Project* (WESTON, 2004).

Facilities were categorized as Level 1 or Level 2 facilities based on the Phase I sampling results. Level 2 facilities were facilities where samples did not exceed the screening level downwind, but suggested a trend of decreasing concentration with increased distance from the facility that may be representative of aerial deposition. Conversely, Level 2 facility downwind sample data may indicate no characteristics of aerial deposition but contain concentrations of lead above the screening level.

A total of 24 surface soil samples were collected upwind and downwind of the Site for the Phase I sampling. None of the samples collected upwind of the Site contained concentrations of lead above Part 201 Residential/Commercial I Direct Contact Criteria (RCDCC) (400 milligrams per kilogram [mg/kg]). Lead concentrations in the samples collected at the properties upwind of the Site ranged from 43 mg/kg to 170 mg/kg. One downwind sample contained a lead concentration

above the RCDCC. Lead concentrations in the downwind samples ranged from 40 mg/kg to 490 mg/kg. The results are summarized in **Table 1**.

Table 1: Phase I - Analytical Results

Sample Address	Sample ID	Concentration of Lead (mg/Kg)
Upwind		
14205 Cloverdale	CLV-14200-A-C-0-2	83
14205 Cloverdale	CLV-14200-B-C-0-1	74
14205 Cloverdale	CLV-14300-A-C-0-1	58
14205 Cloverdale	CLV-14300-B-C-0-1	60
14205 Cloverdale	CLV-14334-A-C-0-1	72
14205 Cloverdale	CLV-14334-B-C-0-2	66
14205 Cloverdale	CLV-14350-A-C-0-1	65
14205 Cloverdale	CLV-14350-B-C-0-1	43
14202 Greenlawn	GRN-14202-A-C-0-1	110
14202 Greenlawn	GRN-14202-B-C-0-1	66
14210 Greenlawn	GRN-14210-A-C-0-2	150
14210 Greenlawn	GRN-14210-B-C-0-1	170
Downwind		
14665 Dexter	DXT-14665-A-C-0-1	190
14665 Dexter	DXT-14665-B-C-0-1	230
14707 Dexter	DXT-14707-A-C-0-2	260
14707 Dexter	DXT-14707-B-C-0-1	250
14699 Petosky	PET-14699-A-C-0-1	230
14699 Petosky	PET-14699-B-C-0-2	40
14709 Petosky	PET-14709-A-C-0-1	130
14709 Petosky	PET-14709-B-C-0-1	130
14745 Quincey	QYN-14745-A-C-0-1	110
14745 Quincey	QYN-14745-A-C-0-1	98
14678 Livernois	LIV-14678-A-C-0-1	250
14678 Livernois	LIV-14678-B-C-0-1	**490**

*Notes
1) Bold indicates results equal to or greater than to 400 mg/kg.

Although the spatial distribution of downwind samples did not show an aerial deposition trend and only one downwind sample exceeded the screening level, the Site was determined to be a Level 2 facility as the samples were collected at the edge of the downwind envelope, possibly resulting in a data gap. WESTON recommended Phase II efforts to include conducting an inspection at the former facility, conducting interviews with personnel, and collecting samples at the former facility for lead analysis to verify a source of contamination did not remain.

SECTION 2

FIELD ACTIVITIES AND PROCEDURES

2.1 OVERVIEW OF SAMPLING ACTIVITIES

MDEQ RRD tasked WESTON to conduct on-site sampling activities at the Site for the Detroit Lead Assessment Project in Detroit, Michigan. WESTON was directed by the MDEQ to 1) visit the suspected former smelting facility that is now a commercial/industrial property; 2) obtain/review available historical documents from the facility that pertain to previous environmental work and/or property transactions; and 3) perform surficial soil sampling for lead analysis at the facility where possible. The details of these efforts are summarized in the *Detroit Lead Assessment Project – Limited Sampling Plan for the Former Detroit Lead Pipe Works Site* (WESTON, 2006) and the *Detroit Lead Assessment Project – Limited Sampling Plan for Additional Sampling at the Former Detroit Lead Pipe Works Site* (WESTON, 2007) (**Appendix A**).

WESTON personnel collected six surface soil samples at the Site on 28 November 2006. WESTON subsequently collected 59 samples (plus 5 duplicates) at multiple depths to further evaluate the source of lead contamination at and in the vicinity of the Site. All samples were submitted to the MDEQ Environmental Laboratory in Lansing, Michigan for lead analysis for total, fine, and coarse fractions soil.

2.1.1 Sampling Approach

Initial Sampling – November 2006

WESTON collected a total of six discrete surface soil samples on 28 November 2006 to further characterize the Site, as shown on **Figure 2**. WESTON collected the six surface soil samples from an open area immediately west of the building situated at the 7001 Lyndon Street address. The aforementioned area is fenced and contains scrap tires and automobile parts and some

vegetation. WESTON initiated the sample collection proximal to the former stack located at the southwest side of the building, and continued sample collection north toward Lyndon Street.

Soil sampling procedures consisted of removing a volume of soil approximately 3 inches in diameter and 3 inches in depth using a disposable plastic scoop. The removed soil was placed directly into laboratory supplied glass jars. WESTON attempted to avoid collecting samples from within a 5-foot buffer of any painted structure, or from locations where flaked paint, or visibly stained soil existed to prevent the possible false positive from lead-based paint or other wastes. Foreign materials, such as vegetation, large rocks, and pebbles, etc., were removed from the sample and discarded. Following sample collection, the sample hole was filled with the remaining soil not used in the sample.

Subsequent Sampling – May 2007

WESTON subsequently collected 59 investigative samples (plus 5 duplicates) on 23 April, 1 May, and 2 May 2007 to further characterize the Site and evaluate the source of lead contamination. WESTON collected both surficial and deeper samples to evaluate the potential for contamination as a result of aerial deposition versus contaminated fill material.

WESTON collected samples at the following depths:

- 0 to 3 inch interval: 27 samples
- 6 to 12 inch interval: 13 samples
- 18 to 24 inch interval: 10 samples
- 30 to 36 inch interval: 7 samples

Sample stations are shown on **Figure 3**. WESTON collected surface samples in the same manner described for the Initial Sampling and collected samples at depth using a hand auger. Although WESTON attempted to collect samples from each interval at every sample station (with the exception of the samples designated LYN-RW and the screening locations on Stoepel Street and Santa Rosa Drive), subsurface conditions such as the presence of concrete or metal prevented achieving the desired depths at many locations.

During both sampling events, all information regarding soil description, location, and other distinguishable features present at the sample location were recorded in the field logbook. A field sketch was prepared that included sample locations.

Duplicate samples were collected at a one per 10 frequency. In addition, soil samples were designated for matrix spike/matrix spike duplicate (MS/MSD) analysis at a frequency of one per 20 soil samples.

X-Ray Fluorescence (XRF) Screening – June 2007

The following was excerpted from Innov-X Systems™ (www.innov-x-sys.com):

XRF Spectrometry is used to identify elements (such as lead) in a substance and quantify the amount of those elements present to ultimately determine the elemental composition of a material. In XRF Spectrometry, high-energy primary X-ray photons are emitted from a source (X-ray tube) and strike the sample. The primary photons from the X-ray tube have enough energy to knock electrons out of the innermost orbitals of atoms. When this occurs, the atoms become ions, which are unstable. An electron from an outer orbital will move into the newly vacant space at the inner orbital to regain stability. As the electron from the outer orbital moves into the inner orbital space, it emits an energy known as a secondary X-ray photon. This phenomenon is called fluorescence. The secondary X-ray produced is characteristic of a specific element. The energy (E) of the emitted fluorescent X-ray photon is determined by the difference in energies between the initial and final orbitals of the individual transitions. Energies are inversely proportional to the wavelengths; they are characteristic for each element. For example the energy for iron is about 6.4 kiloelectron volts (keV).

XRF screening of soil samples has been conducted at many sites of environmental contamination in the past with good correlation between screening results and fixed laboratory results. Therefore, on 14 June 2007, WESTON conducted XRF screening of surface soil within the right of ways along Stoepel Street (west side) and Santa Rosa Drive (east side) to further evaluate the lead concentrations in the residential neighborhood most proximal to the Site. XRF screening locations are shown on **Figure 3**.

2.1.2 Sampling and Sample Handling Procedures

Sample containers and disposable sampling equipment were maintained in a clean, segregated area prior to use. Sampling personnel changed gloves between each sample collection/handling. All samples were assembled and catalogued prior to delivery to the MDEQ Environmental Laboratory in Lansing, Michigan. Samples were analyzed for lead (total, fine, and coarse soil fractions) in accordance with United States Environmental Protection Agency (U.S. EPA) Solid Waste (SW) Method 6010/6020. MDEQ Environmental Laboratory's standard hold time for lead analysis is 180 days. The standard hold time was not exceeded for these samples.

2.2 FIELD ACTIVITIES

WESTON personnel, Ms. Shamille Lewis and Ms. Alexandra Clark, conducted the initial field sampling. Ms. Lewis, Ms. Lorie Ambrosio, Ms. Lori Kozel, Ms. Clark, and Mr. Jeremy Efros conducted the subsequent sampling in May 2007. Ms. Clark conducted the XRF screening in June 2007.

2.2.1 Sample Custody Procedures

Following sample collection and identification, the samples were maintained under chain of custody (COC) procedures, as described below.

The COC procedures were made available to all personnel involved with the sampling. A typical COC record was completed each time a sample or group of samples was prepared for shipment to the MDEQ Environmental Laboratory. The record repeated the information on each of the sample labels and served as documentation of handling during shipment. A copy of this record remained with the shipped samples at all times, and another copy was retained by the member of the sampling team who originally relinquished the samples. WESTON personnel completed a COC form for all samples sent to the MDEQ Environmental Laboratory.

2.2.2 Photographic Documentation

WESTON took photographs to document Site conditions and sample locations. The photographs showed typical operations and operating conditions.

All photographs were taken with a digital camera. Each photograph was recorded in the logbook with the location of the photograph, the direction the photograph was taken, the subject of the photograph, and its significance (i.e., why the picture was taken). Photographs were labeled using the automated assigned number the digital camera provides. A photographic log is included in **Appendix B.**

SECTION 3

PHASE II ANALYTICAL RESULTS

3.1 SUMMARY OF ANALYSIS

Initial Sampling – November 2006

WESTON collected a total of six investigative discrete samples for lead analysis via U.S. EPA SW 6010 for total, fine, and coarse fractions of soil. Of the six samples collected, five of the samples contained concentrations of lead above the RCDCC (400 mg/kg). Analytical results indicated elevated concentrations of lead were present at the Site and the overall lead concentrations were indicative of lead smelting activities. Lead concentrations ranged from 260 mg/kg to 85,000 mg/kg with concentrations decreasing with increasing distance from the former stack location. Further, the coarse fraction of soil contained the highest concentrations of lead in most cases, indicating the contaminated particles would not be expected to be as significantly dispersed. The results are shown on **Figure 2** and summarized in **Table 2**.

Table 2: Phase II - Initial Sampling Analytical Results

Sample Address	Sample ID	Total Concentration (mg/Kg)	Fine Concentration (mg/Kg)	Coarse Concentration (mg/Kg)
7001 Lyndon	LYN-7001-01	**78,000**	**9,300**	**85,000**
7001 Lyndon	LYN-7001-02	**18,000**	**7,900**	**19,000**
7001 Lyndon	LYN-7001-03	**34,000**	**5,800**	**40,000**
7001 Lyndon	LYN-7001-04	**29,000**	**6,600**	**33,000**
7001 Lyndon	LYN-7001-05	**14,000**	**2,600**	**18,000**
7001 Lyndon	LYN-7001-06	320	260	340

*Notes
1) Residential and Commercial I Direct Contact Criteria is 400 mg/kg.
Bold indicates results greater than 400 mg/kg.
2) Industrial and Commercial II Direct Contact Criteria is 900 mg/kg.
Underline indicates results greater than 900 mg/kg.

Subsequent Sampling – May 2007

WESTON collected a total of 59 investigative samples as described in **Subsection 2.1.1**. Analytical results for each interval sampled are provided below in **Tables 3, 4, 5, and 6** and shown on **Figures 4, 5, 6, and 7**.

Table 3: Phase II - Subsequent Sampling Analytical Results (0 to 3 Inch Interval)

Sample Address	Upwind or Downwind	Sample ID	Total Concentration (mg/Kg)	Fine Concentration (mg/Kg)	Coarse Concentration (mg/Kg)
Lyndon Street ROW	Upwind	LYN-RW-A01-0-1	75	86	69
Lyndon Street ROW	Upwind	LYN-RW-A02-0-1	120	130	120
Lyndon Street ROW	Upwind	LYN-RW-A03-0-1	140	160	130
Lyndon Street ROW	Upwind	LYN-RW-A04-0-1	140	140	140
Lyndon Street ROW	---	LYN-RW-A05-0-1	160	180	160
Lyndon Street ROW	---	LYN-RW-A06-0-1	160	190	160
Lyndon Street ROW	Upwind	LYN-RW-A07-0-1	**460**	190	**950**
Lyndon Street ROW	Upwind	LYN-RW-A08-0-1	240	270	220
Lyndon Street ROW	Upwind	LYN-RW-A09-0-1	**740**	**960**	370
Lyndon Street ROW	Upwind	LYN-RW-A10-0-1	**740**	**940**	**500**
Lyndon Street ROW	Upwind	LYN-RW-A11-0-1	**660**	**850**	280
Lyndon Street ROW	Upwind	LYN-RW-A12-0-1	**980**	**550**	**1,400**
14344 Cloverdale	Upwind	CLV1-14344-A-D-0-1	390	350	400
14344 Cloverdale		CLV2-14344-A-D-0-1	**2,100**	**2,400**	**2,100**
14344 Cloverdale		CLV3-14344-A-D-0-1	190	210	190
14471 Livernois	---	LIV1-14471-A-D-0-1	**840**	**710**	**850**
14471 Livernois	Downwind	LIV2-14471-A-D-0-1	**710**	**760**	**710**
14471 Livernois	Upwind	LIV3-14471-A-D-0-1	**770**	230	**830**
6345 Lyndon	Downwind	LYN1-6345-A-D-0-1	160	150	160
6345 Lyndon		LYN2-6345-A-D-0-1	**2,300**	**2,400**	**2,300**
6345 Lyndon		LYN3-6345-A-D-0-1	170	200	160
7001 Lyndon	---	LYN1-7001-A-D-0-1	**64,000**	**50,000**	**65,000**
7001 Lyndon		LYN2-7001-A-D-0-1	**110,000**	**18,000**	**120,000**
7001 Lyndon		LYN3-7001-A-D-0-1	270	190	280
7049 Lyndon	---	LYN1-7049-A-D-0-1	230	380	200
7049 Lyndon	---	LYN2-7049-A-D-0-1	140	170	130
7049 Lyndon	Upwind	LYN3-7049-A-D-0-1	330	210	370

*Notes
1) Residential and Commercial I Direct Contact Criteria is 400 mg/kg.
Bold indicates results greater than 400 mg/kg.
2) Industrial and Commercial II Direct Contact Criteria is 900 mg/kg.
Underline indicates results greater than 900 mg/kg.
--- = sample location at or very proximal to the Site – neither upwind or downwind

Table 4: Phase II - Subsequent Sampling Analytical Results (6 to 12 Inch Interval)

Sample Address	Upwind or Downwind	Sample ID	Total Concentration (mg/Kg)	Fine Concentration (mg/Kg)	Coarse Concentration (mg/Kg)
14344 Cloverdale	Upwind	CLV1-14344-A-D-1-1	110	180	100
14344 Cloverdale		CLV2-14344-A-D-1-1	**2,100**	**2,500**	**2,000**
14471 Livernois	---	LIV1-14471-A-D-1-1	210	**440**	190
14471 Livernois	Downwind	LIV2-14471-A-D-1-1	**670**	**650**	**670**
14471 Livernois	Upwind	LIV3-14471-A-D-1-1	140	200	130
6345 Lyndon		LYN1-6345-A-D-1-1	**950**	**580**	**970**
6345 Lyndon	Downwind	LYN2-6345-A-D-1-1	210	390	190
6345 Lyndon		LYN3-6345-A-D-1-1	28	30	27
7001 Lyndon		LYN1-7001-A-D-1-1	**78,000**	**43,000**	**87,000**
7001 Lyndon	---	LYN2-7001-A-D-1-1	**53,000**	**13,000**	**59,000**
7001 Lyndon		LYN3-7001-A-D-1-1	160	240	130
7049 Lyndon	---	LYN1-7049-A-D-1-1	230	**430**	180
7049 Lyndon	---	LYN2-7049-A-D-1-1	57	86	48

*Notes
1) Residential and Commercial I Direct Contact Criteria is 400 mg/kg.
Bold indicates results greater than 400 mg/kg.
2) Industrial and Commercial II Direct Contact Criteria is 900 mg/kg.
Underline indicates results greater than 900 mg/kg.
--- = sample location at or very proximal to the Site – neither upwind or downwind

Table 5: Phase II - Subsequent Sampling Analytical Results (18 to 24 Inch Interval)

Sample Address	Upwind or Downwind	Sample ID	Total Concentration (mg/Kg)	Fine Concentration (mg/Kg)	Coarse Concentration (mg/Kg)
14344 Cloverdale	Upwind	CLV1-14344-A-D-2-1	32	56	29
14344 Cloverdale		CLV2-14344-A-D-2-1	**1,500**	**2,600**	**1,300**
14471 Livernois	---	LIV1-14471-A-D-2-1	38	96	34
14471 Livernois	Upwind	LIV3-14471-A-D-2-1	170	230	170
6345 Lyndon	Downwind	LYN2-6345-A-D-2-1	100	350	83
7001 Lyndon		LYN1-7001-A-D-2-1	**32,000**	**9,900**	**44,000**
7001 Lyndon	---	LYN2-7001-A-D-2-1	**21,000**	**3,000**	**24,000**
7001 Lyndon		LYN3-7001-A-D-2-1	36	45	25
7049 Lyndon	---	LYN1-7049-A-D-2-1	15	13	16
7049 Lyndon		LYN2-7049-A-D-2-1	68	62	69

*Notes
1) Residential and Commercial I Direct Contact Criteria is 400 mg/kg.
Bold indicates results greater than 400 mg/kg.
2) Industrial and Commercial II Direct Contact Criteria is 900 mg/kg.
Underline indicates results greater than 900 mg/kg.
--- = sample location at or very proximal to the Site – neither upwind or downwind

Table 6: Phase II - Subsequent Sampling Analytical Results (30 to 36 Inch Interval)

Sample Address	Upwind or Downwind	Sample ID	Total Concentration (mg/Kg)	Fine Concentration (mg/Kg)	Coarse Concentration (mg/Kg)
14344 Cloverdale	Upwind	CLV2-14344-A-D-3-1	**450**	**970**	330
14471 Livernois	---	LIV1-14471-A-D-3-1	32	85	29
6345 Lyndon	Downwind	LYN2-6345-A-D-3-1	20	36	19
7001 Lyndon	---	LYN2-7001-A-D-3-1	**24,000**	**3,300**	**29,000**
7001 Lyndon		LYN3-7001-A-D-3-1	10	12	7.0
7049 Lyndon	---	LYN1-7049-A-D-3-1	12	26	11
7049 Lyndon		LYN2-7049-A-D-3-1	35	40	35

*Notes
1) Residential and Commercial I Direct Contact Criteria is 400 mg/kg.
Bold indicates results greater than 400 mg/kg.
2) Industrial and Commercial II Direct Contact Criteria is 900 mg/kg.
Underline indicates results greater than 900 mg/kg.
--- = sample location at or very proximal to the Site – neither upwind or downwind

Table 7: Phase II - Subsequent Sampling Results Summary

Sample Interval	Number of Samples Collected	Number of Samples Exceeding Screening Level	Number of Samples Exceeding Upwind	Number of Samples Exceeding On or Proximal to the Site	Number of Samples Exceeding Downwind
0 to 3 inch	27	12	7	3	2
6 to 12 inch	13	7	1	4	2
18 to 24 inch	10	3	1	2	0
30 to 26 inch	7	2	1	1	0

Sample results collected at the ground surface and at depth indicated lead concentrations exceed RCDCC at several locations both on and off-site. The surficial lead concentrations above RCDCC can be considered somewhat sporadic when the upwind concentrations are compared to concentrations proximal and downwind of the Site. The lead concentration in the surficial sample collected furthest from the former stack location (270 mg/kg total lead) on-site was below RCDCC and significantly lower than the other two surficial samples collected on-site (64,000 and 110,000 mg/kg total lead). While there were decreases in lead concentrations with depth, there were still RCDCC exceedances at the 18 to 24 inch and 30 to 36 inch intervals upwind and at the Site.

Given the sporadic distribution of surficial lead concentrations above RCDCC the extent of aerial deposition of lead from the Site appears limited.

XRF Screening – June 2007

WESTON screened a total of 11 locations using an XRF instrument on 14 June 2007. None of the locations screened contained lead above the screening level according to the XRF readings as summarized in **Table 8**. The XRF readings do not indicate a clear trend of decreasing concentrations with increasing distance.

Table 8: XRF Screening Results

Location (feet north of Lyndon)	Lead Concentration in PPM
Stoepel Street (125 feet from front door of Facility)	
54	90 +/- 6
107	117 +/- 7
155	135 +/- 7
203	131 +/- 4
300	51 +/- 6
397	137 +/- 9
Santa Rosa Drive (193 feet northwest from front door of facility)	
10	340 +/- 14
62	197 +/- 6
117	225 +/- 7
167	105 +/- 6
280	160 +/- 6

ppm = parts per million
+/- = plus or minus

SECTION 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Review of historical information indicated the Site was a former potential lead smelter. The Phase I sampling results indicated only one sample exceeded the screening level and there was no evidence of an aerial deposition trend. However, samples were collected near the edge of the downwind envelope, possibly resulting in a data gap.

The initial Phase II on-Site sampling results were indicative of lead smelting operations. WESTON performed additional surface soil sampling and collected samples at depth on the Site and neighboring properties to further evaluate the source of lead contamination. The additional sampling results indicated the off-site instances of lead concentrations above the RCDCC were sporadic and not necessarily attributable to the former Site operations. Further, XRF screening performed in the residential area most proximal to the Site did not indicate lead concentrations in surface soil were above the screening level. Nor did the XRF screening results indicate decreasing concentrations with increasing distance from the Site.

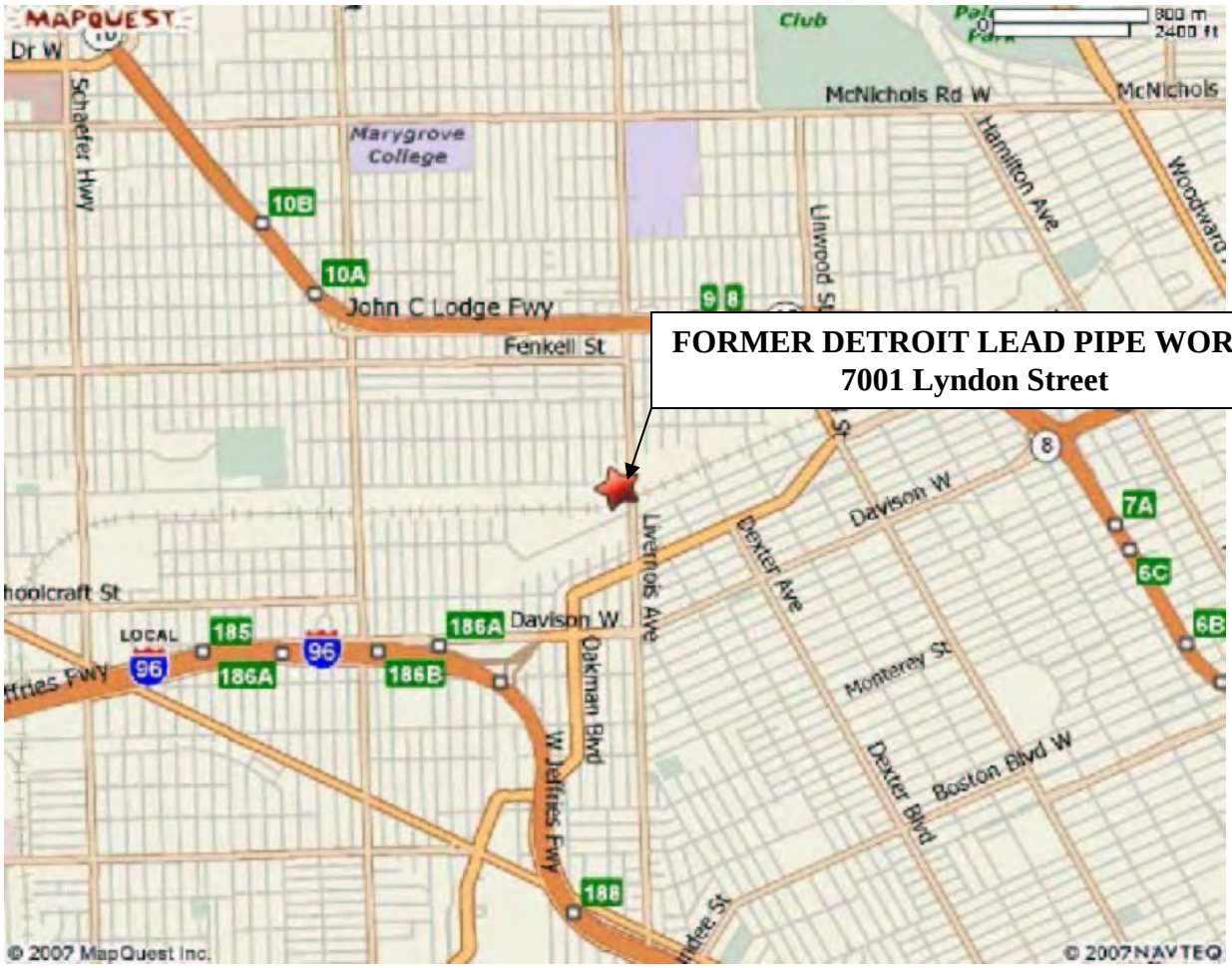
WESTON concluded that the property was indicative of a source of lead contamination as a result of smelting operations. However, given the low concentrations of lead in the residential neighborhood proximal to the Site and the sporadic instances of lead concentrations above the screening level, it does not appear there is an off-site human health risk as a result of previous Site operations.

4.2 RECOMMENDATIONS

WESTON recommends that a Due Care Plan be developed and implemented for the Site. MDEQ will issue a Due Care Letter to the current property owner informing them of their due care obligations. No further action is recommended for the Site provided Due Care obligations are met.

FIGURES

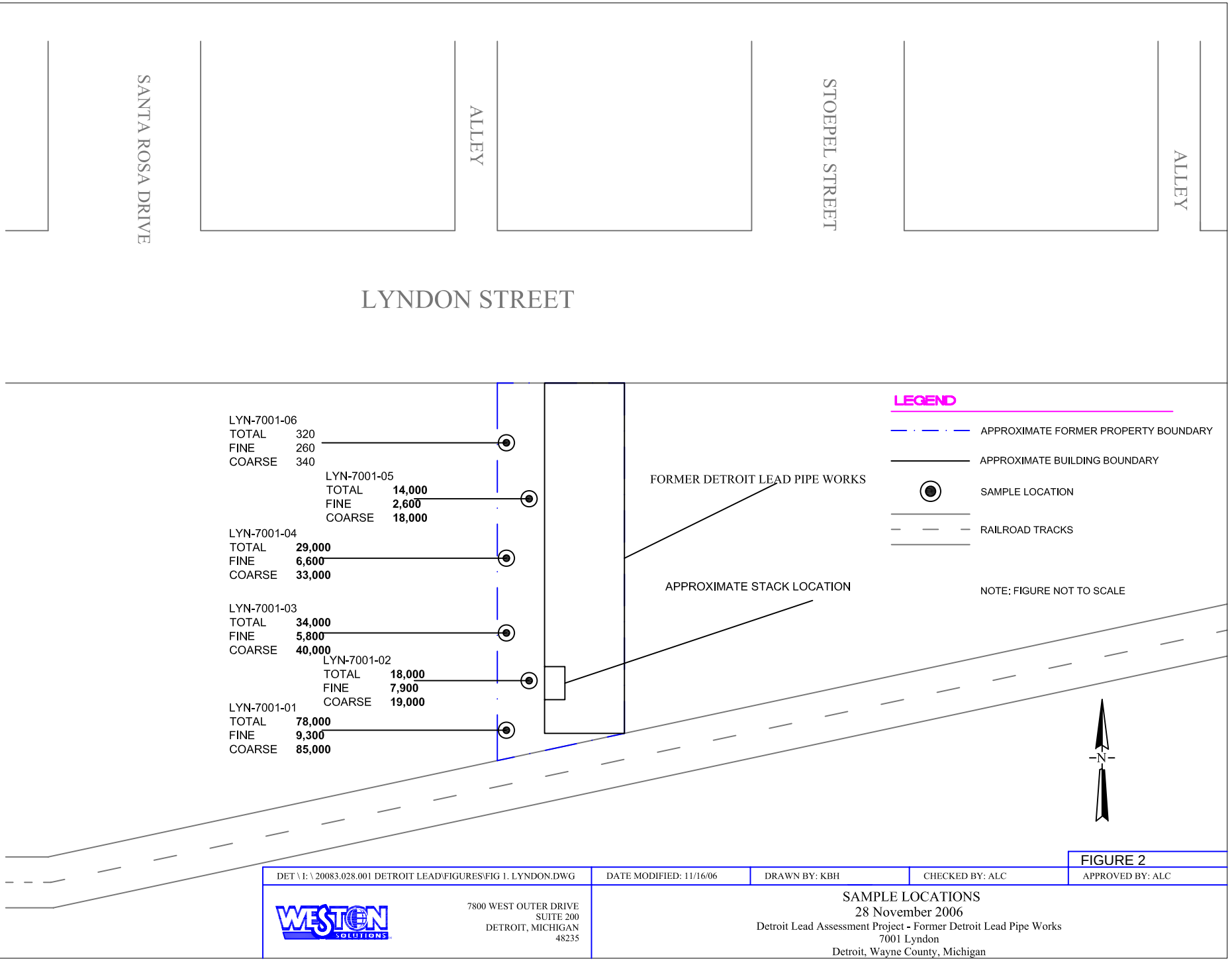
FIGURE 1
Detroit Metropolitan Area Map



WESTON SOLUTIONS OF MICHIGAN , INC.

7800 West Outer Drive, Suite 200
Detroit, Michigan 48235

Detroit Lead Assessment Project
Detroit, Wayne County, Michigan
W.O. No. 20083.028.001


SANTA ROSA DRIVE
ALLEY
STOEPEL STREET
ALLEY
LYNDON STREET
LYN-7001-06
TOTAL 320
FINE 260
COARSE 340
LYN-7001-05
TOTAL 14,000
FINE 2,600
COARSE 18,000
LYN-7001-04
TOTAL 29,000
FINE 6,600
COARSE 33,000
LYN-7001-03
TOTAL 34,000
FINE 5,800
COARSE 40,000
LYN-7001-02
TOTAL 18,000
FINE 7,900
COARSE 19,000
LYN-7001-01
TOTAL 78,000
FINE 9,300
COARSE 85,000
FORMER DETROIT LEAD PIPE WORKS
APPROXIMATE STACK LOCATION
LEGEND
APPROXIMATE FORMER PROPERTY BOUNDARY
APPROXIMATE BUILDING BOUNDARY
SAMPLE LOCATION
RAILROAD TRACKS
NOTE: FIGURE NOT TO SCALE
N
FIGURE 2
DET \ I: \ 20083.028.001 DETROIT LEAD\FIGURES\FIG 1. LYNDON.DWG
DATE MODIFIED: 11/16/06
DRAWN BY: KBH
CHECKED BY: ALC
APPROVED BY: ALC
WESTON SOLUTIONS
7800 WEST OUTER DRIVE
SUITE 200
DETROIT, MICHIGAN
48235
SAMPLE LOCATIONS
28 November 2006
Detroit Lead Assessment Project - Former Detroit Lead Pipe Works
7001 Lyndon
Detroit, Wayne County, Michigan

LEGEND:

Sample Locations

NOTES:

mg/kg = milligrams/kilogram

X-Ray Fluorescence (XRF) screening wasconducted on Stoepel Street (SS) and Santa Rosa Drive (SRD). The sample identifiers indicate the distance from the Site

N

0 200 Feet

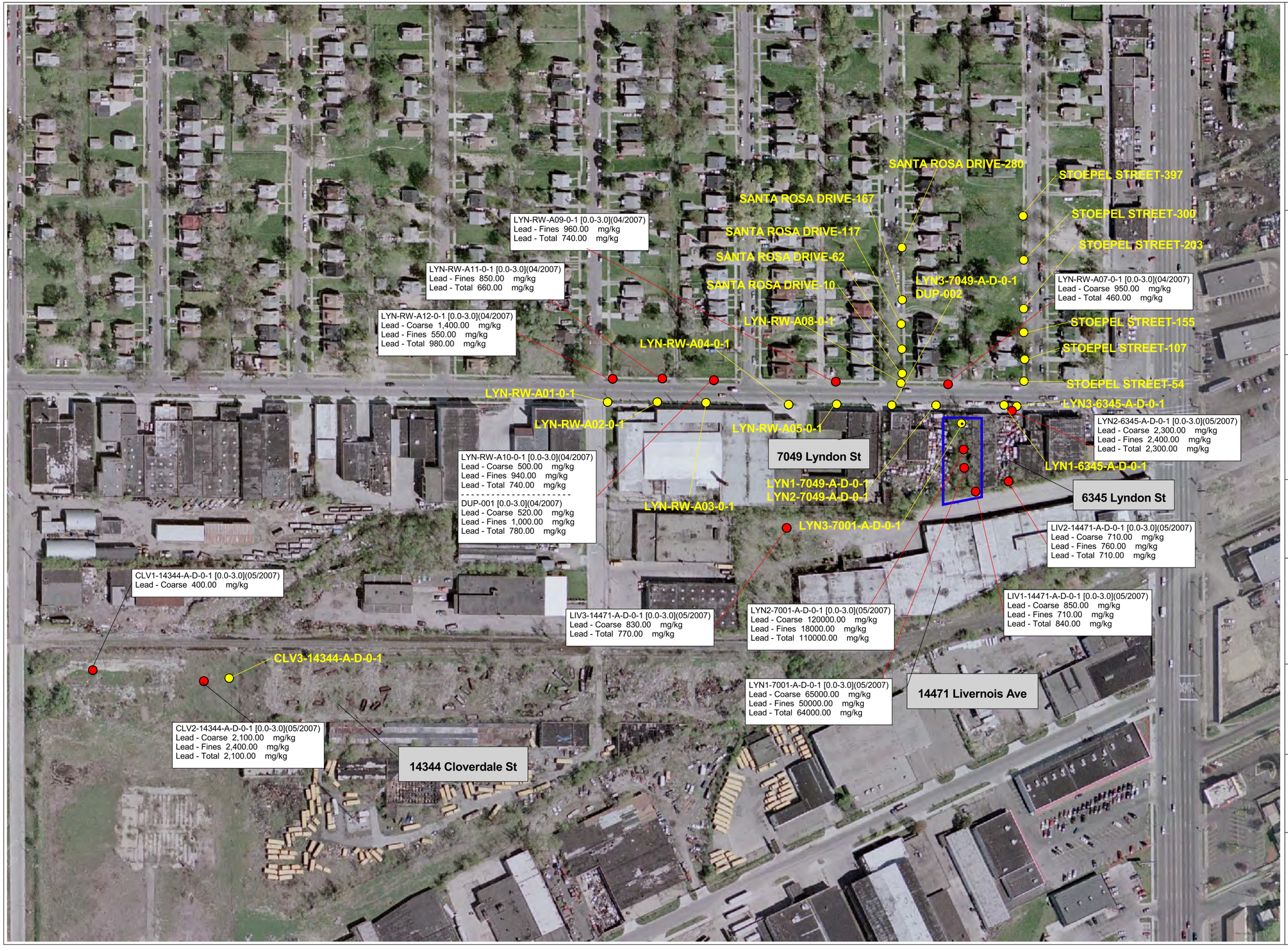
WESTON SOLUTIONS

Weston Solutions, Inc.
7800 W. Outer Drive
Suite 200
Detroit, MI 48235
http://www.westonsolutions.com

Detroit Lead Pipe Works
Detroit, Michigan

Phase II Subsequent Sampling Stations

WORK ORDER No.: 20083.028.001.0010		PROJECT MANAGER: ALC	
DRAWN BY: NJW		CHECKED BY: ALC	
DRAWING NAME:		DIRECTORY/ FOLDER: D:\Detroit_Lead_Pipeworks\apr\dlpw_060707_d.apr	
CONTRACT No.:		DELIVERY ORDER No.:	
SCALE:		REPORT DATE:	
DATE: August 17, 2007		REVISION No.:	FIGURE No.: 3



LEGEND:

- Sample Locations
- Sample Locations with at least one concentration greater than 400 mg/kg
- Facility of Concern (7001 Lyndon)

NOTES:

mg/kg = milligrams/kilogram

X-Ray Fluorescence (XRF) screening wasconducted on Stoepel Street and Santa Rosa Drive. The sample identifiers indicate the distance from the Site

N

0 200 Feet

WESTON SOLUTIONS

Weston Solutions, Inc.
7800 W. Outer Drive
Suite 200
Detroit, MI 48235
http://www.westonsolutions.com

Detroit Lead Pipe Works
Detroit, Michigan

Sample Result Exceedances
0 - 3 "

WORK ORDER No.: 20083.028.001.0010		PROJECT MANAGER: ALC	
DRAWN BY: NJW		CHECKED BY: ALC	
DRAWING NAME:		DIRECTORY/ FOLDER: D:\Detroit_Lead_Pipeworks\apr\dlpw_060707_d.apr	
CONTRACT No.:		DELIVERY ORDER No.:	
SCALE:		REPORT DATE:	
DATE: August 17, 2007		REVISION No.:	FIGURE No.: 4

LEGEND:

- Sample Locations
- Sample Locations with at least one concentration greater than 400 mg/kg
- Facility of Concern (7001 Lyndon)

NOTES:

mg/kg = milligrams/kilograms

N

0 200 Feet

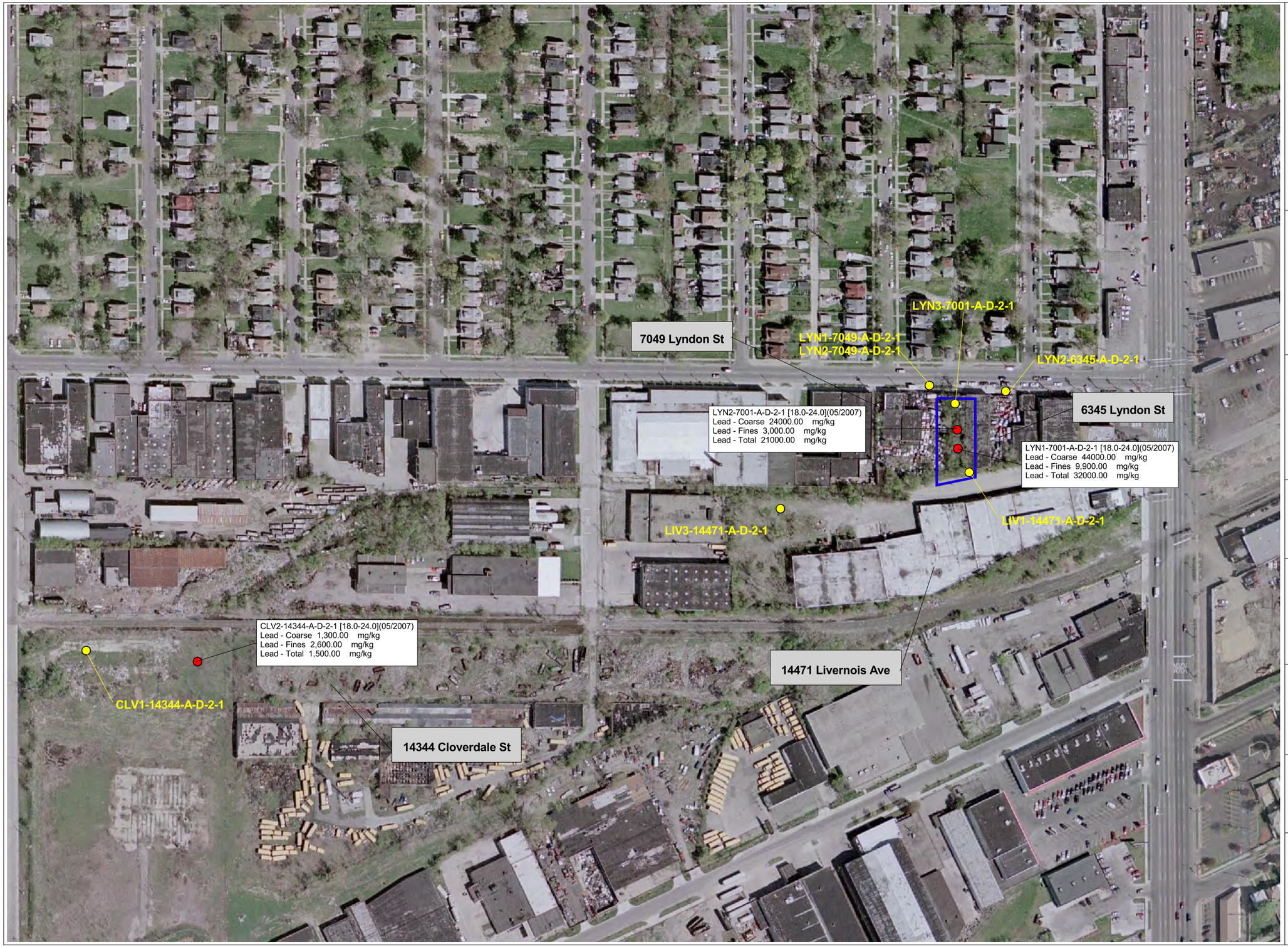
WESTON SOLUTIONS

Weston Solutions, Inc.
7800 W. Outer Drive
Suite 200
Detroit, MI 48235
http://www.westonsolutions.com

Detroit Lead Pipe Works
Detroit, Michigan

Sample Result Exceedances
6-12 "

WORK ORDER No.: 20083.028.001.0010	PROJECT MANAGER: ALC		
DRAWN BY: NJW	CHECKED BY: ALC		
DRAWING NAME:	DIRECTORY/ FOLDER: D:\Detroit_Lead_Pipeworks\apr\dtpw_060707_d.apr		
CONTRACT No.:	DELIVERY ORDER No.:		
SCALE:	REPORT DATE:		
DATE: August 17, 2007	REVISION No.:	FIGURE No.:	5



LEGEND:

- Sample Locations
- Sample Locations with at least one concentration greater than 400 mg/kg
- Facility of Concern (7001 Lyndon)

NOTES:

mg/kg = milligrams/kilograms

N

0 200 Feet

WESTON SOLUTIONS

Weston Solutions, Inc.
7800 W. Outer Drive
Suite 200
Detroit, MI 48235
http://www.westonsolutions.com

Detroit Lead Pipe Works
Detroit, Michigan

Sample Result Exceedances
18- 2 4 "

WORK ORDER No.: 20083.028.001.0010	PROJECT MANAGER: ALC		
DRAWN BY: NJW	CHECKED BY: ALC		
DRAWING NAME:	DIRECTORY/ FOLDER: D:\Detroit_Lead_Pipeworks\apr\dlpw_060707_d.apr		
CONTRACT No.:	DELIVERY ORDER No.:		
SCALE:	REPORT DATE:		
DATE: August 17, 2007	REVISION No.:	FIGURE No.: 6	

LEGEND:

- Sample Locations
- Sample Locations with at least one concentration greater than 400 mg/kg
- Facility of Concern (7001 Lyndon)

NOTES:

mg/kg = milligrams/kilograms

N

0 200 Feet

WESTON SOLUTIONS

Weston Solutions, Inc.
7800 W. Outer Drive
Suite 200
Detroit, MI 48235
http://www.westonsolutions.com

Detroit Lead Pipe Works
Detroit, Michigan

Sample Result Exceedances
30 - 36 "

WORK ORDER No.: 20083.028.001.0010		PROJECT MANAGER: ALC	
DRAWN BY: NJW		CHECKED BY: ALC	
DRAWING NAME:		DIRECTORY/ FOLDER: D:\Detroit_Lead_Pipeworks\apr\dlpw_060707_d.apr	
CONTRACT No.:		DELIVERY ORDER No.:	
SCALE:		REPORT DATE:	
DATE: August 17, 2007		REVISION No.:	FIGURE No.: 7

APPENDIX A

LIMITED SAMPLING PLAN

Weston Solutions of Michigan, Inc.
Suite 200
7800 West Outer Drive
Detroit, MI 48235
313-739-2500 • Fax 313-739-2501
www.westonsolutions.com

1 December 2006

Mr. Ed Novak
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
Southeastern Michigan District Office
27700 Donald Court
Warren, Michigan 48092

Re: Detroit Lead Assessment Project – Limited Sampling Plan W. O. No.: 20083.028.001
Former Detroit Lead Pipe Works
Detroit, Michigan

Dear Mr. Novak:

Weston Solutions of Michigan, Inc. (WESTON®) has prepared this Limited Sampling Plan for the Former Detroit Lead Pipe Works facility in response to a request from the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division to perform on-site sampling activities at seven former smelting sites for the Detroit Lead Assessment Project in Detroit, Michigan. WESTON was directed by the MDEQ to 1) visit seven former smelting sites that are now commercial/industrial properties; 2) obtain/review available historical documents from each facility that pertain to previous environmental work and/or property transactions; and 3) perform surficial soil sampling for lead analysis at the facilities where possible.

WESTON arranged for and conducted site visits at each of the facilities between 30 June and 27 October 2006. On 27 October 2006, WESTON visited Pittman Tire, formerly the location of Detroit Lead Pipe Works, located at 7001 Lyndon Street, Detroit, Michigan. Of note, the address 7001 Lyndon Street is the location of a building that is currently used for storage by Pittman Tire, and the actual mailing address for Pittman Tire is 6335 Lyndon Street, Detroit, Michigan. The following summarizes information obtained during WESTON's site visit to Pittman Tire:

- The building that housed the former Detroit Lead Pipe Works is currently used for tire storage. The building appears to be vacated of equipment. Round indentations that are suspect former stack locations are visible on the southwestern portion of the ceiling. However, due to the storage of tires, WESTON was unable to inspect the entire building interior.

- A large open space is located outside along the west side of the building. Many tires and automotive debris are located within the space, but exposed ground surface is visible. At least one remaining stack is protruding from the top of the southwest side of the building.

- There were no environmental or property transaction-related documents prepared for the property or available to WESTON.

WESTON also took several photographs of potential sampling locations during the 27 October 2006 site visit. As shown in the photographs, there is limited exposed ground surface at the facility. A photographic log is enclosed in **Attachment A**.

Based on the information presented above, WESTON recommends further sampling at the facility in the following locations:

- Collect up to six surficial grab samples from the open space located on the west side of the building. Up to three of the six samples will be collected proximal to the remaining stack.

Proposed sample locations are shown on the Attached **Figure 1**. WESTON will follow the health and safety, sample collection and quality assurance/quality control procedures outlined in the *Phase I Quality Assurance Sampling Plan for Detroit Lead Assessment Project* (WESTON, 2003) provided in **Attachment B**. WESTON will arrange for total, fine, and coarse lead analysis of all soil samples with the MDEQ Environmental Laboratory in Lansing, Michigan.

WESTON appreciates the opportunity to provide continued professional services to MDEQ. Should you have any questions, please feel free to contact me at (313) 739-2533.

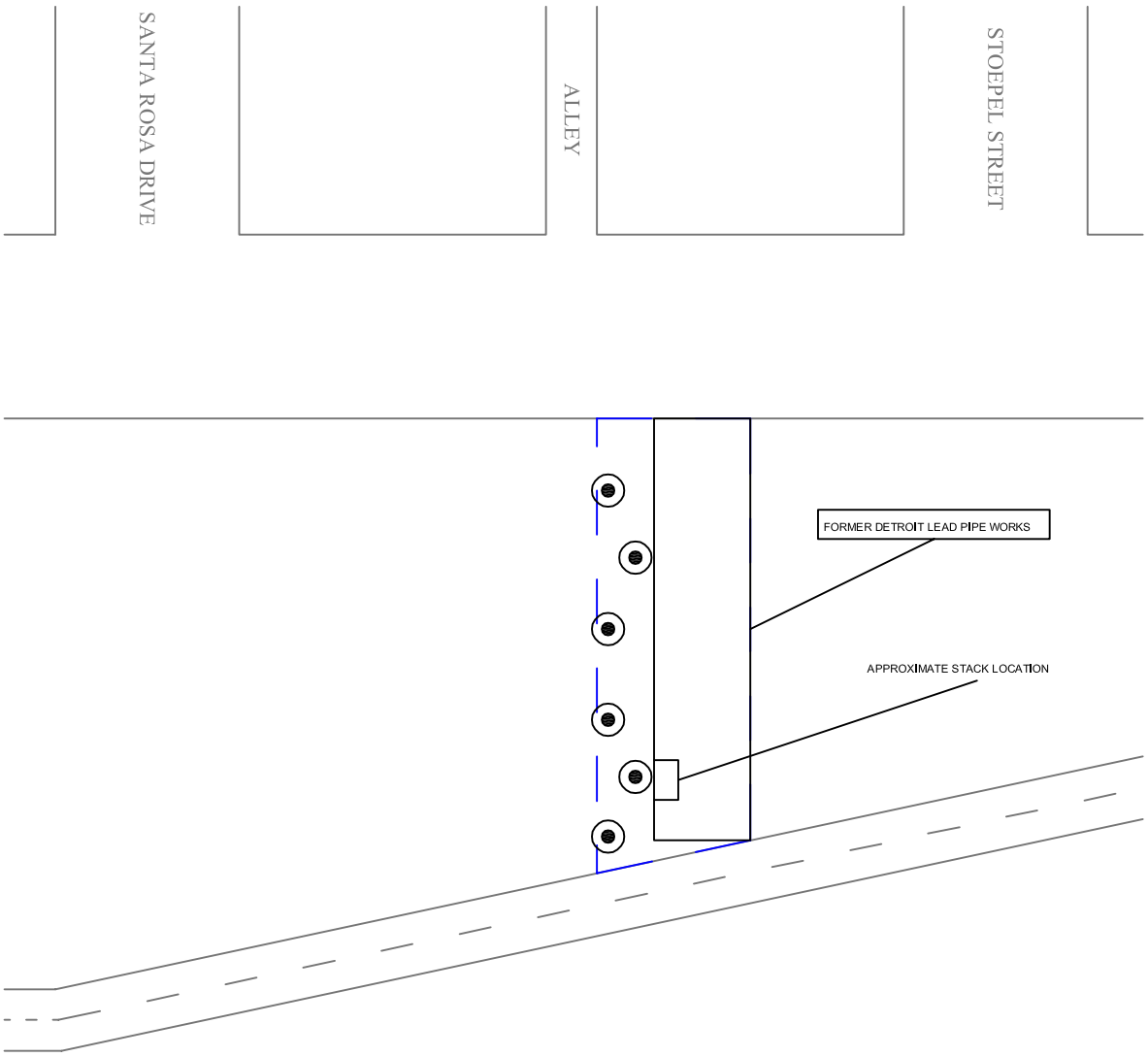
Very truly yours,

WESTON SOLUTIONS OF MICHIGAN, INC.

Alexandra L. Clark
Project Manager

Enclosures

FIGURE



LEGEND

- APPROXIMATE FORMER PROPERTY BOUNDARY
- APPROXIMATE BUILDING BOUNDARY
- PROPOSED SAMPLE LOCATION
- RAILROAD TRACKS

NOTE: FIGURE NOT TO SCALE

FIGURE 1

DET \ I: \ 20083.028.001 DETROIT LEAD\FIGURES\FIG 1. LYNDON.DWG	DATE MODIFIED: 11/16/06	DRAWN BY: KBH	CHECKED BY: ALC	APPROVED BY: ALC

WESTON SOLUTIONS
7800 WEST OUTER DRIVE
SUITE 200
DETROIT, MICHIGAN
48235

PROPOSED SAMPLING LOCATIONS
Detroit Lead Assessment Project
Former Detroit Lead Pipe Works
7001 Lyndon
Detroit, Wayne County, Michigan

ATTACHMENT A

Photographic Log
Detroit Lead Assessment Project
7001 Lyndon
27 October 2006

Photograph 1: View of open space on west side of building facing south.

Photograph 2: View of remaining stack on southwest side of building.

ATTACHMENT B

PHASE I
QUALITY ASSURANCE SAMPLING PLAN
FOR
DETROIT LEAD ASSESSMENT PROJECT
DETROIT, WAYNE COUNTY, MICHIGAN

Prepared for

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION AND REDEVELOPMENT DIVISION
Detroit Field Office – Cadillac Place
Suite 2-300
3058 West Grand Boulevard
Detroit, Michigan 48202

Prepared by

WESTON SOLUTIONS OF MICHIGAN, INC.
2501 Jolly Road
Suite 100
Okemos, MI 48864

October 2003

PHASE I
QUALITY ASSURANCE SAMPLING PLAN
FOR
DETROIT LEAD ASSESSMENT PROJECT
DETROIT, WAYNE COUNTY, MICHIGAN

Prepared for

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION AND REDEVELOPMENT DIVISION
Detroit Field Office – Cadillac Place
Suite 2-300
3058 West Grand Boulevard
Detroit, Michigan 48202

J. Randall Elder, P.E
Project Manager

Sally Bartz
Program Manager

Prepared by

WESTON SOLUTIONS OF MICHIGAN, INC
2501 Jolly Road
Suite 100
Okemos, MI 48864

October 2003

W.O. No: 20083.028.001

TABLE OF CONTENTS

Section **Page**

TABLE OF APPENDICES

APPENDIX

SECTION 1

INTRODUCTION

Weston Solutions of Michigan, Inc. (WESTON®) was contracted by the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD) to perform off-site sampling activities at the Detroit Lead Assessment Project in Detroit, Wayne County, Michigan. The project consists of conducting evaluations of possible lead releases from 12 facilities in the city of Detroit, which have been previously identified as potential lead smelters. The project tasks include soil sampling 6 downwind parcels and 4 upwind parcels located within 1,000 feet of each facility. WESTON will collect 2 composite samples from each parcel. WESTON has prepared this Phase I Quality Assurance Sampling Plan (QASP) to describe the technical scope of work to be completed.

1.1 SAMPLING OBJECTIVES

The primary objective of this Phase I QASP is to characterize the off-site soil in the immediate vicinity of each of the 12 former smelter facilities identified as requiring additional investigation during WESTON's initial investigation. Soil characterization of off-site soils at properties located within 1,000 feet of the facility is an initial step in evaluating the impact potential smelting operations on neighboring areas located within expected depositional areas. Soil samples will be collected from state and city owned properties upwind and downwind to further evaluate the presence of a smelter-related release. All samples will be analyzed for lead using U.S. EPA Method 6010B.

1.2 PROJECT TEAM

The Project Team will consist of Mr. Randy Elder, Project Manager (PM); a Site Manager; a Sample Management Coordinator; a Site Health & Safety Coordinator (SHSC); a Data Manager (DM); and other WESTON personnel as necessary. WESTON has available resources throughout the Midwest in its Detroit, MI; Okemos, MI; Chicago, IL; Vernon Hills, IL; Cleveland, OH; Miamisburg, OH; and Indianapolis, IN, offices as necessary.

WESTON personnel will be responsible for performing the sampling activities and will serve as the liaison with MDEQ personnel and the community in the field during the site activities. For all sample collection, the Site Manager will determine the sample locations in the field; collect samples, as necessary; log the activities at each sample location in the field logbook; and verify the sample documentation. Sample documentation and preparation is the responsibility of WESTON.

1.3 QASP FORMAT

This QASP has been organized in a format that is intended to facilitate and effectively meet the objectives of the Phase I investigation. The QASP is organized into the following sections:

- Section 1 – Introduction;
- Section 2 – Site Background;
- Section 3 – Sampling Approach and Procedures; and
- Section 4 – Quality Assurance.

Attachments to this QASP include the following:

- **Appendix A** – Site Location Map for Each of the 12 Former Smelter Facilities;
- **Appendix B** – List of City and State Properties to be Sampled;
- **Appendix C** – Wind Rose;
- **Appendix D** – Greenways Photographs;
- **Appendix E** – Sample Location Map – Example; and
- **Appendix F** – Table of Sample Location Identifiers

SECTION 2

SITE INFORMATION

2.1 SITE DESCRIPTION

Seventeen facilities in the Detroit, Michigan area were suspected of historical smelting operations and were chosen for investigation by the MDEQ. WESTON performed a preliminary records review including review of Bresser's city directory information, Sanborn fire insurance maps, aerial photographs, Fire Marshall inspection/permit records, and Baseline Environmental Assessments (BEAs) which may have been performed for each of the seventeen facilities. As a result, WESTON identified the following 12 facilities that require additional investigation:

1) Detroit Lead Company – 13521 - 13535 Helen Street;
2) Federal Mogul Corporation - 11031 Shoemaker Street;
3) Continental Metal Company – 11500 Russell Street;
4) Detroit Lead Pipe Works – 7001 Lyndon Street;
5) Industrial Smelting – 19430 Mt. Elliot Street;
6) Federated Metals Division – 11630 Russell Street;
7) Aetna Smelting – 1826 Illinois Street;
8) Michigan Smelting – 7885 Joseph Campau Street;
9) Great Lakes Smelting – 1640 East Euclid Street;
10) Wolverine White Metal – 3421 Gibson Street;
11) Acme Metal Company – 1436 Holbrook Street; and
12) City Metals Refining – 2945 Hubbard Street.

Details regarding the historical data investigation can be found in the "Summary Report for Data Investigation, Detroit Lead Assessment Project, Detroit Michigan", prepared by WESTON, dated 19 September 2003.

During this phase of the assessment activities MDEQ will conduct interviews with facility personnel at each of the 12 facilities and WESTON will conduct soil sampling at City of Detroit and State of Michigan owned properties within 1,000 feet of each of the facilities. The sampling includes properties upwind and downwind of the facilities and is designed to further the evaluation of the presence of lead related to potential smelting operations. Four exceptions to this plan are Continental Metal Company – 11500 Russell Street/11630 Russell Street, Detroit Lead Company – 13521 Helen Street and Federal Mogul Corporation - 11031 Shoemaker Street. Extensive sampling and lead containing soil removal has already been performed downwind of the Russell Street properties, so during this assessment only upwind samples will be collected. The U.S. EPA is currently performing work at the Helen Street property, including off site sampling, so assessment will be deferred to that effort. The Shoemaker Street property is scheduled for investigative work under the Clean Michigan Initiative (CMI) and assessment will be deferred to that effort.

Facility location maps for each of the 12 facilities are included in **Appendix A**. The addresses of potential offsite properties to be sampled are given in **Table 1** in **Appendix B**.

2.2 SITE CONCERNS

The primary concern associated with the Detroit Lead Assessment Project is related to the off-site releases of smelter-related metals, through aerial deposition, from potential smelter operations into soil of the surrounding neighborhood near each of the 12 potential former smelter facilities. The goal of the Phase I sampling is to determine if smelter-related releases are present and can be identified at each of the facilities.

SECTION 3

SAMPLING APPROACH AND PROCEDURES

3.1 OVERVIEW OF SAMPLING ACTIVITIES

Soil samples will be collected from City and/or State owned properties within approximately 1,000 feet of each facility. During Phase I soil sampling activities, upwind and downwind areas will be established within 1,000 feet from each of the 12 facilities based on the mean wind direction from 1984 to 1991 for the Detroit Metropolitan area. A copy of the wind rose plot is provided in **Appendix C**. The City and/or State owned parcels identified for sampling will be those closest to the average wind direction and at varying distances from the former smelting facilities. Where city or state owned parcels are not available, right of ways, utility corridors, and alleyways ('greenways') will be used and have been identified on the figures included in **Appendix A**. Photographs of the potential greenways locations with the exception of downwind from 1436 Holbrook Street, have been included in **Appendix D**. Greenway locations downwind of this facility have not been established and will be identified during field work. Exposure units and appropriate sample grids will be established to guide the sampling activities. WESTON will collect samples from up to of 10 State or City owned parcels near each of the suspected former smelter facilities. When possible, based on access or size of available area, six parcels will be sampled in the downwind direction and four in the upwind direction.

All properties to be sampled will be divided into two units, and soil samples will be collected at random locations within the units based on the size of the area. An example of a typical soil sample location is provided in **Appendix E**. All samples from each exposure unit will be composited prior to analysis and will be analyzed for lead using U.S. EPA SW Method 6010 or equivalent.

WESTON personnel will be responsible for performing the sampling activities. For all sample locations, the WESTON lead sampler will finalize the sample locations in the field; collect

samples; log the activities at each sample location in the field logbook; and verify the sample documentation. Sample documentation and preparation is the responsibility of WESTON. Details of soil sampling collection methodologies and procedures are provided in Subsection 3.2.

3.1.1 Health and Safety Plan Implementation

The WESTON field activities will be conducted in accordance with the site-specific health and safety plan (HASP). In general, the HASP specifies that work will proceed in Level D (coveralls and steel-toed boots) in selected sampling areas. The WESTON Site Health and Safety Coordinator (SHSC) will be responsible for implementation of the HASP during all field investigation activities. In accordance with WESTON's general health and safety operating procedures, the field team will drive the route to the hospital specified in the HASP prior to initiating sampling activities.

3.2 SAMPLING APPROACH

During Phase I soil sampling, WESTON anticipates a total of 240 soil samples will be collected from off-site parcels associated with the 10 smelter properties for subsequent laboratory analysis. Two composite soil samples will be collected from each of the 10 parcels located within 1,000 feet of each of the 10 former smelting facilities. Each composite soil sample will consist of five randomly located discrete surface soil samples (0 to 3 inches) of approximately equal volume collected from the sampling unit. All discrete soil samples will be collected from undisturbed areas (i.e., no signs of recent landscaped areas, gardens, etc.). Soil sampling procedures will consist of removing a volume of soil approximately 3 inches in diameter and 3 inches in depth using a precleaned, stainless-steel bucket auger or trowel. The removed soil will be placed directly into a large, plastic Ziploc® bag. Samples will not be collected from within a 5 foot buffer of any painted structure or from locations where flaked paint or visibly stained soil exist. Greenways samples will be collected from the furthest practicable point from the curb line. Foreign material, such as snow, vegetation, large rocks, and pebbles, etc., will be removed from the sample and discarded.

Following sample collection the sample hole will be filled with topsoil and seeded with a mulch/seed combination.

At the time of sampling, all information regarding soil description, location, and other distinguishable features present at the sample site shall be recorded in the field log book. In addition, a global positioning system (GPS) will be used to record the approximate location of each composite soil sample location within each parcel. A field sketch will be prepared (on 8.5" by 11" graph paper) for each exposure unit, which includes: all sample locations and their sample number, the GPS coordinates of each sample location, physical features (sidewalks, building corners, utility poles), measurements between sample points and physical features, and any information necessary to relocate the area (address, street name, etc.)

Deviations (either additions or deletions) from this procedure may be made due to new observations made while in the field, difficulty in sample collection, limited access, or other conditions. All information pertaining to the deviation, including sample identification, sample location, and reason, must be documented in the field log book.

3.2.1 Sampling and Sample Handling Procedures

All clean, decontaminated sampling equipment and sample containers will be maintained in a clean, segregated area. All soil samples will be collected with clean, decontaminated equipment. Sampling personnel will change gloves between each sample collection/handling. All samples will be assembled and catalogued prior to shipping to the designated MDEQ laboratory. Sampling preservation, containers, and hold times for analytical methods associated with this site are presented in Subsection 3.5. All information relating to sample collection (field notes, chain of custody, sketches) will be maintained as presented in Section 4.

3.2.2 Quality Control Samples

Upon receipt of the samples, the laboratory will be provided with specific sample preparation and analysis procedures. These procedures are not intended to preclude the use of internal laboratory standard operating procedures (SOPs) with regards to analytical methods or preparation but rather are intended to instruct the laboratory of site-specific sampling requirements. Since the preparation and/or analysis of the quality control (QC) samples requires the preparation of laboratory prepared split (duplicate) samples, WESTON will require the laboratory to follow strict confidentiality procedures between the sampling preparation technician and the laboratory analyst.

The sample preparation procedure consists of agitating and mixing, removing rock and vegetation, oven drying, and sieving. Specific sample preparation steps are provided below:

1. Manually agitate the sample contents to mix the soil (i.e., breakup large soil clumps, etc.) using a pre-cleaned, stainless-steel scoop until the mixture appears homogeneous.
2. Following mixing, transfer the sample into a clean drying container so that any rocks or plant material are removed from the sample.
3. Dry the sample in an atmospheric oven at a temperature of 110° Celsius for 2 to 6 hours.
4. After drying, transfer the soil to a mechanical shaking device. The soil will be sieved through a 250 micron (60 mesh) sieve for 10 minutes. The sieve must be constructed of stainless steel and conform to American Society for Testing and Materials (ASTM) E11-95 standards. DO NOT GRIND SAMPLES.
5. If the sample has not been designated as a laboratory-prepared split (duplicate) sample, then proceed to Step 7.
6. Ten percent of investigative soil samples will be designated as laboratory prepared split (duplicate) samples. If the sample has been designated as a

duplicate sample, the sample preparation technician shall split the sample into an equal aliquot after sieving. The split sample will be assigned a separate sample identification code as indicated on the chain-of-custody. Strict confidentiality between the sampling preparation technician and the laboratory analyst must be ensured to preserve the integrity of this quality assurance procedure.

7. Submit sample to laboratory analyst for Lead (Method 6010B) analysis.

In addition, investigative soil samples will be designated for matrix spike/matrix spike duplicate (MS/MSD) analysis at a frequency of one per five soil samples. When non-dedicated sample equipment (stainless augers/trowels, mixing bowls) is used, equipment blanks will be collected at a rate of one per sampling team per day to assess the effectiveness of decontamination procedures. The samples will be collected following decontamination by running de-ionized water over each piece of equipment a during sampling event.

3.3 SAMPLE AND INFORMATION MANAGEMENT

Specific nomenclature that WESTON will use will provide a consistent means of facilitating the sampling and overall data management for the project are described in the following subsections.

3.3.1 Sample Management

Each sample will be identified using an 18-character combination of letters, numbers, and dashes in the following format: AAA-BBBBB-C-D-E. The components of the identifiers are described as follows:

- **Street Abbreviation (AAA):** A three character alphanumeric designation will be used to identify the street (e.g. West First Street – FST). A list of street abbreviations to be used during the Phase I soil sampling is included in the table in **Appendix B**. Where greenways samples are collected the site manager will develop street designations which reflect this guideline.

- **Address Street Number (BBBBB):** A five character alphanumeric designation will be used to identify the street number of the house or building that is being sampled (e.g., 14403, 00104, etc.). When the street number is less than five digits, the leading digits will be zeros.

- **Exposure Unit (C):** A single character alphanumeric designation will be used to identify the sample location at each parcel. For the Phase I sample event WESTON will designate the letters A and B for the two samples collected from each of the parcels. The sample location identification will be recorded on the sample diagram completed by field personnel.

- **Sample Type (D):** One character alphanumeric designation will be used to identify the sample matrix type. Typical sample matrix types that may be used are as follows:
  - **C** - Composite Soil Sample

Other codes that may be used during subsequent investigations include the following:

  - **D –** Discrete soil sample
  - **A –** Air sample
  - **P –** Paint sample
  - **D –** Dust sample
  - **S –** Surface water sample
  - **T** - Concrete sample

- **Depth Identifier (D):** A singe digit numeral will be used to identify sample depth, where applicable. The number designation will represent the three inch sampling interval. All two digit depth indentifiers are as followers: -0 (0 to 3 inches), -1 (3 to 6 inches), -2 (6 to 9 inches), -3 (9 to 12 inches), etc.

- **Quality Control Sample Identifier (E):** A one digit identifier will be used to identify quality control samples collected or prepared in the field. The following designations will be used:

  1 – Investigative sample;
  2 – Investigative sample with matrix spice/matrix spike duplicate (MS/MSD);
  3 – Laboratory prepared split (duplicate) sample;
  4 – PE sample; and
  5 – Equipment blank sample.

Other codes that may be used during subsequent phases:

6 – Confirmation sample; and
7 – Trip blank (TB) sample.

Examples of full sample identification numbers are as follows:

- **FST-14431-A-0-1:** Indicates a sample collected at 14431 First Street. The sample is an investigative soil sample collected from soil sampling location A at a sampling interval of 0 to 3 inches.

- **FST-14431-A-0-2**: Indicates a sample collected at 14431 First Street. The sample is an investigative soil sample collected from soil sampling location A at a sampling interval of 0 to 3 inches. This sample is designated as an MS/MSD sample.

3.3.2 Information Management

WESTON will incorporate the use of complete field notes and a computer database to facilitate data interpretation and ensure quality data reporting from the field.

WESTON will request that the laboratory submit an electronic data deliverable (EDD) simultaneously with the hard copy data package. The EDD will contain the COC information, laboratory ID, date and time of analysis, and the results for the analyses requested.

WESTON will utilize a standard set of GIS tools for use with ArcView. Using these tools, geologists and engineers can quickly query the database and represent the findings on a map. The user can easily represent the concentration of any chemical of concern using colored symbols and apply labels to the base map. The labeling tools display the sample location ID, the date and depth of sample collection, and the concentration of the chemical of concern.

3.4 DECONTAMINATION

The nondisposable sampling equipment (soil samplers, hand trowels, etc.) used during the sample collection process will be thoroughly decontaminated before the initial use, between uses, and at the end of the field investigation. Equipment decontamination will be completed as follows:

- Water spray or brush, if needed, to remove soil/sediment from the equipment;
- Nonphosphate detergent and potable water wash to clean the equipment;
- Final potable water rinse;
- Equipment air dried; and
- Wrap equipment in clean aluminum foil for storage and/or transport.

Personnel decontamination procedures will be described in the site-specific HASP, which WESTON will prepare prior to implementing activities at the site.

3.5 SAMPLE PRESERVATION, CONTAINERS, AND HOLD TIMES

Once collected, samples will be securely stored in a cooler until they are submitted for analysis. The samples will be sent to the designated MDEQ laboratory by WESTON field personnel or a common carrier, typically on a daily basis. Sample preservatives are not required.

It is currently anticipated that WESTON will require a one-week turnaround for analytical results. This turnaround time is initiated when the samples are received at the laboratory and continues until the analytical results are made available to WESTON (either verbally or by providing facsimile copies of the results) for review. Samples that have been analyzed will be disposed of by the designated laboratory in accordance with the laboratory's SOPs.

SECTION 4

QUALITY ASSURANCE

4.1 SAMPLE CUSTODY PROCEDURES

Because of the evidentiary nature of sample collection, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. Following sample collection and identification, the samples will be maintained under proper chain-of-custody procedures. If the sample collected is to be split, the sample will be allocated into similar sample containers. Sample labels completed with the same information as that on the original sample container will be attached to each of the split samples. All personnel required to package and ship coolers containing potentially hazardous material will be trained accordingly.

The chain-of-custody procedures will be made available to all personnel involved with the sampling. A typical chain-of-custody record will be completed each time a sample or group of samples is prepared for shipment to the MDEQ laboratory. The record will repeat the information on each of the sample labels and will serve as documentation of handling during shipment. A copy of this record will remain with the shipped samples at all times, and another copy will be retained by the member of the sampling team who originally relinquished the samples. WESTON personnel will complete a chain-of-custody form for all samples sent to the MDEQ laboratory.

Samples relinquished to the MDEQ laboratory will be subject to the following procedures for transfer of custody and shipment:

- Samples will be accompanied by the chain-of-custody record. When transferring possession of samples, the individuals relinquishing and receiving the samples will sign, date, and note the time of the sample transfer on the record. This custody record documents transfer of sample custody from the sampler to another person or to the laboratory.

- Samples will be properly packed for shipment and dispatched to the appropriate laboratory for analysis with separate, signed custody records enclosed in each sample box or cooler. Sample shipping containers will be padlocked or custody-sealed for shipment to the laboratory. The preferred procedure includes use of a custody seal wrapped across filament tape. This tape will be wrapped around the package at least twice. The custody seal will be affixed to the container in such a manner that it cannot be opened without breaking the seal.

- If sent by common carrier, a bill of lading or air bill will be used. Bill of lading and air bill receipts will be retained in the project file as part of the permanent documentation of sample shipping and transfer.

4.2 FIELD DOCUMENTATION

WESTON will perform field documentation of site activities during all field work. The primary methods of documentation will include completion of a field logbook and photo documentation. All documents will be completed legibly and in ink. Any corrections or revisions will be made by lining through the original entry and initialing the change. The following sections identify the field documentation that will be maintained.

4.2.1 Field Logbook

The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. Each entry will be signed by the individual making the entry. Entries should include, at a minimum, the following:

- Site name and project number;
- Names of personnel on-site;
- Dates and times of all entries;

- Descriptions of all site activities, including site entry and exit times;
- Noteworthy events and discussions;
- Weather conditions;
- Site observations;
- Identification and description of samples and locations;
- Subcontractor information and names of on-site personnel;
- Dates and times of sample collections and chain-of-custody information;
- Records of photographs; and
- Site sketches (kept separately on 8.5" by 11" graph paper).

4.2.2 Sample Labels

Sample labels will be securely affixed to the sample container. They will clearly identify the particular sample and should include the following information:

- Site name and project number;
- Date and time the sample was collected;
- Sample preservation method;
- Analysis requested; and
- Sampling location.

4.2.3 Chain-of-Custody Record

A chain-of-custody record will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed, and a copy of the record will be kept by each individual who has signed it. The chain-of-custody procedures are discussed in detail in Subsection 4.1 Sample Custody Procedures.

4.2.4 Custody Seal

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual with custody of the samples will sign and date the seal and affix it to the container in such a manner that it cannot be opened without breaking the seal.

4.2.5 Photo Documentation

WESTON will take photographs to document site conditions and activities as site work progresses. Initial site conditions and features that define site-related contamination or special working conditions will be photographically documented. Representative photographs will be taken of each type of site activity. The photographs will show typical operations and operating conditions as well as special situations and conditions that may arise during site activities. Photo documentation will also be used to document final site conditions upon the completion of work.

All photographs should be taken with a digital camera, or a video camera capable of recording the date on the image. Each photograph should be recorded in the logbook with the location of the photographer, the direction the photograph was taken, the subject of the photograph, and its significance (i.e., why the picture was taken). Photographs will be labeled using the street abbreviation/street number-exposure unit-and picture number starting at 01 for each property sampled. Where appropriate, the photograph location, direction, and subject should also be shown on a site sketch.

Weston Solutions of Michigan, Inc.
Suite 200
7800 West Outer Drive
Detroit, MI 48235
313-739-2500 • Fax 313-739-2501
www.westonsolutions.com

20 March 2007

Mr. Ed Novak
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
Southeastern Michigan District Office
27700 Donald Court
Warren, Michigan 48092

Re: Detroit Lead Assessment Project
Draft Limited Sampling Plan For Additional Sampling
Former Detroit Lead Pipe Works Facility
Detroit, Michigan

W. O. No.: 20083.028.001

Dear Mr. Novak:

Weston Solutions of Michigan, Inc. (WESTON®) has prepared this Draft Limited Sampling Plan for Additional Sampling at the Former Detroit Lead Pipe Works facility in response to a request from the Michigan Department of Environmental Quality (MDEQ) Remediation and Redevelopment Division (RRD). WESTON was previously directed by the MDEQ to 1) visit seven former smelting sites (facilities) that are now commercial/industrial properties; 2) obtain/review available historical documents from each facility that pertain to previous environmental work and/or property transactions; and 3) perform surficial soil sampling for lead analysis at the facilities where possible.

WESTON arranged for and conducted site visits at each of the facilities between 30 June and 27 October 2006. On 27 October 2006, WESTON visited Pittman Tire, formerly the location of Detroit Lead Pipe Works, located at 7001 Lyndon Street, Detroit, Michigan. Of note, the address 7001 Lyndon Street is the location of a building that is currently used for storage by Pittman Tire, and the actual mailing address for Pittman Tire is 6335 Lyndon Street, Detroit, Michigan. The following summarizes information obtained during WESTON's site visit to Pittman Tire:

- The building that housed the Former Detroit Lead Pipe Works is currently used for tire storage. The building appears to be vacated of equipment. Round indentations that are suspect former stack locations are visible on the southwestern portion of the ceiling. However, due to the storage of tires, WESTON was unable to inspect the entire building interior.

- A large open space is located outside along the west side of the building. Many tires and automotive debris are located within the space, but exposed ground surface is visible. At least one remaining stack was observed protruding from the top of the southwest side of the building.

- There were no environmental or property transaction-related documents prepared for the property or available to WESTON.

Based on the information presented above, WESTON recommended collecting six surficial soil samples from the exposed ground surface located to the west of the Former Detroit Lead Pipe Works building.

On 28 November 2006, WESTON performed surface soil sampling at the Former Detroit Lead Pipe Works. The samples were submitted to the MDEQ Environmental Laboratory for lead analysis of total, fine, and coarse fractions of the soil. The following table summarizes the results of the 28 November 2006 sampling event.

Sample Identification	Fine Fraction Result	Coarse Fraction Result	Total Lead Result
LYN-7001-01	**9,300**	**85,000**	**78,000**
LYN-7001-02	**7,900**	**19,000**	**18,000**
LYN-7001-03	**5,800**	**40,000**	**34,000**
LYN-7001-04	**6,600**	**33,000**	**29,000**
LYN-7001-05	**2,600**	**18,000**	**14,000**
LYN-7001-06	260	340	320

All results provided in parts per million (ppm)
Bold font indicates the result exceeds Residential/Commercial I Direct Contact Criterion of 400 ppm

As summarized in the table above, five of the six samples exceeded the Part 201 Residential/Commercial Direct Contact Criterion of 400 parts per million (ppm). The sample results indicated there were higher lead concentrations associated with the coarse fraction of soil and proximal to the former facility stack. The 28 November 2006 sampling locations are shown on **Figure 1**. Sample results were presented to MDEQ RRD personnel on 9 and 21 February 2007.

WESTON also recently performed air modeling of varying stack heights (30 to 80 feet modeled in 10 foot increments) for the Former Detroit Lead Pipe Works facility. The modeling was performed for varying stack heights due to uncertainty regarding the actual height of the facility stack that is no longer present. However, given the building dimensions (approximately 45 feet by 110 feet) and the height of an existing chimney at the facility (approximately 30 feet), it is not suspected that the stack was more than 80 feet tall; and more likely on the order of 30 to 60 feet tall. Assumptions included in the modeling were based on emissions information for a former nearby lead smelting operation.

Results of the air modeling indicated the greatest magnitude of lead deposition would have occurred within 100 meters (328 feet) of the facility. Results also indicated stack heights of 60 feet and above (70 and 80 feet) had relatively the same magnitude of deposition. Lead deposition contours for the 30 foot and 60 foot stack heights are shown on **Figure 2.**

Based on the facility sampling results, the air modeling results, and the proximity of residential neighborhoods to the facility (within 300 feet), additional sampling is proposed according the rationale in the table below and shown on **Figure 3.**

Sampling Area	Type of Property[1]	Purpose	# Sampling Locations	# Samples	Proposed Sampling Method
Facility (west side)	P (A)	Further evaluate the source of contamination at the facility with depth.	3	12[2]	Hand Auger: 0 - 3 feet
6345 Lyndon Street (east side of facility)	C	Further evaluate the source of contamination adjacent to the facility to the east.	3	12[2]	Hand Auger: 0 - 3 feet
Lyndon Street Right of Way	C	Further evaluate the extent of contamination possibly associated with aerial deposition.	12	12[3]	Plastic Scoop: 0 - 3 inches
14471 Livernois Avenue	P	Further evaluate the source of contamination adjacent to the facility to the south.	3	12[2]	Hand Auger: 0 - 3 feet
14344 Cloverdale Street	C	Further evaluate the source of contamination adjacent to the facility to the southwest where the magnitude of lead deposition is insignificant.	3	12[2]	Hand Auger: 0 - 3 feet
7049 Lyndon Street	P (A)	Further evaluate the source of contamination adjacent to the facility to the west.	3	12[2]	Hand Auger: 0 - 3 feet

C = City-owned property
P(A) = Privately-owned property, access currently granted
P = Privately-owned property
S = State-owned property
1 = Information provided by the City of Detroit Planning and Development Department
2 = WESTON proposes to collect faur samples from each location from the following intervals: 0-3 inch, 6-12 inch, 18-24 inch, and 30-36 inch. WESTON will attempt to evenly space the sampling locations across the areas to be sampled.
3 = WESTON proposes to collect one sample every 100 feet on alternating sides of the Lyndon Street Right of Way between Livernois Avenue and Prairie Street for a total of 12 samples.

WESTON will also attempt to measure the diameter of the former stack at the Former Detroit Lead Pipe Works while in the field during soil sampling to further assist with dispersion modeling.

WESTON has assumed that sampling at the Former Detroit Lead Pipe Works facility will be performed under the existing Consent to Enter agreement with the property owner and that MDEQ will take the lead on pursuing access to adjacent privately-owned facilities targeted for sampling with assistance from WESTON, as necessary. WESTON will pursue access to sample

City of Detroit-owned property including the Lyndon Street Right of Way and any other adjacent properties targeted for sampling that are City of Detroit-owned.

WESTON will follow the health and safety, sample collection and quality assurance/quality control procedures outlined in the *Phase I Quality Assurance Sampling Plan for Detroit Lead Assessment Project* (WESTON, 2003). WESTON will arrange for total, fine, and coarse lead analysis of all soil samples with the MDEQ Environmental Laboratory in Lansing, Michigan.

WESTON appreciates the opportunity to provide continued professional services to MDEQ. Should you have any questions, please feel free to contact me at (313) 739-2533.

Very truly yours,

WESTON SOLUTIONS OF MICHIGAN, INC.

Alexandra L. Clark
Project Manager

Enclosures

FIGURES

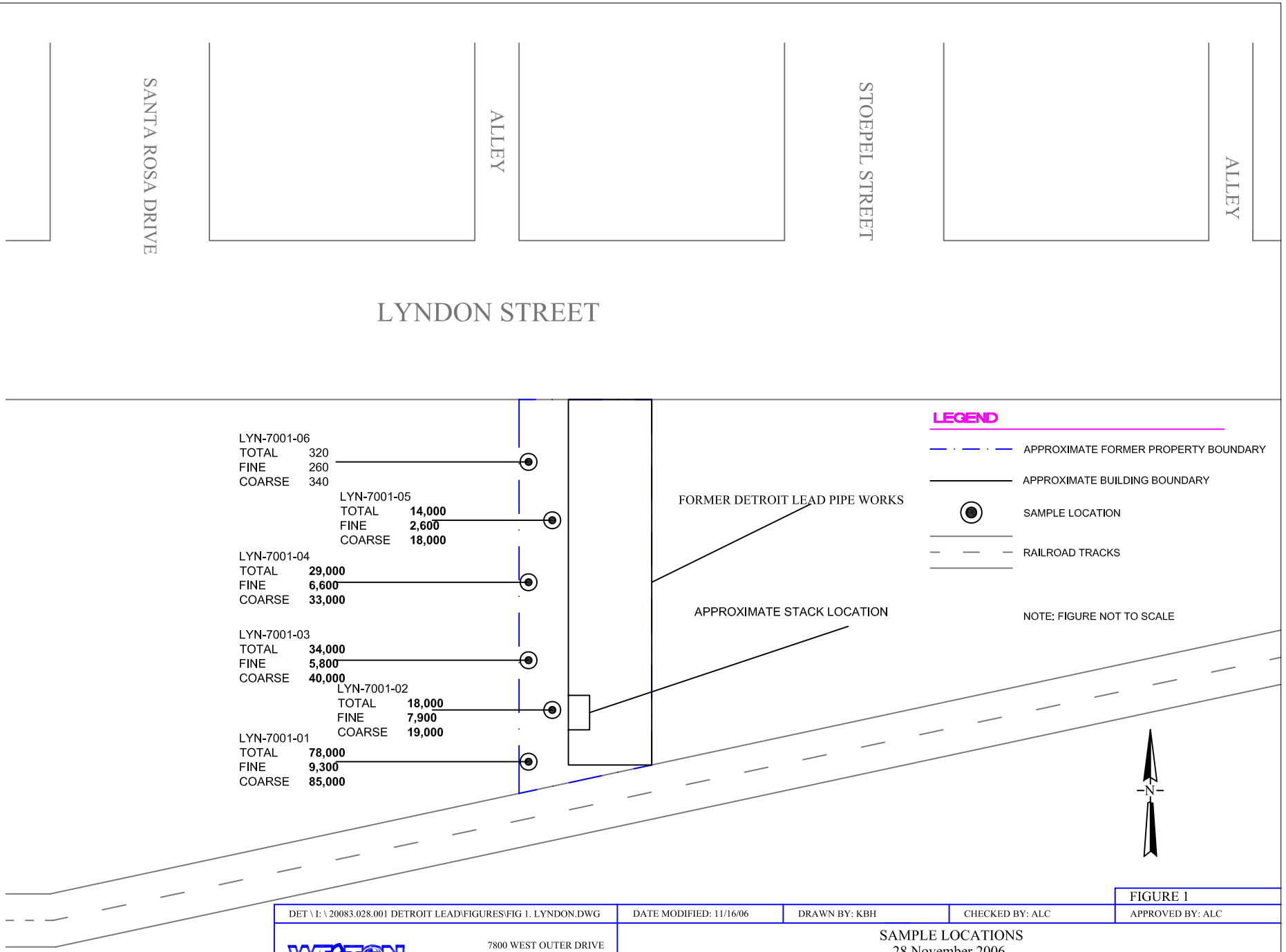


FIGURE 1

DET \ I: \ 20083.028.001 DETROIT LEAD\FIGURES\FIG 1. LYNDON.DWG	DATE MODIFIED: 11/16/06	DRAWN BY: KBH	CHECKED BY: ALC	APPROVED BY: ALC

WESTON SOLUTIONS
7800 WEST OUTER DRIVE
SUITE 200
DETROIT, MICHIGAN
48235

SAMPLE LOCATIONS
28 November 2006
Detroit Lead Assessment Project - Former Detroit Lead Pipe Works
7001 Lyndon
Detroit, Wayne County, Michigan

Legend:

- 30 ft Stack Height - Lead Deposition Contour
- 60 ft Stack Height - Lead Deposition Contour
- Predominant Wind Direction
- Parcel Boundaries
- Facility of Concern

N

0 300 600 Feet

1:7,200

WESTON SOLUTIONS

PROJECT NAME:

Detroit Lead Assessment Project
Detroit, Wayne County, Michigan

Weston Solutions of Michigan, Inc.
7800 Outer Driver
Suite 200
Detroit, Michigan 48235

DRAWING TITLE:

30 ft & 60 ft Stack Height Lead Deposition Contours
Detroit Lead Pipe Works
7001 Lyndon Street

WORK ORDER No.: 20083.028.001		PROJECT MANAGER: A. Clark	
DRAWN BY: KRB/NJK		CHECKED BY: A. Clark	
DRAWING NAME:		DIRECTORY/ FOLDER: G:\GIS_Projects\DLAP\apr\LyndonFig2.mxd	
CONTRACT No.:		DELIVERY ORDER No.:	
SCALE:		REPORT DATE:	
DATE: March 13, 2007	REVISION No.:	FIGURE No.: 2	

Legend:

- 30 ft Stack Height - Lead Deposition Contour
- 60 ft Stack Height - Lead Deposition Contour
- Right of Way Sampling Location
- Predominant Wind Direction
- Parcel Boundaries
- Facility of Concern
- Proposed Property to be Sampled

N

0 300 600 Feet

1:7,200

WESTON SOLUTIONS

PROJECT NAME:

Detroit Lead Assessment Project
Detroit, Wayne County, Michigan

Weston Solutions of Michigan, Inc.
7800 Outer Driver
Suite 200
Detroit, Michigan 48235

DRAWING TITLE:

Proposed Sampling Locations
Detroit Lead Pipe Works
7001 Lyndon Street

WORK ORDER No.: 20083.028.001		PROJECT MANAGER: A. Clark	
DRAWN BY: KRB/NJK		CHECKED BY: A. Clark	
DRAWING NAME:		DIRECTORY/ FOLDER: G:\GIS_Projects\DLAP\apr\LyndonFig3.mxd	
CONTRACT No.:		DELIVERY ORDER No.:	
SCALE:		REPORT DATE:	
DATE: March 13, 2007		REVISION No.:	FIGURE No.: 3

APPENDIX B

PHOTOGRAPHIC LOG

Photographic Log
Detroit Lead Assessment Project
7001 Lyndon
27 October 2006

Photograph 1: View of open space on west side of building facing south.

Photograph 2: View of remaining stack on southwest side of building.

Photographic Log
Detroit Lead Assessment Project
7001 Lyndon Street

Photograph 1: 10/27/06: View of open space on west side of building facing south.

Photograph 2: 10/27/06: View of remaining stack on southwest side of building.

Photographic Log
Detroit Lead Assessment Project
7001 Lyndon Street

Photograph 3: 11/28/07: View of initial Phase II on-site sample collection.

Photograph 4: 2/20/07: View of first block of Stoepel Street across Lyndon Street from the Site.

Photographic Log
Detroit Lead Assessment Project
7001 Lyndon Street

Photograph 5: 4/23/07: View of entrance to 6345 Lyndon Street.

Photograph 6: 4/23/07: View of 14344 Cloverdale property.

Photographic Log
Detroit Lead Assessment Project
7001 Lyndon Street

Photograph 7: 4/23/07: View of Lyndon Street right of way facing east where samples were collected.

Photograph 8: 4/23/07: View of hand auger used to retrieve samples with depth.

Photographic Log
Detroit Lead Assessment Project
7001 Lyndon Street

Photograph 9: 4/23/07: View of 36 inch depth achieved at 7049 Lyndon Street, station 1.