PHASE I SUMMARY REPORT
FOR
DETROIT LEAD ASSESSMENT PROJECT
11031 SHOEMAKER STREET SITE
DETROIT, WAYNE COUNTY, MICHIGAN

Prepared for:

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION AND REDEVELOPMENT DIVISION
Southeast Michigan District Office
27700 Donald Court
Warren, Michigan 48092-2793

Prepared by:

WESTON SOLUTIONS OF MICHIGAN, INC.
7800 West Outer Drive, Suite 200
Detroit, Michigan 48235-3459

November 2007

W.O. No. 20083.028.001
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Alexandra Clark
Project Manager

Prepared by:

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<th>Attachment</th>
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<tr>
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</table>
EXECUTIVE SUMMARY

Weston Solutions of Michigan, Inc. (WESTON®) was contracted by the Michigan Department of Environmental Quality Remediation and Redevelopment Division to conduct off-site sampling for the Detroit Lead Assessment Project in Detroit, Wayne County, Michigan. This Summary Report addresses sampling that was conducted in the vicinity of the 11031 Shoemaker Street Site (the Site) Detroit, Wayne County, Michigan.

The presence of lead identified on properties adjacent to or nearby the former industrial facility (the Facility), was evaluated against predominant atmospheric conditions, spatial distribution, and statistical analysis to determine if the lead at adjacent or nearby properties was indicative of aerial deposition from the Facility.

WESTON collected 13 soil samples for lead analysis at locations upwind and downwind of the Site between 21 through 28 December 2006. The data collected during the Phase I sampling does not support that an identifiable release occurred from the Facility during historic smelting operations. In addition, the City of Detroit Department of Environmental Affairs (DEA) contracted Camp Dresser & McKee to perform a Phase II Environmental Site Assessment (ESA) at the Facility. WESTON was unable to obtain a copy of the draft Phase II ESA Report for review, but was provided with the analytical results for lead and a base map showing sample locations by DEA. The Phase II ESA data provided contained analytical results for 63 lead samples, 21 of which were collected from 0 to 6-inches below ground surface (bgs) and four samples were collected from 0 to 12-inches bgs. The detected concentrations of lead ranged from 9.2 milligrams per kilogram (mg/kg) to 740 mg/kg. The levels of lead found in the soils on-Site were not indicative of long term intensive lead smelting activities.

Because lead concentrations downwind and on-Site were not indicative of smelting operations, no further action is recommended at the Site related to lead concentrations above Residential/Commercial I Direct Contact Criteria.
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 off-site sampling for the Detroit Lead Assessment Project (the Project) in Detroit, Wayne County, Michigan. This Summary Report addresses sampling that was conducted in the vicinity of the 11031 Shoemaker Street Site, Detroit, Wayne County, Michigan. The overall objectives, technical basis, and general sampling protocols for this work are described in the Phase I Quality Assurance Sampling Plan for the Detroit Lead Assessment Project (WESTON, 2003).

This Phase I Summary Report for 11031 Shoemaker Site (the Site) has been organized in a format that is intended to facilitate and effectively meet the objectives of the Phase I investigation. Herein, the Site refers to the former industrial facility (the Facility) located at 11031 Shoemaker Street and the surrounding areas within 1,500 feet (ft) of the Facility. The Summary Report is organized into the following sections:

- **Section 1** – Introduction,
- **Section 2** – Site Information,
- **Section 3** – Field Activities and Procedures,
- **Section 4** – Phase I Analytical Results, and
- **Section 5** – Recommendations.

Attachments to this Summary Report include the following:

- **Attachment A** – Figures,
- **Attachment B** – Tables,
- **Attachment C** – Wind Rose Plot,
- **Attachment D** – Photographs of Sampling Locations,
- **Attachment E** – Concentration Graph, and
- **Attachment F** – Statistical Distribution.
SECTION 2

SITE INFORMATION

2.1 SITE DESCRIPTION

The Site, located in the vicinity of 11031 Shoemaker Street in Detroit, Wayne County, Michigan (Detroit Metropolitan Area Map, Attachment A), was suspected of historical smelting operations and was chosen for investigation based on research previously performed by MDEQ. The addresses of off-site properties sampled are presented in Table 1 in Attachment B.

There are two vacant industrial/office buildings and vacant watchman office on the property. The Site is bounded to the north by Olga Street, to the west by Fairview Street, to the south by Shoemaker Street and to the east by railroad tracks and St. Jean Street. The vicinity of the Site is mostly residential and commercial areas.

2.1.1 Site History

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, 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). WESTON concluded through the available historical information that the Site (and 11 others) was a possible lead smelter.
The Bresser’s directory review showed that Federal Mogul Corporation owned the property from 1946 to 1971. Co-owners of the property are included in the following table.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1946</td>
<td>Federal Bearing &amp; Bushing Corporation, Jones Edwin Olney, Mogul Metal Company, Muzzy Lyons Company, and Reynolds Stafford C</td>
</tr>
<tr>
<td>1951</td>
<td>Reynolds Stafford C, Jones Edwin Olney OFC, National Formetal Company, and Dixon HP</td>
</tr>
<tr>
<td>1961</td>
<td>HF Dixon and Edwin Olney Jones</td>
</tr>
<tr>
<td>1971</td>
<td>Bower Roller Bearing</td>
</tr>
<tr>
<td>1981</td>
<td>Erwin Trucking and RPM Distributing</td>
</tr>
</tbody>
</table>

Review of Sanborn maps indicated the chronology of the Facility as summarized in the following table.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969</td>
<td>Federal Mogul-Bower Bearings listed with a foundry shown</td>
</tr>
<tr>
<td>1972</td>
<td>Facility building shown</td>
</tr>
<tr>
<td>1977</td>
<td>Aetna Metals listed with facility building shown</td>
</tr>
<tr>
<td>1978</td>
<td>Facility building shown, but listed as vacant</td>
</tr>
<tr>
<td>1984</td>
<td>Facility building shown</td>
</tr>
<tr>
<td>1998</td>
<td>Facility building demolished</td>
</tr>
</tbody>
</table>

The aerial photograph review indicated this area was industrialized from 1957 to 1994 and current land use also appears to be industrial and vacant. Structures identified from a 2003 aerial photograph include buildings in the south and west portions of the property with undeveloped space to the east and north. Adjacent to the Facility, to the west, a high-density residential area was shown.

WESTON’s review of the *Phase I Environmental Site Assessment Report* (The Traverse Group, 2003) indicated that the facility was previously operated as an industrial facility by Federal Mogul Corporation, Bower Bearing Manufacturers, and Ernst Realty Company/Ernst Fuel & Supply Company from 1925 until the 1970’s. In addition, a lead foundry was located in the central portion of the west building and contained approximately eight kettles and a furnace in a concrete floor depicted south in the babbitting room.
In addition, the City of Detroit Department of Environmental Affairs (DEA) contracted Camp Dresser & McKee to perform a Phase II Environmental Site Assessment (ESA) at the Facility. WESTON was unable to obtain a copy of the draft Phase II ESA Report for review, but was provided with the analytical results for lead and a base map showing sample locations by DEA. The Phase II data provided contained analytical results for 63 lead samples, 21 of which were collected from 0 to 6-inches below ground surface (bgs) and four samples were collected from 0 to 12-inches bgs. The detected concentrations of lead ranged from 9.2 milligrams per kilogram (mg/kg) to 740 mg/kg. The levels of lead found in the soils on-Site are not indicative of long term intensive lead smelting activities.

Currently, the Site is partially occupied by the City of Detroit Department of Water and Sewerage Department Maintenance Group. There are two vacant industrial office buildings and a vacant watchman office. It appears there is at least one stack located on the building but the height is unknown.

2.2 SITE CONCERNS

The primary concern associated with the Site is the potential off-site release through aerial deposition of smelter-related metals, specifically lead, to soils in the surrounding neighborhood.
SECTION 3

FIELD ACTIVITIES AND PROCEDURES

3.1 OVERVIEW OF SAMPLING ACTIVITIES

The goal of the Phase I sampling was to determine if lead concentrations consistent with smelter related releases were present off-site and could be attributed to the Facility. Sampling was performed in accordance with the Limited Sampling Plan for the 11031 Shoemaker Street Site (WESTON, December 2006).

Prior to sample collection, upwind and downwind sampling areas were established within an approximate 1,500 foot radius of the Facility. These areas were established based on mean wind direction from 1984 to 1991 for the Detroit Metropolitan Area. A copy of the wind rose plot is provided in Attachment C. Soil samples were collected from city and/or state owned properties located within these established areas.

The city and/or state owned parcels identified for sampling were those closest to the average wind direction and at varying distances from the Facility. Where individual city and/or state owned parcels were not available, right-of-ways were used and have been identified on the location sketches included in Attachment A. Photographs of the sampling locations have been included in Attachment D. Exposure units and appropriate sample grids were established in accordance with the Quality Assurance Sampling Plan (QASP) (WESTON, 2003) to guide the sampling activities.

Sampling activities (sample collection, record keeping, and photo documentation) were conducted as described in the Comprehensive Summary. A total of four composite samples were collected from two upwind properties. Right-of-ways owned by the City of Detroit were sampled in the downwind direction due to the large size and availability of the property, and two right-of-ways were sampled in the upwind direction. Downwind samples collected within the right-of-ways were collected in 30 foot sections to be considered representative of local residential lot sizes that are approximately 30 ft wide. Thirteen composite samples were
collected from the area upwind and downwind of the Facility and are shown on the sample location sketches and figures included in Attachment A.

3.2 FIELD ACTIVITIES

WESTON personnel conducted field sampling on 21 and 28 December 2006. Since 12 city and/or state owned parcels were not available both upwind and downwind, WESTON selected six upwind properties/right-of-ways and two downwind properties/right-of-ways prior to the sampling event and requested access from the City of Detroit to sample the properties/right-of-ways. One sample was designated as a matrix spike/matrix spike duplicates and two samples were designated at duplicate samples in accordance with the QASP.
SECTION 4

PHASE I ANALYTICAL RESULTS

4.1 SUMMARY OF ANALYSIS

During Phase I soil sampling, the following samples were collected upwind and downwind of the Facility:

- Seven composite soil samples in the upwind direction, and
- Six composite soil samples in the downwind direction.

Sample locations from both the upwind and downwind areas are listed in Table 1 included in Attachment B.

In accordance with the QASP, a total of 13 samples were sent to the MDEQ Environmental Laboratory located in Lansing, Michigan for lead analysis using United States Environmental Protection Agency solid waste method 6010B for total, fine, and coarse fractions of soil. One sample collected downwind of the Facility and one sample collected upwind of the Facility contained concentrations of lead (coarse fraction and fine fraction, respectively) above Part 201 Residential/Commercial I Direct Contact Criteria (RCDCC) (400 mg/kg). A summary of the Phase I sampling results are included in the table below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Samples</th>
<th>Number Equal to or Greater than 400 mg/kg</th>
<th>Coarse Fraction Lead Concentration Range (mg/kg)</th>
<th>Fine Fraction Lead Concentration Range (mg/kg)</th>
<th>Total Lead Concentration Range (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upwind</td>
<td>7</td>
<td>1</td>
<td>87-290</td>
<td>130-410</td>
<td>92-300</td>
</tr>
<tr>
<td>Downwind</td>
<td>6</td>
<td>1</td>
<td>40-640</td>
<td>78-310</td>
<td>61-590</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>2</td>
<td>40-640</td>
<td>78-410</td>
<td>92-590</td>
</tr>
</tbody>
</table>

4.2 ATMOSPHERIC CONDITIONS

During Phase I soil sampling activities, upwind and downwind parcels were selected 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 Attachment C. The wind rose plot showed a prominent northeast
wind direction in the City of Detroit Metropolitan Area. If smelting operations occurred, lead in soils resulting from aerial deposition would be detected downwind in the northeast direction from the Facility. Parcels/right-of-ways ranging from 720 ft to 1,100 ft west/southwest of the Facility were selected for upwind sampling locations. Right-of-way areas ranging from 1,200 ft to 1,600 ft east/northeast of the Facility were selected for downwind sampling. As discussed above, one upwind sample and one downwind sample exceeded Part 201 RCDCC.

4.3 SPATIAL ANALYSIS

Where air-transport of materials occurs, it is expected that the largest impacts on the soil will occur closest to the source, and the magnitude of the impact will tend to decrease as a function of distance from the source. In addition, it is expected that the spatial pattern of soil impacts will tend to be elongated in the predominant downwind direction. Thus, the Phase I investigation was designed to determine if an off-site airborne release had occurred by examining the spatial pattern of soil contaminant concentrations as a function of distance from the Facility in a downwind direction. As seen in Table 2 (Attachment B), concentrations of lead greater than the screening level occurred within the primary downwind envelope.

To determine the distribution of the lead concentrations in soils as the distance from the Facility increases, WESTON evaluated the lead concentration of samples versus the distance from the Facility by graphing the data in relation to each other. Evaluation of this graph (see Attachment E) indicated consistently low concentrations of lead in the downwind direction and slightly elevated levels of lead in the upwind direction. The graph does not represent decreasing concentrations with increasing distance from the Facility. This condition would be expected if an aerial release of lead had occurred due to smelting operations.

4.4 STATISTICAL ANALYSIS

Analytical data was entered into a spreadsheet and differentiated as downwind and upwind samples, then processed using the MDEQ online statistical interface for Part 201 evaluations. As shown on the distribution analysis figures included in Attachment F, the downwind log mean is 4.79 mg/kg and the upwind log mean is 5.16 mg/kg indicating the concentrations downwind are lower than the upwind concentrations. In addition, the relative frequency histogram
Attachment F indicates that the highest frequency of occurrence occurs at 75 mg/kg in downwind areas and the highest frequency occurs at 150 mg/kg in the upwind area. Comparison of the upwind and downwind data sets indicates the mean lead concentrations upwind of the Facility are similar and slightly higher than the mean downwind concentrations to conclude that the data represent similar conditions.

4.5 CONCLUSIONS

The overall concentrations and pattern of analytical results for lead in soil samples collected from the Site do not suggest historic releases from smelting operations at the Facility have occurred. Further, samples collected at the Facility on behalf of the City of Detroit DEA did not contain lead concentrations that would be indicative of lead smelting operations. The analytical data was compared to a screening level consisting of the MDEQ RCDCC for soil (400 mg/kg), as established under Part 201, Environmental Response, of the Natural Resources and Environmental Protection Act 1994, as amended.
SECTION 5

RECOMMENDATIONS

Based on the conclusions provided in Section 4, WESTON recommends that no further action be performed at the Site related to RCDCC exceedances for lead.
ATTACHMENT A

FIGURES
FIGURE 1
Site Location Map
11031 Shoemaker Street Site
Commodity Metals - Shoemaker

PREPARED BY: REA

DATE: 12/28/06

METHOD REV. BY: 

DEPT: DEPT DATE: 

WECC Sign

- manhole
- light pole
- tree
- gas
- sample pt
- stormwater drain
- methane gas vent

Drive
SHOEMAKER

LEMay

ALL EXWAY

Fte Co. Husky

BOAT 7

Lot 109097

VACANT

1/2/91

10983
ATTACHMENT B

TABLES
Table 1
Summary of Sampled Properties
11031 Shoemaker Street Site
Detroit Lead Assessment Project
Detroit, Wayne County, Michigan

<table>
<thead>
<tr>
<th>Upwind Properties</th>
<th>Description</th>
<th>Sample Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>5267 Lemay</td>
<td>Right-of-way located on the west side of Lemay Street, approximately 30 ft north to south from the fence line of 5267 Lemay Street.</td>
<td>LEM-05287-RW-C-0-1</td>
</tr>
<tr>
<td>5281 Lemay</td>
<td>Right-of-way located on the west side of Lemay Street in front of the vacant property known as 5281 Lemay Street.</td>
<td>LEM-05281-RW-C-0-1</td>
</tr>
</tbody>
</table>
| 10840 Shoemaker    | Vacant property located on the south side of Shoemaker Street and west of the church parking lot. | SHO-10840-A-C-0-1  
|                    |             | SHO-10840-B-C-0-1     |
| (Duplicate sample) |             | SHO-10840-B-C-0-3     |
| 10901 Shoemaker    | Vacant gated property located on the north side of Shoemaker Street and west of a small business. | SHO-10901-A-C-0-1  
| (MS/MSD sample)    |             | SHO-10901-B-C-0-2     |
| 5549 Springfield   | Right-of-way located east of the vacant lot of 5549 Springfield. 5549 Springfield is located on the west side of Springfield and south of 5561 Springfield. | SPR-05549-RW-C-0-1 |
| 5561 Springfield   | Right-of-way located east of the 5561 Springfield. 5561 Springfield is located on the west side of Springfield. | SPR-05561-RW-C-0-1 |

<table>
<thead>
<tr>
<th>Downwind Properties</th>
<th>Description</th>
<th>Sample Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Description</td>
<td></td>
</tr>
</tbody>
</table>
| 5901 Conner         | Right-of-way located on the west side of Conner, east of Wayne County Community College Campus | CON-05901-RW1-C-0-1  
|                     |             | CON-05901-RW2-C-0-1   |
| (Duplicate sample)  |             | CON-05901-RW2-C-0-3   |
|                     |             | CON-05901-RW3-C-0-1   |
| 5901 St. Jean       | Right-of-way located on the west side of Conner Road, west of Dialysis health center on the east side of Conner. | STJ-05901-RW1-C-0-1  
|                     |             | STJ-05901-RW2-C-0-1   |
|                     |             | STJ-05901-RW3-C-0-1   |
Table 2
Summary of Analytical Results
11031 Shoemaker Street Site
Detroit Lead Assessment Project
Detroit, Wayne County, Michigan

<table>
<thead>
<tr>
<th>Sample Address</th>
<th>Sample ID</th>
<th>Total Concentration (mg/Kg)</th>
<th>Fine Concentration (mg/Kg)</th>
<th>Coarse Concentration (mg/Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upwind Properties</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5267 Lemay</td>
<td>LEM-05267-RW-C-0-1</td>
<td>250</td>
<td>350</td>
<td>190</td>
</tr>
<tr>
<td>5281 Lemay</td>
<td>LEM-05281-RW-C-0-1</td>
<td>270</td>
<td>250</td>
<td>290</td>
</tr>
<tr>
<td>10840 Shoemaker</td>
<td>SHO-10840-A-C-0-1</td>
<td>120</td>
<td>130</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>SHO-10840-B-C-0-1</td>
<td>140</td>
<td>180</td>
<td>140</td>
</tr>
<tr>
<td>(Duplicate sample)</td>
<td>SHO-10840-B-C-0-3</td>
<td>170</td>
<td>180</td>
<td>170</td>
</tr>
<tr>
<td>10901 Shoemaker</td>
<td>SHO-10901-A-C-0-1</td>
<td>160</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>(MS/MSD sample)</td>
<td>SHO-10901-B-C-0-2</td>
<td>92</td>
<td>150</td>
<td>87</td>
</tr>
<tr>
<td>5549 Springfield</td>
<td>SPR-05549-RW-C-0-1</td>
<td>300</td>
<td><strong>410</strong></td>
<td>270</td>
</tr>
<tr>
<td>5581 Springfield</td>
<td>SPR-05561-RW-C-0-1</td>
<td>180</td>
<td>220</td>
<td>170</td>
</tr>
<tr>
<td><strong>Downwind Properties</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5901 Conner</td>
<td>CON-05901-RW1-C-0-1</td>
<td>190</td>
<td>310</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>CON-05901-RW2-C-0-1</td>
<td>91</td>
<td>160</td>
<td>62</td>
</tr>
<tr>
<td>(Duplicate sample)</td>
<td>CON-05901-RW2-C-0-3</td>
<td>110</td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>CON-05901-RW3-C-0-1</td>
<td>66</td>
<td>110</td>
<td>40</td>
</tr>
<tr>
<td>5901 St. Jean</td>
<td>STJ-05901-RW1-C-0-1</td>
<td>81</td>
<td>93</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>STJ-05901-RW2-C-0-1</td>
<td>590</td>
<td>190</td>
<td><strong>640</strong></td>
</tr>
<tr>
<td></td>
<td>STJ-05901-RW3-C-0-1</td>
<td>61</td>
<td>78</td>
<td>58</td>
</tr>
</tbody>
</table>

Entered by: KBH
QC by: ALC

*Notes
1) RW indicates sample was collected in right-of-way near road.
2) Duplicate and Matrix spike / Matrix spike duplicate (MS/MSD) samples collected from sample listed just previously.
3) Residential and Commercial I Direct Contact Criteria is 400 milligrams per kilogram (mg/kg). Bold indicates results equal to or greater than 400 mg/kg.
**Table 3**

Total Concentration of Lead vs. Distance
11031 Shoemaker Street Site
Detroit Lead Assessment Project
Detroit, Wayne County, Michigan

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Distance (ft)</th>
<th>Concentration (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upwind Properties</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEM-05267-RW-C-0-1</td>
<td>1,000</td>
<td>250</td>
</tr>
<tr>
<td>LEM-05281-RW-C-0-1</td>
<td>1,000</td>
<td>270</td>
</tr>
<tr>
<td>SHO-10840-A-C-0-1</td>
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<td>120</td>
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<td>SHO-10840-B-C-0-1</td>
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<tr>
<td>SHO-10840-B-C-0-3</td>
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<tr>
<td>SHO-10901-A-C-0-1</td>
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<td>SHO-10901-B-C-0-2</td>
<td>800</td>
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<td>SPR-05549-RW-C-0-1</td>
<td>680</td>
<td>300</td>
</tr>
<tr>
<td>SPR-05561-RW-C-0-1</td>
<td>720</td>
<td>180</td>
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<td><strong>Downwind Properties</strong></td>
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<tr>
<td>CON-05901-RW1-C-0-1</td>
<td>1,600</td>
<td>190</td>
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<tr>
<td>CON-05901-RW2-C-0-1</td>
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<td>91</td>
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<tr>
<td>CON-05901-RW2-C-0-3</td>
<td>1,600</td>
<td>110</td>
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<tr>
<td>CON-05901-RW3-C-0-1</td>
<td>1,560</td>
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<td>STJ-05901-RW1-C-0-1</td>
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<tr>
<td>STJ-05901-RW2-C-0-1</td>
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<td>590</td>
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<tr>
<td>STJ-05901-RW3-C-0-1</td>
<td>1,200</td>
<td>61</td>
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</table>

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

WIND ROSE PLOT
WIND ROSE PLOT
STATION #94847 - DETROIT/METROPOLITAN ARPT, MI

Weston Solutions, Inc.

DATE: 2/3/2003

DISPLAY: Wind Speed
UNIT: m/s

AVG. WIND SPEED: 5.06 m/s
CALM WINDS: 3.67%

ORIENTATION: 1984-1991
PLOT YEAR-DATE-TIME: 84 85 86 87 88 89 90 91
January 1 - December 31
Midnight - 11 PM

ATTACHMENT C
ATTACHMENT D

PHOTOGRAPHS OF SAMPLING LOCATIONS
PHOTOGRAPHIC LOG
Detroit Lead Assessment Project
11031 Shoemaker Street Site

Photograph 01
Photographer: S. Lewis. Date: 12/18/06. View: West.
Description: 5281 Lemay Street – Right-of-Way, with Lemay Street in foreground.

Photograph 02
Photographer: S. Lewis. Date: 12/21/06. View: West.
Description: 5267 Lemay Street – Right-of-Way, with Lemay Street in foreground.
PHOTOGRAPHIC LOG
Detroit Lead Assessment Project
11031 Shoemaker Street Site

Photograph 03 Photographer: S. Lewis. Date: 12/21/06. View: East.
Description: 5549 Springfield Street – Right-of-Way, with Springfield Street in foreground.

Photograph 04 Photographer: S. Lewis. Date: 12/21/06. View: East.
Description: 5561 / 5567 Springfield Street – Right-of-Way, with Springfield Street in foreground.
Photograph 05 Photographer: S. Lewis. Date: 12/21/06. View: South.  
Description: 10840 Shoemaker Street sample location, with composite soil samples collected on north and south portion of parcel.

Photograph 06 Photographer: S. Lewis. Date: 12/21/06. View: North.  
Description: 10901 Shoemaker Street sample location, with view of south portion of parcel (front yard).
**Photograph 07** Photographer: S. Lewis. Date: 12/21/06. View: South. Description: 10901 Shoemaker Street sample location, with view of north portion of parcel (back yard).

**Photograph 08** Photographer: K. Hudson. Date: 12/28/06. View: West-Southwest. Description: 5901 St. Jean Street – Right-of-Way #1, with St. Jean Street in foreground.
Photograph 09  Photographer: K. Hudson. Date: 12/28/06. View: West-Southwest. Description: 5901 St. Jean Street – Right-of-Way #2, with St. Jean Street in foreground.

Photograph 10  Photographer: K. Hudson. Date: 12/28/06. View: West-Southwest. Description: 5901 St. Jean Street – Right-of-Way #3, with St. Jean Street in foreground.
PHOTOGRAPHIC LOG
Detroit Lead Assessment Project
11031 Shoemaker Street Site

Photograph 11 Photographer: K. Hudson. Date: 12/28/06. View: North-Northeast. Description: 5901 Conner Road – Right-of-Way #1, with Conner Road in background.

Photograph 12 Photographer: K. Hudson. Date: 12/28/06. View: North-Northeast. Description: 5901 Conner Road – Right-of-Way #2, with Conner Road in background.
ATTACHMENT E

CONCENTRATION GRAPH
ATTACHMENT F

STATISTICAL DISTRIBUTION
Results of Shapiro-Wilk GOF Test for Lead.Total..mg.kg. in X11031.Shoemaker.Street.Site.Samples..2.

Histogram of Observed Data with Fitted Lognormal Distribution

Empirical CDF for Lead.Total..mg.kg. (solid line) with Fitted Lognormal CDF (dashed line)

Quantile-Quantile Plot with 0-1 Line

Lognormal(meanlog=4.790495, sdiog=0.7959669) Distribution

Results of Shapiro-Wilk GOF

Hypothesized Distribution: Lognormal

Estimated Parameters: meanlog = 4.790495
sdiog = 0.7959669

Sample Size: 7
Test Statistic: W = 0.8312327
Test Statistic Parameter: n = 7
P-value: 0.08219902

Area = DWN

Area = DWN
Results of Shapiro-Wilk GOF Test for Lead.Total.mg.kg. in X11031.Shoemaker.St.St.Site.Samples..2.

Histogram of Observed Data with Fitted Lognormal Distribution

Empirical CDF for Lead.Total.mg.kg. (solid line) with Fitted Lognormal CDF (dashed line)

Quantile-Quantile Plot with 0-1 Line

Results of Shapiro-Wilk GOF

Hypothesized Distribution: Lognormal
Estimated Parameters: meanlog = 5.16428
sdlog = 0.3966766

Sample Size: 9
Test Statistic: W = 0.9639173
Test Statistic Parameter: n = 9
P-value: 0.8382673

Area = UP

Boxplot of Lead.Total.mg.kg.

Area = UP