FINAL

PHASE I
SUMMARY REPORT
FOR
DETROIT LEAD ASSESSMENT PROJECT
FORMER MASTER ALLOYS – 2930 DENTON STREET
HAMTRAMCK, 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, Michigan 48864

December 2005

W.O. No. 20083.028.001.0010

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_____
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Project Manager

Prepared by:

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

December 2005

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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 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 former Master Alloys (the Facility), 2930 Denton Street, Hamtramck, Wayne County, Michigan.

The presence of lead identified on properties adjacent to or nearby 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.

On 24 March 2004, WESTON collected 24 soil samples for lead analysis at locations upwind and downwind of the Facility. The data collected during the Phase I sampling does not support that an identifiable release occurred from the Facility during historic smelting operations. Because lead concentrations exceeding the screening level were not detected downwind and since the U.S. Environmental Protection Agency (U.S. EPA) completed an on-site removal action during October 2001, it is recommended that no further action is required at this time.

TABLE OF CONTENTS

Section **Page**

LIST OF ATTACHMENTS

Title

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 former Master Alloys (the Facility), 2930 Denton Street, Hamtramck, Wayne County, Michigan. The overall objectives, technical basis, and general sampling protocols for this work are described in the *Comprehensive Phase I Sampling Summary Report for the Detroit Lead Assessment Project* (Comprehensive Summary).

This Phase I Summary Report for Master Alloys has been organized in a format that is intended to facilitate and effectively meet the objectives of the Phase I investigation. 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 Facility, located at 2930 Denton Street in Hamtramck, Wayne County Michigan (Detroit Metropolitan Area), was suspected of historical smelting operations and was chosen for investigation by the MDEQ based on previous investigative and removal activities performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) by the United States Environmental Protection Agency (U.S. EPA). Facility location maps are included in **Attachment A**. The addresses of off-site properties sampled are presented in **Table 1** located in **Attachment B**.

2.1.1 Site Location

The Facility is located on a 1.75-acre property and is mostly surrounded by industrial and commercial areas. There is a residential area located approximately 1/3 of a mile from the Facility. The Facility is an abandoned property including a severely deteriorated building.

2.1.2 Site History

Review of the *U.S. EPA Pollution Report* indicated that the Facility was operated as an industrial smelting facility from the late 1930s through the early 1990s. The Facility was used for recycling operations in the late 1990s.

The U.S. EPA's site assessment documented the presence of approximately 300 drums and small containers on-site that were noted to be leaking their contents to the floor. Analytical results of those drums indicated the presence of characteristic toxic arsenic, cadmium, and lead hazardous wastes.

Initial removal activities under the U.S. EPA's authority were performed from 22 October to 27 October 2001. Additional removal activities were performed by the U.S. EPA from 25 March to 5 April 2002. A total of 2,121 tons of lead contaminated soils were transported to Michigan Disposal's Waste Treatment Plant in Belleville, Michigan for stabilization and landfilling. The

contaminated soils were excavated to an underlying clay layer present beneath the fill material. This layer was encountered at an approximate depth of 4 to 6 feet (ft.) throughout most of the Facility, and at an approximated depth of 2 to 2.5 ft. near the access gate/roadway. A total of 14 samples were collected from the bottom of the excavation and sent to Kemron Labs in Marietta, Ohio for total lead analysis. The results indicated lead concentrations ranging from 6.21 to 22.50 milligrams per kilogram (mg/kg) across the backyard. Sidewall samples were not collected due to visibly stained soils. All excavated areas were backfilled with clean soil.

2.2 SITE CONCERNS

The primary concern associated with the Facility is the 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. The general sampling protocol presented in **Section 2** of the Comprehensive Summary was followed during the Phase I evaluation of the Facility.

Prior to sample collection, upwind and downwind sampling areas were established, 1,800 ft. and 1,350 ft. from the Facility, respectively. 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, rights-of-way, utility corridors, and alleyways ('greenways') 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) to guide the sampling activities.

Sampling activities (sample collection, record keeping, and photo documentation) were conducted as described in the Comprehensive Summary. One city and/or state owned parcel was sampled in the downwind direction due to size and availability of the property, and two city and/or state owned parcels and four greenways were sampled in the upwind direction. Two composite samples were collected from each of the four upwind greenways and two parcels, and 12 composite samples were collected from the one downwind parcel. Twenty four composite samples were collected from the area upwind and downwind of the Facility and are shown on the sample location sketches included in **Attachment A**.

3.2 FIELD ACTIVITIES

WESTON personnel conducted field sampling on 24 March 2004. Since 12 city and/or state owned parcels were not available, WESTON selected four greenways, prior to the sampling event, and submitted them to the City of Hamtramck to obtain their approval and access. Any changes to field sample identifications were noted in the logbook and can be viewed on the "Summary Table For Sample Properties" (**Attachment B**) and the sample location sketches (**Attachment A**).

WESTON collected two samples from each of the two upwind city and/or state owned parcels and four greenways for a total of 12 upwind samples. Also, 12 samples were collected from the city and/or state owned parcel downwind for a total of 12 downwind samples. Twenty four soil samples were submitted for analysis. Four samples were designated as matrix spike/matrix spike duplicates (MS/MSD) 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 from the Facility project area:

- 12 composite soil samples in the upwind direction, and
- 12 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 24 samples were sent to the state laboratory located in Lansing, Michigan for analysis by U.S. EPA Method 6010B for lead. Samples collected from properties downwind of the Facility did not contain concentrations of lead above the project screening level (400 mg/kg) established in the Phase I QASP. One sample collected from properties upwind of the Facility contained concentrations of lead above the project screening level (400 mg/kg) established in the Phase I QASP. A summary of the Phase I sample results is included in the table below.

Phase I Summary of Results

Location	Number of Samples	Number equal or greater than 400 mg/kg	Range of Values (mg/kg)
Upwind	12	1	120-700
Downwind	12	0	62-230
Total	24	1	

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 ranging from 450 ft. to 1,800 ft. were selected southwest in the upwind direction of the Facility. Parcels ranging from 1,000 ft. to 1,350 ft. were chosen north, as close to the mean downwind direction of the Facility due to the presence of residential properties. A single elevated lead concentration was detected in the upwind direction of the Facility and low-level lead concentrations were detected in the downwind direction. A detailed analysis of upwind and downwind concentrations is contained in **Sub-Section 4.3 Spatial Analysis**.

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 do not occur 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 logmean is 5.0 mg/kg and the upwind logmean is 5.4 mg/kg indicating the concentrations downwind are similar to the upwind concentrations. In addition the relative frequency histogram (**Attachment F**) indicates that the highest frequency of occurrence occurs at 200 mg/kg in both the upwind and downwind areas. Comparison of the upwind and downwind data sets indicates the lead concentrations are similar to each other both in mean concentration and distribution to conclude that the data represent similar conditions.

4.5 CONCLUSIONS

The pattern of analytical results for lead in soil samples collected for the Facility does not suggest that lead contamination detected in downwind locations is attributable to historic releases from historic smelting operations at the Facility. The analytical data was compared to a screening level consisting of the MDEQ Residential and Commercial I Direct Contact Criteria for soils (400 mg/kg), as established under Part 201 Environmental Response of the Natural Resources and Environmental Protection Act 1994, as amended.

One sample collected from upwind of the Facility contained concentrations of lead above the screening level and the remaining lead that is present is similar in concentration to that detected in the downwind direction. Additionally, the downwind samples do not show a trend of decreasing concentration with increasing distance. The data collected during the Phase I sampling does not suggest that an aerial release occurred from the Facility during historic smelting operations.

SECTION 5

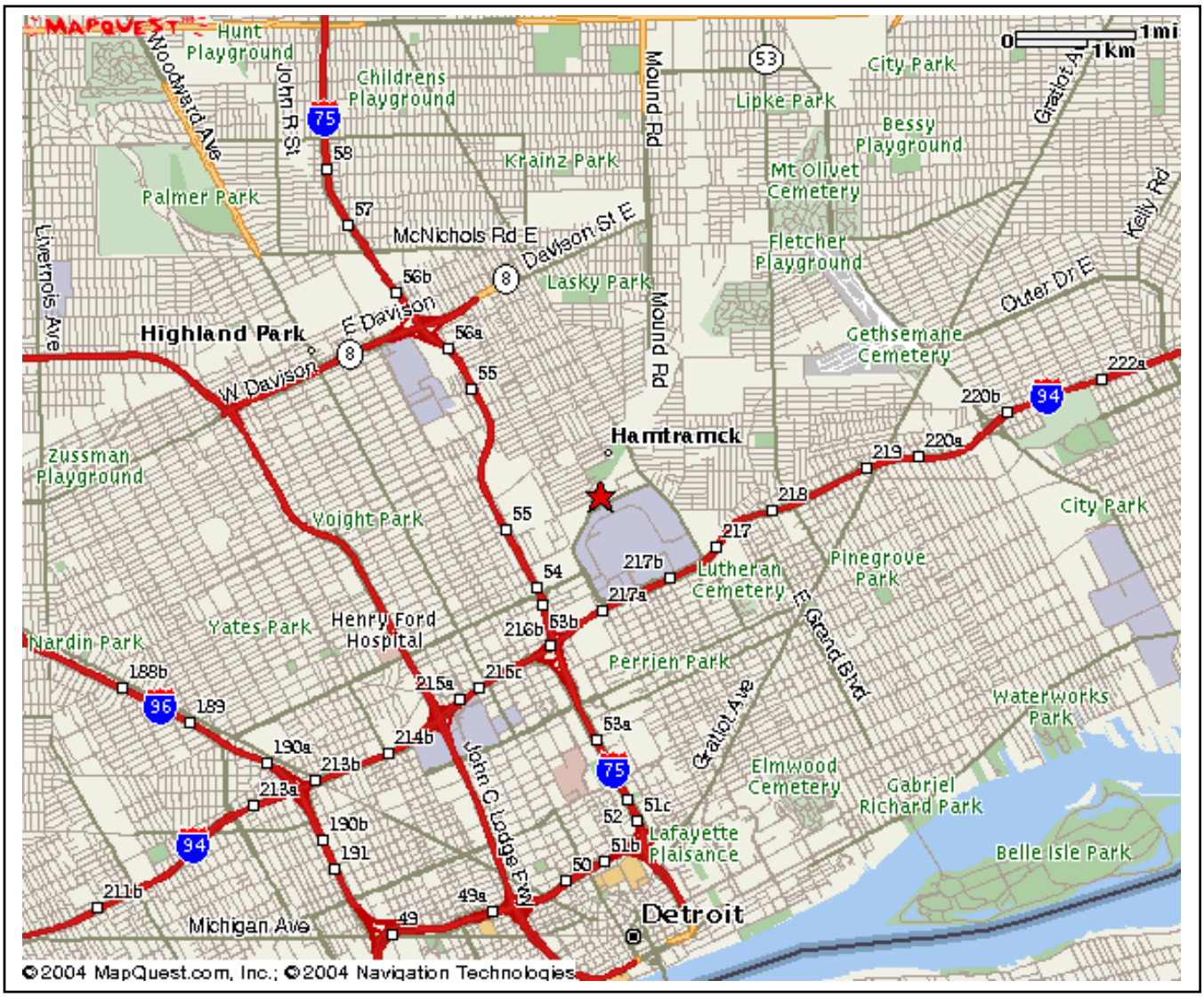
RECOMMENDATIONS

The results of this investigation do not indicate that soils at downwind properties have been impacted by releases of lead from the Facility as a result of aerial deposition related to historic smelting operations. The data collected during the Phase I sampling does not support that an identifiable release occurred from the Facility during historic smelting operations. Because lead concentrations exceeding the screening level were not detected downwind and since the U.S. EPA completed an on-site removal action during October 2001, it is recommended that no further action is required at this time.

ATTACHMENT A

FIGURES

Figure 1
Site Location Map
2930 Denton Street



WESTON SOLUTIONS, INC. OF MICHIGAN

300 River Place, Suite 2800
Detroit, Michigan 48207

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

WESTON SOLUTIONS

SHEET 1 of 4

CLIENT/SUBJECT DEN-02400-A,D W.O. NO.

TASK DESCRIPTION 02400 DENTON TASK NO.

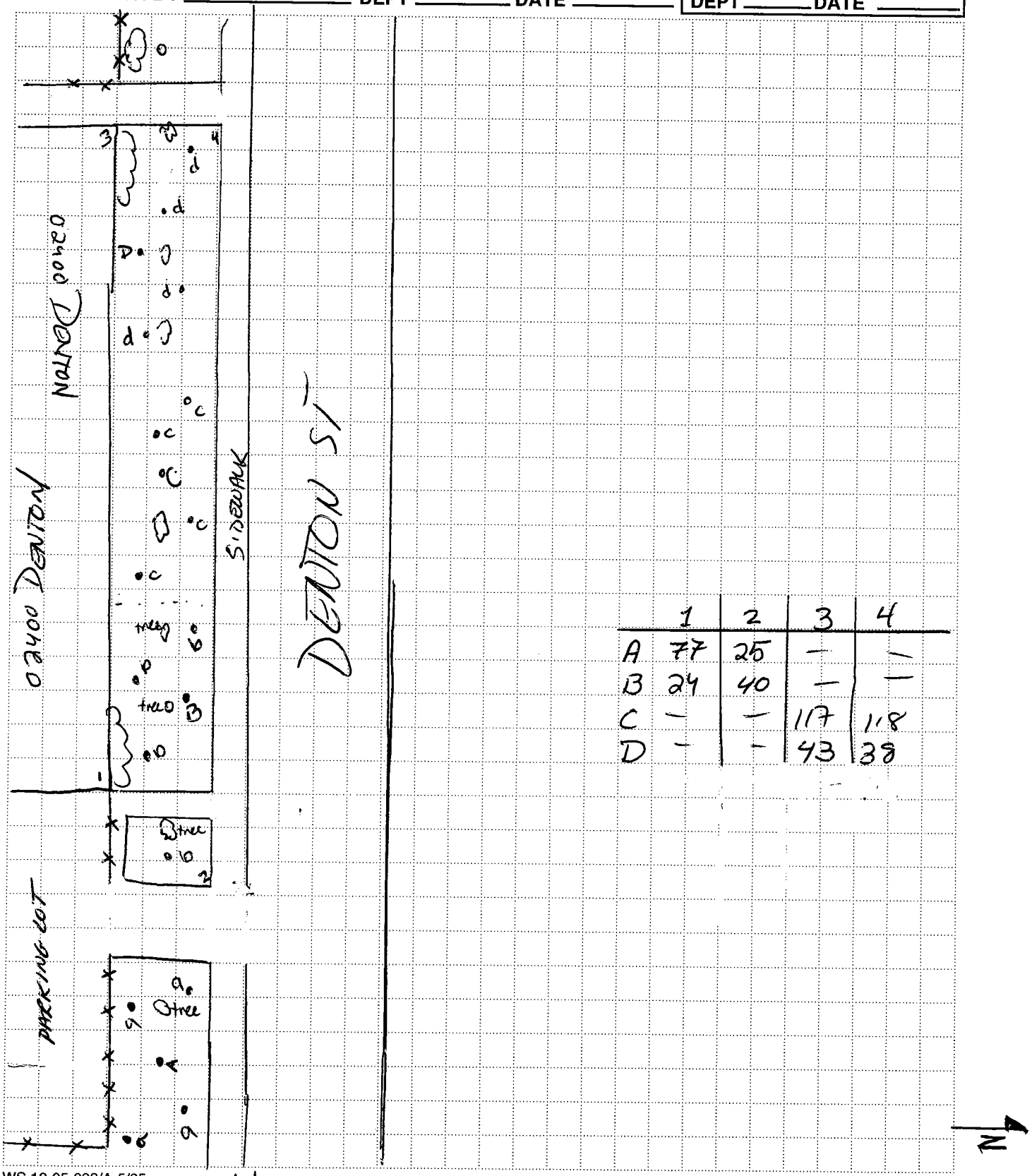
PREPARED BY R. NEMIRASKY DEPT DATE 3/24/04

MATH CHECK BY DEPT DATE

METHOD REV. BY DEPT DATE

APPROVED BY

DEPT DATE



	1	2	3	4
A	77	25	—	—
B	24	40	—	—
C	—	—	117	118
D	—	—	43	38

N

NOT SCALE

WESTON SOLUTIONS

CLIENT/SUBJECT DEN-02400 - ETOH

SHEET 2 of 4

TASK DESCRIPTION 2400 DENTON, 2345, 2361

W.O. NO.

PREPARED BY R. NEMIROVSKY DEPT DATE 3/24/04

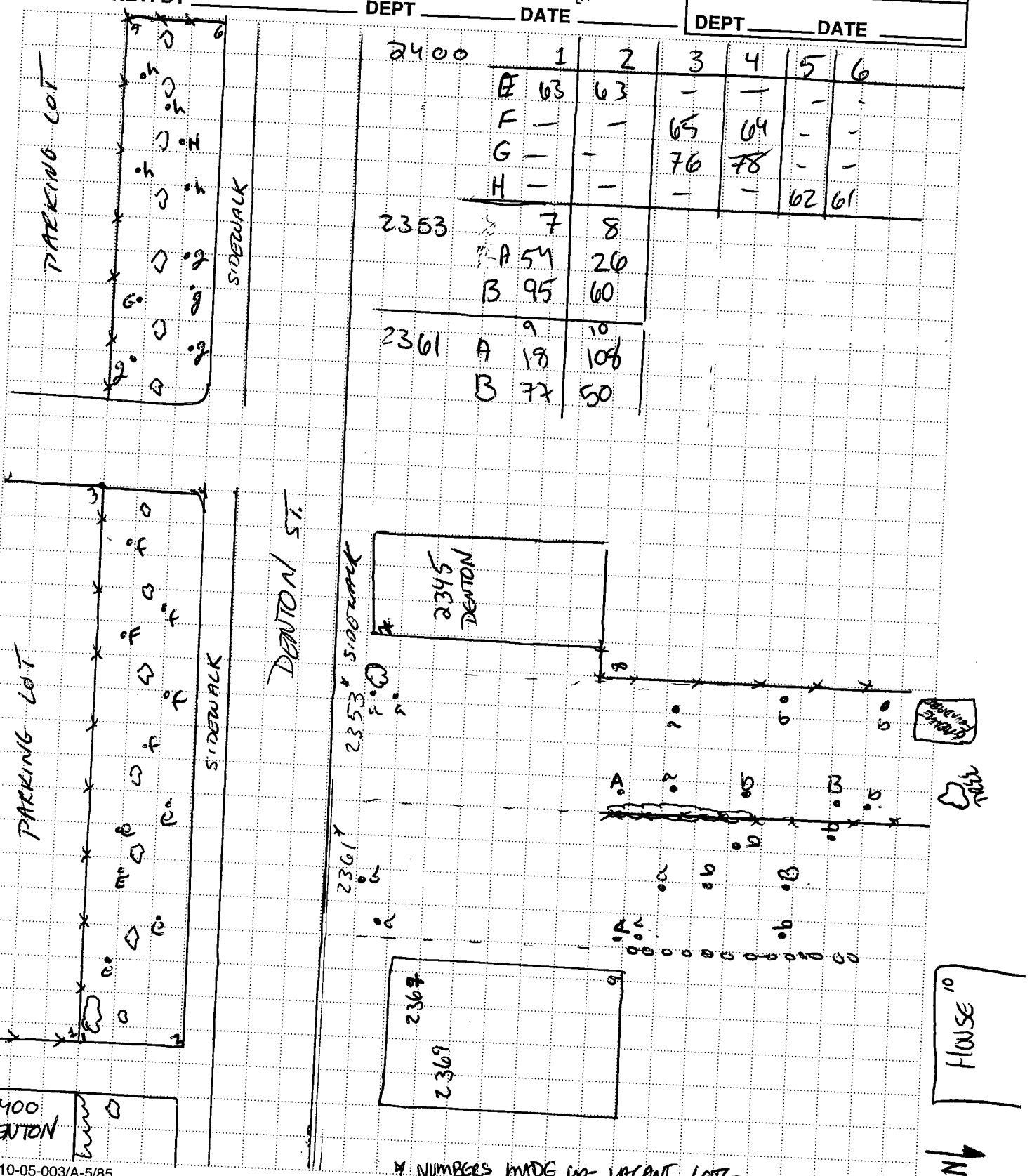
TASK NO.

MATH CHECK BY DEPT DATE

METHOD REV. BY DEPT DATE

APPROVED BY

DEPT DATE



2400		1	2	3	4	5	6
	E	63	63	–	–	–	–
	F	–	–	65	64	–	–
	G	–	–	76	78	–	–
	H	–	–	–	–	62	61

2353		7	8
	A	54	26
	B	95	60

		9	10
2361	A	18	108
	B	77	50

* NUMBERS MATCH UP - VACANT LOTS

WS 10-05-003/A-5/85
02P-1562

WESTON SOLUTIONS

SHEET 3 of 4

CLIENT/SUBJECT VET-00000 A TO B — W.O. NO. _____

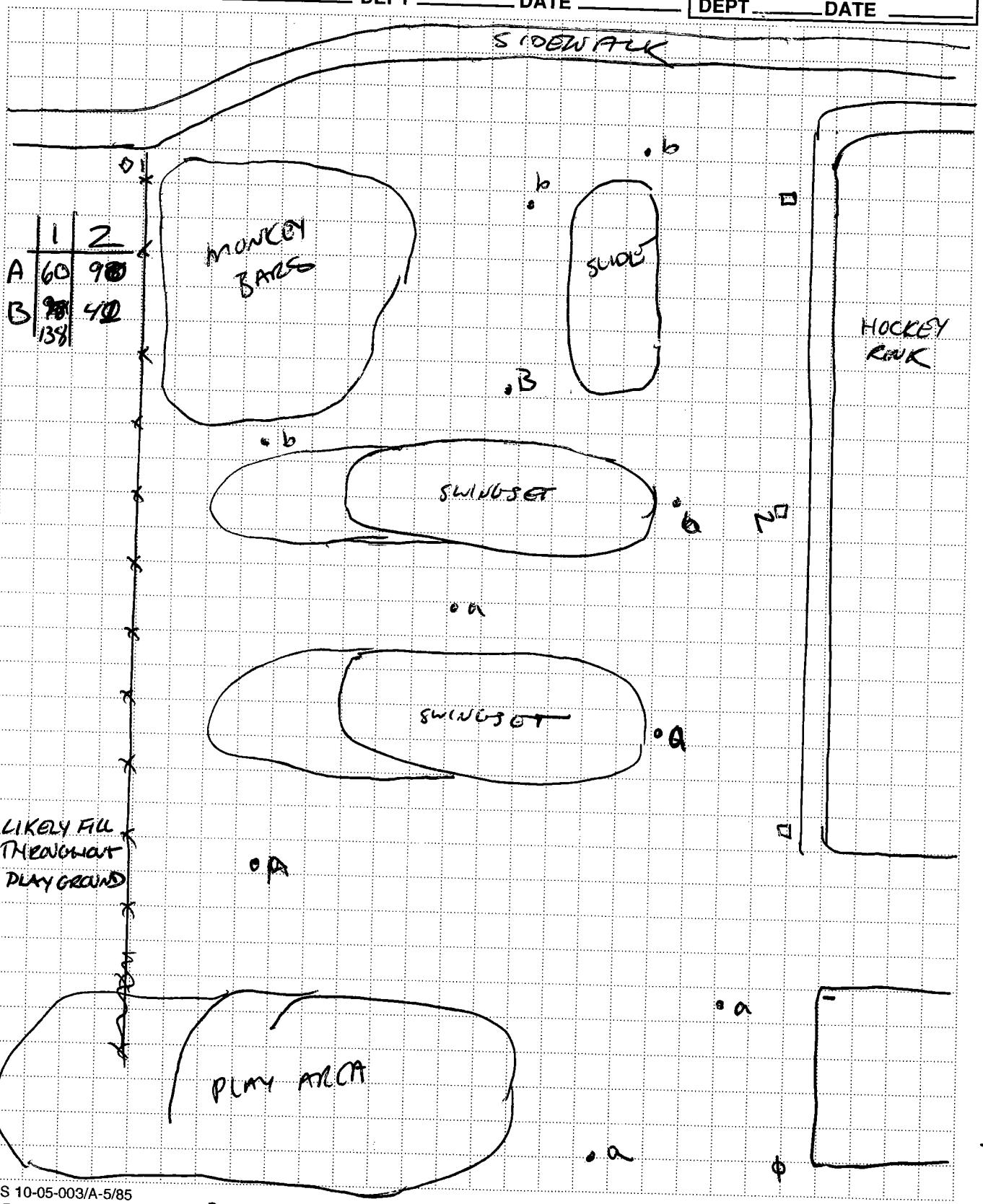
TASK DESCRIPTION VETERANS PK, HAMTRAMCK — TASK NO. _____

PREPARED BY R. NEMIROVSKY DEPT _____ DATE 3/24/04

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY _____ DEPT _____ DATE _____



WESTON SOLUTIONS

SHEET 4 of 4

CLIENT/SUBJECT VGT-00000 C TO L W.O. NO. _____

TASK DESCRIPTION VETERANS PK, HAMTRAMCK TASK NO. _____

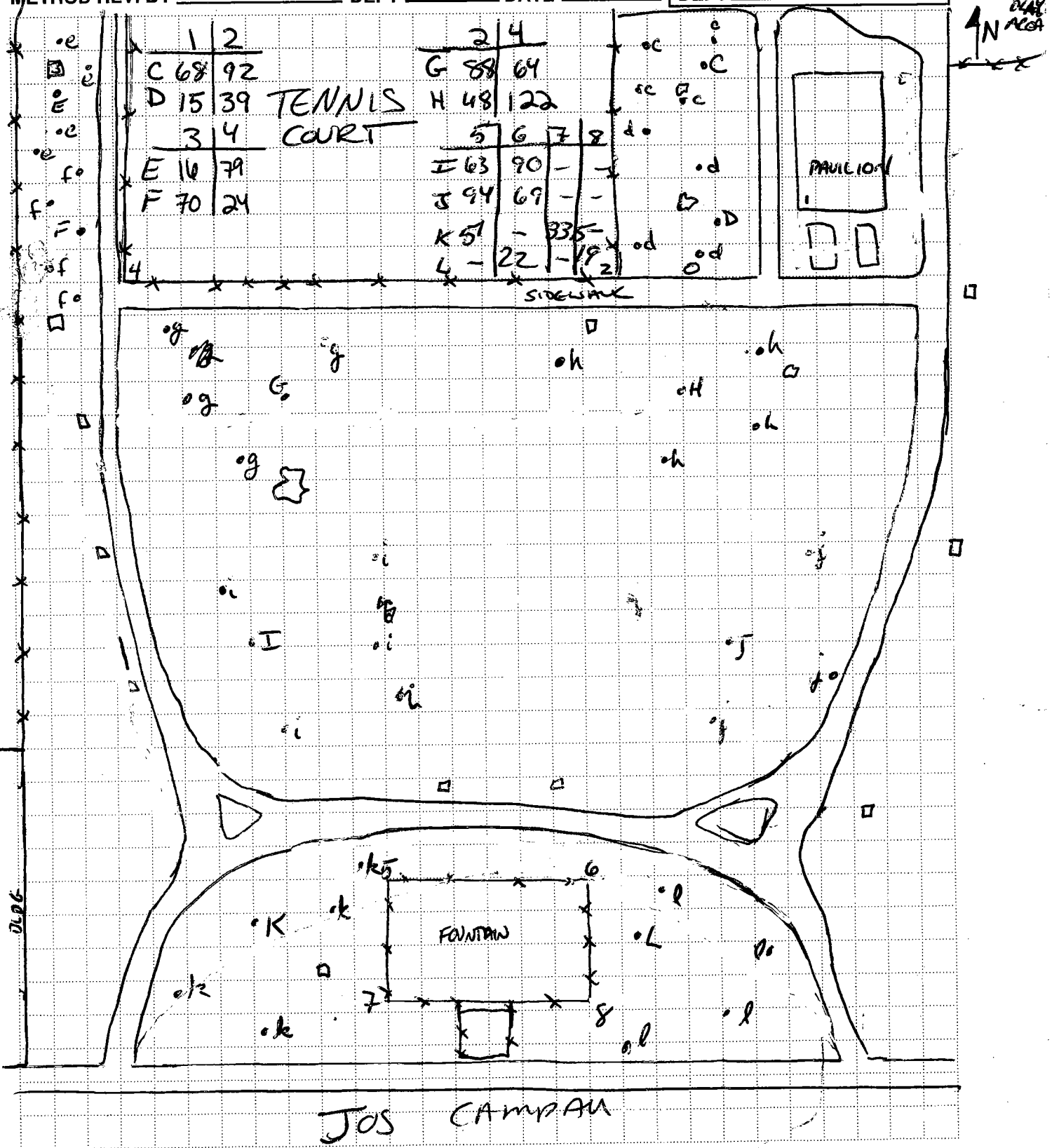
PREPARED BY R Nemeusek DEPT _____ DATE 3/24/07

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY

DEPT _____ DATE _____



ATTACHMENT B

TABLES

TABLE 1

SUMMARY OF SAMPLED PROPERTIES

Upwind Properties		
Address	**Description**	**Sample Identification**
2400 Denton	Greenway located on the south side of Denton St and to the north of the State of Michigan Family Independence Agency of Wayne County building and parking lot.	DEN-02400-A-C-0-1
		DEN-02400-B-C-0-1
		DEN-02400-C-C-0-1
		DEN-02400-D-C-0-1
		DEN-02400-E-C-0-2
		DEN-02400-F-C-0-1
		DEN-02400-G-C-0-1
		DEN-02400-H-C-0-1
2353 Denton	Vacant property located on the north side of Denton St and across the street from the parking lot of the building at 2400 Denton.	DEN-02353-A-C-0-1
		DEN-02353-B-C-0-2
2361 Denton	Vacant property located on the north side of Denton St and to the east of the vacant property at 2353 Denton St.	DEN-02361-A-C-0-1
		DEN-02361-B-C-0-1
Downwind Properties		
Address	**Description**	**Sample Identification**
Veterans Park	Property located in the Veterans Park of Hamtramck between the playground equipment.	VET-00000-A-C-0-1
		VET-00000-B-C-0-1
Veterans Park	Property located in the Veterans Park of Hamtramck, to the east of the tennis courts, and to the west of the pavilion.	VET-00000-C-C-0-2
		VET-00000-D-C-0-1
	Property located in the Veterans Park of Hamtramck and to the west of the tennis courts.	VET-00000-E-C-0-1
		VET-00000-F-C-0-1
	Property located in the Veterans Park of Hamtramck and to the south of the tennis courts and the pavilion	VET-00000-G-C-0-1
		VET-00000-H-C-0-2
	Property located in the Veterans Park of Hamtramck and to the north of the fountain.	VET-00000-I-C-0-1
		VET-00000-J-C-0-1
	Property located in the Veterans Park of Hamtramck and to the west and east, respectively, of the fountain.	VET-00000-K-C-0-1
		VET-00000-L-C-0-1

TABLE 2
ANALYTICAL RESULTS
FORMER MASTER ALLOYS
DETROIT LEAD ASSESSMENT PROJECT

Sample Address	Sample ID	Concentration (mg/Kg)
Upwind		
2400 Denton	DEN-02400-A-C-0-1	120
2400 Denton	DEN-02400-B-C-0-1	130
2400 Denton	DEN-02400-C-C-0-1	210
2400 Denton	DEN-02400-D-C-0-1	200
2400 Denton	DEN-02400-E-C-0-2	170
2400 Denton	DEN-02400-F-C-0-1	180
2400 Denton	DEN-02400-G-C-0-1	180
2400 Denton	DEN-02400-H-C-0-1	190
2353 Denton	DEN-02353-A-C-0-1	340
2353 Denton	DEN-02353-B-C-0-2	**700**
2361 Denton	DEN-02361-A-C-0-1	230
2361 Denton	DEN-02361-B-C-0-1	280
Downwind		
Veterans Park	VET-00000-A-C-0-1	62
Veterans Park	VET-00000-B-C-0-1	100
Veterans Park	VET-00000-C-C-0-2	190
Veterans Park	VET-00000-D-C-0-1	190
Veterans Park	VET-00000-E-C-0-1	180
Veterans Park	VET-00000-F-C-0-1	180
Veterans Park	VET-00000-G-C-0-1	130
Veterans Park	VET-00000-H-C-0-2	160
Veterans Park	VET-00000-I-C-0-1	180
Veterans Park	VET-00000-J-C-0-1	190
Veterans Park	VET-00000-K-C-0-1	160
Veterans Park	VET-00000-L-C-0-1	230

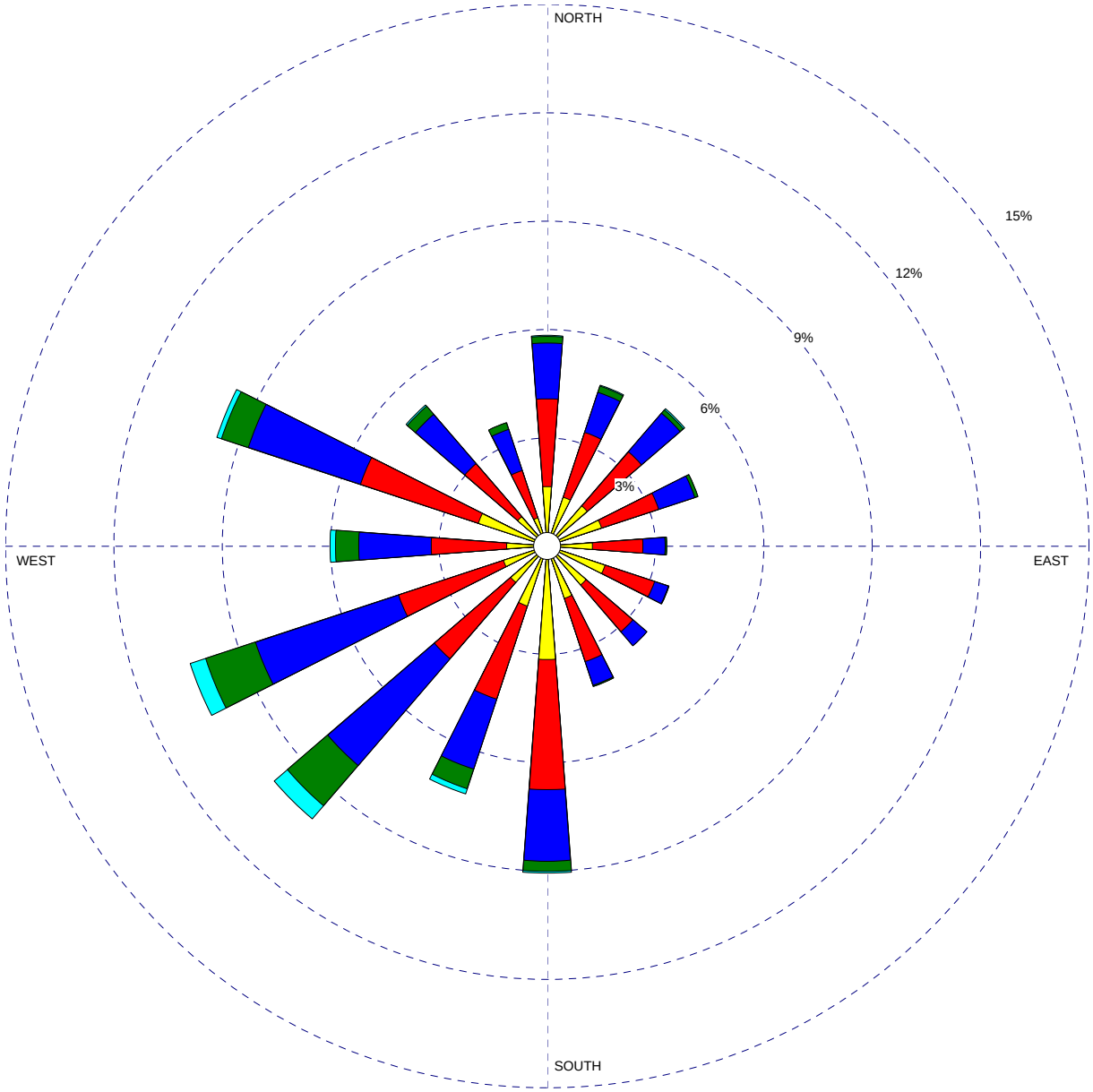
* Notes
1) Bold indicates results equal to or greater than 400 mg/Kg.

ATTACHMENT C

WIND ROSE PLOT

WIND ROSE PLOT

STATION #94847 - DETROIT/METROPOLITAN ARPT, MI



Wind Speed (m/s)

> 10.8
8.8-10.8
5.7- 8.8
3.6- 5.7
2.1- 3.6
0.5- 2.1

	DATE **2/3/2003**	**Weston Solutions, Inc.**
DISPLAY **Wind Speed**	UNIT **m/s**	**Years** **1984-1991**
AVG. WIND SPEED **5.06 m/s**	CALM WINDS **3.67%**	
ORIENTATION **Direction** **(blowing from)**	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

Former Master Alloys – 2930 Denton

2400 Denton – Greenway properties located to the north of the State of Michigan Family Independence Agency of Wayne County and on the south side of Denton St.

Looking west along the greenway at 5 total discrete sample A locations.

Looking west along the greenway at 5 total discrete sample B locations.

Denton (cont'd)

2400 Denton (cont'd)

Looking west along the greenway at 10 total discrete sample C and D locations.

Looking west along the greenway at 10 total discrete sample E and F locations.

Denton (cont'd)

2400 Denton (cont'd)

Looking west along the greenway at 10 total discrete sample G and H locations.

2353 Denton – Vacant property located on the north side of Denton St and across the street from a parking lot on the west side of the State of Michigan Family Independence Agency of Wayne County building.

Looking north along the vacant property at 10 total discrete sample A and B locations.

Denton (cont'd)

2361 Denton – Vacant property located on the north side of Denton St and across the street from a parking lot on the west side of the State of Michigan Family Independence Agency of Wayne County building and to the east of the vacant property at 2353 Denton.

Looking north along the vacant property at 10 total discrete sample A and B locations.

Veterans Park – City Park located to the northeast of Joseph Campau St and to the southwest of Conant St.

Looking east along the property at 5 total discrete sample A locations.

Denton (cont'd)

Veterans Park (cont'd)

Looking west along the property at 5 total discrete sample B locations.

Looking northwest along the property at 5 total discrete sample C locations.

Denton (cont'd)

Veterans Park (cont'd)

Looking southwest along the property at 5 total discrete sample D locations.

Looking north along the property at 5 total discrete sample E locations.

Denton (cont'd)

Veterans Park (cont'd)

Looking north along the property at 5 total discrete sample F locations.

Looking east along the property at 10 total discrete sample G and H locations.

Denton (cont'd)

Veterans Park (cont'd)

Looking south along the property at 5 total discrete sample I locations.

Looking east along the property at 5 total discrete sample J locations.

Denton (cont'd)

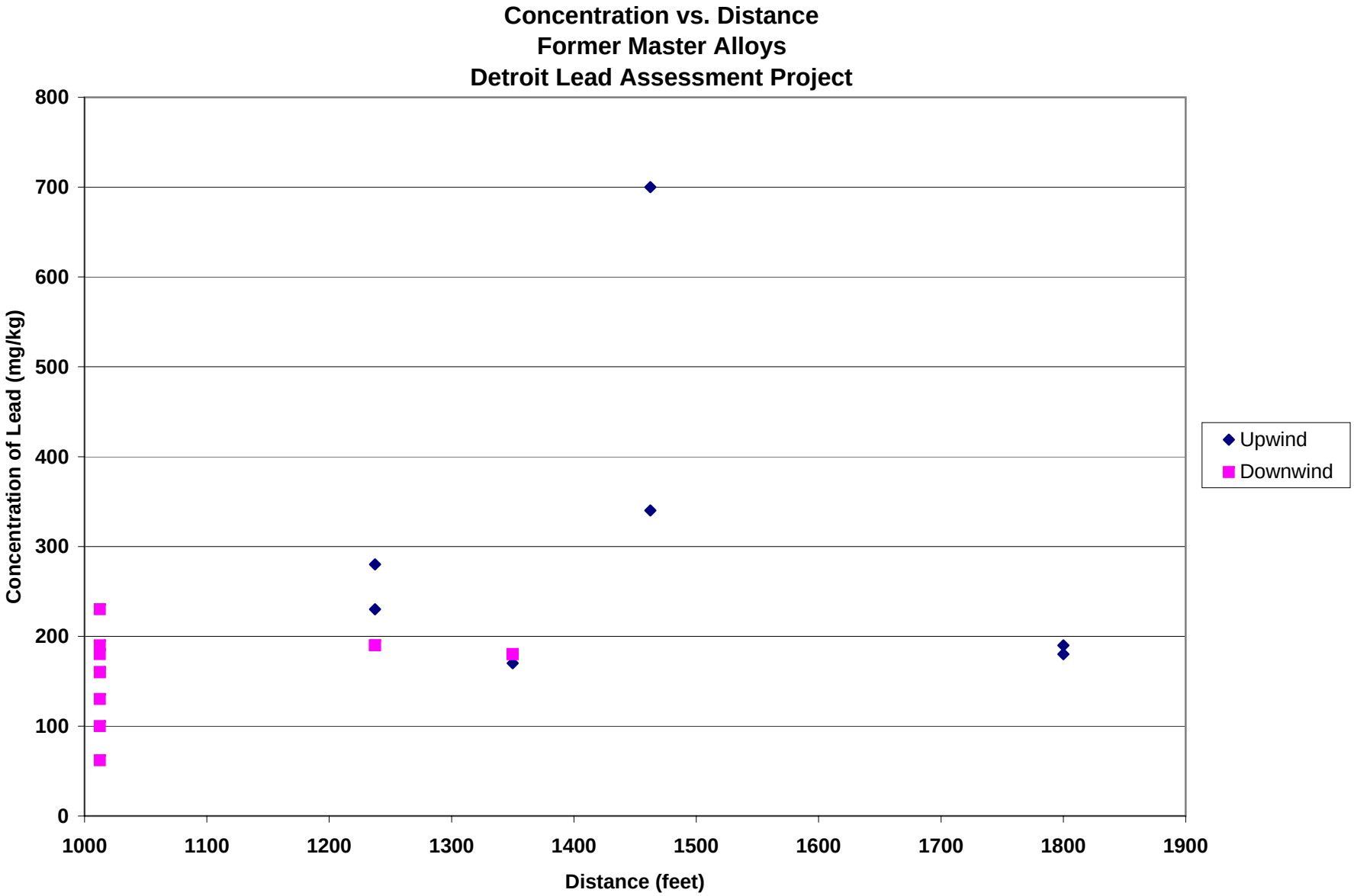
Veterans Park (cont'd)

Looking north along the property at 5 total discrete sample K locations.

Looking north along the property at 5 total discrete sample L locations.

ATTACHMENT E

CONCENTRATION GRAPH


Concentration vs. Distance
Former Master Alloys
Detroit Lead Assessment Project
Concentration of Lead (mg/kg)
800
700
600
500
400
300
200
100
0
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
Distance (feet)
Upwind
Downwind

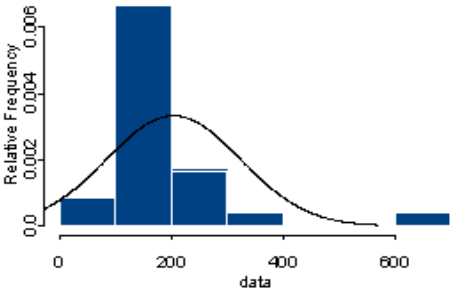
ATTACHMENT F

STATISTICAL DISTRIBUTION

Normal Distribution Analysis for Data

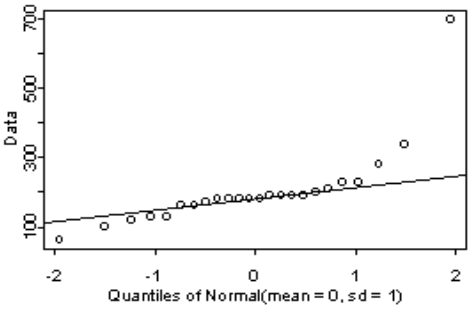
Data Set Name: Denton , Area: DEN

Histogram of Observed Data with Fitted Normal Distribution



Box Plot of Data Data

Normal Probability Plot of Data Data



Summary Statistics

Sample Size:	24
Coefficient of Variation:	0.5882846
Coefficient of Skewness:	3.31887

Results of Shapiro-Wilk GOF

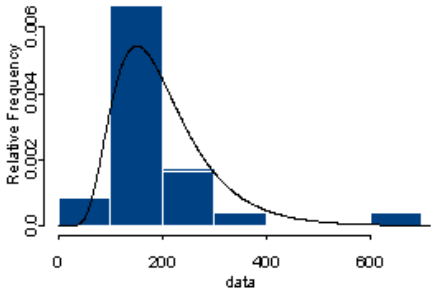
Hypothesized Distribution:	Normal
Estimated Parameters:	mean = 203.4167 sd = 119.6669
Test Statistic:	W = 0.6336869
Test Statistic Parameter:	n = 24
p-value:	1.502451e-6

Since p < .05 conclude distribution is not normal.

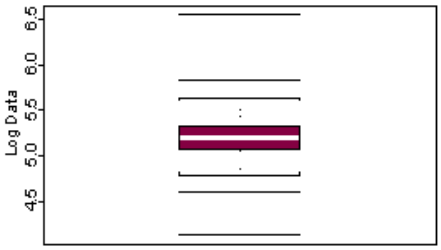
Lognormal Distribution Analysis for Data

Data Set Name: Denton , Area: DEN

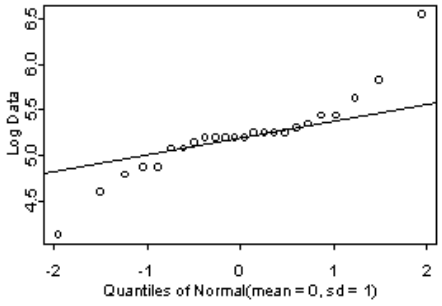
Histogram of Observed Data with Fitted Lognormal Distribution



Box Plot of Log Data Data



Normal Probability Plot of Log Data Data



Summary Statistics

Sample Size:	24
Coefficient of Variation:	0.0848396
Coefficient of Skewness:	0.607714

Results of Shapiro-Wilk GOF

Hypothesized Distribution:	Lognormal
Estimated Parameters:	meanlog = 5.209595 sdlog = 0.4419799
Test Statistic:	W = 0.8875308
Test Statistic Parameter:	n = 24
p-value:	0.01182239

Since p < .05 conclude distribution is not lognormal.