

**PHASE I SUMMARY REPORT
FOR
DETROIT LEAD ASSESSMENT PROJECT
WOLVERINE WHITE METAL – 3421 GIBSON STREET
DETROIT, WAYNE COUNTY, MICHIGAN**

Prepared for:

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION AND REDEVELOPMENT DIVISION**

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March 2004

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 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 Wolverine White Metal (the Facility), 3421 Gibson Street, Detroit, 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 the adjacent or nearby properties was indicative of aerial deposition from the Facility.

On 19 and 20 November 2003, 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 aerial release occurred from the Facility during historic smelting operations. Data gaps exist in the downwind deposition area due to the availability of City and/or State owned parcels, therefore it is recommended that additional work be performed at the Facility including:

- Obtain access to the Facility for:
 - Review of existing information related to property transfer (Phase I, Phase II, and development planning);
 - Interview past employees regarding historical Facility operations;
 - Perform a Facility walk through to determine existing conditions;
 - Collect on-site soil samples to determine the presence, concentration, and extent of lead on the Facility (related to the location of former structures, if possible); and
- Collect soil samples from additional downwind properties to confirm and/or determine the extent of downwind contamination.

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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 for the Detroit Lead Assessment Project in Detroit, Wayne County, Michigan. This Summary Report addresses sampling that was conducted in the vicinity of the former Wolverine White Metal (the Facility), 3421 Gibson Street, Detroit, 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 Wolverine White Metal 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.

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SECTION 2

SITE INFORMATION

2.1 SITE DESCRIPTION

The Facility, located at 3421 Gibson Street in Detroit, Wayne County, Michigan (Detroit Metropolitan Area), was suspected of historical smelting operations and was chosen for investigation by the MDEQ based on its presence on a nationwide list of potential lead smelters. 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). This review, presented in the “*Summary Report for Data Investigation, Detroit Lead Assessment Project*” dated September 2003, concluded that the facility required additional investigation. 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 was located at 3421 Gibson Street in Detroit, Wayne County, Michigan (Detroit Metropolitan Area). The Facility appears to be a fenced vacant lot. Palates of bricks are being stored inside the fence and the areas were likely used as a parking lot. The area five blocks north of the Facility is residential. The areas five blocks south, east, and west of the Facility are both industrial and commercial with residences starting at the five-block fringe.

2.1.2 Site History

Review of the Bresser’s city directory indicated that Wolverine White Metal owned the property from 1946 to 1971. There are no listings for the address from 1971 to the present.

Review of the Sanborn maps for this address showed the following chronology: 1921 Wolverine White Metal Company present with warehouse and solder room; 1986 through 2002 Wolverine White Metal Company no longer present.

The aerial photograph review showed that this address was located in an industrial area. The 1957 photograph showed a stack located across the street from the Facility. The Facility is currently vacant but the immediate surrounding area is still industrialized with residential use within 300 feet (ft.) to the north and west, and up to 1,500 ft. to the east. Structures were not identified from the most recent aerial photograph (2003 GlobeExplorer™) and the Facility exists as a vacant lot situated between Gibson and Lincoln Streets. Review of the drive by information indicates that land use is consistent with the aerial photograph and Sanborn maps.

During the investigation of the fire records, a permit indicating the replacement of a defective stack in the Blk. Factory (Smelting White Metal) was located.

Review of the BEA for nearby Sites “69 through 73 Selden, 141 Selden, and 3752 Cass”, dated December 1996, prepared by Soil and Materials Engineers Inc. for Detroit Symphony Orchestra Hall, indicates that lead was detected on the Sites at levels up to 890 milligrams/kilogram (mg/kg) and exceeded the MDEQ Part 201 Residential Direct Contact Criterion (RDCC) (400 mg/kg)).

2.2 SITE CONCERNS

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

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 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. Due to the development around the Facility, samples could not be collected within the 1,000 foot radius stated in the Quality Assurance Sampling Plan (QASP), so the radius was increased for this Facility.

Prior to sample collection, upwind and downwind sampling areas were established, 1,300 and 1,600 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 figures 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 QASP to guide the sampling activities.

Sampling activities (sample collection, record keeping, and photo documentation) were conducted as described in the Comprehensive Summary. WESTON collected samples from nine City and/or State owned parcels near the Facility. One large parcel and two small parcels were sampled in the downwind direction and six parcels were sampled in the upwind direction. Twelve composite samples were collected from each of the upwind parcels and two of the downwind parcels. Eight samples were collected from the large downwind parcel. A total of 24

composite samples were collected from the area upwind and downwind of the Facility and are shown on the sample sketches included in **Attachment A**.

3.2 FIELD ACTIVITIES

WESTON personnel conducted field sampling on 19 and 20 November 2003. When City and /or State owned parcels were not located on the same street as the mailing address of the nearest building, the number of the building was used in conjunction with the street of the greenway. For example, an apartment located at an apartment complex under the tax address of 2921 Fourth Street with an adjoining grassy area located in front of apartment number 939, would be identified as FRT – 00939. These changes were noted in the logbook and can be viewed in the “Summary Table For Sample Properties” (located in **Attachment B**) and on the sample sketches (located in **Attachment A**).

WESTON collected two composite samples from each of the six upwind City and/or State owned parcels. Also, two composite samples were collected from each of two downwind City and/or State owned parcels and eight composites were collected from the large downwind parcel. Twenty-four soil samples were submitted for analysis. Five samples were designated as a matrix spike/matrix spike duplicates (MS/MSD) in accordance with 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 United States Environmental Protection Agency (U.S. EPA) Method 6010B for lead. Five samples 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. 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. 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	5	120-860
Downwind	12	0	41-240
Total	24	5	41-860

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 found downwind in the northeast direction from

the Facility. Parcels ranging from 650 ft. to 1,350 ft. were chosen southwest in the upwind direction of the Facility. Parcels ranging from 440 ft. to 1,530 ft. were chosen northeast, as close to the mean downwind direction of the Facility due to the presence of residential properties. Elevated lead concentrations were 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 **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 **Figure 2 (Attachment A)**, concentrations of lead greater than the screening level occurs within the primary upwind envelope but not in the downwind.

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 (**Attachment E**) indicated elevated levels of lead occurred in the upwind direction but not in the downwind direction from the Facility. The downwind direction showed consistently low concentrations (all less than the screening level) of lead with no clear change in concentration versus increasing distance from the Facility. This condition would be expected if an aerial release of lead had occurred due to smelting operations. These conclusions were confirmed by a linear regression of the concentrations versus distance data (**Attachment E**).

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

4.8 mg/kg and the upwind logmean is 5.7 mg/kg indicating the concentrations upwind are greater than the downwind concentrations. Comparison of the relative frequency histogram (**Attachment F**) for the downwind and upwind data indicated the upwind concentrations are spread over a greater range (up to 1000 mg/kg) than the downwind. Comparison of the upwind and downwind data sets indicates the lead concentrations are sufficiently different from each other both in mean concentration and distribution to conclude that the data represent separate 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.

Samples collected from downwind of the Facility did not contain concentrations of lead above the screening level. The upwind samples contained elevated lead concentrations, but this condition is not indicative of aerial deposition. The data collected during the Phase I sampling does not support that an identifiable aerial release occurred from the Facility during historic smelting operations.

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SECTION 5

RECOMMENDATIONS

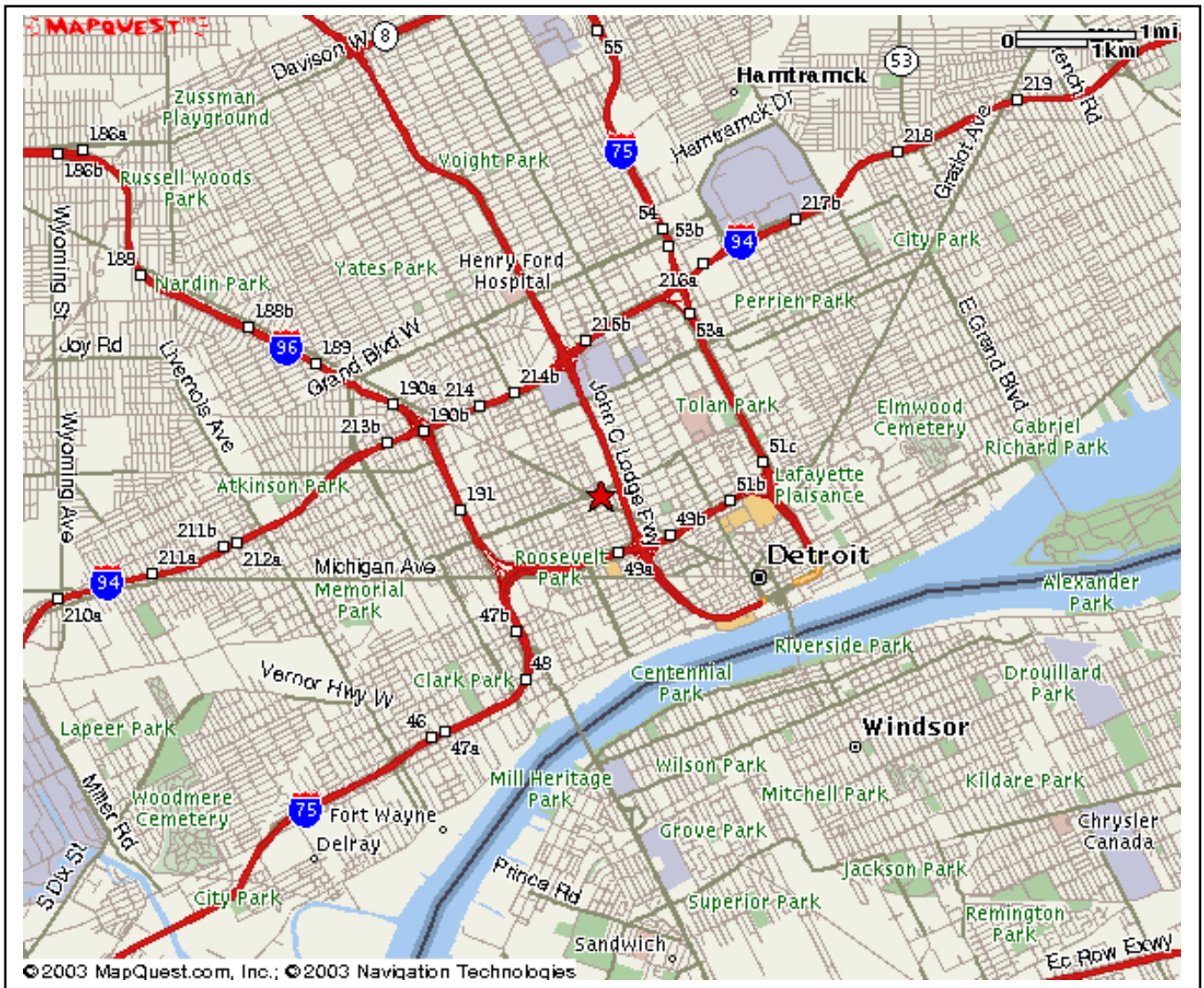
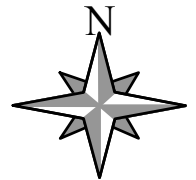
The results of this investigation do not indicate that soils at downwind properties have been impacted by releases of lead from the Facility as a result of aerial deposition related to historic smelting operations. A data gap exists in the downwind deposition area due to the availability of City and/or State owned parcels, therefore it is recommended that additional work be performed at the Facility including:

- Obtain access to the Facility for:
 - Review of existing information related to property transfer (Phase I, Phase II, and development planning);
 - Interview past employees regarding historical Facility operations;
 - Perform a Facility walk through to determine existing conditions;
 - Collect on-site soil samples to determine the presence, concentration, and extent of lead on the Facility (related to the location of former structures, if possible); and
- Collect soil samples from additional downwind properties to confirm and/or determine the extent of downwind contamination.

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ATTACHMENT A
FIGURES

FIGURE 1
Site Location Map
3421 Gibson Street

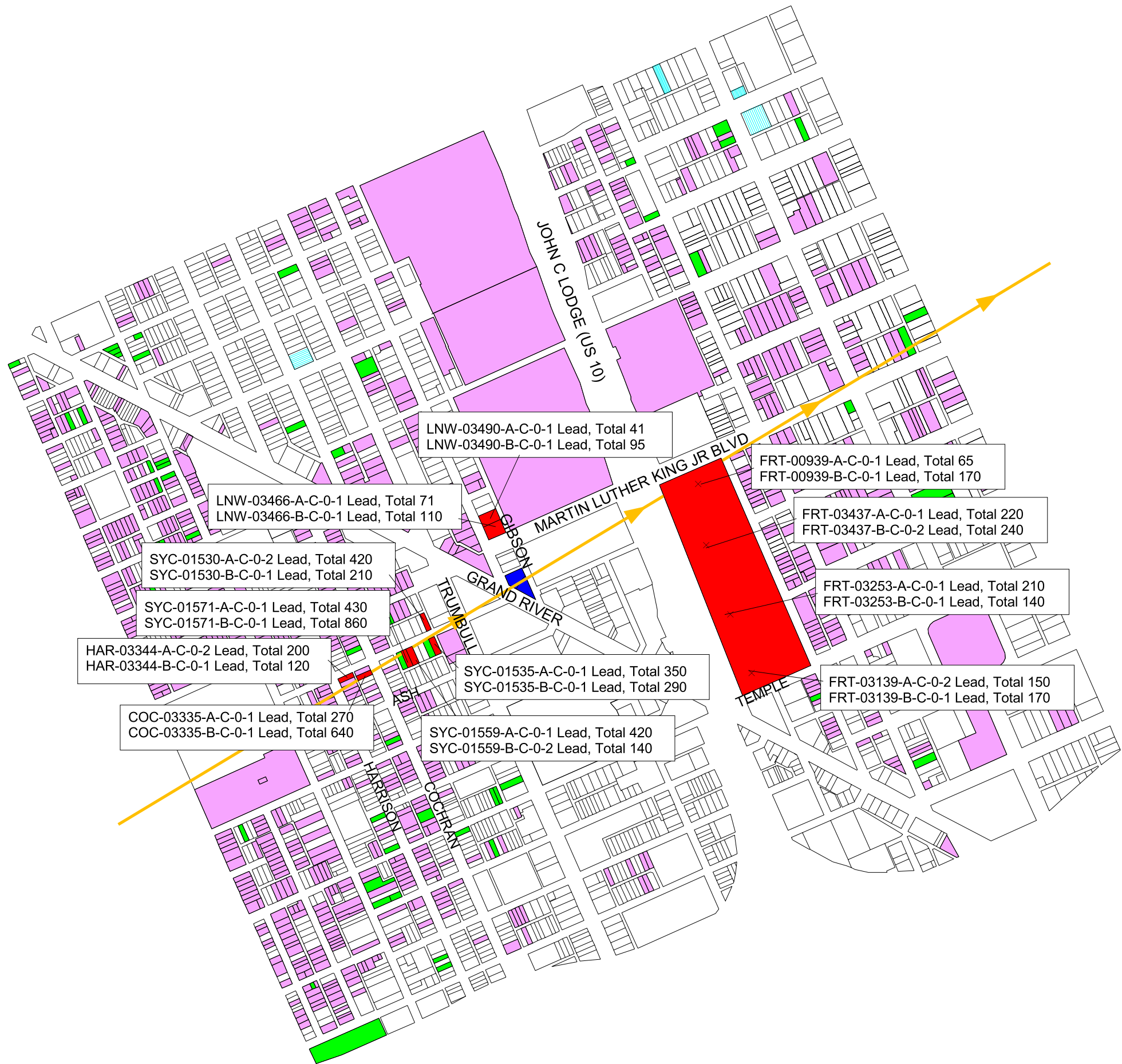


WESTON SOLUTIONS, INC. OF MICHIGAN



300 River Place, Suite 2800
Detroit, Michigan 48207

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

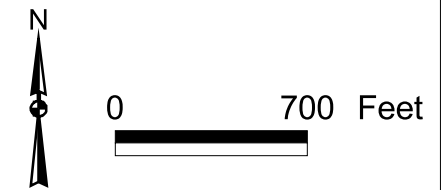


LEGEND:

EXAMPLE:
 MWK-02525-A-C-0-1 Lead, Total 170
 Sample ID Constituent Result

- Parcel Boundaries
- Sampled Properties
- Facility of Concern
- State Owned Property
- City Owned Property
- Wind Direction

Note: All Lead, Total analytical results are shown in mg/kg.



PROJECT NAME:
 Detroit Lead Assessment Project
 Detroit, Wayne County, Michigan

Weston Solutions, Inc. of Michigan
 300 River Place
 Suite 2800
 Detroit, Michigan 48207

DRAWING TITLE:
 Wolverine White Metal
 3421 Gibson Street

WORK ORDER No.: 20083.028.001	PROJECT MANAGER:	
DRAWN BY: JLT	CHECKED BY:	
DRAWING NAME:	DIRECTORY/ FOLDER: JLT\JD\DLAP\apr09_09_03.apr	
CONTRACT No.:	DELIVERY ORDER No.:	
SCALE:	REPORT DATE:	
DATE: January 2004	REVISION No.:	FIGURE No.: 2

CLIENT/SUBJECT GIBSON

W.O. NO. _____

TASK DESCRIPTION SYC-01530 A+B SYC-01535 A+B

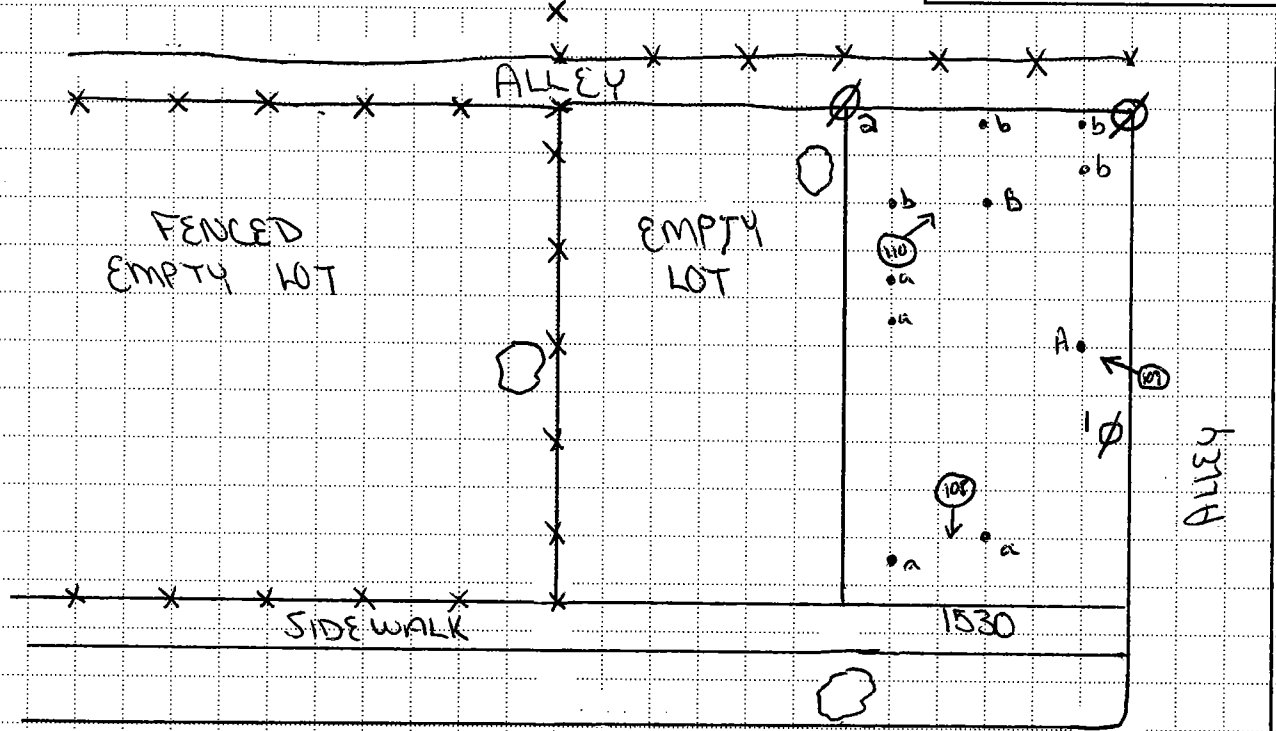
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PREPARED BY A. Freeman DEPT _____ DATE 11-20-03

MATH CHECK BY _____ DEPT _____ DATE _____

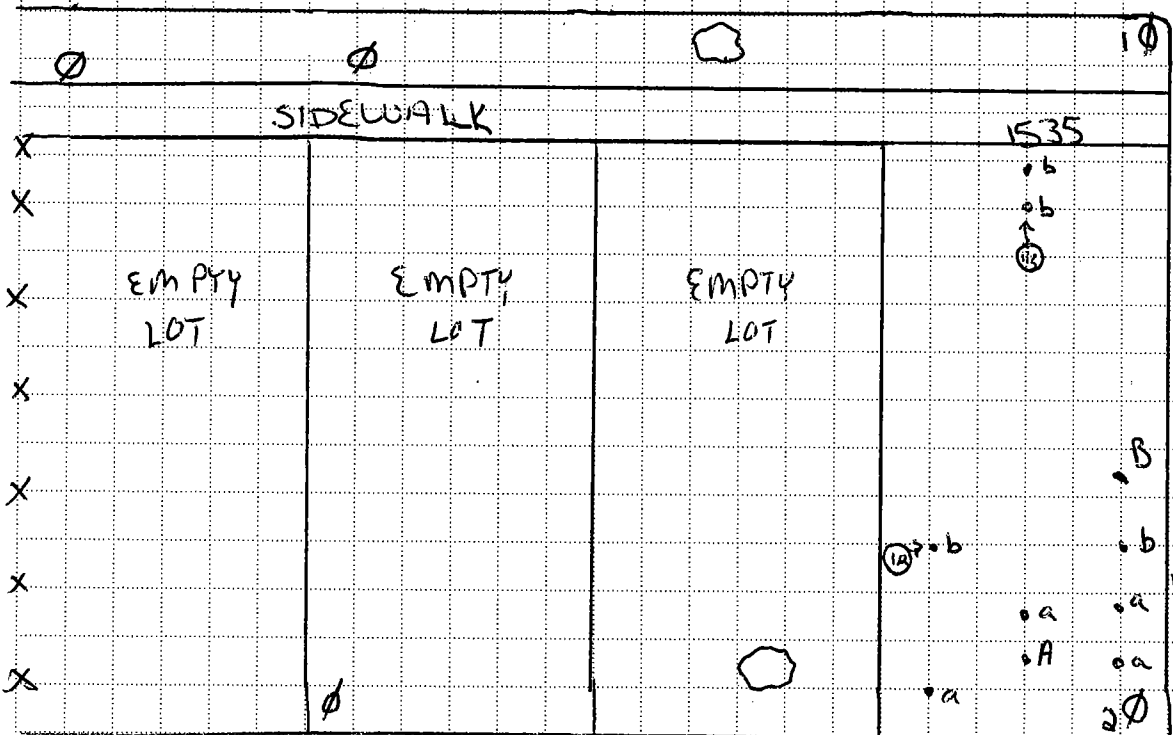
METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
DEPT _____	DATE _____



	1	2
A	24	62
B	58	21

SYCAMORE



	1	2
A	98	31
B	68	54

CLIENT/SUBJECT GIBSON

W.O. NO. _____

TASK DESCRIPTION SYC-01559 A+B SYC01571 A+B

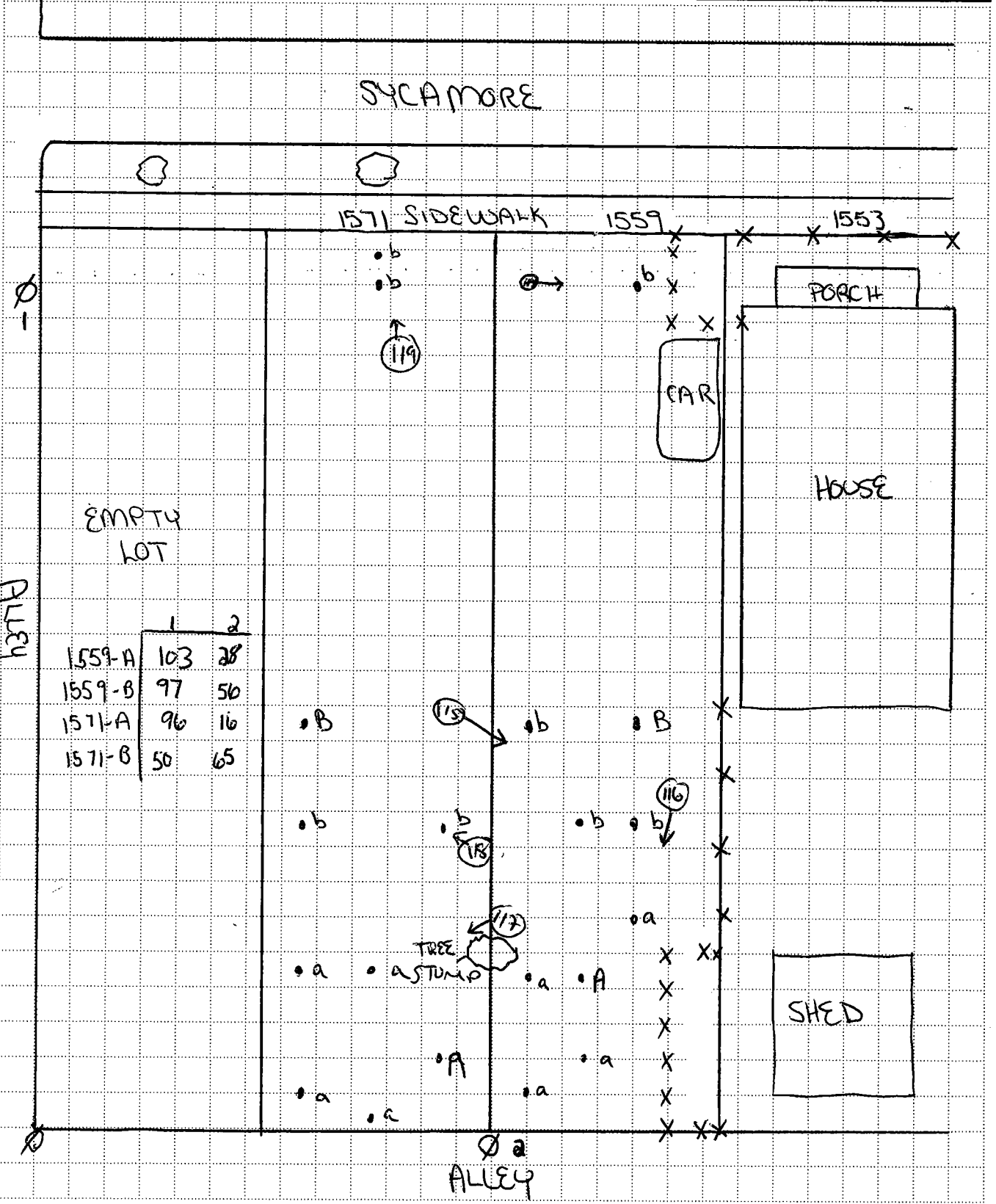
TASK NO. _____

PREPARED BY A Freeman DEPT _____ DATE 11-20-03

APPROVED BY
DEPT _____ DATE _____

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____



CLIENT/SUBJECT GIBSON W.O. NO. _____

TASK DESCRIPTION 000-03335 A+B HAR-03344 A+B TASK NO. _____

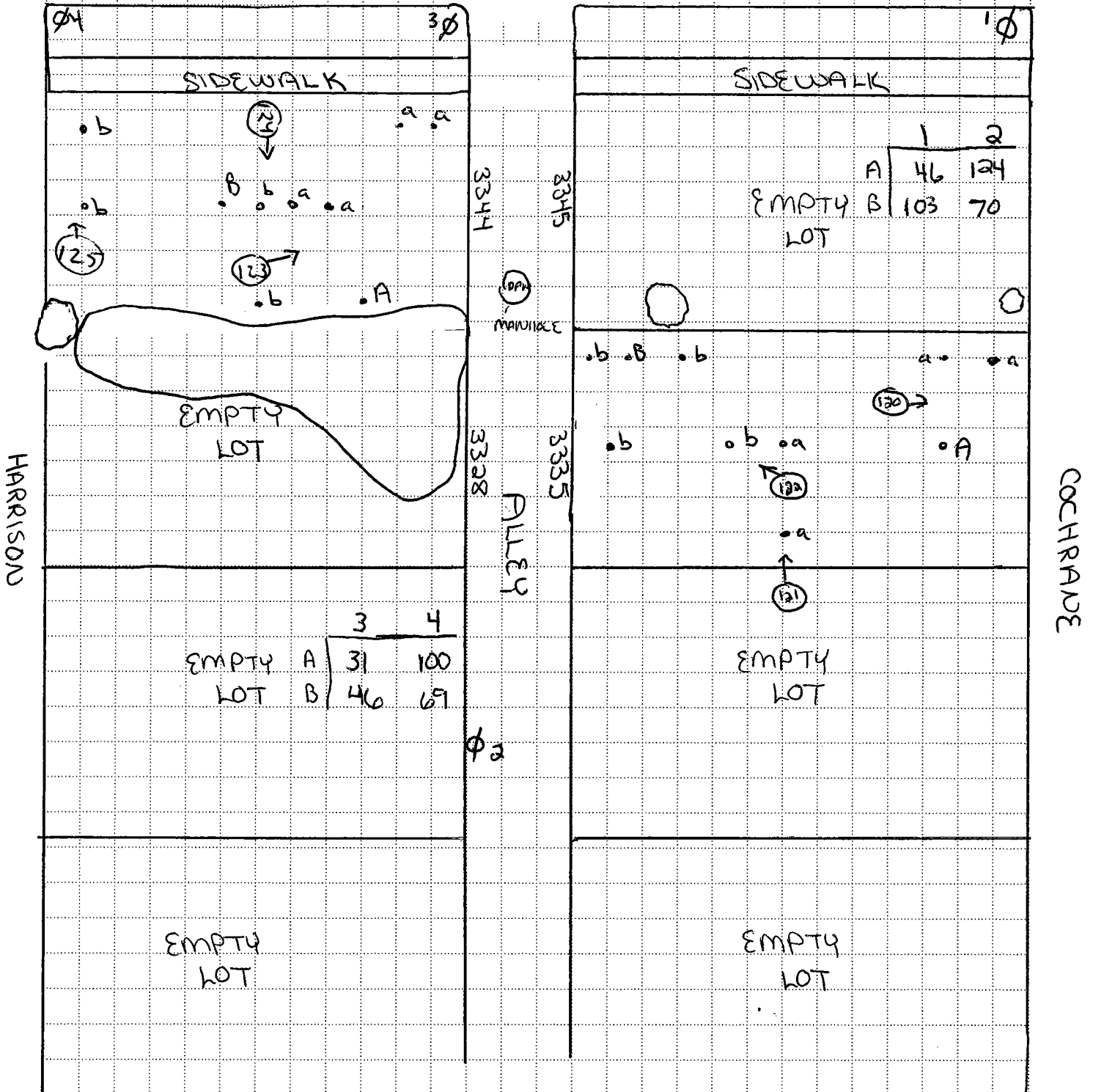
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MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
DEPT _____	DATE _____

SYCAMORE



CLIENT/SUBJECT Gibson W.O. NO. _____

TASK DESCRIPTION FRT - 00939 A+B TASK NO. _____

PREPARED BY A. Freeman DEPT _____ DATE 11-19-03

MATH CHECK BY _____ DEPT _____ DATE _____

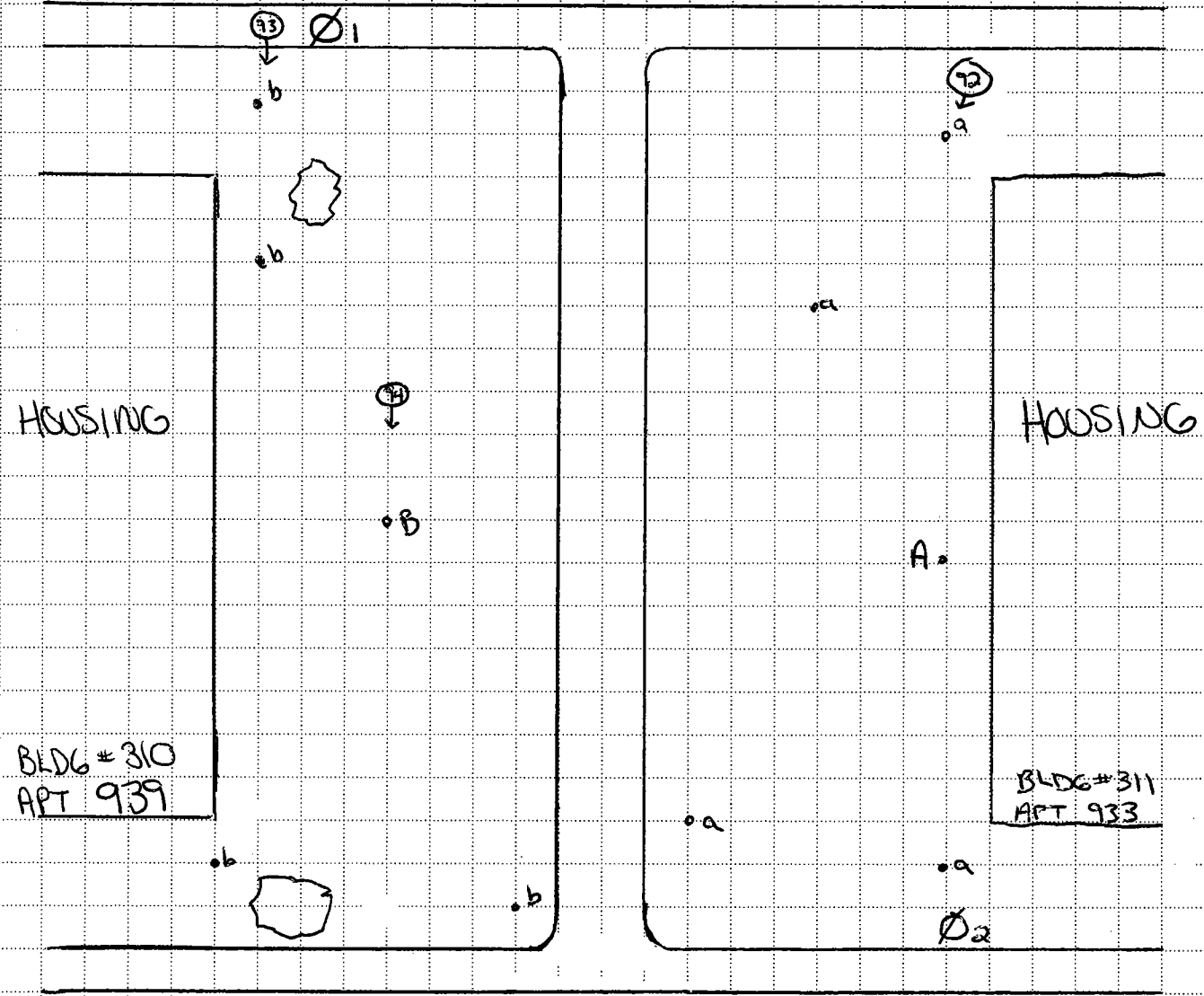
METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	

DEPT _____	DATE _____

↑ Dewey Center For Urban Education ↑

MARTIN LUTHER KING JR



ACCESS ROAD

		2
A	60	28
B	50	44

CLIENT/SUBJECT GIBSON W.O. NO. _____

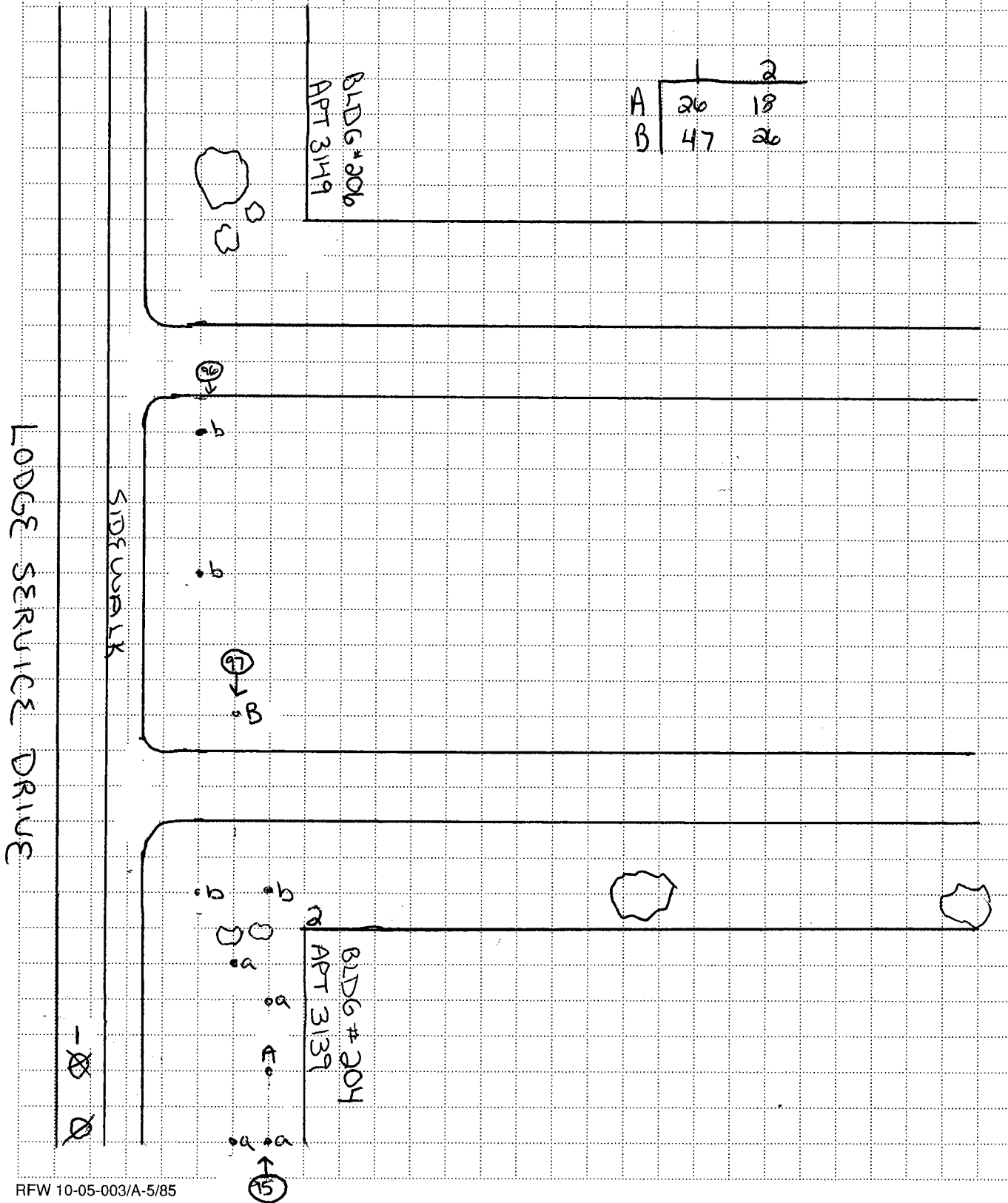
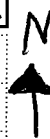
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PREPARED BY A. Freeman DEPT _____ DATE 11-19-03

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
DEPT _____	DATE _____



CLIENT/SUBJECT GIBSON W.O. NO. _____

TASK DESCRIPTION FRT-03253 A+B TASK NO. _____

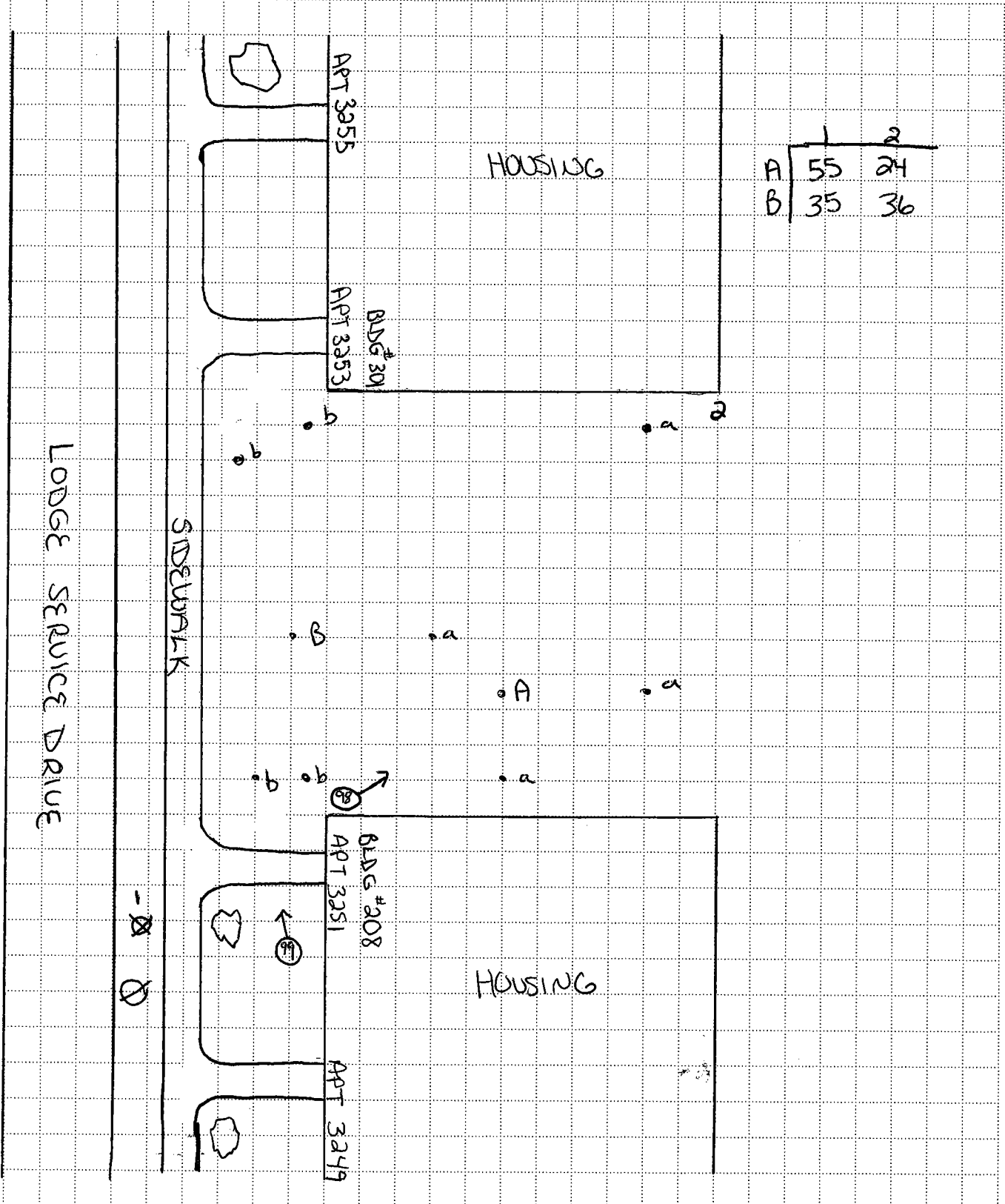
PREPARED BY A. Freeman DEPT _____ DATE 11-19-03

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	

DEPT _____	DATE _____



CLIENT/SUBJECT GIBSON W.O. NO. _____

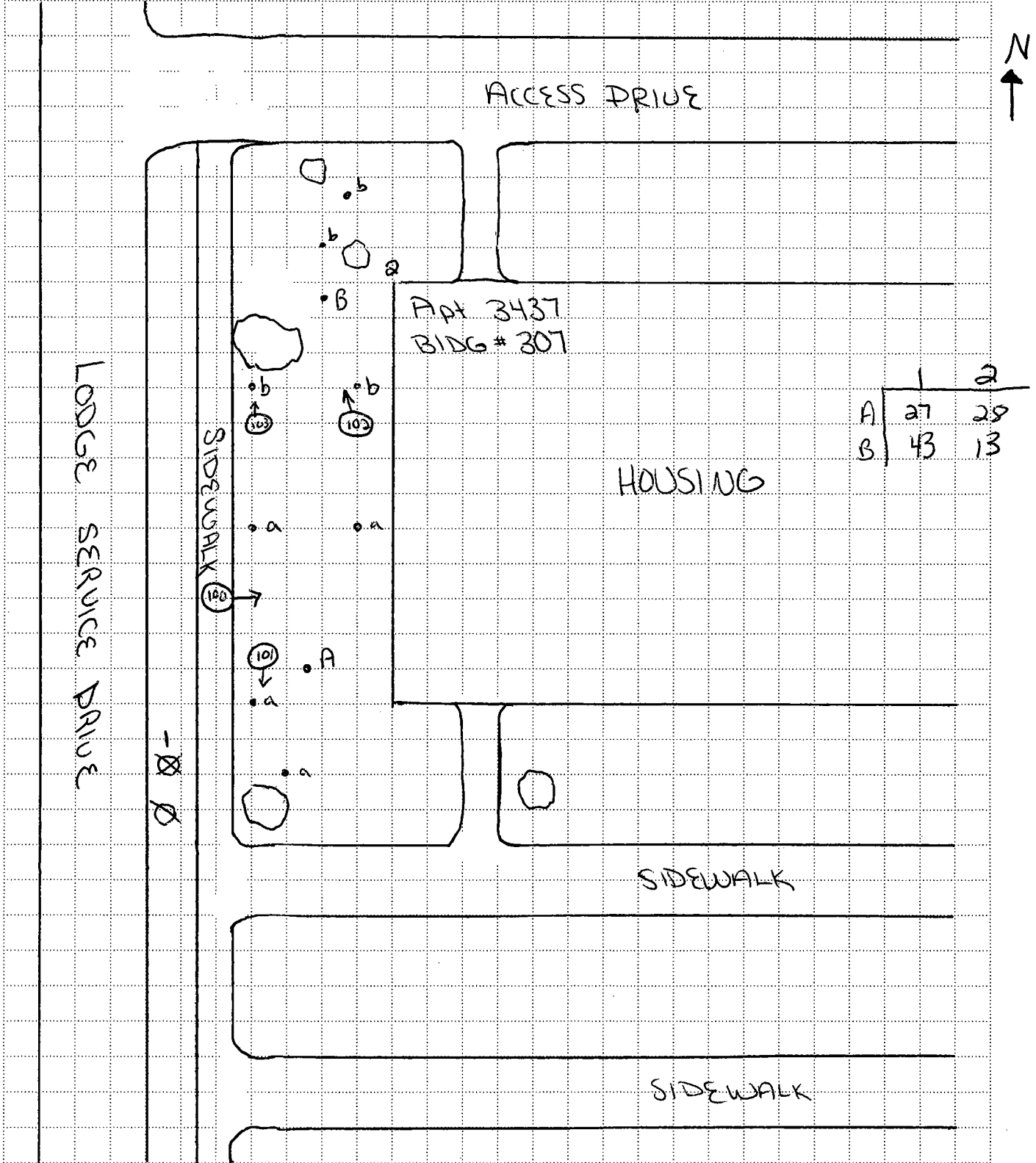
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PREPARED BY A Freeman DEPT _____ DATE 11-19-03

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
_____	_____
DEPT _____	DATE _____



CLIENT/SUBJECT GIBSON LOW W.O. NO. _____

TASK DESCRIPTION LOW 03490 AB HD-03466 A+B TASK NO. _____

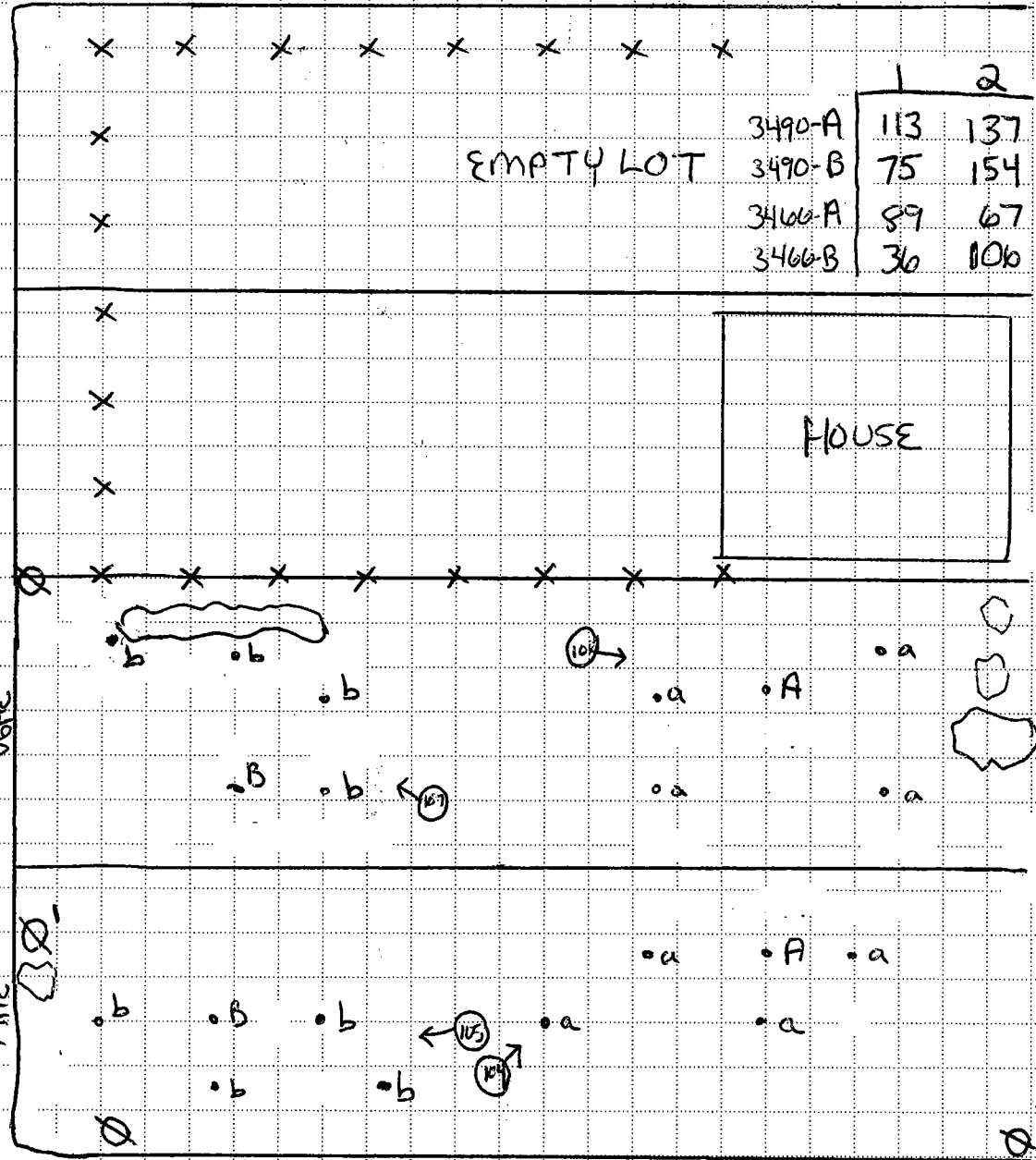
PREPARED BY A. Freeman DEPT _____ DATE 11-20-03

MATH CHECK BY _____ DEPT _____ DATE _____

METHOD REV. BY _____ DEPT _____ DATE _____

APPROVED BY	
DEPT _____	DATE _____

BRAWARD



	1	2
3490-A	113	137
3490-B	75	154
3466-A	89	67
3466-B	36	106

LINCOLN

3490

3466

MARTIN LUTHER KING JR BLVD

ATTACHMENT B

TABLES

TABLE 1
SUMMARY OF SAMPLED PROPERTIES

<i>Upwind Properties</i>		
Address	Description	Sample Identification
1530 Sycamore	Vacant property located on the north side of Sycamore St and directly west of an alley.	SYC-01530-A-C-0-2
		SYC-01530-B-C-0-1
1535 Sycamore	Vacant property located on the south side of Sycamore St and directly west of an alley.	SYC-01535-A-C-0-1
		SYC-01535-B-C-0-1
1559 Sycamore	Vacant property located on the south side of Sycamore and west of a house at 1553 Sycamore.	SYC-01559-A-C-0-1
		SYC-01559-B-C-0-2
1571 Sycamore	Vacant property located on the south side of Sycamore St and is the second vacant lot to the west of the house at 1553 Sycamore.	SYC-01571-A-C-0-1
		SYC-01571-B-C-0-1
3335 Cochrane	Vacant property located on the west side of Cochrane and two lots to the south of Sycamore St.	COC-03335-A-C-0-1
		COC-03335-B-C-0-1
3344 Harrison	Vacant property located to the east of Harrison at the corner of Harrison and Sycamore St.	HAR-03344-A-C-0-2
		HAR-03344-B-C-0-1
<i>Downwind Properties</i>		
Address	Description	Sample Identification
2921 Fourth St*	Greenway located between Apt 939 & 933 of the Jeffries Housing Complex. Directly to the south of the Dewy Center For Urban Education and Martin Luther King Jr Blvd.	FRT-00939-A-C-0-1
		FRT-00939-B-C-0-1
2921 Fourth St*	Greenway located on the east side of the Lodge Service Dr and to the west of Apt 3139 of the Jeffries Housing.	FRT-03139-A-C-0-2
		FRT-03139-B-C-0-1
2921 Fourth St*	Greenway located between Apt 3253 & 3251 of Jeffries Housing and east of the Lodge Service Dr.	FRT-03253-A-C-0-1
		FRT-03253-B-C-0-1
2921 Fourth St*	Greenway located to the west of Apt 3437 and to the east of the Lodge Service Dr.	FRT-03437-A-C-0-1
		FRT-03437-B-C-0-2
3466 Lincoln West	Vacant property on the east side of Lincoln St and the second vacant lot to the south of the house.	LNW-03466-A-C-0-1
		LNW-03466-B-C-0-1
3490 Lincoln West	Vacant property on the east side of Lincoln St and directly south of a house.	LNW-03490-A-C-0-1
		LNW-03490-B-C-0-1

*Notes:

Sampled properties were identified by the apartment number closest to the greenway sampled. All were a part of the Jeffries Housing Complex at 2921 Fourth St.

TABLE 2
ANALYTICAL RESULTS

Sample Address	Sample ID	Concentration of Lead (mg/Kg)
Upwind		
1530 Sycamore	SYC-01530-A-C-0-2	420
1530 Sycamore	SYC-01530-B-C-0-1	210
1535 Sycamore	SYC-01535-A-C-0-1	350
1535 Sycamore	SYC-01535-B-C-0-1	290
1559 Sycamore	SYC-01559-A-C-0-1	420
1559 Sycamore	SYC-01559-B-C-0-2	140
1571 Sycamore	SYC-01571-A-C-0-1	430
1571 Sycamore	SYC-01571-B-C-0-1	860
3335 Cochrane	COC-03335-A-C-0-1	270
3335 Cochrane	COC-03335-B-C-0-1	640
3344 Harrison	HAR-03344-A-C-0-2	200
3344 Harrison	HAR-03344-B-C-0-1	120
Downwind		
2921 Fourth St	FRT-00939-A-C-0-1	65
2921 Fourth St	FRT-00939-B-C-0-1	170
2921 Fourth St	FRT-03139-A-C-0-2	150
2921 Fourth St	FRT-03139-B-C-0-1	170
2921 Fourth St	FRT-03253-A-C-0-1	210
2921 Fourth St	FRT-03253-B-C-0-1	140
2921 Fourth St	FRT-03437-A-C-0-1	220
2921 Fourth St	FRT-03437-B-C-0-2	240
3466 Lincoln W	LNW-03466-A-C-0-1	71
3466 Lincoln W	LNW-03466-B-C-0-1	110
3490 Lincoln W	LNW-03490-A-C-0-1	41
3490 Lincoln W	LNW-03490-B-C-0-1	95

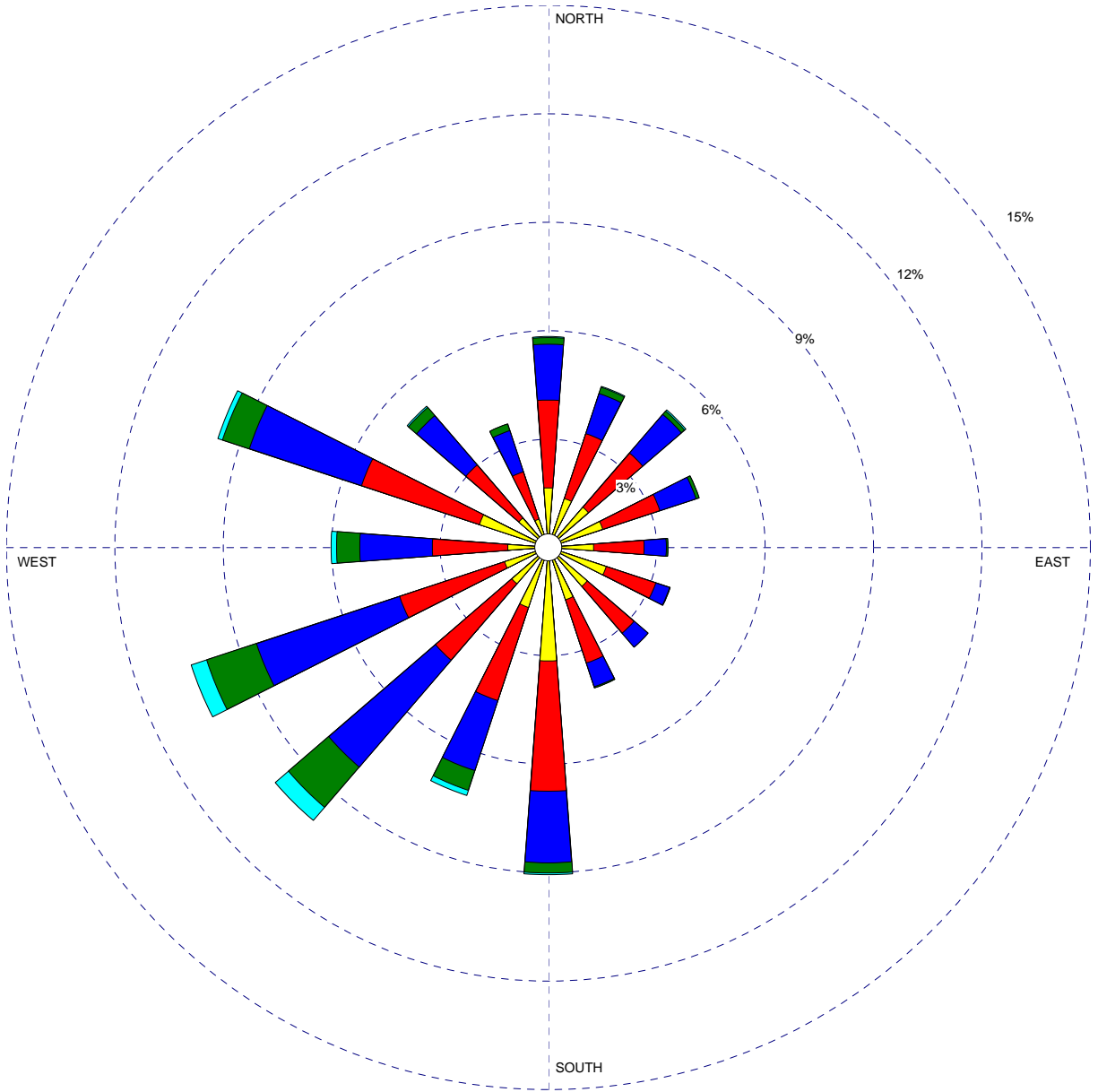
*Notes:

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

ATTACHMENT C
WIND ROSE PLOT

WIND ROSE PLOT

STATION #94847 - DETROIT/METROPOLITAN ARPT, MI



<p>Wind Speed (m/s)</p>		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 Wolverine White Metal – 3421 Gibson

1530 Sycamore – Vacant property located on the north side of Sycamore St and directly west of an alley.

Looking south and northwest, respectively, along the vacant property at 5 total discrete sample A locations.



Looking northeast along the vacant property at 5 discrete sample B locations.



Sycamore (cont'd)

1535 Sycamore – Vacant property located on the south side of Sycamore St and directly west of an alley.

Looking southwest along the vacant property at 5 discrete sample A locations.



Looking east and north, respectively, along the vacant property at 5 total discrete sample B locations.



Sycamore (cont'd)

1559 Sycamore – Vacant property located on the south side of Sycamore St and west of a house at 1553 Sycamore.

Looking southwest along the vacant property at 5 discrete sample A locations.



Looking east and southeast, respectively, along the vacant property at 5 total discrete sample B locations.



Sycamore (cont'd)

1571 Sycamore – Vacant property located on the south side of Sycamore St and it is the second vacant lot on the west of the house at 1553 Sycamore.

Looking southwest along the vacant property at 5 discrete sample A locations.



Looking northwest and north, respectively, along the vacant property at 5 total discrete sample B locations.



Sycamore (cont'd)

3335 Cochrane – Vacant property located on the west side of Cochrane and it is the second lot to the south of Sycamore St.

Looking east and north, respectively, along the vacant property at 5 total discrete sample A locations.



Looking northwest along the vacant property at 5 discrete sample B locations.



Sycamore (cont'd)

3344 Harrison – Vacant property located to the east of Harrison St and at the corner of Harrison and Sycamore St.

Looking northeast along the vacant property at 5 discrete sample A locations.



Looking south and north, respectively, along the vacant property at 5 total discrete sample B locations.



Sycamore (cont'd)

939 Fourth St – Greenway located between Apartment 939 and 933 of the Jeffries Housing Complex. It is directly to the south of the Dewy Center For Urban Education and also south of Martin Luther King Jr Blvd.

Looking southwest along the greenway at 5 discrete sample A locations.



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



Sycamore (cont'd)

3139 Fourth St – Greenway located on the east side of the Lodge Service Dr and to the west of Apt 3139 of the Jeffries Housing Complex.

Looking north along the greenway at 5 discrete sample A locations. Sample B locations are further to the north in this photo.



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



Sycamore (cont'd)

3253 Fourth St – Greenway located between Apt 3253 and 3251 of the Jeffries Housing Complex and east of the Lodge Service Dr.

Looking northeast along the greenway at 5 discrete sample A locations.



Looking north along the greenway at 5 discrete sample B locations.



Sycamore (cont'd)

3437 Fourth St – Greenway located to the west of Apt 3437 and to the east of the Lodge Service Dr.

Looking east and north, respectively, along the greenway at 5 total discrete sample A locations.



Looking northwest and north, respectively, along the greenway at 5 discrete sample B locations.



Sycamore (cont'd)

3466 Lincoln West – Vacant property on the east side of Lincoln West St and it is the second vacant lot to the south of the house.

Looking northeast along the vacant property at 5 discrete sample A locations.



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



Sycamore (cont'd)

3490 Lincoln West – Vacant property located on the east side of Lincoln St and directly south of a house.

Looking to the northeast along the vacant property at 5 discrete sample A locations.

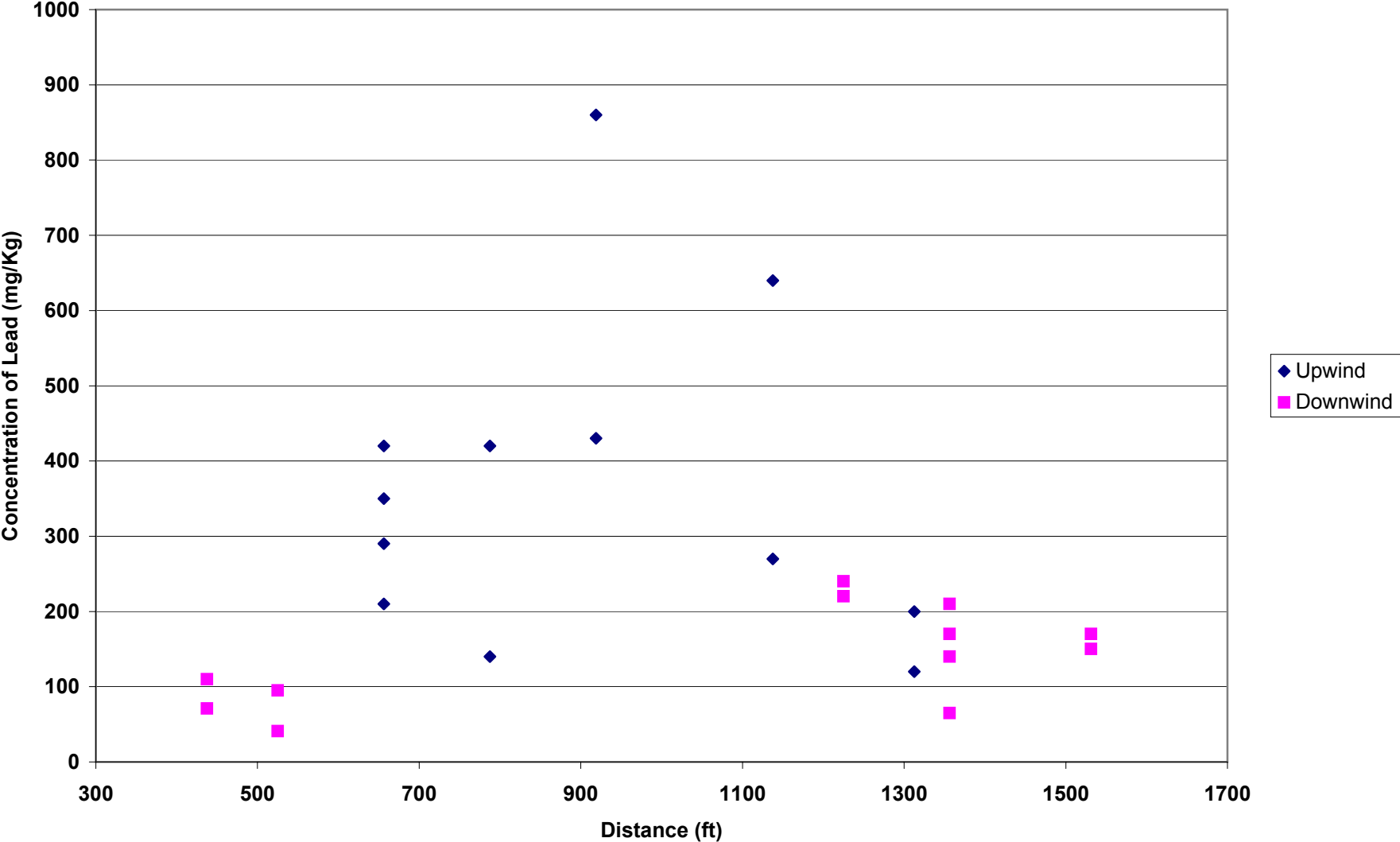


Looking to the northwest along the vacant property at 5 discrete sample B locations.



ATTACHMENT E
CONCENTRATION GRAPH

3421 Gibson



Wolverine

*** Linear Model ***

Call: lm(formula = Lead.ppm ~ Location + Distance + Distance:Location, data =
Wolverine, na.action = na.exclude)

Residuals:

Min	1Q	Median	3Q	Max
-231.2	-80.09	-11.91	45.67	498

Coefficients:

	Value	Std. Error	t value	Pr(> t)
(Intercept)	426.3381	182.1728	2.3403	0.0297
Location	-381.1810	222.1705	-1.7157	0.1017
Distance	-0.0700	0.1931	-0.3628	0.7206
Distance:Location	0.1587	0.2223	0.7138	0.4836

Residual standard error: 163.3 on 20 degrees of freedom

Multiple R-Squared: 0.3731

F-statistic: 3.968 on 3 and 20 degrees of freedom, the p-value is 0.0227

Analysis of Variance Table

Response: Lead.ppm

Terms added sequentially (first to last)

	Df	Sum of Sq	Mean Sq	F Value	Pr(F)
Location	1	296592.7	296592.7	11.12544	0.0032964
Distance	1	7174.4	7174.4	0.26912	0.6096179
Distance:Location	1	13583.3	13583.3	0.50952	0.4835943
Residuals	20	533179.0	26659.0		

*** Linear Model ***

Call: lm(formula = LogLead ~ Distance + Location + Location:Distance, data =
Wolverine, na.action = na.exclude)

Residuals:

Min	1Q	Median	3Q	Max
-0.8657	-0.2056	-0.01748	0.3125	1.022

Coefficients:

	Value	Std. Error	t value	Pr(> t)
(Intercept)	6.1784	0.5921	10.4348	0.0000
Distance	-0.0005	0.0006	-0.7689	0.4509
Location	-2.1838	0.7221	-3.0242	0.0067
Location:Distance	0.0013	0.0007	1.7347	0.0982

Residual standard error: 0.5307 on 20 degrees of freedom

Multiple R-Squared: 0.5367

F-statistic: 7.723 on 3 and 20 degrees of freedom, the p-value is 0.001282

Analysis of Variance Table

Response: LogLead

Terms added sequentially (first to last)

	Df	Sum of Sq	Mean Sq	F Value	Pr(F)
Distance	1	0.070205	0.070205	0.24929	0.6230224
Location	1	5.607193	5.607193	19.91058	0.0002390
Location:Distance	1	0.847427	0.847427	3.00913	0.0981832
Residuals	20	5.632375	0.281619		

ATTACHMENT F
STATISTICAL DISTRIBUTION

WOLVERINE WHITE METAL STATISTICAL DISTRIBUTION

