PHASE I SUMMARY REPORT
FOR
DETROIT LEAD ASSESSMENT PROJECT
ACME METAL COMPANY – 1436 HOLBROOK STREET
DETROIT, WAYNE COUNTY, MICHIGAN

Prepared for:

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
REMEDIATION AND REDEVELOPMENT DIVISION
Detroit Field Office – Cadillac Place
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Prepared by:

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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 Acme Metal Company (the Facility), 1436 Holbrook 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 10 and 11 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. However since data gaps exist relative to downwind concentrations and lead concentrations exceeding the screening level were detected downwind 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 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 Acme Metal Company (the Facility) – 1436 Holbrook 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 Acme Metal Company 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 1436 Holbrook 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 appears to be located in a grass covered open area west of the American Axle parking lot. The property is enclosed with a black iron fence. The area five blocks north and east of the Facility is both industrial and commercial with residential use to the northeast. The area five blocks south of the Facility is the American Axle Plant. The area five blocks west of the Facility is residential.

2.1.2 Site History

A review of the Bresser's directory indicated that Holbrook Rubber Company and Reliable Metal Company co-owned the property from 1946 to 1951. The Acme Metal Company owned the property from 1960 to 1971. There are no listings for the address from 1981 to the present.

Review of the Sanborn maps for this address show the following chronology: 1951 metal junk yard present with smelting furnace, 1968 metal junk yard present, 1971 metal junk yard present, and 1997 to 2002 vacant lot.

The aerial photograph review indicated this area was industrialized from 1957 to 2004. Structures identified from the most recent aerial photograph (2003 GlobeXplorer™) include a paved parking area in the southeast corner with the remaining property maintained as an empty lot. The property is currently vacant with light residential use within 600 feet (ft.) to the west and heavy residential use approximately 600 ft. to the northeast. 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, two permits were located for repairs caused by fire damage in the Brick and Metal Storage and Smelting area along with Scrap Metal Warehouse and Junkyard.

Review of the BEA for the properties located north of the address indicates that lead was detected that exceeded the MDEQ Part 201 Residential Direct Contact Criteria (RDCC) (400 milligrams/kilogram [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 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. 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, 1,500 and 4,400 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. Because 12 City and/or State owned parcels were not available in the sample radius for the Facility, WESTON collected samples from six City and/or State owned parcels in the upwind direction and six greenways in the downwind direction near the Facility. Two composite samples were collected from each of the six downwind greenways and each of the six upwind parcels. 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 10 and 11 November 2003. Since City and/or State owned parcels were not available in the downwind direction, WESTON selected greenways, prior to the sampling event, and submitted them to the City of Hamtramck to obtain their approval and access. When greenways 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, a building located on 2620 Holbrook Street with an adjacent greenway located on Brombach Street, would be identified as BRO – 02620. These changes were noted in the logbook and can be viewed on the "Summary Table For Sample Properties" (**Attachment B**) and the sample sketches (**Attachment A**).

WESTON collected samples from six upwind City and/or State owned parcels and six downwind greenways. Two composite samples were collected from each of the 12 locations. Twenty four soil samples submitted for analysis. Five samples were designated as an 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 United States Environmental Protection Agency (U.S. EPA) Method 6010B for lead. Two 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. Five samples collected from properties downwind 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	2	59-470
Downwind	12	5	160-680
Total	24	7	59-680

4.2 ATMOSPHERIC CONDITIONS

During Phase I soil sampling activities, upwind and downwind parcels were chosen 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 soil resulting from aerial deposition would be detected downwind in the northeast direction from the Facility. Parcels ranging from 900 ft. to 1,500 ft. were selected southwest in the upwind direction of the Facility. Parcels ranging from 2,300 ft. to 4,400 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 and downwind direction of the Facility. 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 downwind and upwind envelopes.

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 low concentrations of lead in the upwind direction with the exception of two samples both located on a vacant lot. Elevated levels of lead were detected in the downwind direction but do not show any clear indication of a decreasing concentration. 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**). A review of the sketches and photographs showing sampling locations did not reveal any industry in the area which would explain the elevated presence of lead, but did indicate the sampling locations are close to buildings, curbs, and fire hydrants all of which could have been painted with lead paint in the past. (**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 log mean is 5.1 mg/kg and the upwind logmean is 5.0 mg/kg indicating the concentrations downwind and upwind are similar. Comparison of the relative frequency histogram (**Attachment F**) for the downwind and upwind data indicates a higher frequency of occurrence for both data sets between 0 and 200 mg/kg and a greatly decreasing frequency above 300 mg/kg also indicating the data are similar. Comparison of the upwind and downwind data sets indicates the lead concentrations are sufficiently like to each other both in mean concentration and distribution to conclude that the data represent the same 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 aerial deposition 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 upwind of the Facility did contain concentrations of lead above the screening level but do not appear to be consistent with other lower levels found at other upwind locations. Additionally, the downwind samples do not show a clear trend of decreasing concentration with increasing distance with levels of lead starting under 200 mg/kg and rising to 680 µg/kg approximately 3,800 ft. from 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 at the Facility. However, the lack of available City and/or State owned properties close to the Facility leaves a data gap in the downwind direction.

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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. However since data gaps exist relative to downwind concentrations and lead concentrations exceeding the screening level were detected downwind 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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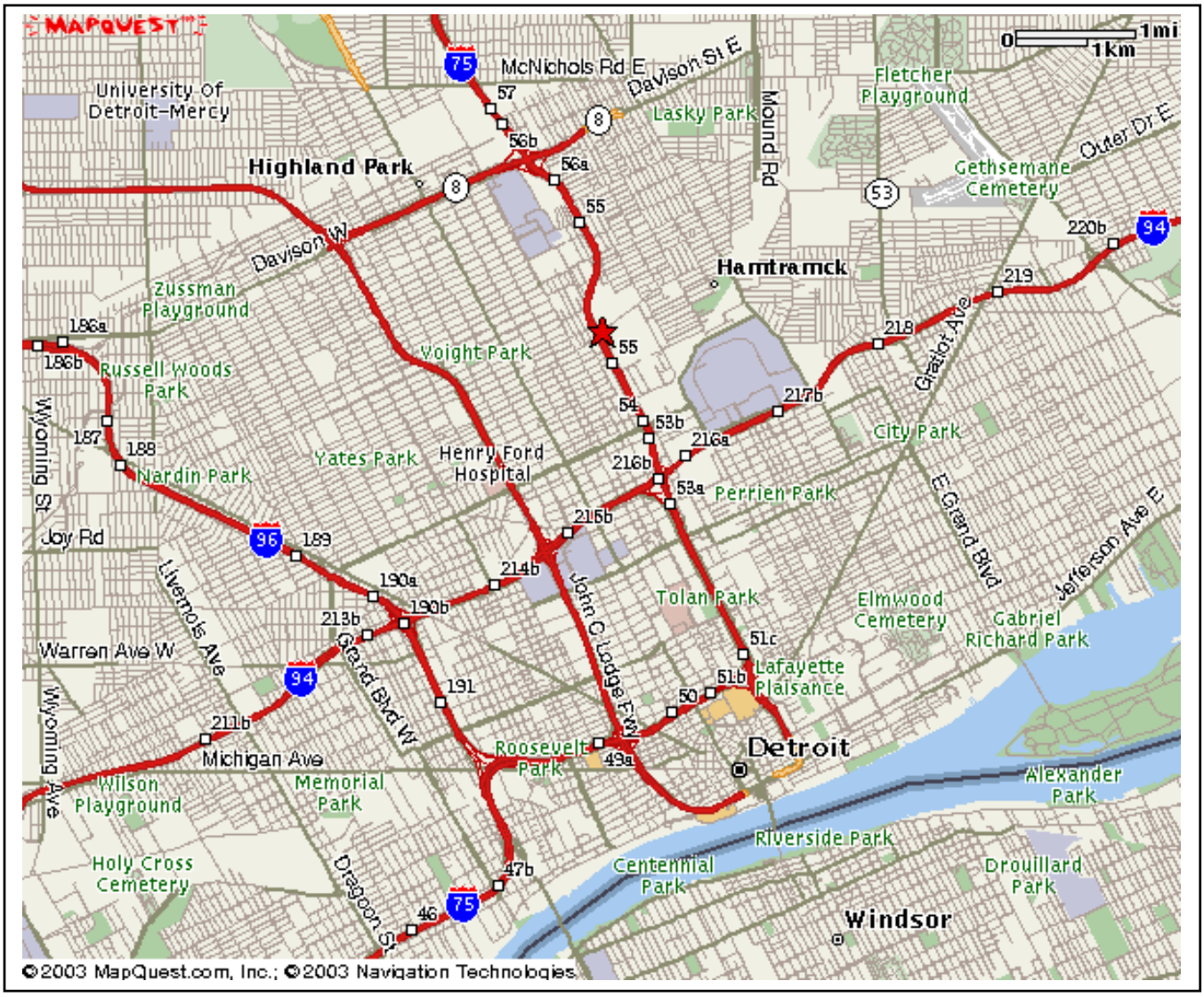
ATTACHMENT A

FIGURES

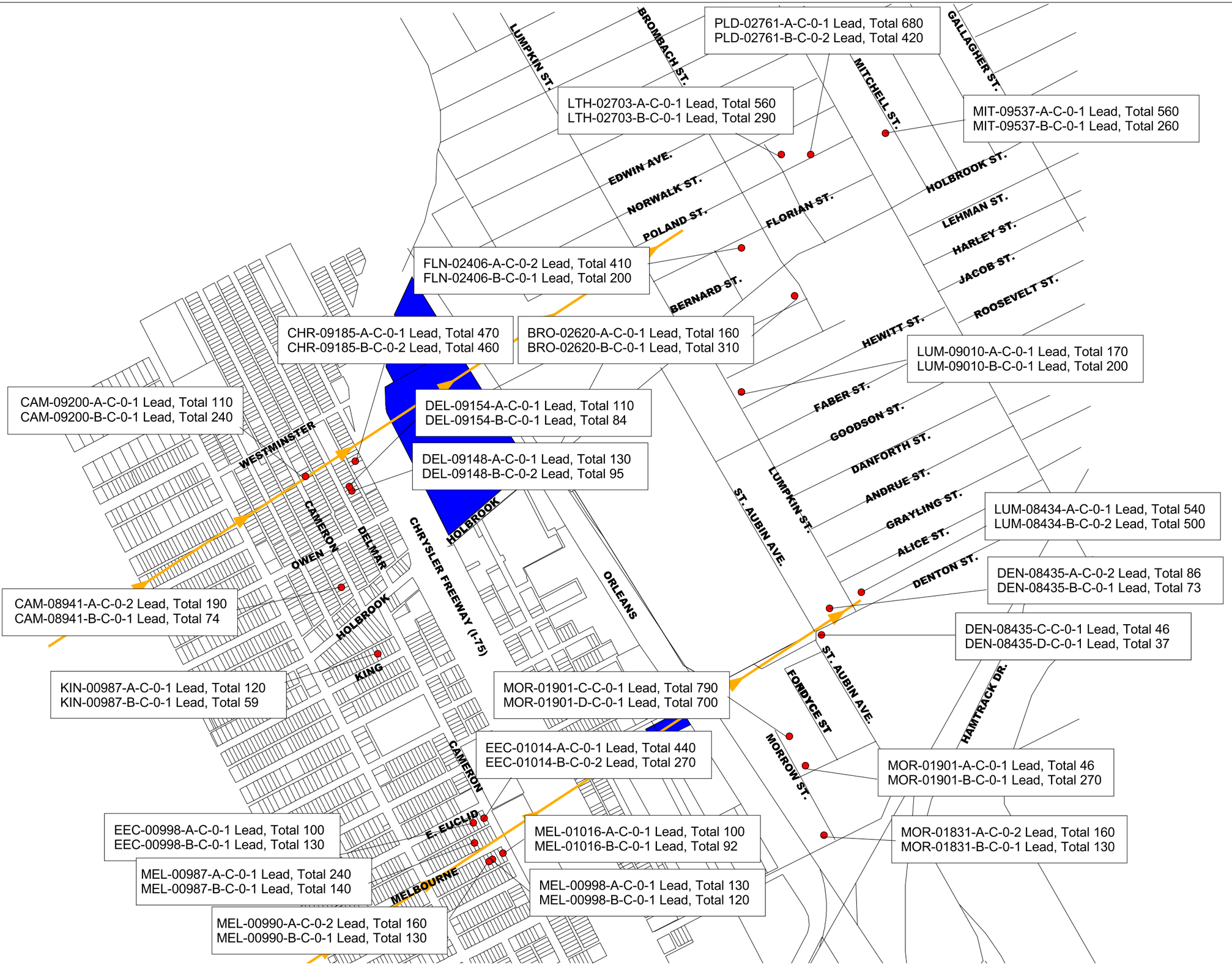
FIGURE 1
Site Location Map
1436 Holbrook Street



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

- Sampling Locations
- Wind Direction
- Parcel Boundaries and Roads (Approximate)
- Facility of Concern

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

N

0 700 Feet

WESTON SOLUTIONS SM

PROJECT NAME:

Detroit Lead Assessment Project
Detroit, Wayne County, Michigan

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

DRAWING TITLE:

Analytical Results Map

Acme Metal Co
1436 Holbrook Street
Great Lakes Smetling
1640 E. Euclid Street

WORK ORDER No.: 20083.028.001	PROJECT MANAGER:	
DRAWN BY: JLT	CHECKED BY:	
DRAWING NAME:	DIRECTORY/ FOLDER: JTD:\DLAP\apr\09_09_03.apr	
CONTRACT No.:	DELIVERY ORDER No.:	
SCALE:	REPORT DATE:	
DATE: January 2004	REVISION No.:	FIGURE No.: 2

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT Holbrook W.O. NO. ____

TASK DESCRIPTION 2620 BROMBACH A+B TASK NO. ____

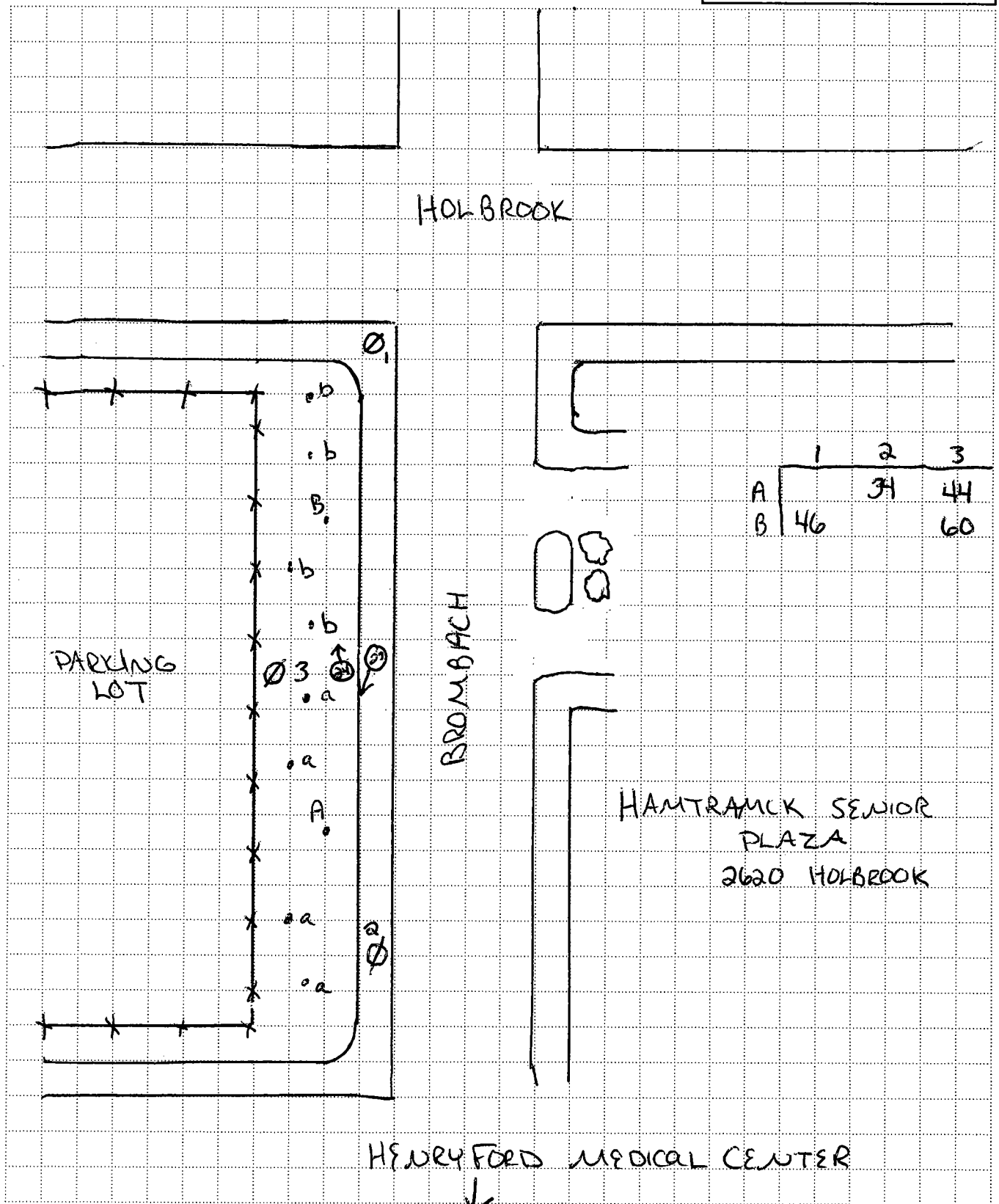
PREPARED BY A. Freeman DEPT ____ DATE 11-11-03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



RFW 10-05-003/A-5/85

WESTON MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT HOLBROOK W.O. NO. ____

TASK DESCRIPTION LUM-09010-A×B TASK NO. ____

PREPARED BY R.Nemeroff DEPT ____ DATE 11/11/03

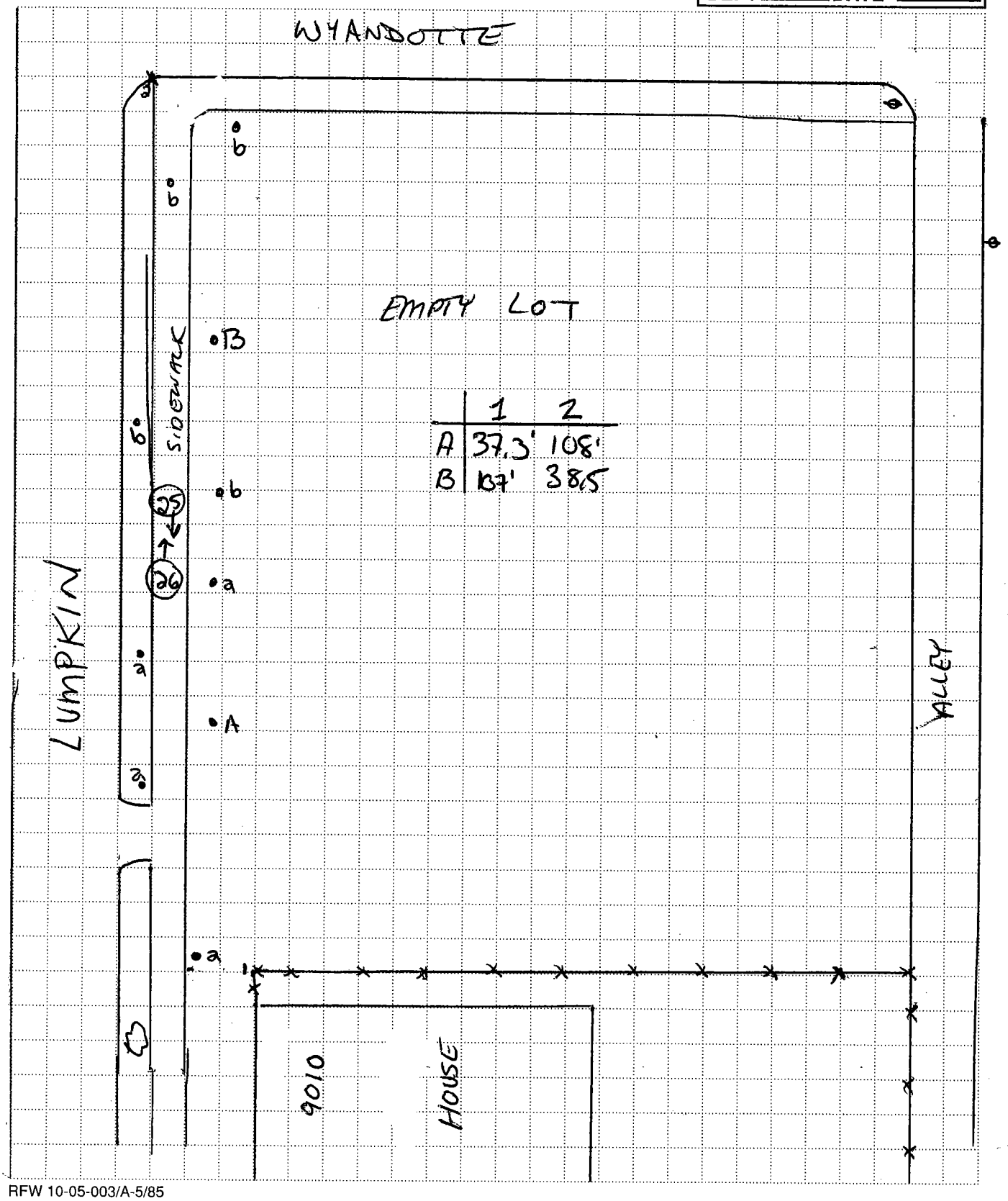
MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY ____

DEPT ____ DATE ____

9N



	1	2
A	37.3'	108'
B	137'	38.5

RFW 10-05-003/A-5/85

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT HOLBROOK W.O. NO. ____

TASK DESCRIPTION 2406 FLORIAN (FLN) - A+B TASK NO. ____

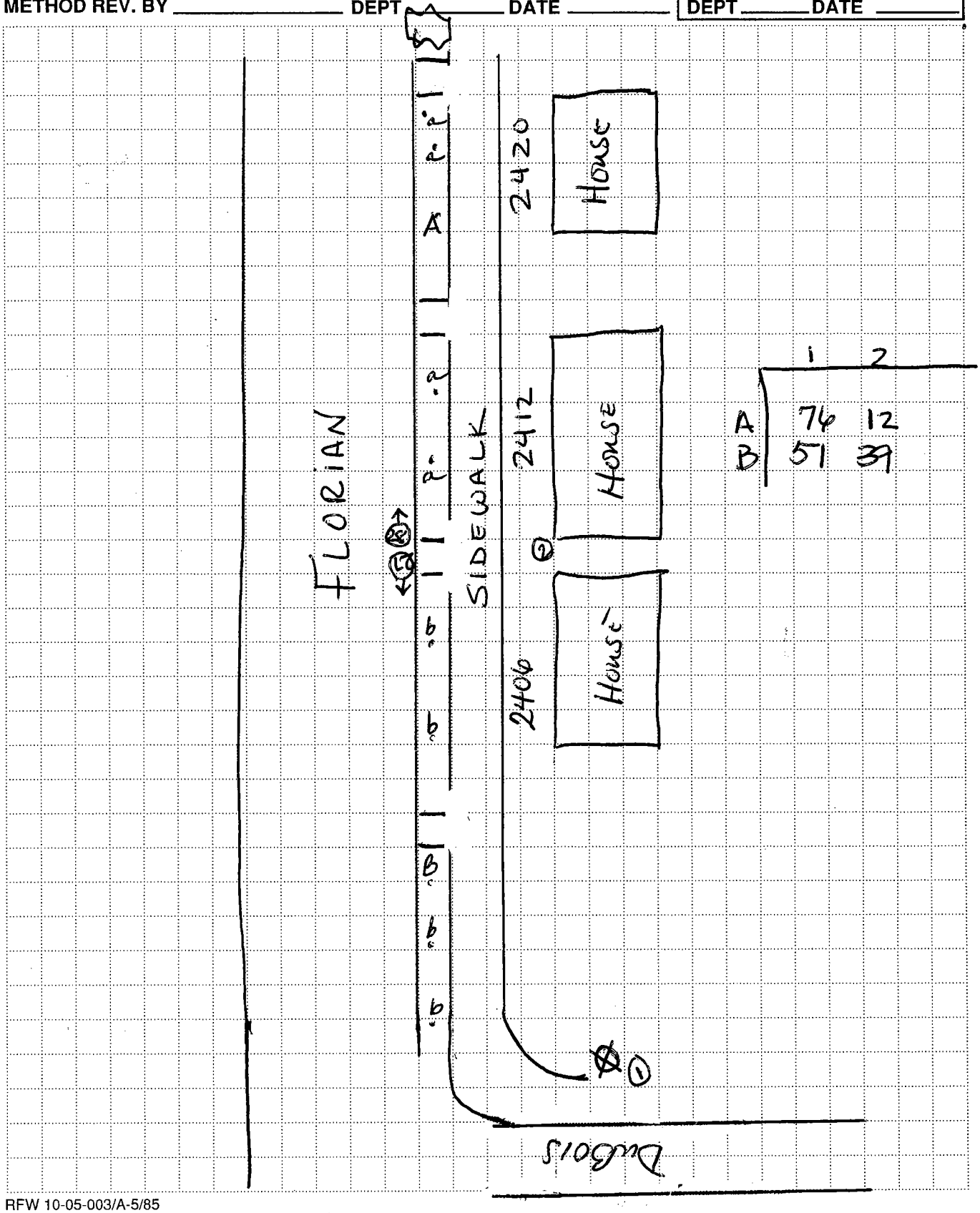
PREPARED BY S. LEWIS DEPT ____ DATE 11/11/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



RFW 10-05-003/A-5/85

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT HOLLISBROOK W.O. NO. ____

TASK DESCRIPTION LTH-02703 - A-B TASK NO. ____

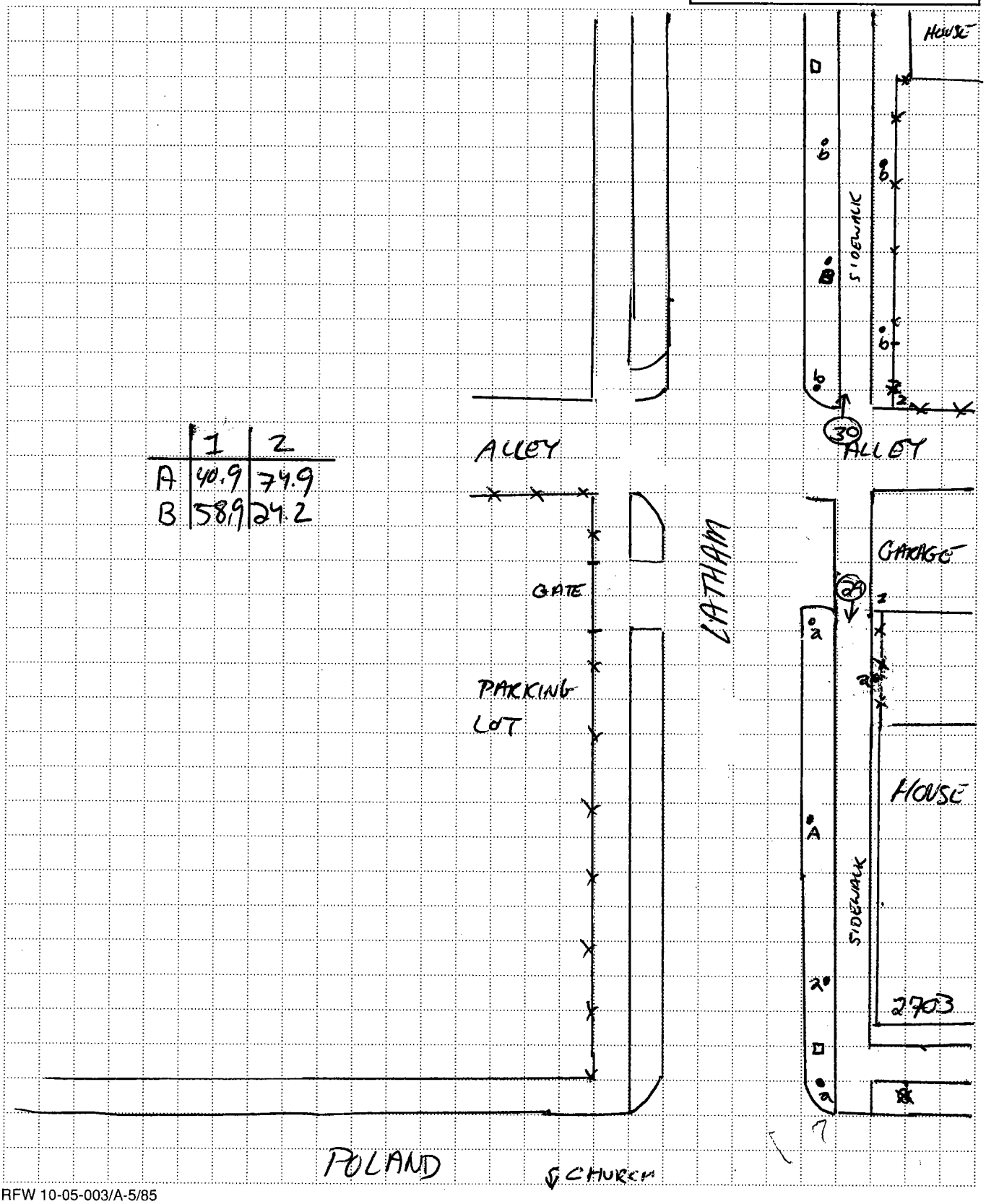
PREPARED BY R.NEMIROVSKY DEPT ____ DATE 11/11/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



	1	2
A	40.9	74.9
B	58.9	24.2

WESTON
MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT Holbrook W.O. NO. ____

TASK DESCRIPTION PLD-02761 A+B TASK NO. ____

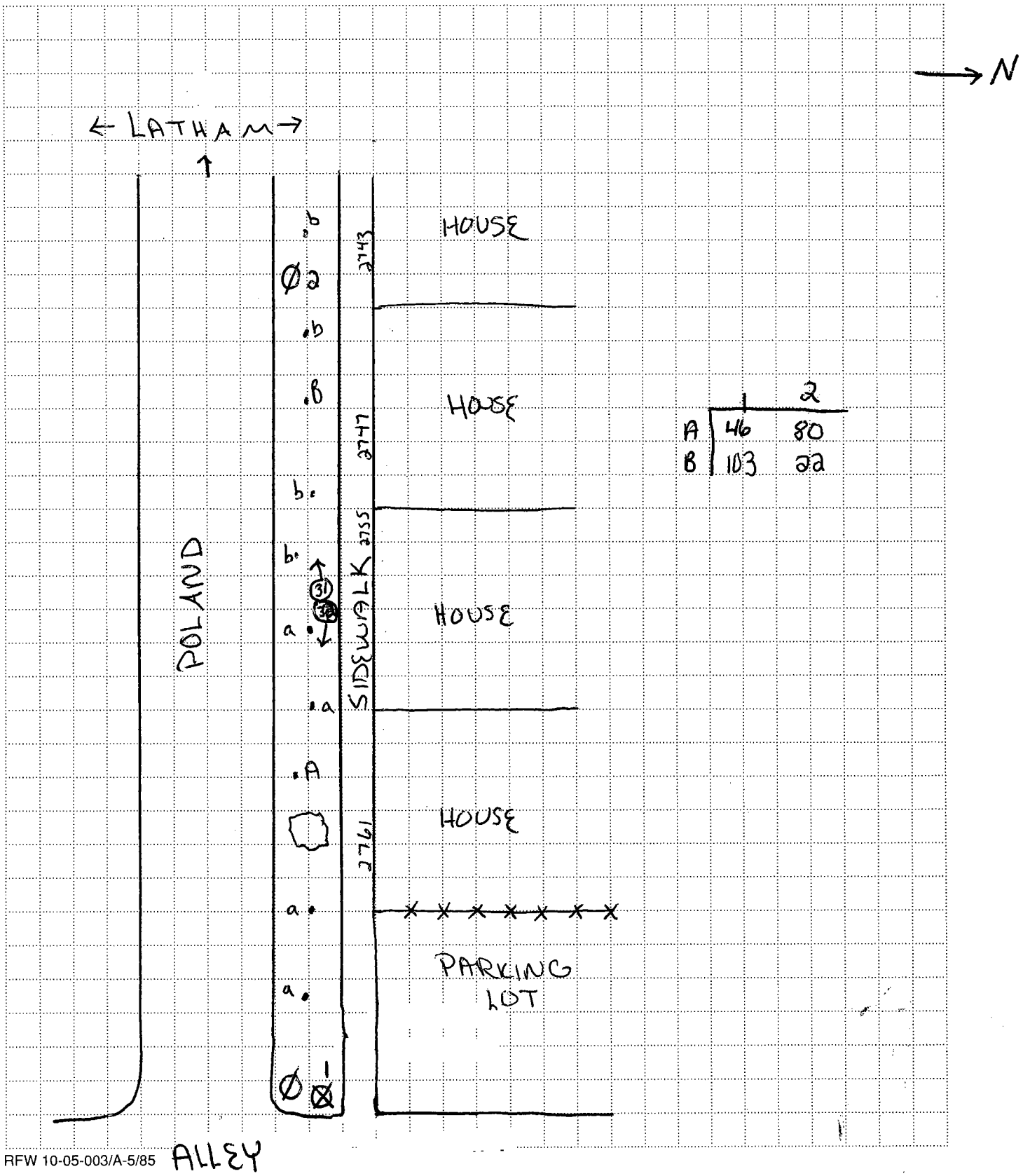
PREPARED BY A. Freeman DEPT ____ DATE 11-11-03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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SHEET ____ of ____

CLIENT/SUBJECT Holbrook W.O. NO. ____

TASK DESCRIPTION MIT - 09537 A+B TASK NO. ____

PREPARED BY R. Nemiensky DEPT ____ DATE 11/11/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____

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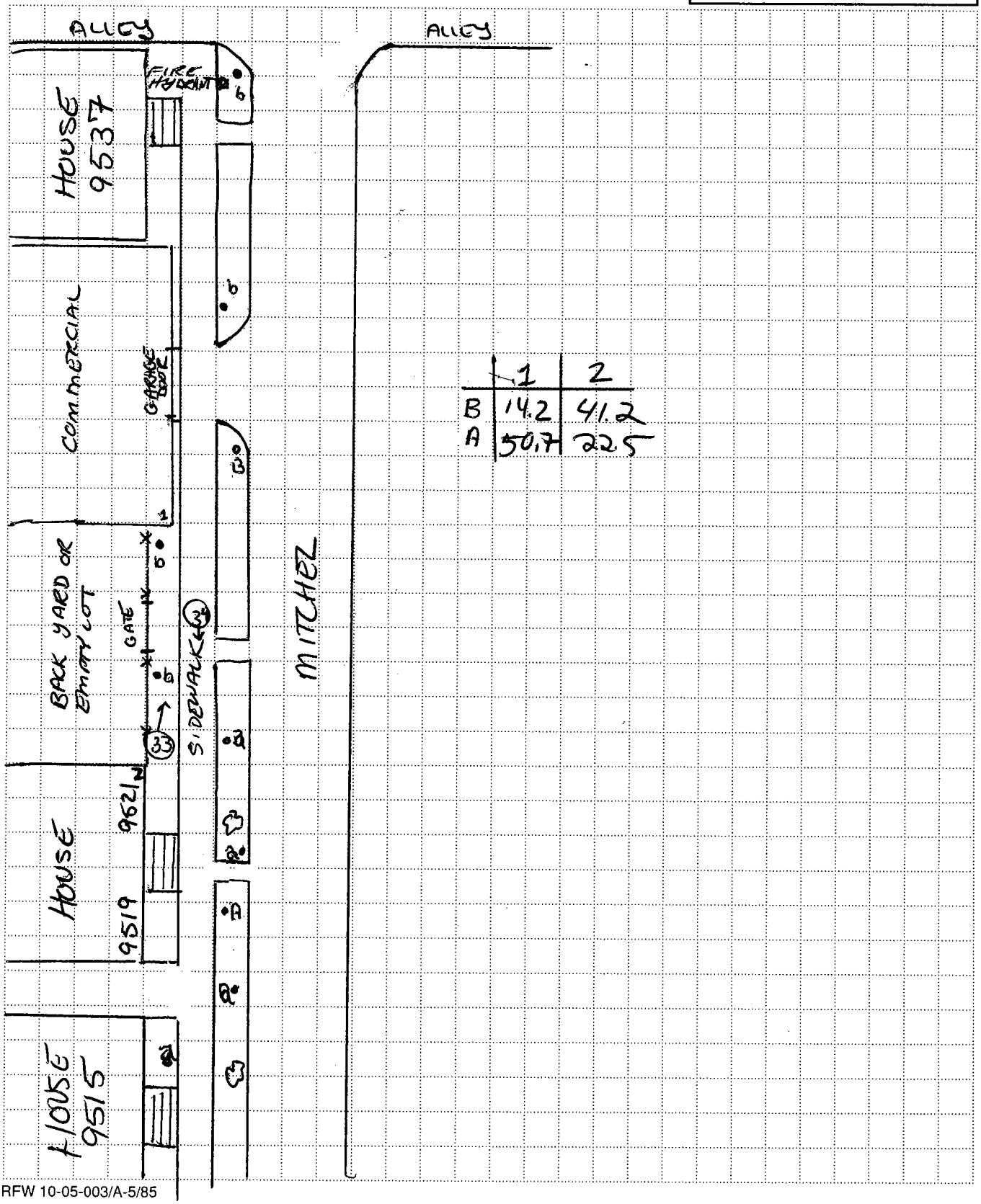


	1	2
B	14.2	41.2
A	50.7	22.5

WESTON MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT Holbrook/Lucid W.O. NO. ____

TASK DESCRIPTION CAM-0894I TASK NO. ____

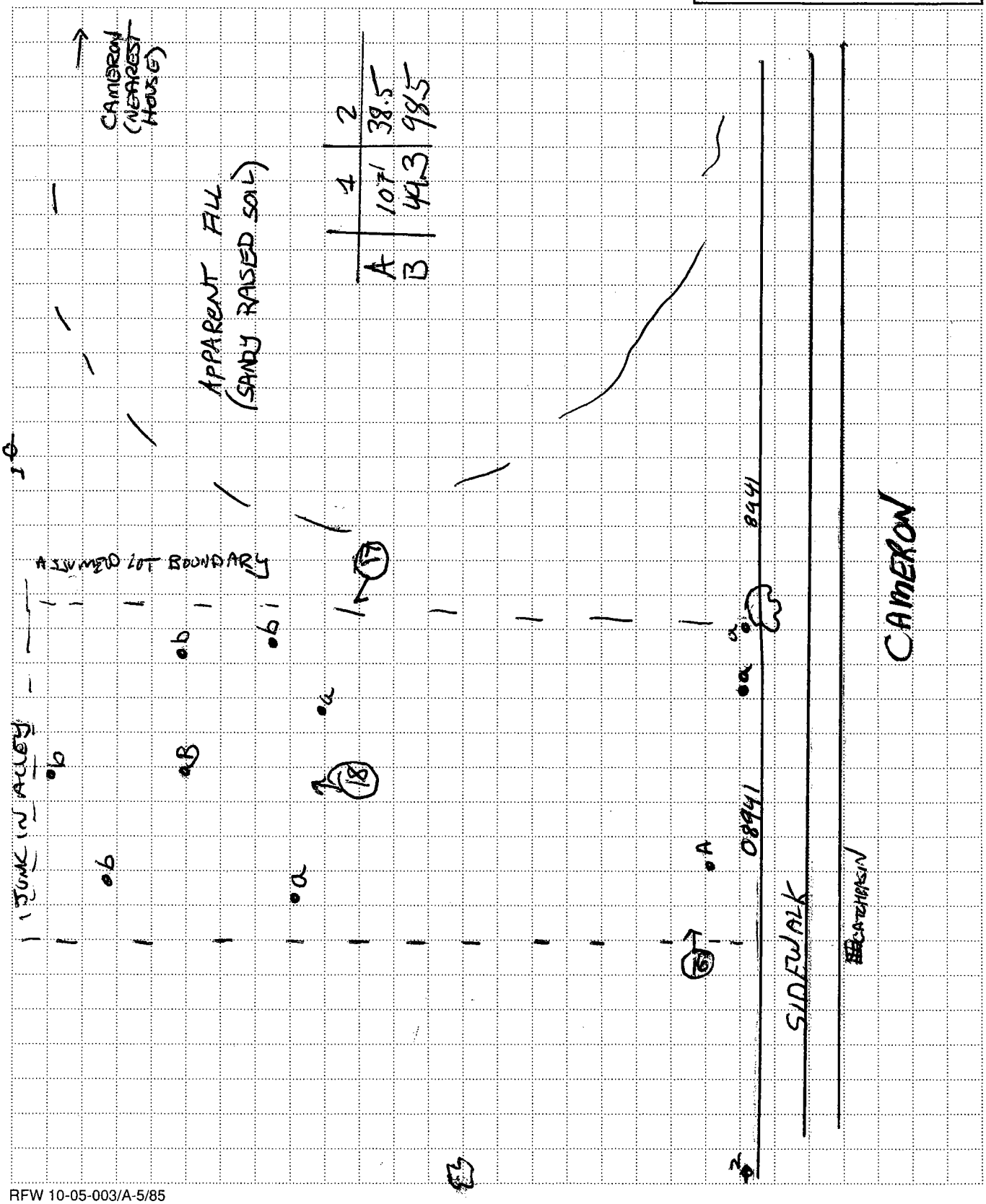
PREPARED BY R. Nemirovsky DEPT ____ DATE 11/10/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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SHEET ____ of ____

CLIENT/SUBJECT HOLBROOK W.O. NO. ____

TASK DESCRIPTION CAM-09200-A+B TASK NO. ____

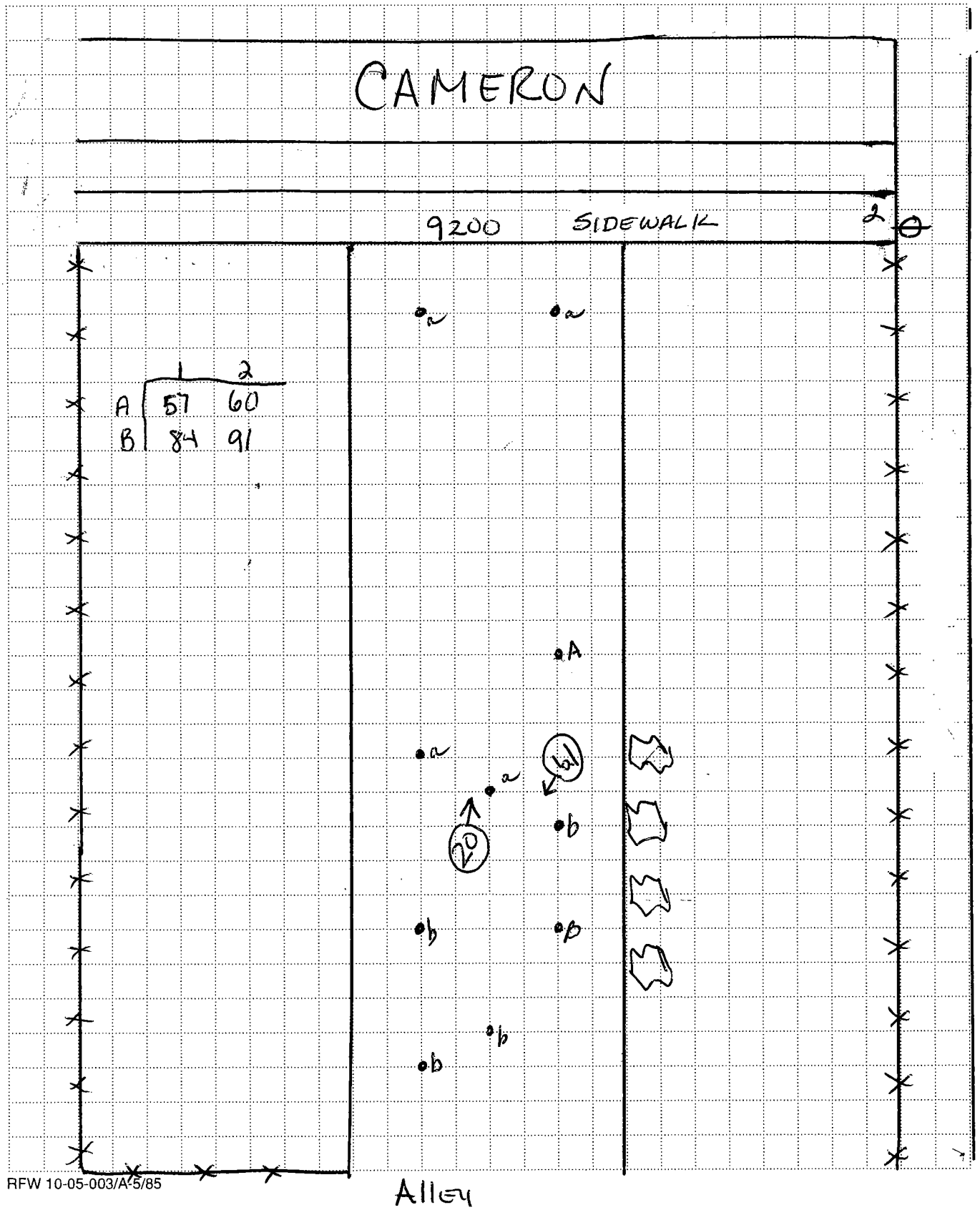
PREPARED BY S. LEWIS DEPT ____ DATE 11/10/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



WESTON® MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT Holbrook 9148 DELMAR W.O. NO. ____

TASK DESCRIPTION DEL-09148-A-RB-C-0-1 and DEL-09154-AMB TASK NO. ____

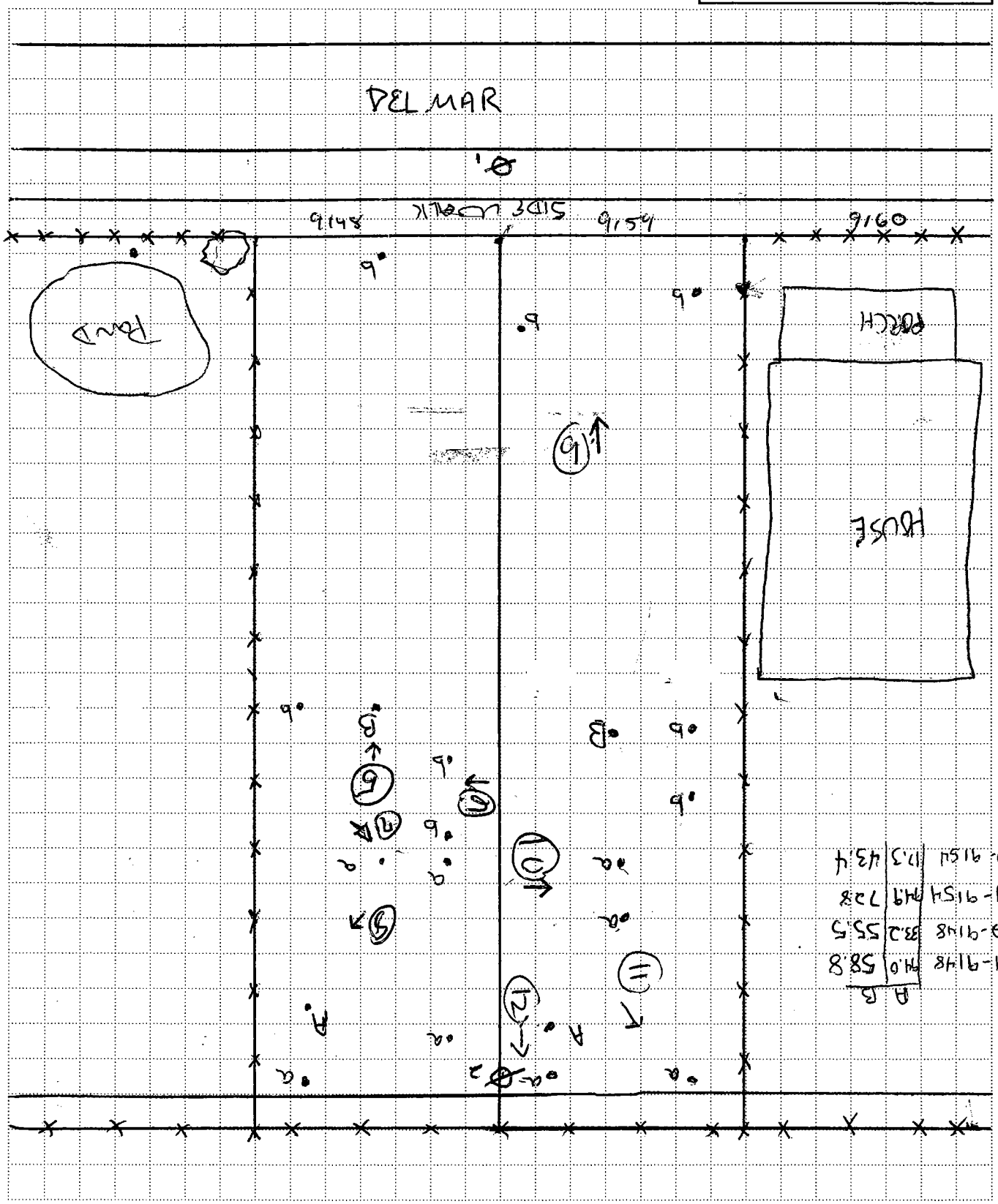
PREPARED BY A. Freeman DEPT ____ DATE 11-10-03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY ____

DEPT ____ DATE ____



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WESTON® MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT Holbrook W.O. NO. ____

TASK DESCRIPTION KIN00987 A+B TASK NO. ____

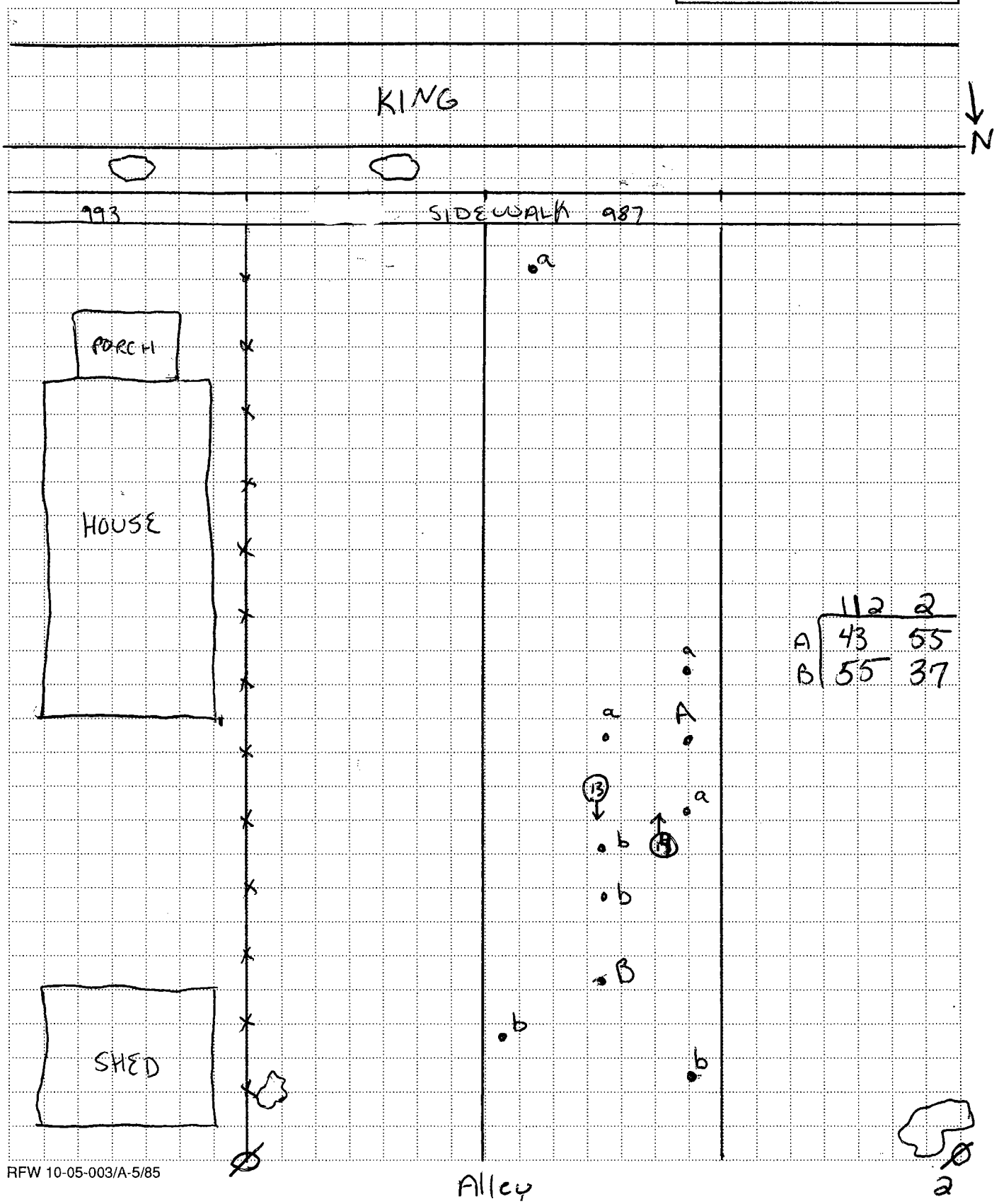
PREPARED BY A. Freeman DEPT ____ DATE 11-10-03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



	11	2
A	43	55
B	55	37

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MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT HOLBROOK W.O. NO. ____

TASK DESCRIPTION 9 CHR-9185 A+B TASK NO. ____

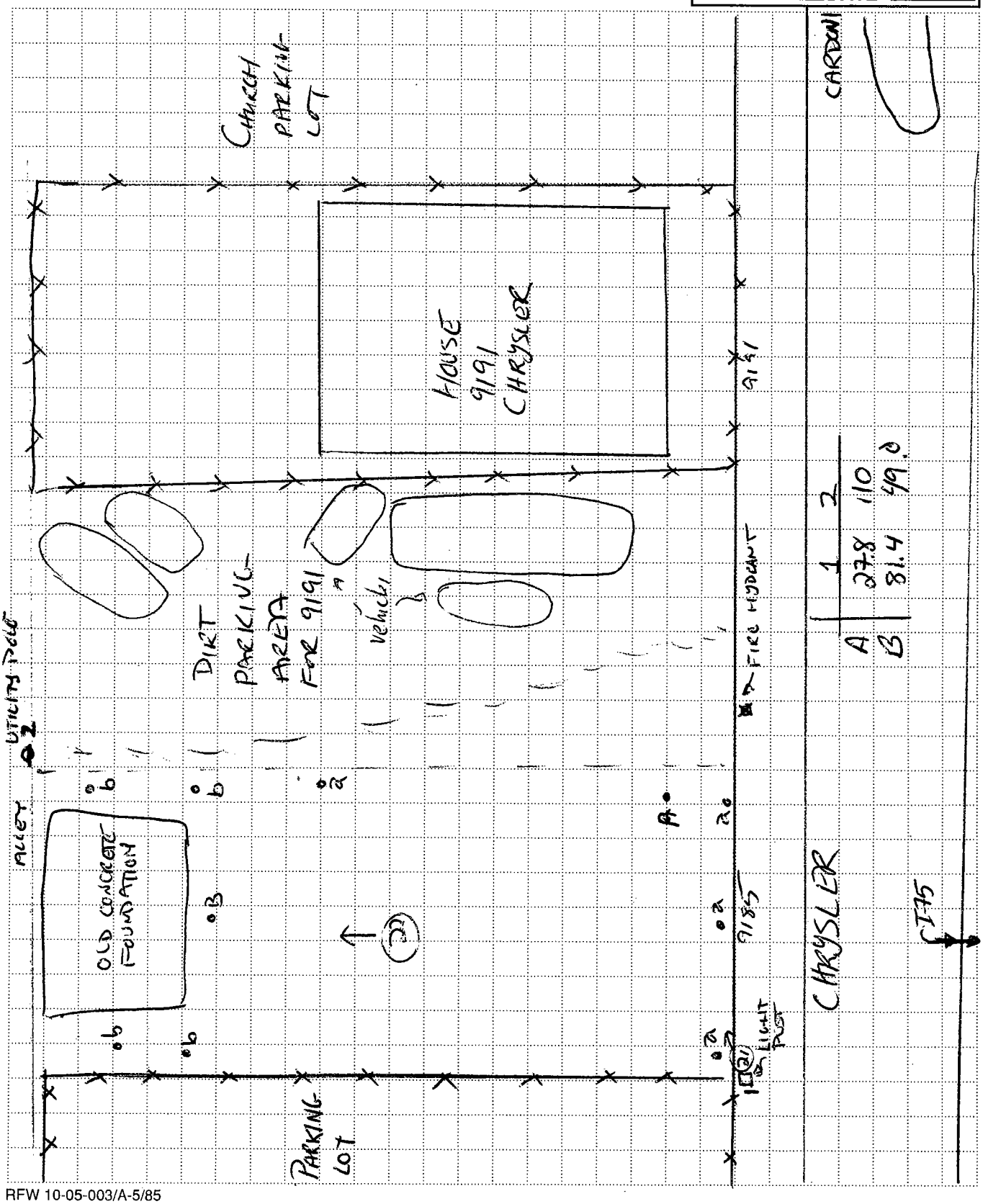
PREPARED BY R. NEMIROVSKY DEPT ____ DATE 1/10/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



RFW 10-05-003/A-5/85

ATTACHMENT B

TABLES

TABLE 1

SUMMARY OF SAMPLED PROPERTIES

Upwind Properties		
Address	**Description**	**Sample Identification**
2620 Holbrook	Greenway located to the southwest of Brombach St across from the Hamtramack Senior Plaza and to the northeast of an enclosed parking lot.	BRO-02620-A-C-0-1
		BRO-02620-B-C-0-1
9010 Lumpkin	Greenway located to the east of Lumkin St and at the corner of Lumkin and Wyandotte St.	LUM-09010-A-C-0-1
		LUM-09010-B-C-0-1
2406 Florian	Greenways located to the south of Florian St and in front of houses 2406, 2412, & 2420 Florian.	FLN-02406-A-C-0-2
		FLN-02406-B-C-0-1
2703 Latham	Greenways located to the east of Latham St in front of house at 2703 Latham and in front of enclosed yard at house to the north of 2703.	LTH-02703-A-C-0-1
		LTH-02703-B-C-0-1
2761 Poland	Greenways located to the south of houses at 2761, 2755, 2747, & 2743 Poland and to the north of Poland St.	PLD-02761-A-C-0-1
		PLD-02761-B-C-0-2
9537 Mitchell	Greenways located to the west of Mitchell St and to the east of houses at 9537, 9521, 9519, & 9515 Mitchell.	MIT-09537-A-C-0-1
		MIT-09537-B-C-0-1
Downwind Properties		
Address	**Description**	**Sample Identification**
8941 Cameron	Vacant property located on the west side of Cameron St and surrounded by vacant properties.	CAM-08941-A-C-0-2
		CAM-08941-B-C-0-1
9200 Cameron	Vacant property located on the northeast side of Cameron St and surrounded by vacant properties.	CAM-09200-A-C-0-1
		CAM-09200-B-C-0-1
9148 Delmar	Vacant property located to the northeast of Delmar St and to the east of vacant property at 9154 Delmar.	DEL-09148-A-C-0-1
		DEL-09148-B-C-0-2
9154 Delmar	Vacant property located to the northeast of Delmar St and to the east of house at 9160 Delmar.	DEL-09154-A-C-0-1
		DEL-09154-B-C-0-1
987 King	Vacant property located on the north side of King St and surrounded by vacant properties.	KIN-00987-A-C-0-1
		KIN-00987-B-C-0-1
9185 Chrysler	Vacant property located on the west side of Chrysler Dr, to the north of a fenced parking lot, and to the south of a dirt parking area of a house at 9191 Chrysler.	CHR-09185-A-C-0-1
		CHR-09185-B-C-0-2

*Notes:

Greenway identifiers were taken from the street the greenway was parallel to and not the actual street to which the property belonged.

TABLE 2

ANALYTICAL RESULTS

Sample Address	Sample ID	Concentration of Lead (mg/Kg)
Upwind		
8941 Cameron	CAM-08941-A-C-0-2	190
8941 Cameron	CAM-08941-B-C-0-1	74
9200 Cameron	CAM-09200-A-C-0-1	110
9200 Cameron	CAM-09200-B-C-0-1	240
9148 Delmar	DEL-09148-A-C-0-1	130
9148 Delmar	DEL-09148-B-C-0-2	95
9154 Delmar	DEL-09154-A-C-0-1	110
9154 Delmar	DEL-09154-B-C-0-1	84
987 King	KIN-00987-A-C-0-1	120
987 King	KIN-00987-B-C-0-1	59
9185 Chrysler	CHR-09185-A-C-0-1	**470**
9185 Chrysler	CHR-09185-B-C-0-2	**460**
Downwind		
2620 Holbrook	BRO-02620-A-C-0-1	160
2620 Holbrook	BRO-02620-B-C-0-1	310
9010 Lumpkin	LUM-09010-A-C-0-1	170
9010 Lumpkin	LUM-09010-B-C-0-1	200
2406 Florian	FLN-02406-A-C-0-2	**410**
2406 Florian	FLN-02406-B-C-0-1	200
2703 Latham	LTH-02703-A-C-0-1	**560**
2703 Latham	LTH-02703-B-C-0-1	290
2761 Poland	PLD-02761-A-C-0-1	**680**
2761 Poland	PLD-02761-B-C-0-2	**420**
9537 Mitchell	MIT-09537-A-C-0-1	**560**
9537 Mitchell	MIT-09537-B-C-0-1	260

*Notes

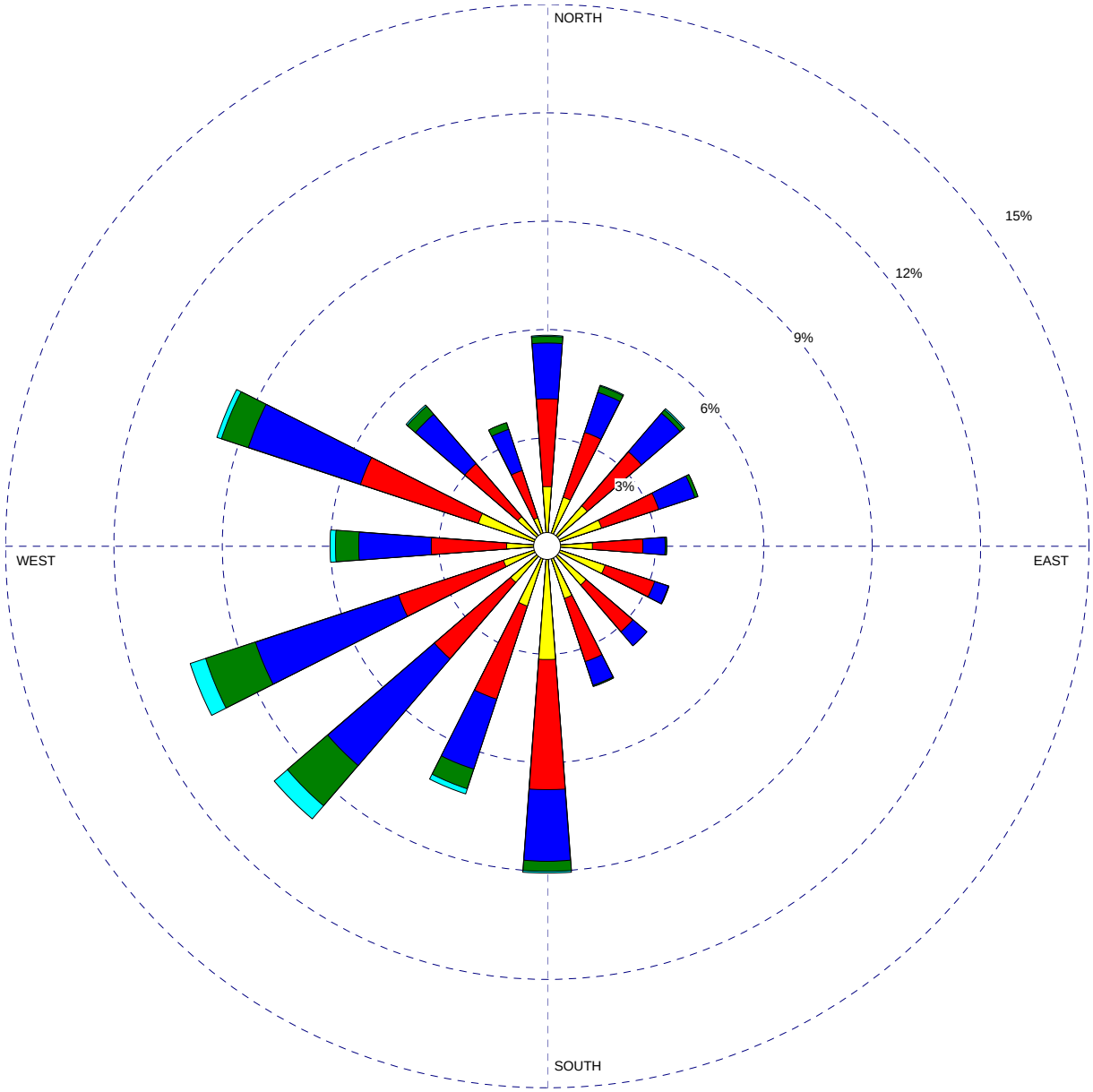
1) Bold Indicates results equal to or greater than to 400 mg/kg.

ATTACHMENT C

WIND ROSE PLOT

WIND ROSE PLOT

STATION #94847 - DETROIT/METROPOLITAN ARPT, MI



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 Acme Metal Company – 1436 Holbrook

2620 Brombach – Greenway located on the southwest side of Brombach St across from the Hamtramck Senior Plaza and to the northeast of an enclosed parking lot.

Looking south along greenway at 5 discrete sample A locations.

Looking northwest along greenway at 5 discrete sample B locations.

Holbrook (cont'd)

9010 Lumpkin – Greenway located on the east side of Lumpkin St and directly north of the house at 9010 Lumpkin. The greenway is on the corner of Lumpkin and Wyandotte St.

Looking south along greenway at 5 discrete sample A locations.

Looking north along greenway at 5 discrete sample B locations.

Holbrook (cont'd)

2406 Florian – Greenways located to the south of Florian St and in front of houses 2406, 2412, and 2420 Florian.

Looking east along greenway at 5 discrete sample A locations.

Looking west along greenway at 5 discrete sample B locations.

Holbrook (cont'd)

2703 Latham – Greenway located on the east side of Latham St in front of house at 2703 Latham and in front of enclosed yard at house to the north of 2703 Latham.

Looking south along greenway at 5 discrete sample A locations.

Looking north along greenway at 5 discrete sample B locations.

Holbrook (cont'd)

2761 Poland – Greenways located on the north side of Poland St and to the south of houses at 2761, 2755, 2747, and 2743 Poland.

Looking east along greenway at 5 discrete sample A locations.

Looking west along greenway at 5 discrete sample B locations.

Holbrook (cont'd)

9537 Mitchell – Greenways located on the west side of Mitchell St and to the east of houses at 9537, 9521, 9519, and 9515 Mitchell.

Looking south along greenway at 5 discrete sample A locations.

Looking north along greenway at 5 discrete sample B locations.

Holbrook (cont'd)

8941 Cameron – Vacant property on the west side of Cameron St and surrounded by vacant properties.

Looking north along vacant property at 3 of 5 discrete sample A locations.

Looking southwest along vacant property at 2 of 5 discrete sample A locations.

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

Holbrook (cont'd)

9200 Cameron – Vacant property located on the northeast side of Cameron St and surrounded by vacant properties.

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

Looking east along vacant property at 5 discrete sample B locations.

Holbrook (cont'd)

9148 Delmar – Vacant property located on the northeast of Delmar St and directly east of a vacant property at 9154 Delmar.

Looking southwest and southeast, respectively, along vacant property at 5 total discrete sample A locations.


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


Holbrook (cont'd)

9154 Delmar – Vacant property located to the northeast of Delmar St and directly east of a house at 9160 Delmar.

Looking northwest along the vacant property at 3 of 5 discrete sample B locations and at 2 of 5 discrete sample A locations. Also looking north at 1 of 5 sample A locations.

Looking northeast along the vacant property at 2 of 5 sample A locations.

Looking southwest along vacant property at 2 of 5 discrete sample B locations.

Holbrook (cont'd)

987 King – Vacant property located on the north side of King St and surrounded by vacant properties.

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

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

Holbrook (cont'd)

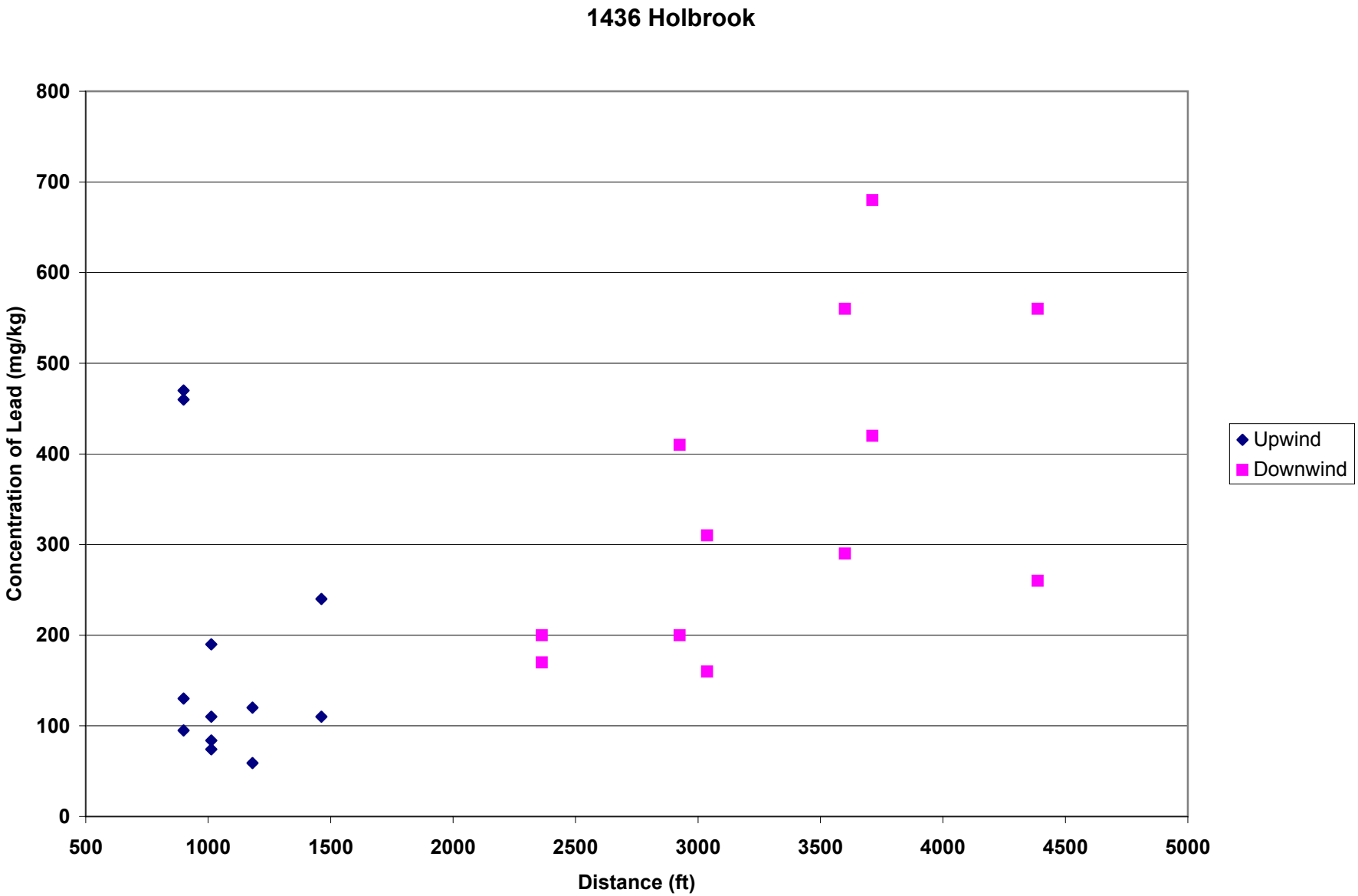
9185 Chrysler – Vacant property located on the west side of Chrysler Dr, to the north of a fenced parking lot, and to the south of a dirt parking area of a house at 9191 Chrysler.

Looking northwest along vacant property at 4 of 5 discrete sample A locations.

Looking west along the vacant property at 1 of 5 discrete sample A locations and 5 discrete sample B locations.

ATTACHMENT E

CONCENTRATION GRAPH


1436 Holbrook
Concentration of Lead (mg/kg)
800
700
600
500
400
300
200
100
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
Distance (ft)
Upwind
Downwind

Acme

*** Linear Model ***

```
Call: lm(formula = Lead.ppm ~ Location + Distance.ft + Location:Distance.ft, data = Acme, na.action = na.exclude)
Residuals:
   Min     1Q Median    3Q   Max
 -246.3 -100.5 -23.04 70.02 273.1

Coefficients:
                    Value Std. Error   t value  Pr(>|t|)
       (Intercept)  372.1842  237.3299     1.5682    0.1325
          Location -512.1508  325.3552    -1.5741    0.1311
       Distance.ft   -0.1796    0.2166    -0.8295    0.4166
Location:Distance.ft    0.3270    0.2263     1.4450    0.1639

Residual standard error: 147 on 20 degrees of freedom
Multiple R-Squared: 0.413
F-statistic: 4.691 on 3 and 20 degrees of freedom, the p-value is 0.01225

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  179920.2 179920.2 8.321977 0.0091597
       Distance.ft  1   79214.1  79214.1 3.663946 0.0700200
Location:Distance.ft  1   45145.9  45145.9 2.088167 0.1639308
         Residuals 20  432397.7  21619.9
```

*** Linear Model ***

```
Call: lm(formula = log(Lead.ppm) ~ Location + Distance.ft + Location:Distance.ft,
      data = Acme, na.action = na.exclude)
Residuals:
    Min      1Q   Median     3Q   Max
 -0.8161 -0.3428 -0.06884 0.3049 1.098

Coefficients:
                   Value Std. Error t value Pr(>|t|)
       (Intercept)  5.5721  0.9211     6.0495  0.0000
          Location -1.3158  1.2627    -1.0420  0.3098
       Distance.ft -0.0006  0.0008    -0.6833  0.5022
Location:Distance.ft  0.0010  0.0009     1.1640  0.2581

Residual standard error: 0.5706 on 20 degrees of freedom
Multiple R-Squared: 0.4335
F-statistic: 5.102 on 3 and 20 degrees of freedom, the p-value is 0.008761

Analysis of Variance Table

Response: log(Lead.ppm)

Terms added sequentially (first to last)
                 Df Sum of Sq  Mean Sq  F Value     Pr(F)
          Location  1  3.820197 3.820197 11.73140 0.0026814
       Distance.ft  1  0.722510 0.722510  2.21875 0.1519450
Location:Distance.ft  1  0.441242 0.441242  1.35500 0.2581041
         Residuals 20  6.512771 0.325639
```

ATTACHMENT F

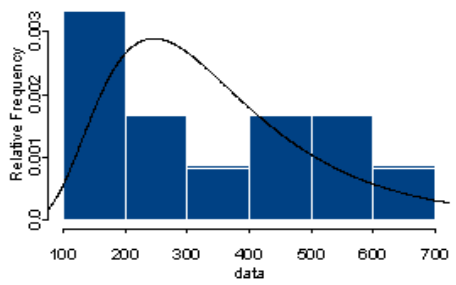
STATISTICAL DISTRIBUTION

ACME METAL COMPANY
STATISTICAL DISTRIBUTION

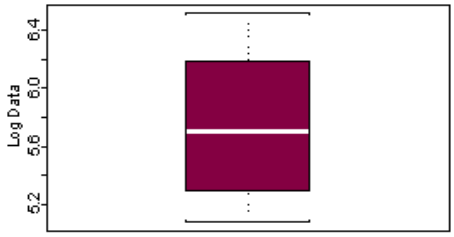
Lognormal Distribution Analysis for Data

Data Set Name: Test , Area: HOL D

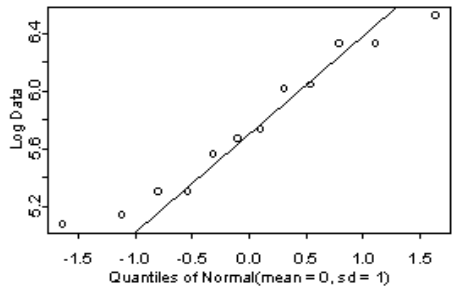
Histogram of Observed Data with Fitted Lognormal Distribution



Box Plot of Log Data Data



Normal Probability Plot of Log Data Data



Summary Statistics

Sample Size:	12
Coefficient of Variation:	0.0861883
Coefficient of Skewness:	0.1369582

Results of Shapiro-Wilk GOF

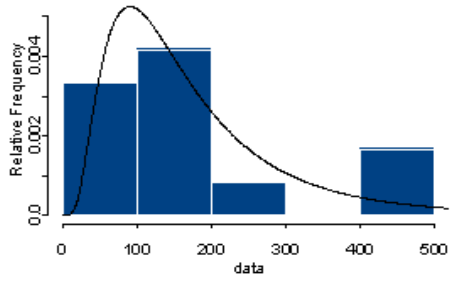
Hypothesized Distribution:	Lognormal
Estimated Parameters:	meanlog = 5.75076 sdlog = 0.4956482
Test Statistic:	W = 0.9383281
Test Statistic Parameter:	n = 12
p-value:	0.4767221

Since p >= .05 conclude distribution is lognormal.

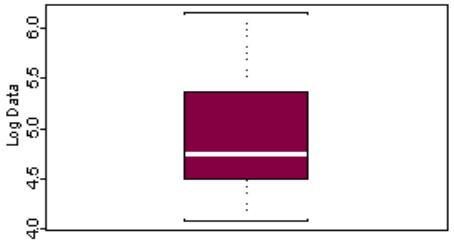
Lognormal Distribution Analysis for Data

Data Set Name: Test , Area: HOL U

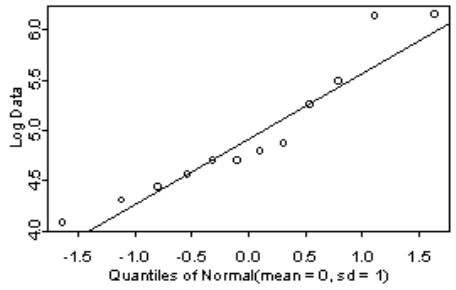
Histogram of Observed Data with Fitted Lognormal Distribution



Box Plot of Log Data Data



Normal Probability Plot of Log Data Data



Summary Statistics

Sample Size:	12
Coefficient of Variation:	0.1357724
Coefficient of Skewness:	0.842999

Results of Shapiro-Wilk GOF

Hypothesized Distribution:	Lognormal
Estimated Parameters:	meanlog = 4.952825 sdlog = 0.6724571
Test Statistic:	W = 0.9015136
Test Statistic Parameter:	n = 12
p-value:	0.165916

Since p >= .05 conclude distribution is lognormal.