PHASE I SUMMARY REPORT
FOR
DETROIT LEAD ASSESSMENT PROJECT
INDUSTRIAL SMELTING – 19430 MT ELLIOTT STREET
DETROIT, WAYNE COUNTY, MICHIGAN

Prepared for

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

Prepared by

WESTON SOLUTIONS OF MICHIGAN, INC.
2501 Jolly Road
Suite 100
Okemos, MI 48864
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 Industrial Smelting Company (the Facility), 19430 Mt. Elliott 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 adjacent or nearby properties was indicative of aerial deposition from the Facility.

On 11 November and 8 December 2003 WESTON collected 24 soil samples for lead analysis at locations upwind and downwind of the Facility. Review of the data concluded that the lead detected is consistent with deposition resulting from aerial releases and suggested that such releases occurred from the Facility during historic smelting operations. However, the levels detected were all below the screening level (400 milligrams per kilogram) set in the Quality Assurance Sampling Plan (QASP). To assure that the conclusions are based on sufficient data 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 Industrial Smelting (the Facility), 19430 Mt. Elliott 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 Industrial Smelting 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
- **Attachment F** Statistical Distribution

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SECTION 2

SITE INFORMATION

2.1 SITE DESCRIPTION

The Facility, located at 19430 Mt Elliott 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 a building that is enclosed by a fence extending around the back. The property is owned by Kath Chemicals and is apparently in active operation. A parking lot is located in front of the building. The areas five blocks north, south, and east of the Facility are industrial with residences starting at the eastern extent. The area to the west of the Facility is industrial for approximately half a block and then residential for approximately four and a half blocks.

2.1.2 Site History

Review of the Bresser's directory indicated that Industrial Smelting owned the property from 1951 to 1981. Co-owners of this property included Jessop Steel Sales Company, Metal BI PROD Company, Marx S. H, Marx Jack Mtl, and Wolf Sidney J Mtl in 1951. Green Rve Stl Corporation and Jessop Steel Co were co-owners in 1960-61. Kath Khmels & Mntnc were the current owners listed.

Review of the Sanborn maps for this address show that from 1967 through 2002 Steel Warehouse and Smelting rooms are present.

The aerial photograph review indicated the immediate area surrounding this address was industrialized from 1957 to the present. However, heavy residential settings occur one block west of the facility and two blocks east. Structures identified from the most recent aerial photograph (2003 GlobeXplorer™) include a building in the center of the property with undeveloped space to the east and west. 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, three building permits were located for the additions to a smelting plant.

Review of the BEA for nearby "17403 Mt. Elliott Street", dated August 2002, prepared by Superior Environmental for Hantz Group Inc, indicates that lead was detected on the site but the levels were not specified.

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 1000 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, within 2500 and 1800 feet (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, photo documentation) were conducted as described in the Comprehensive Summary. WESTON collected samples from 11 City and/or State owned parcels and one greenway near the Facility. Five City and/or State owned parcels and one greenway parcel were sampled in the downwind direction and six City and/or State owned parcels were sampled in the upwind direction. Two composite samples were collected from each of the 6 downwind parcels and six of the 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 11 November and 8 December 2003. Since 12 City and/or State owned parcels were not available, WESTON selected one greenway, prior to the sampling event, and submitted the location of the greenway to the City of Detroit to obtain their approval and access. Because the greenway was 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 parcel at 3900 E Outer Drive with an adjacent greenway located across the street from a building with a visible address of 19451 Sherwood Street, would be identified SHE – 19451. These changes were noted in the logbook and can be viewed in the "Summary Table For Sample Properties" (located in **Attachment E**) and on the sample sketches (located in **Attachment A**).

WESTON collected two samples from each of the six upwind City and/or State owned parcels for a total of 12 samples. Also, two samples were collected from each of the five downwind City and/or State owned parcels and of the one greenway for a total of 12 downwind samples. Twenty four soil samples were submitted for analysis. Five 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
- 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. Samples collected from properties upwind of the Facility did not contain concentrations of lead above the project screening level (400 milligram per kilogram [mg/kg]) established in the Phase I QASP. No samples collected from properties downwind of the Facility contained concentrations of lead above the project screening level (400 mg/kg). 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	0	26-230
Downwind	12	0	56-390
TOTAL	24	0	26-390

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 1125 ft. to 2475 ft. were chosen southwest in the upwind direction of the Facility. Parcels ranging from 975 ft. to 1800 ft. were chosen northeast, as close to the mean downwind direction of the Facility due to the presence of residential properties. Low level lead concentrations were detected in both the downwind and upwind direction from the Facility. A detailed analysis of upwind and downwind concentrations is contained in **Section 4.4 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, below the screening level, occurs 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 (**Attachment E**) indicated low levels of lead were present in the upwind direction from the Facility. The downwind direction also showed low concentrations (all less than the screening level) of lead in the downwind direction but presented a decreasing concentration with increasing distance from the Facility. 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 file 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 mean is 192 mg/kg and the upwind mean is 110 mg/kg indicating the downwind concentrations are greater than the upwind concentrations. In addition the relative frequency histogram (**Attachment F**) for the downwind data is an uneven distribution across a wide range of concentrations while the upwind results exhibit a more even distribution over a smaller range of concentrations. 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 potentially represent separate conditions.

4.5 CONCLUSIONS

The pattern of analytical results for lead in soil samples collected for the Facility suggests that lead contamination detected in downwind locations may be 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.

None of the samples collected from upwind of the Facility contained concentrations of lead above the 400 mg/kg screening level. The downwind samples show a clear trend of decreasing concentration with increasing distance. The levels of lead start at 390 mg/kg (975 ft. from the facility) and decrease with distance from the Facility. The data collected during the Phase I sampling supports that an identifiable aerial release occurred from the Facility during historic smelting operations. However, the levels identified during the Phase I investigation are below the screening level.

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SECTION 5

RECOMMENDATIONS

Based on the evaluation of the Phase I analytical data, it is recommended that additional tasks be completed to further define the existing risk and the origin of the off-site contamination. The determination that additional work is necessary is based on two factors:

- The presence of residential receptors located within approximately 1,000 ft downwind of the Facility,
- The pattern of lead concentrations within the study area suggests a strong potential that soils at downwind properties have been impacted by aerial deposition from releases of lead from historic smelting operations at the Facility.

To address these concerns it is recommended that the following additional tasks be completed:

- 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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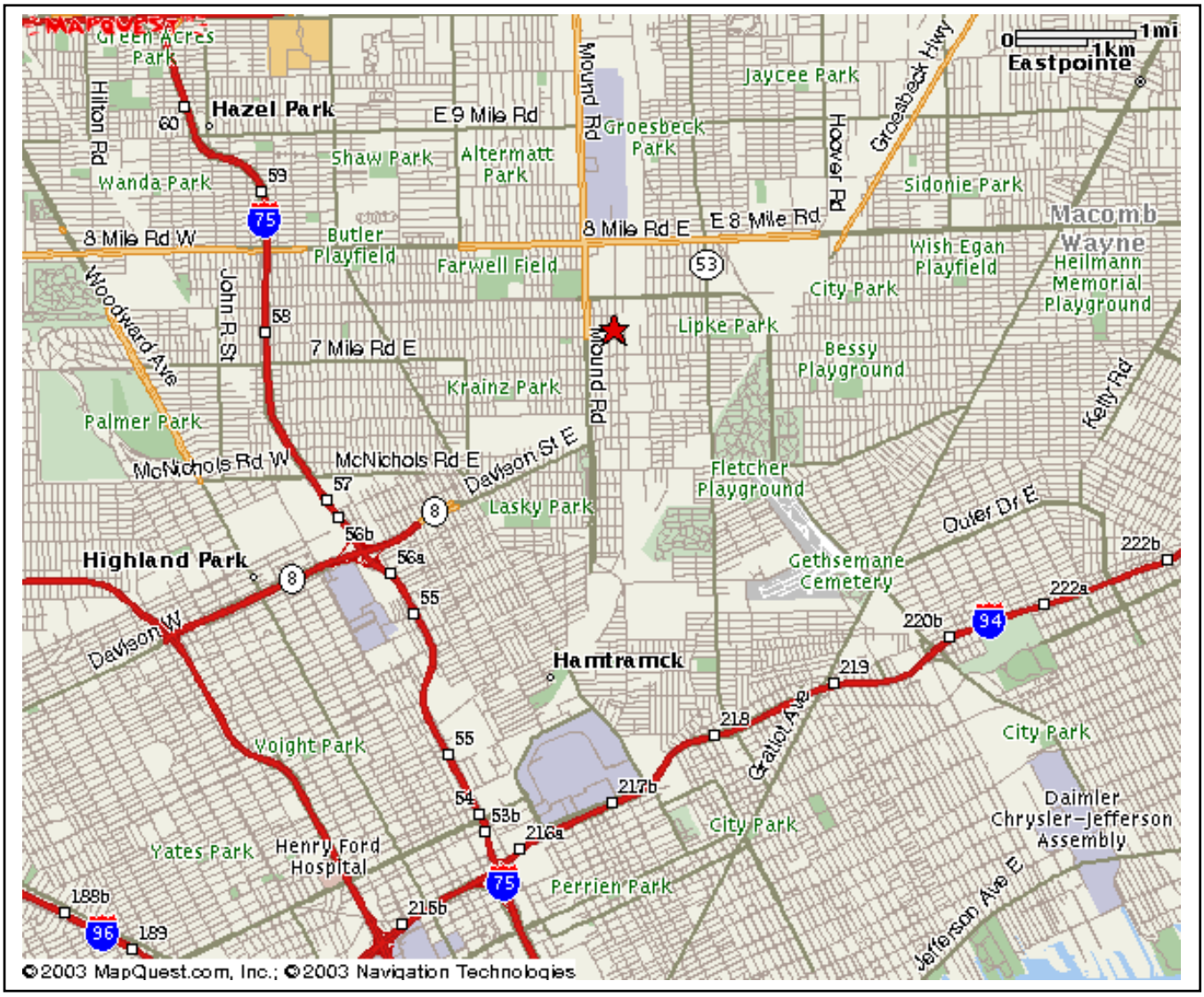
ATTACHMENT A

FIGURES

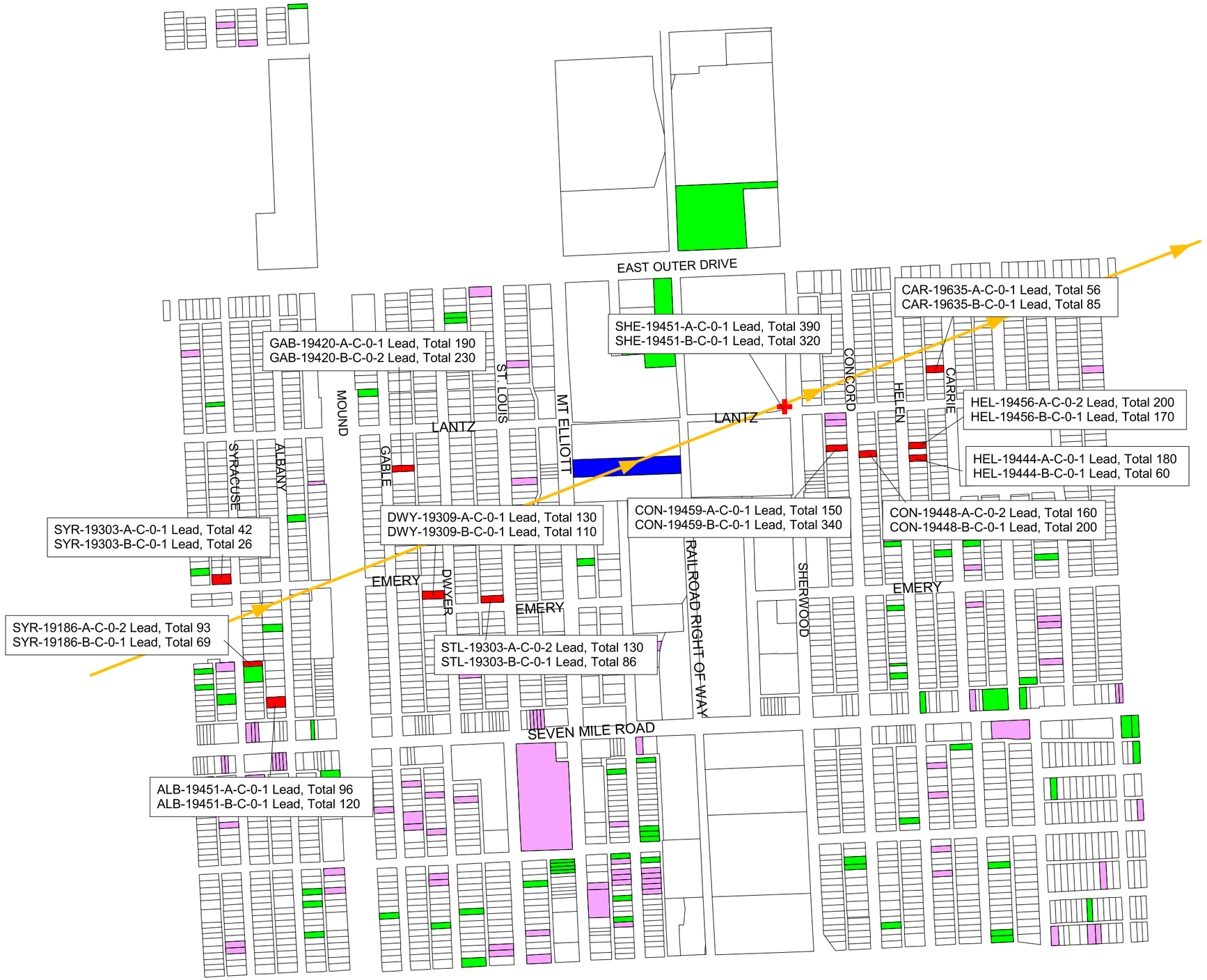
FIGURE 1
Site Location Map
19430 Mt Elliot Street



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

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

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

N

0 600 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:

Industrial Smelting
19430 Mt. Elliot

WORK ORDER No.: 20083.028.001		PROJECT MANAGER:	
DRAWN BY: JLT		CHECKED BY:	
DRAWING NAME:		DIRECTORY/ FOLDER: JLT:/D\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 Mt Elliot W.O. NO. ____

TASK DESCRIPTION STL-19303 AMB TASK NO. ____

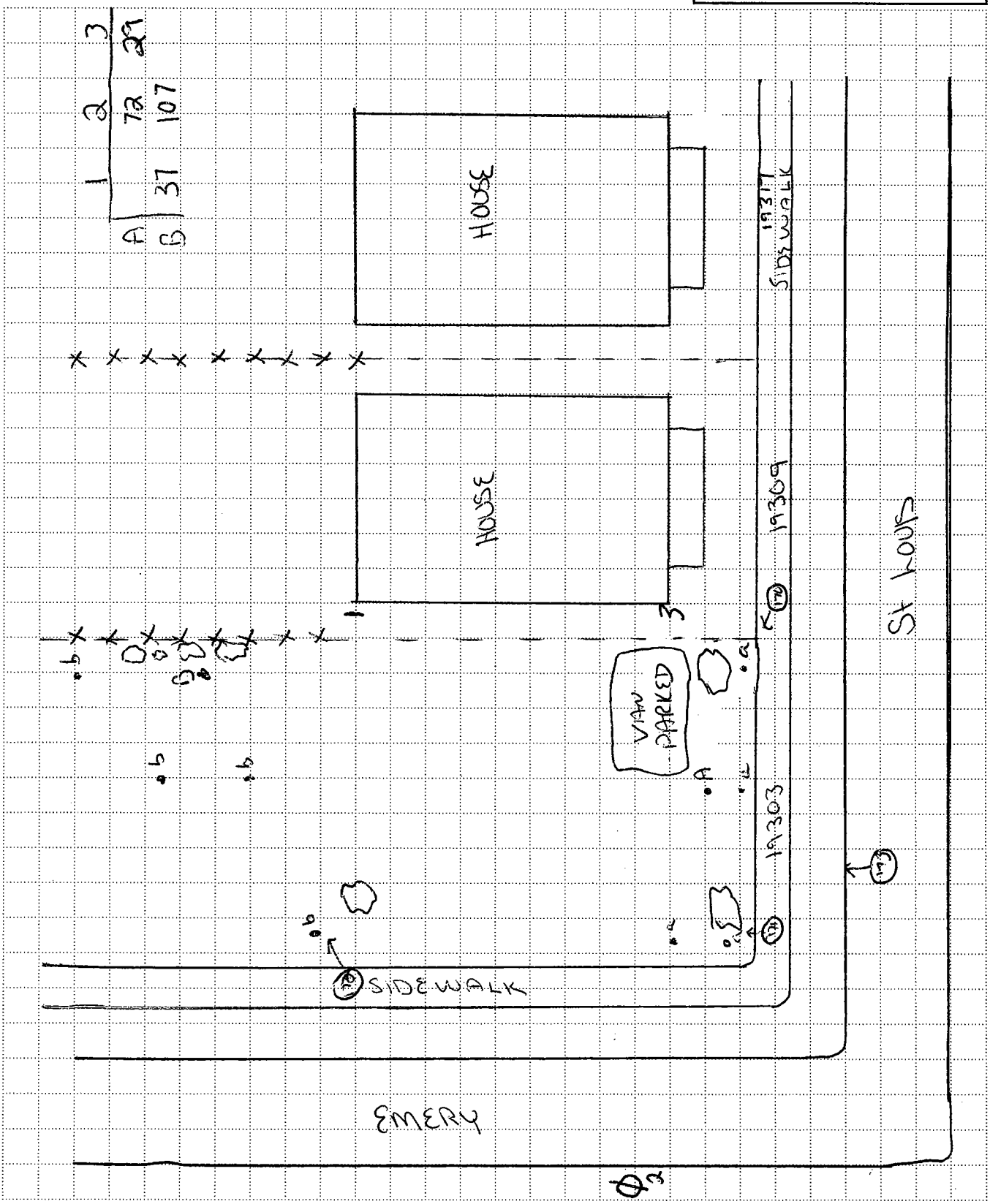
PREPARED BY A. Freeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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

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MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT mt Elliot W.O. NO. ____

TASK DESCRIPTION DWY-19309 A+B TASK NO. ____

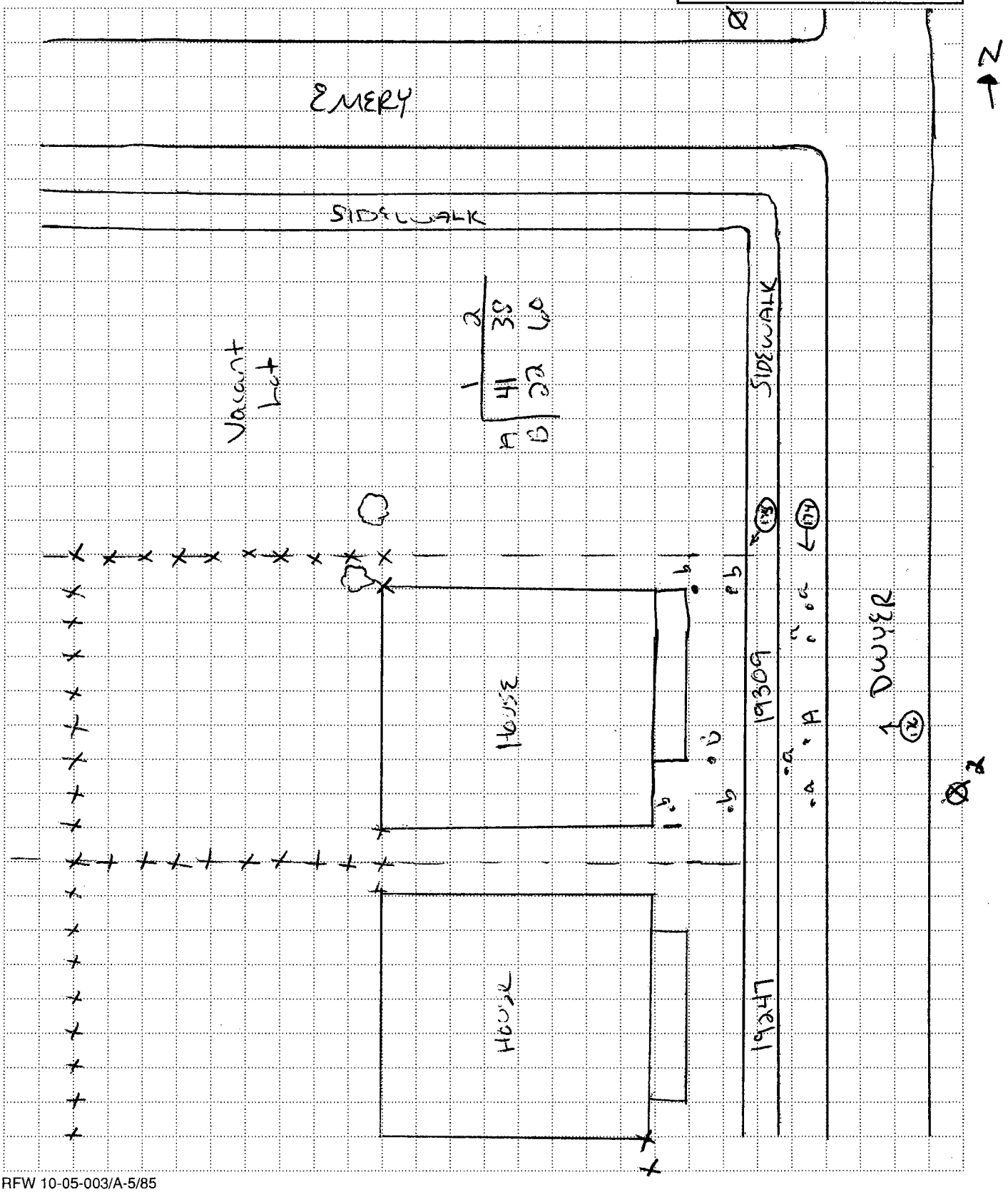
PREPARED BY M. Freeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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

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MANAGERS DESIGNERS/CONSULTANTS

SHEET ____ of ____

CLIENT/SUBJECT Mt Elliot

W.O. NO. ________

TASK DESCRIPTION GAB-19420 A+B

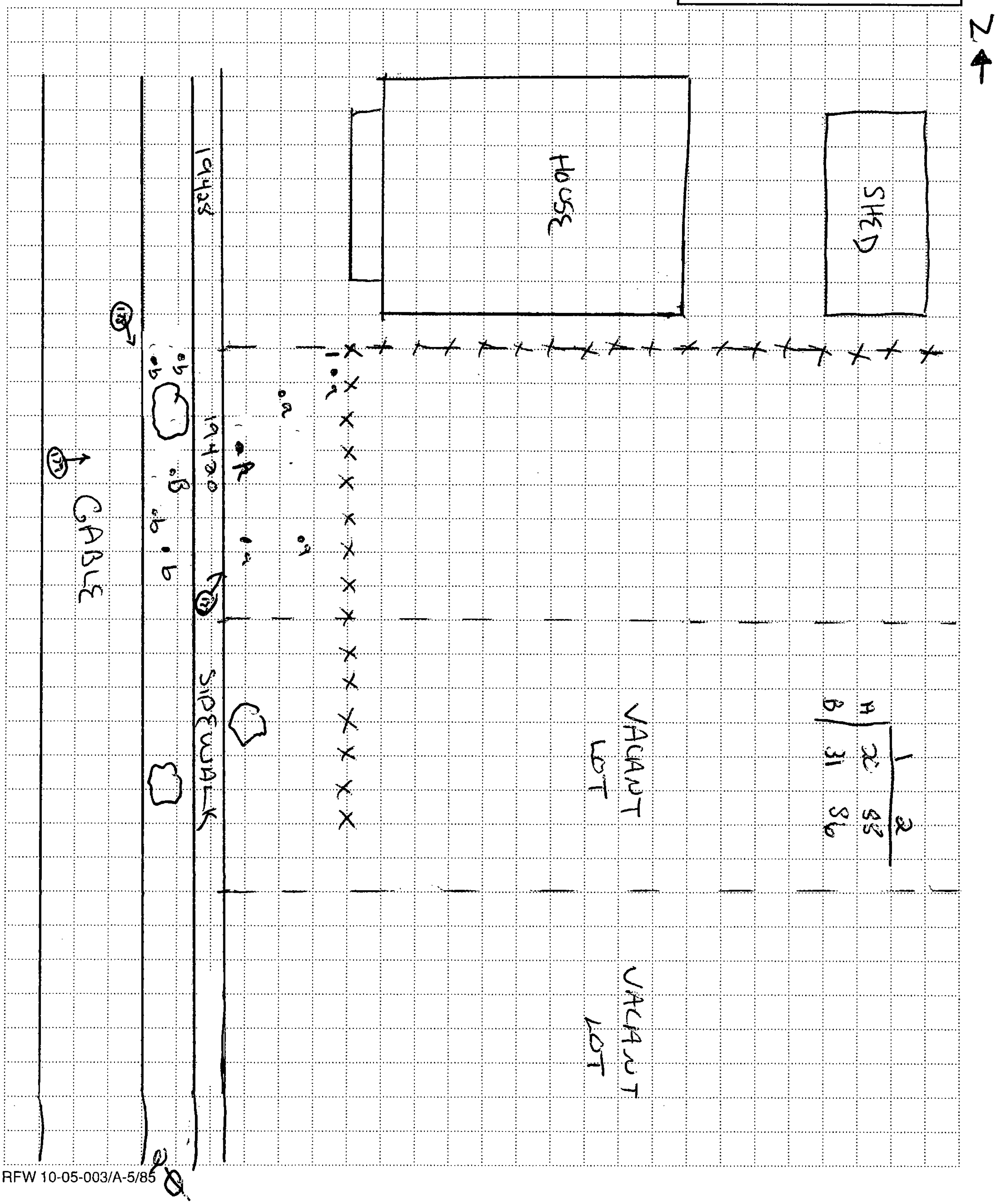
TASK NO. ________

PREPARED BY A. Freeman DEPT ______ DATE 12/8/03

MATH CHECK BY ________ DEPT ______ DATE ______

METHOD REV. BY ________ DEPT ______ DATE ______

APPROVED BY
DEPT ______ DATE ______



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SHEET ____ of ____

CLIENT/SUBJECT Mt Elliot W.O. NO. ____

TASK DESCRIPTION ALB-19145 A+B TASK NO. ____

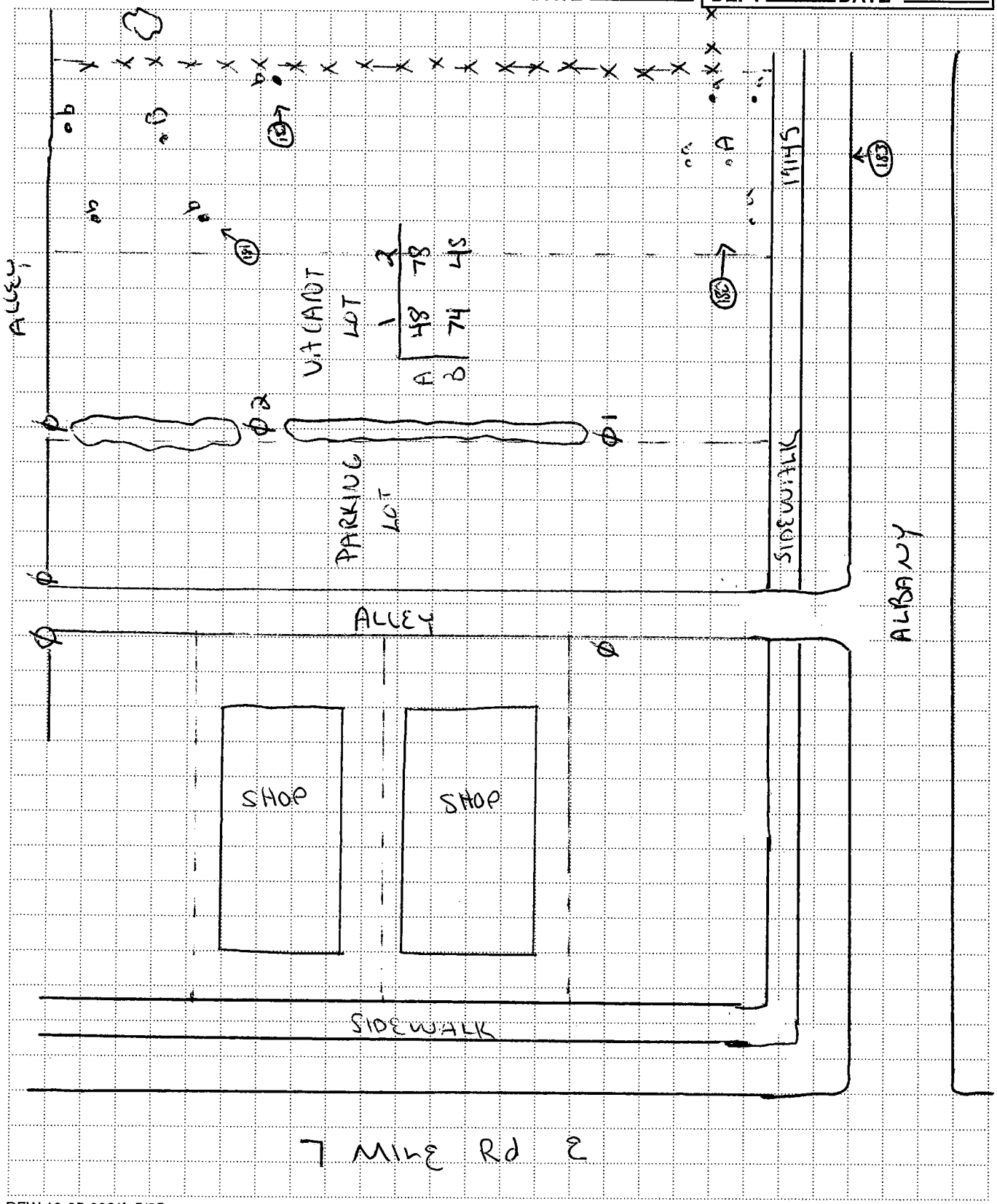
PREPARED BY A. Freeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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SHEET ____ of ____

CLIENT/SUBJECT Mt Elliot W.O. NO. ____

TASK DESCRIPTION SYR-19303 A+B TASK NO. ____

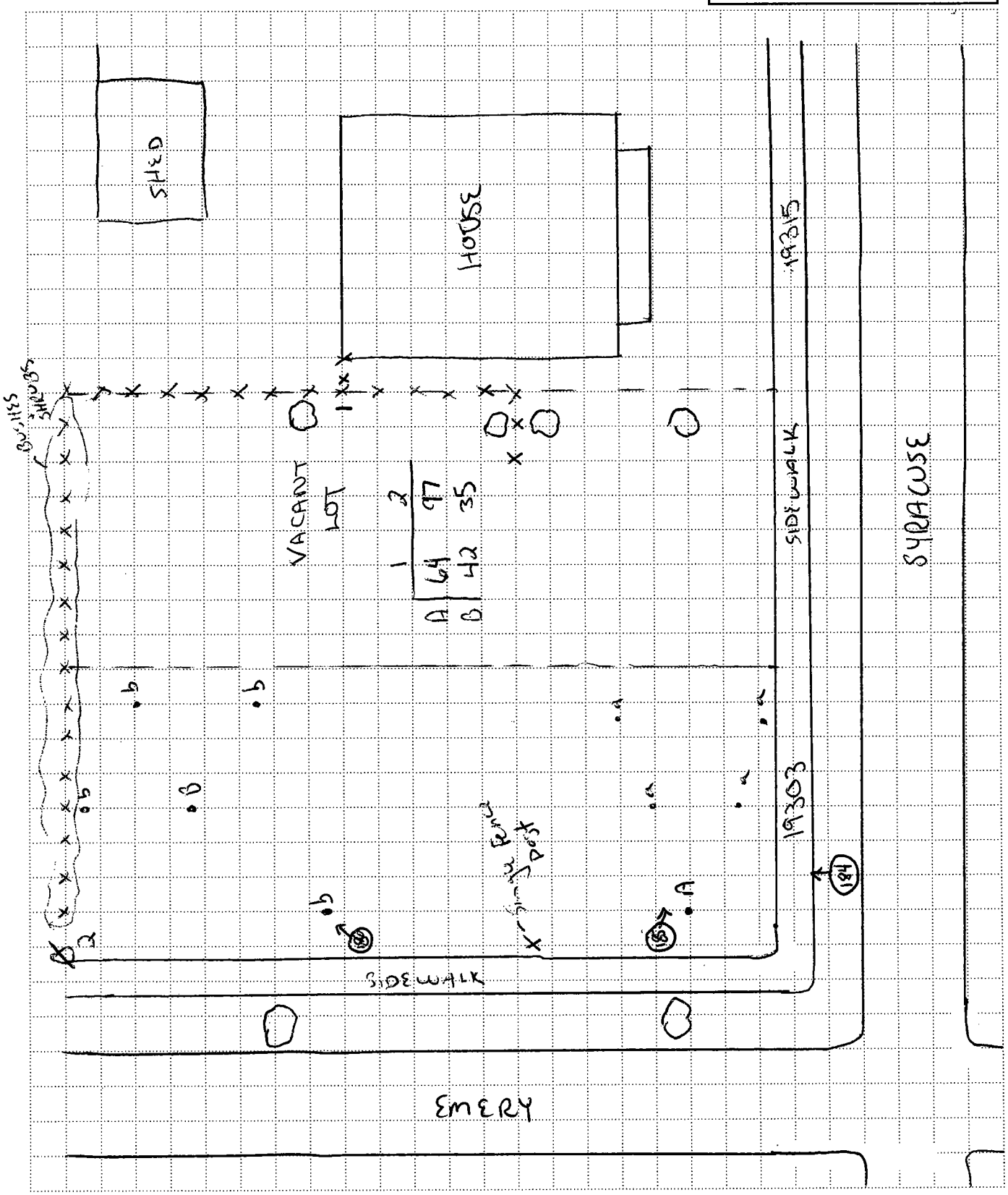
PREPARED BY A. Freeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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SHEET ____ of ____

CLIENT/SUBJECT Mt Elliot W.O. NO. ____

TASK DESCRIPTION SYR- 19186 A+B TASK NO. ____

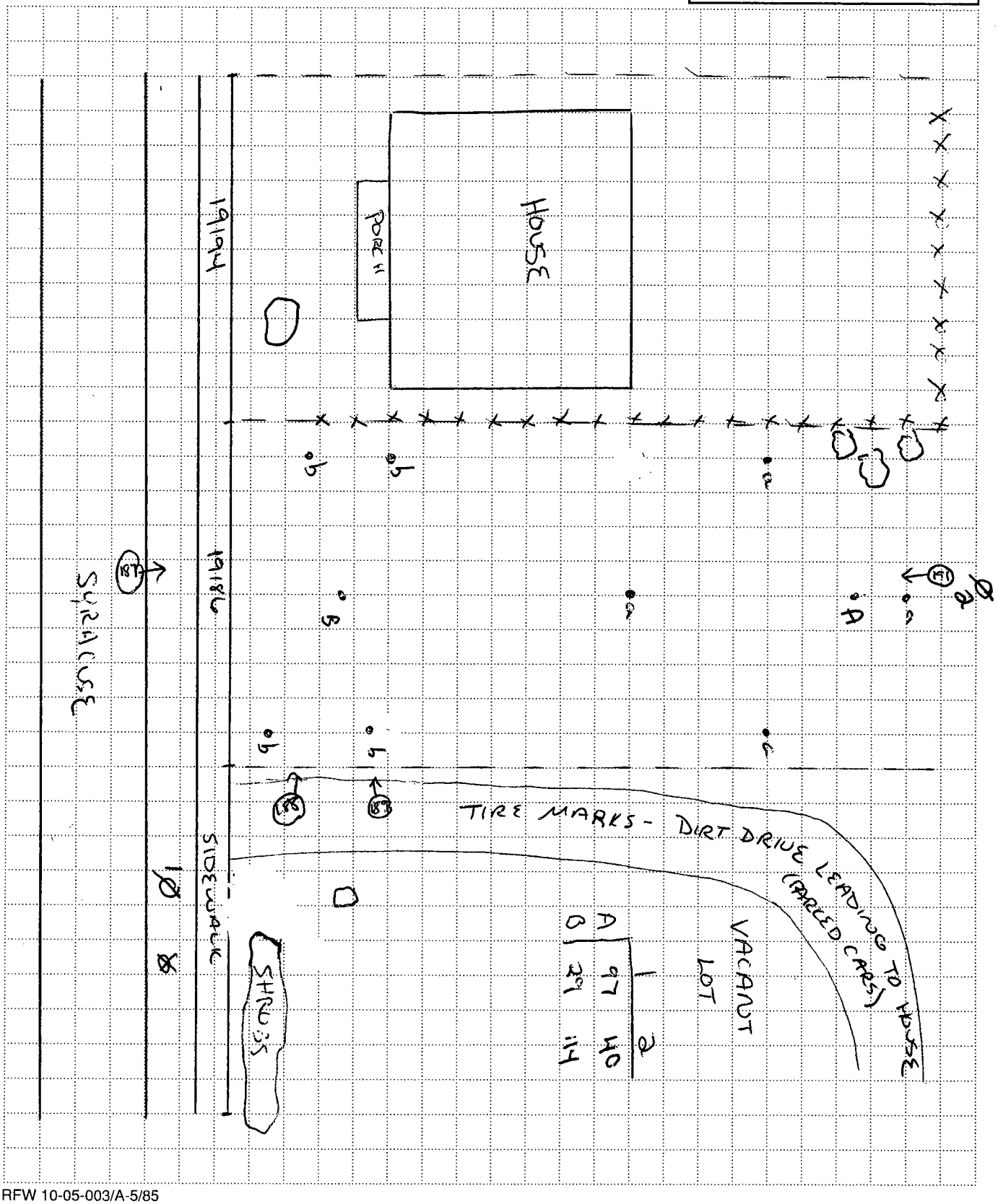
PREPARED BY A. Freeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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SHEET ____ of ____

CLIENT/SUBJECT Mt Elliot W.O. NO. ____

TASK DESCRIPTION CAR- 19635 A+B TASK NO. ____

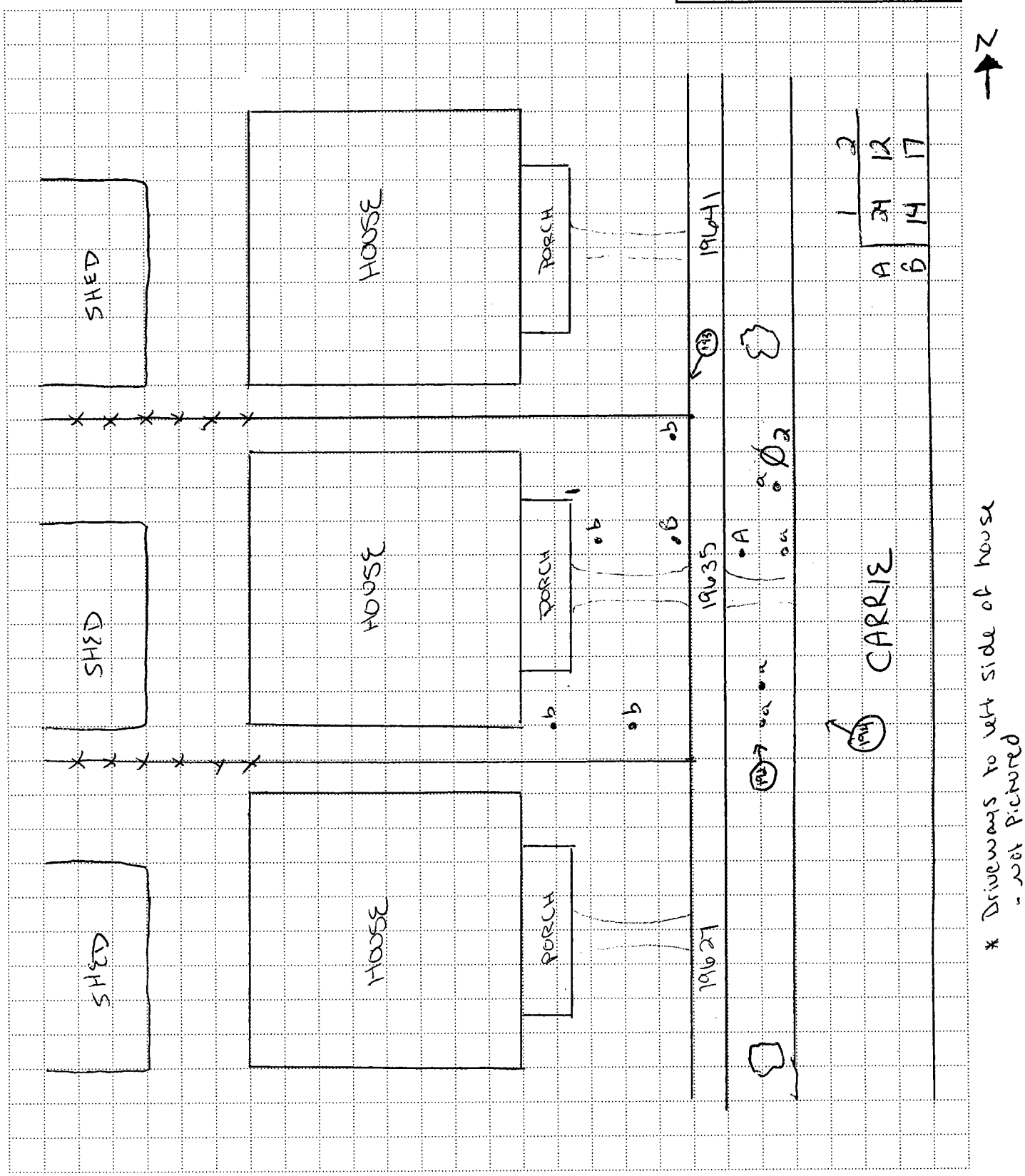
PREPARED BY A. Freeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



* Driveways to left side of house - not pictured

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SHEET ____ of ____

CLIENT/SUBJECT MT ELLIOT W.O. NO. ____

TASK DESCRIPTION HEZ-19456 A+B TASK NO. ____

PREPARED BY R Nemirowsky DEPT ____ DATE 4/11/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____

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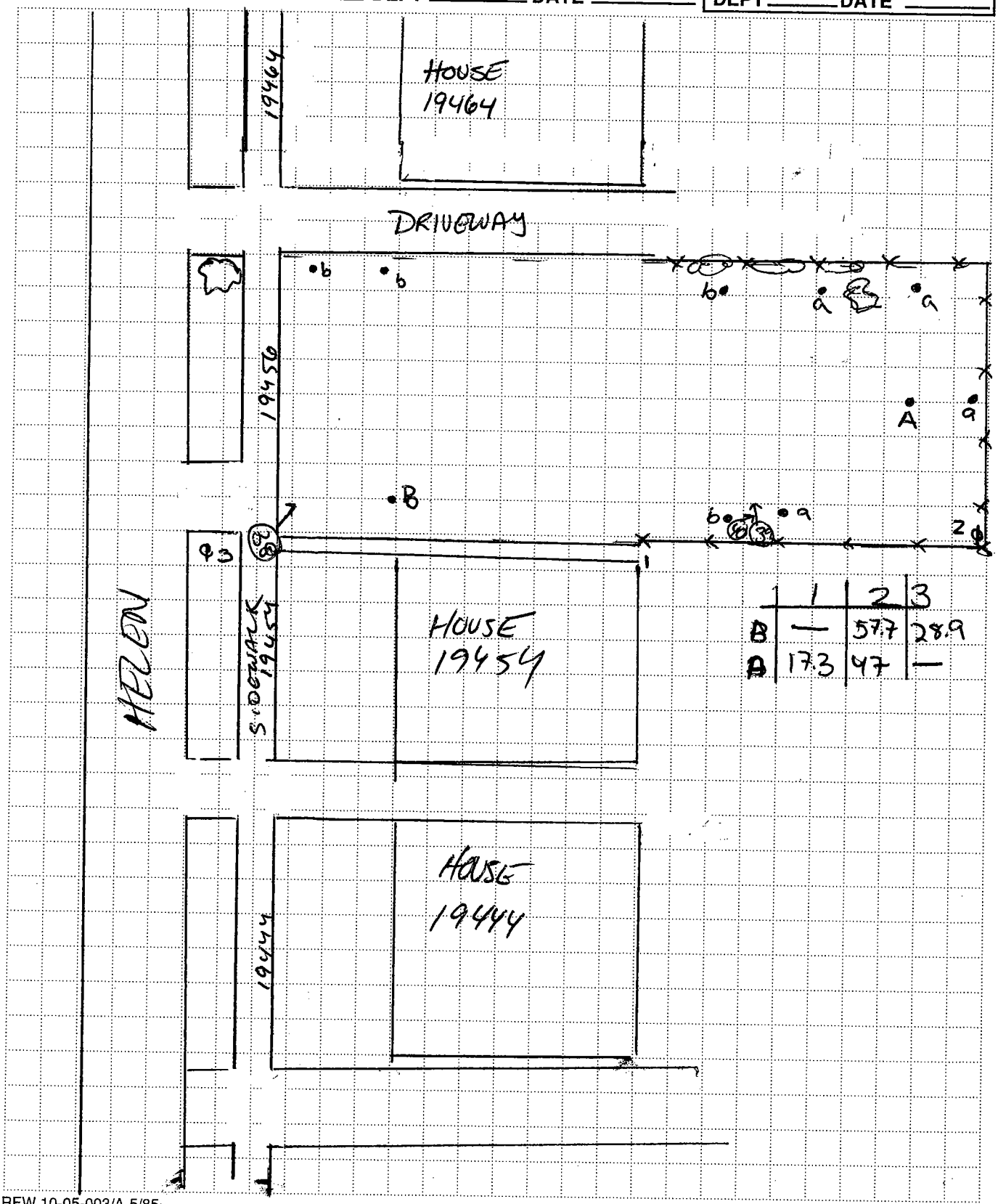

	1	2	3
B	—	57.7	28.9
A	17.3	47	—

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SHEET ____ of ____

CLIENT/SUBJECT Mt Elliot W.O. NO. ____

TASK DESCRIPTION SHE-19451 A+B (Sherwood) TASK NO. ____

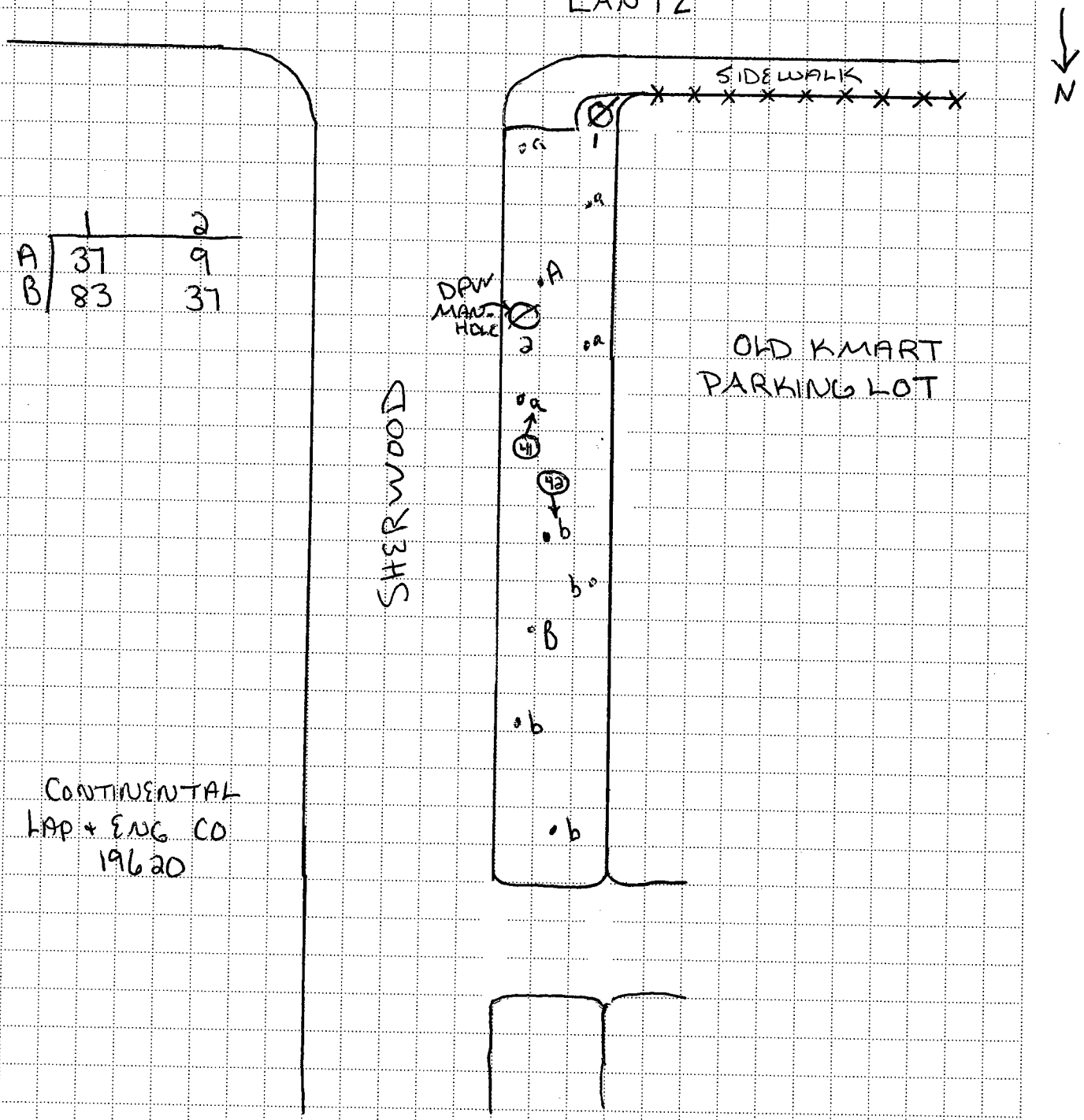
PREPARED BY A. Freeman DEPT ____ DATE 11-11-03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY ____

DEPT ____ DATE ____



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SHEET ____ of ____

CLIENT/SUBJECT Mt Elliot W.O. NO. ____

TASK DESCRIPTION HSL-19444 A+B TASK NO. ____

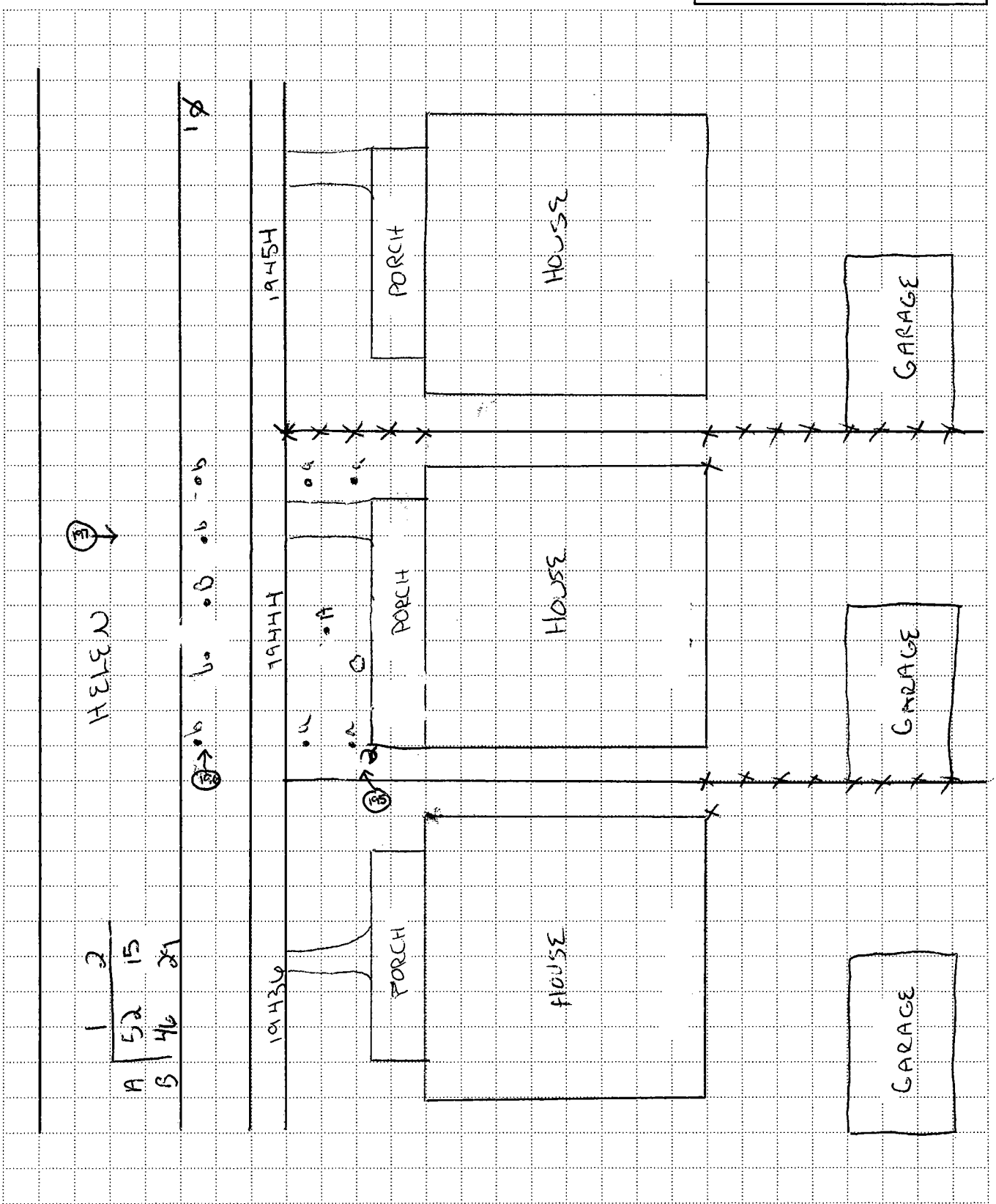
PREPARED BY A. Freeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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SHEET ____ of ____

CLIENT/SUBJECT MT Elliot W.O. NO. ____

TASK DESCRIPTION CON-19459 A+B and CON 19448 A+B TASK NO. ____

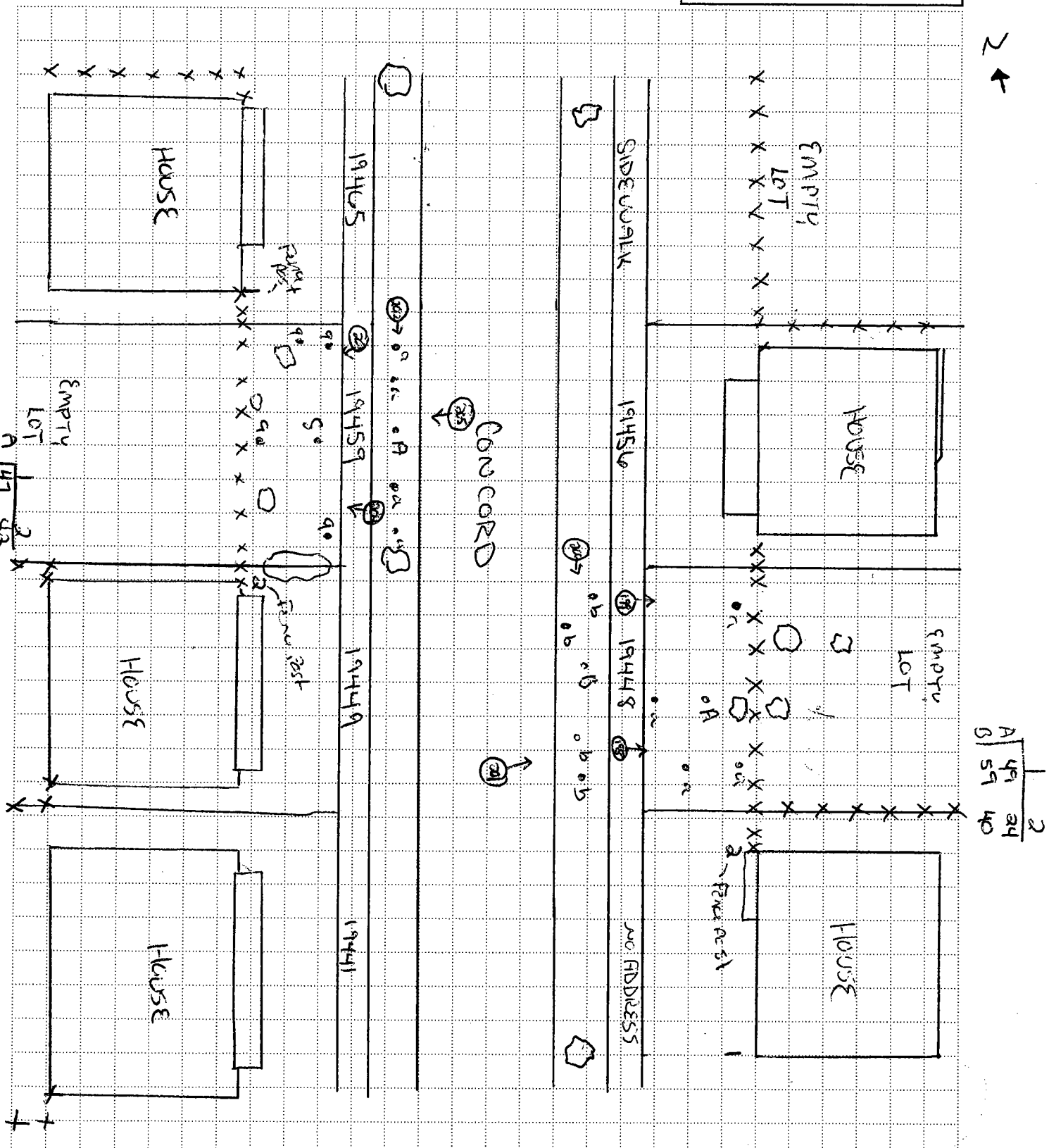
PREPARED BY AFreeman DEPT ____ DATE 12/8/03

MATH CHECK BY ____ DEPT ____ DATE ____

METHOD REV. BY ____ DEPT ____ DATE ____

APPROVED BY

DEPT ____ DATE ____



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ATTACHMENT B

TABLES

TABLE 1

SUMMARY OF SAMPLED PROPERTIES

Upwind Properties		
Address	**Description**	**Sample Identification**
19303 St Louis	Vacant property located at the corner of Emery and St Louis St and on the south of a house at 19309 St Louis.	STL-19303-A-C-0-2
		STL-19303-B-C-0-1
19309 Dwyer	House located on the west side of Dwyer St. The front of the property and Greenway were used.	DWY-19309-A-C-0-1
		DWY-19309-B-C-0-1
19420 Gable	Vacant property located on the east side of Gable St and to the south of a house at 19428 Gable. The front of the property and Greenway were used because the lot was fenced.	GAB-19420-A-C-0-1
		GAB-19420-B-C-0-2
19145 Albany	Vacant property on the west side of Albany St and directly south of a fenced in lot.	ALB-19145-A-C-0-1
		ALB-19145-B-C-0-1
19303 Syracuse	Vacant property located at the corner of Emery and Syracuse St and on the south side of a vacant property.	SYR-19303-A-C-0-1
		SYR-19303-B-C-0-1
19186 Syracuse	Vacant property located on the east side of Syracuse St and on the south side of a house at 19194 Syracuse.	SYR-19186-A-C-0-2
		SYR-19186-B-C-0-1
Downwind Properties		
Address	**Description**	**Sample Identification**
19635 Carrie	House located on the west side of Carrie St. The front of the property and Greenway were used.	CAR-19635-A-C-0-1
		CAR-19635-B-C-0-1
19456 Helen	Vacant property located on the east side of Helen St.	HEL-19456-A-C-0-2
		HEL-19456-B-C-0-1
3900 E Outer Dr *	Greenway located at the corner of Sherwood and Lantz St, on the east side of parking lot of the old Kmart, and to the north of Industrial building at 19451 Sherwood.	SHE-19451-A-C-0-1
		SHE-19451-B-C-0-1
19444 Helen	House located on the east side of Helen St. The front of the property and Greenway were used.	HEL-19444-A-C-0-1
		HEL-19444-B-C-0-1
19448 Concord	Vacant property located on the east side of Concord St. Front of property and Greenway were used due to fence. On the south side of house at 19456 Concord.	CON-19448-A-C-0-2
		CON-19448-B-C-0-1
19459 Concord	Vacant property located on the west side of Concord St. Front of property and Greenway were used due to fence. On the south side of house at 19465 Concord.	CON-19459-A-C-0-1
		CON-19459-B-C-0-1

*Notes:

2) Nearest address used in the sample ID

TABLE 2

ANALYTICAL RESULTS

Sample Address	Sample ID	Concentration of Lead (mg/Kg)
Upwind		
19303 St Louis	STL-19303-A-C-0-2	130
19303 St Louis	STL-19303-B-C-0-1	86
19309 Dwyer	DWY-19309-A-C-0-1	130
19309 Dwyer	DWY-19309-B-C-0-1	110
19420 Gable	GAB-19420-A-C-0-1	190
19420 Gable	GAB-19420-B-C-0-2	230
19145 Albany	ALB-19451-A-C-0-1	96
19145 Albany	ALB-19451-B-C-0-1	120
19303 Syracuse	SYR-19303-A-C-0-1	42
19303 Syracuse	SYR-19303-B-C-0-1	26
19186 Syracuse	SYR-19186-A-C-0-2	93
19186 Syracuse	SYR-19186-B-C-0-1	69
Downwind		
19635 Carrie	CAR-19635-A-C-0-1	56
19635 Carrie	CAR-19635-B-C-0-1	85
19456 Helen	HEL-19456-A-C-0-2	200
19456 Helen	HEL-19456-B-C-0-1	170
3900 E Outer Dr	SHE-19451-A-C-0-1	390
3900 E Outer Dr	SHE-19451-B-C-0-1	320
19444 Helen	HEL-19444-A-C-0-1	180
19444 Helen	HEL-19444-B-C-0-1	60
19448 Concord	CON-19448-A-C-0-2	160
19448 Concord	CON-19448-B-C-0-1	200
19459 Concord	CON-19459-A-C-0-1	150
19459 Concord	CON-19459-B-C-0-1	340

*Notes

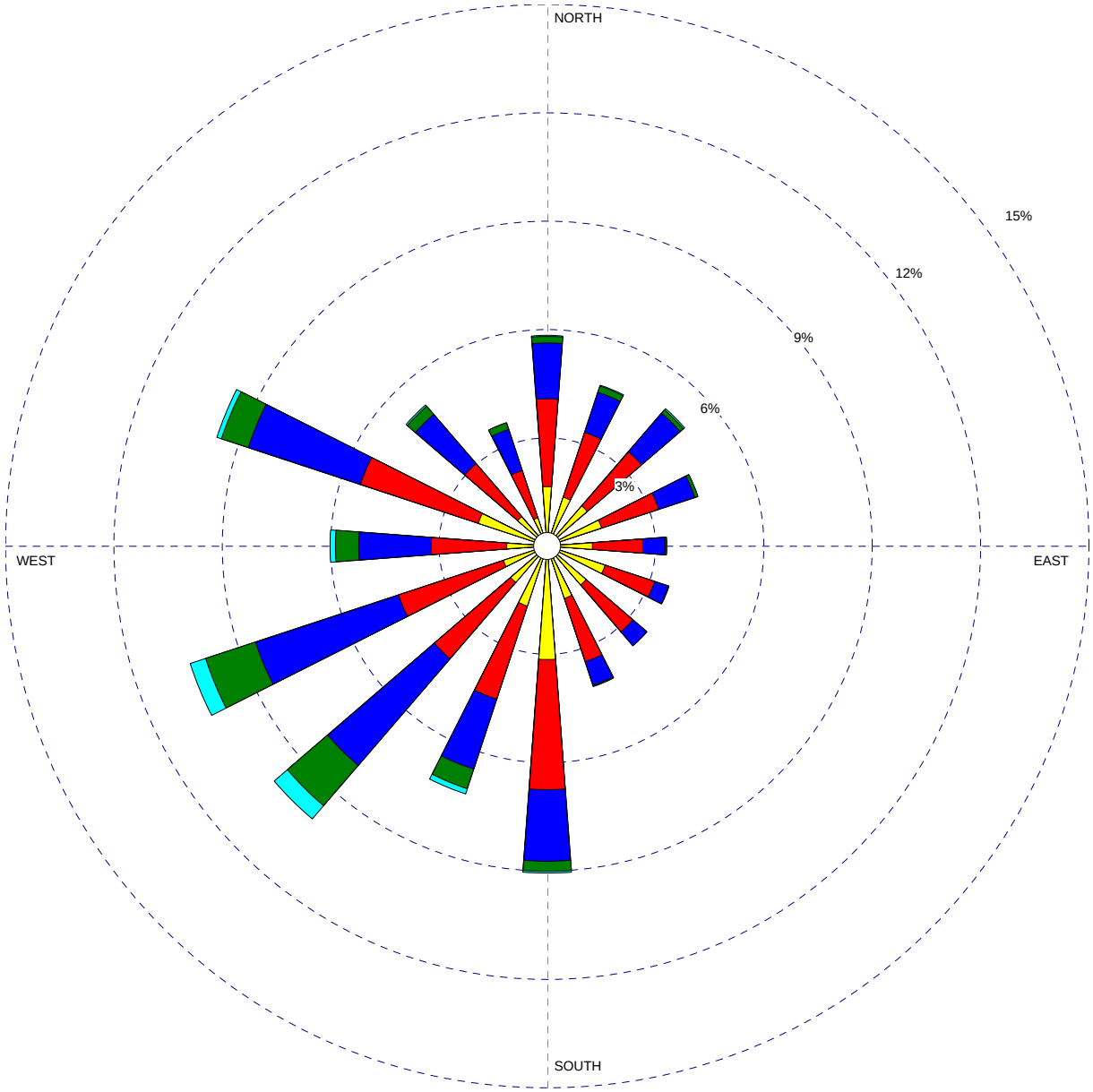
1) Bold indicates results equal to or greater than to 400 mg/kg.

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**

WRPLOT View 2.22 by Lakes Environmental Software - www.lakes-environmental.com

ATTACHMENT D

PHOTOGRAPHS OF SAMPLING LOCATIONS

Former Industrial Smelting – 19430 Mt Elliot

19303 St Louis – Vacant property located at the corner of Emery and St Louis St and on the south side of the house at 19309 St Louis.

Looking west along the vacant property at the total sampling area.

Looking southwest and west, respectively, at 5 total discrete sample A locations.

Looking northwest at 5 total discrete sample B locations.

Mt Elliot (cont'd)

19309 Dwyer – House located on the west side of Dwyer St. The front of the property and Greenway were used for sampling.

Looking south along greenway at 5 discrete sample A locations.

Looking southwest along property at 5 discrete sample B locations.

Looking west along the property at the total sampling area.

Mt Elliot (cont'd)

19420 Gable – Vacant property located on the east side of Gable St and to the south of a house at 19428 Gable. The front of the property and greenway were used because the lot was fenced.

Looking northeast along property at 5 discrete sample A locations.

Looking south along greenway at 5 discrete sample B locations.

Looking east along the property at the total sampling area.

Mt Elliot (cont'd)

19145 Albany – Vacant property on the west side of Albany St and directly south of a fenced in lot.

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

Looking northwest and north, respectively, at 5 total discrete sample B locations.

Looking west along the property at the total sampling area.

Mt Elliot (cont'd)

19303 Syracuse – Vacant property located at the corner of Emery and Syracuse St and on the south side of a vacant property.

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

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

Looking west along the vacant property at the total sampling area.

Mt Elliot (cont'd)

19186 Syracuse – Vacant property located on the east side of Syracuse St and on the south side of a house at 19194 Syracuse.

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

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

Looking east along the vacant property at the total sampling area.

Mt Elliot (cont'd)

19635 Carrie – House located on the west side of Carrie St. The front of the property and greenway were used.

Looking north along greenway at 5 discrete sample A locations.

Looking southwest along the property at 5 discrete sample B locations.

Looking northwest along the property at the total sampling area.

Mt Elliot (cont'd)

19456 Helen – Vacant property located on the east side of Helen St and between houses at 19454 and 19464 Helen.

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

Looking northeast along the vacant property at 3 of 5 discrete sample B locations.

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

Mt Elliot (cont'd)

3900 E Outer Dr – Greenway located at the corner of Sherwood and Lantz St, on the east side of the parking lot of the old Kmart, and directly north of Industrial building at 19451 Sherwood.

Looking south along greenway at 5 discrete sample A locations.

Looking north along greenway at 5 discrete sample B locations.

Mt Elliot (cont'd)

19444 Helen – House located on the east side of Helen St. The front of the property and greenway were used.

Looking northwest along property at 5 discrete sample A locations.

Looking north along greenway at 5 discrete sample B locations.

Looking east along property at the total sampling area.

Mt Elliot (cont'd)

19448 Concord – Vacant property located on the west side of Concord St and directly south of a house at 19456 Concord. Front of property and greenway used due to fence.

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

Looking south along greenway at 5 discrete sample B locations.

Looking east along the property at total sampling area.

Mt Elliot (cont'd)

19459 Concord – Vacant property located on the west side of Concord St and directly south of a house at 19465 Concord. The front of the property and greenway were used due to a fence.

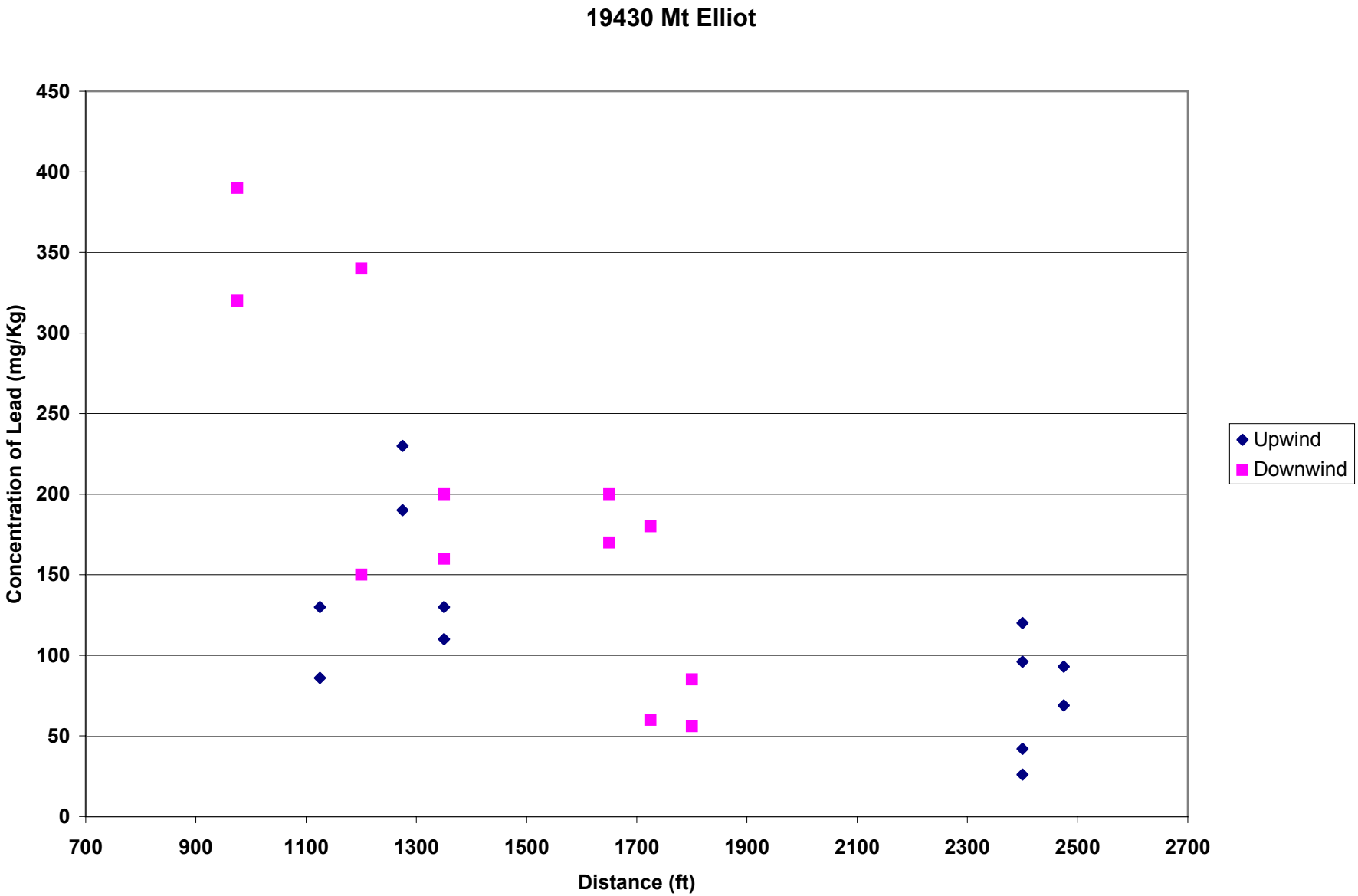
Looking south along greenway at 5 discrete sample A locations.

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

Looking west along property at the total sampling area.

ATTACHMENT E

CONCENTRATION GRAPH


19430 Mt Elliot
Concentration of Lead (mg/Kg)
450
400
350
300
250
200
150
100
50
0
700
900
1100
1300
1500
1700
1900
2100
2300
2500
2700
Distance (ft)
Upwind
Downwind

Industrial

*** Linear Model ***

Call: lm(formula = Lead.ppm ~ Location + Distance.ft + Distance.ft:Location, data = Industrial, na.action = na.exclude)
Residuals:
 Min 1Q Median 3Q Max
 -114 -35.76 -7.939 43.67 87.15

Coefficients:

	Value	Std. Error	t value	Pr(>|t|)
(Intercept)	216.9237	52.7731	4.1105	0.0005
Location	389.9067	95.9307	4.0645	0.0006
Distance.ft	-0.0581	0.0273	-2.1253	0.0462
Distance.ft:Location	-0.2276	0.0606	-3.7541	0.0012

Residual standard error: 56.04 on 20 degrees of freedom
Multiple R-Squared: 0.6941
F-statistic: 15.12 on 3 and 20 degrees of freedom, the p-value is 0.00002259

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	40755.04	40755.04	12.97839	0.001777766
Distance.ft	1	57462.31	57462.31	18.29880	0.000367515
Distance.ft:Location	1	44255.82	44255.82	14.09321	0.001249388
Residuals	20	62804.45	3140.22		

*** Linear Model ***

Call: lm(formula = Log.Lead ~ Location + Distance.ft + Distance.ft:Location, data = Industrial, na.action = na.exclude)
Residuals:
 Min 1Q Median 3Q Max
 -0.9603 -0.2549 0.02991 0.3528 0.569

Coefficients:

	Value	Std. Error	t value	Pr(>|t|)
(Intercept)	5.6648	0.4286	13.2163	0.0000
Location	1.7506	0.7791	2.2468	0.0361
Distance.ft	-0.0006	0.0002	-2.7143	0.0134
Distance.ft:Location	-0.0010	0.0005	-2.0264	0.0563

Residual standard error: 0.4551 on 20 degrees of freedom
Multiple R-Squared: 0.5918
F-statistic: 9.664 on 3 and 20 degrees of freedom, the p-value is 0.0003771

Analysis of Variance Table

Response: Log.Lead

Terms added sequentially (first to last)

	Df	Sum of Sq	Mean Sq	F Value	Pr(F)
Location	1	1.732174	1.732174	8.36189	0.00901969
Distance.ft	1	3.422642	3.422642	16.52244	0.00060463
Distance.ft:Location	1	0.850641	0.850641	4.10638	0.05626619
Residuals	20	4.143022	0.207151		

ATTACHMENT F

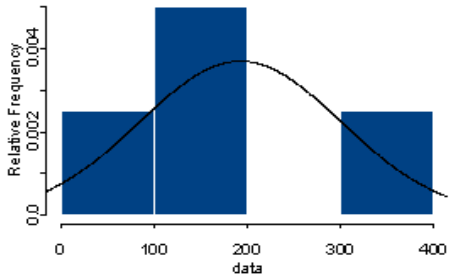
STATISTICAL DISTRIBUTION

INDUSTRIAL SMELTING
STATISTICAL DISTRIBUTION

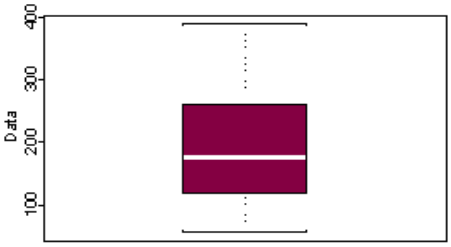
Normal Distribution Analysis for Data

Data Set Name: Industrial Smelting , Area: MTE D

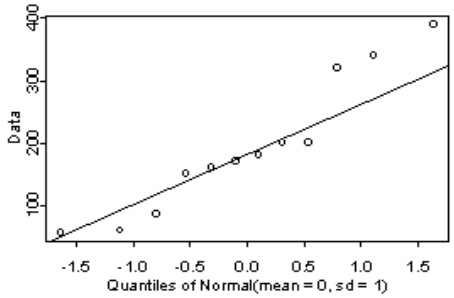
Histogram of Observed Data with Fitted Normal Distribution



Box Plot of Data Data



Normal Probability Plot of Data Data



Summary Statistics

Sample Size:	12
Coefficient of Variation:	0.561008
Coefficient of Skewness:	0.581116

Results of Shapiro-Wilk GOF

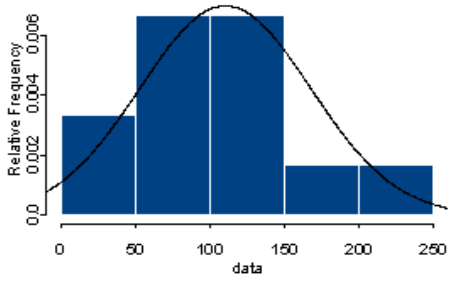
Hypothesized Distribution:	Normal
Estimated Parameters:	mean = 192.5833 sd = 108.0408
Test Statistic:	W = 0.9162004
Test Statistic Parameter:	n = 12
p-value:	0.2559843

Since p >= .05 conclude distribution is normal.

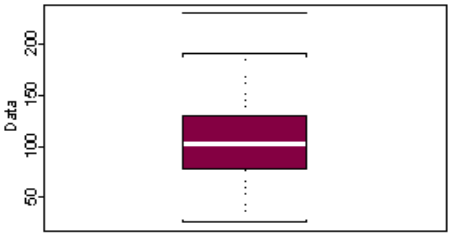
Normal Distribution Analysis for Data

Data Set Name: Industrial Smelting , Area: MTE U

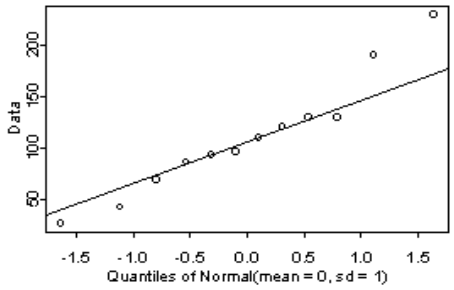
Histogram of Observed Data with Fitted Normal Distribution



Box Plot of Data Data



Normal Probability Plot of Data Data



Summary Statistics

Sample Size:	12
Coefficient of Variation:	0.5201604
Coefficient of Skewness:	0.719678

Results of Shapiro-Wilk GOF

Hypothesized Distribution:	Normal
Estimated Parameters:	mean = 110.1667 sd = 57.30434
Test Statistic:	W = 0.9479834
Test Statistic Parameter:	n = 12
p-value:	0.6077149

Since p >= .05 conclude distribution is normal.