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MPCA, HAZARDOUS
WASTE DIVISION

PETROLEUM TANK RELEASE REPORT

**EAST BUILDING
8053 BLOOMINGTON FREEWAY
BLOOMINGTON, MINNESOTA**

Maxim #4233 95-1505/3009502994
MPCA Leak#00008637

Maxim Technologies, Inc.
662 Cromwell Avenue
St. Paul, Minnesota 55114
(612) 659-7572

October 17, 1995

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.2	Scope of Work	1
2.0	BACKGROUND INFORMATION	2
2.1	Site Location and Description	2
2.2	Site History	2
2.3	Hydrogeologic Setting	3
3.0	PROJECT RESULTS	4
3.1	Soil Borings	4
3.2	Soil Boring Lithology	4
3.3	Soil Boring Sample Screening	4
3.4	Soil Boring Sample Field Analytical Results	5
3.5	Soil Boring Sample Laboratory Analytical Results	5
3.6	Groundwater Analytical Results	5
4.0	DISCUSSION AND CONCLUSIONS	5
5.0	RECOMMENDATIONS	6
6.0	STANDARD OF CARE	6

TABLES

Table 1	Soil Vapor Headspace Readings
Table 2	Soil Sample Analytical Results

FIGURES

Figure 1	Site Location and Local Topography Map
Figure 2	Site Map/Boring Locations

APPENDICES

Appendix A	MPCA Excavation Report Worksheet
Appendix B	Matrix Report
Appendix C	Methods
Appendix D	Soil Boring Logs
Appendix E	Chemistry Reports
Appendix F	MPCA Worksheets

PETROLEUM TANK RELEASE REPORT

**East Building
8053 East Bloomington Freeway
Bloomington, Minnesota**

**Maxim #4233 95-1301/30095003
MPCA Site ID# LEAK00008637**

1.0 INTRODUCTION

1.1 Purpose

Maxim Technologies, Inc. (Maxim) conducted Remedial Investigation (RI) work at the East Building, 8053 East Bloomington Freeway, Bloomington, Hennepin County, Minnesota. The purpose of the RI was to provide information concerning the degree and extent of petroleum contamination as it may exist in the soils and groundwater at the site, and, if necessary, recommend remedial alternatives to the Minnesota Pollution Control Agency (MPCA) for approval. This work was authorized by acceptance of our August 9, 1995 proposal. The work was performed during September, 1995.

1.2 Scope of Work

The scope of services performed consisted of the following items:

1. advancing four geoprobe soil borings to depths ranging from 21 to 24 feet below grade;
2. screening the soil samples recovered from the borings for the presence of organic vapors and for visual evidence of hydrocarbon contamination;
3. collecting eleven soil samples from the borings and analyzing the samples on-site for the presence and concentration of total petroleum hydrocarbons as fuel oil (TPH-FO), benzene, ethylbenzene, toluene, and xylenes (BETX);

4. collecting four ground water samples from the borings and analyzing the samples on-site for the presence and concentration of TPH-FO and BETX;
5. collecting four soil samples from the borings to confirm field analytical results and analyzing the samples for presence and concentration of diesel range organics (DRO) and BETX and;
6. preparing a report presenting field and laboratory data with our opinions and recommendations based on that data in a format in accordance with the April, 1993 MPCA guidance document, Petroleum Tank Release Reports.

2.0 BACKGROUND INFORMATION

2.1 Site Location and Description

The site is located at the southeast corner of 80½ Street and East Bloomington Freeway, at 8053 Bloomington Freeway, Bloomington, Hennepin County, Minnesota. The general legal description of the site is the W½ of the SW¼ of the NE¼ of Section 4, Township 27 North, Range 24 West, Hennepin County. The coordinates of the site are 44 degrees, 51 minutes, 28 seconds North Latitude, and 93 degrees, 17 minutes, 46 seconds West Longitude (Figure 1).

The eastern portion of the site is occupied by a commercial size office building that is currently vacant and undergoing remodeling. The western portion of the property is occupied by an asphalt paved parking lot.

Adjoining property to the north across 80½ Street is Seagate Corporation, to the south is a storm water retention pond and an apartment building, to the east across Freemont Avenue South are residences and to the west is East Bloomington Freeway and Interstate 35 (I-35) (Figure 2).

2.2 Site History

According to the Environmental Site Assessment completed by Maxim on July 26, 1995 the current building was built in the mid 1960's and has been used as multi-tenant office building until recently. Aerial photos indicate the site was a source of gravel fill during the construction

of I-35 and was regraded after the completion of the freeway. The building tenants, past and present, did not suggest any environmental concern at the site. There was however, an underground storage tank (UST) that contained fuel oil on the east side of the building. This tank was removed on August 4, 1995 and is documented in the Excavation Report Worksheet for Petroleum Release Sites, Fact Sheet #4 attached as Appendix A. Organic vapor contamination was measured in the soils at a concentration of 197 parts-per-million (ppm) 6 to 7 feet beneath the fill/distribution lines. The contamination was observed to be in an approximately 1 to 2 foot thick layer. This area could not be investigated using the back hoe due to the proximity of the contamination to the building and a natural gas line. A concentration of 3,000 ppm DRO was detected in the 6 to 7 foot interval and there were no detectable hydrocarbons in the sample beneath this layer at 7 to 8 feet.

2.3 Hydrogeologic Setting

According to the Geologic Atlas of Hennepin County, Minnesota, Minnesota Geological Survey, University of Minnesota, 1989, the site is located on terrace deposits composed of sand gravelly sand and loamy sand.

According to the Geologic Atlas of Hennepin County, Minnesota, Minnesota Geological Survey, University of Minnesota, 1989, the upper most bedrock unit under the site is the Prairie Du Chien Group composed of dolostone, a magnesium limestone. Depth to bedrock under the site is approximately 150 to 200 feet.

According to the Geologic Atlas of Hennepin County, Minnesota, Minnesota Geological Survey, University of Minnesota, 1989, The Prairie Du Chien-Jordan Aquifer is present under the site and is the most heavily used aquifer in the county. Groundwater flow is towards the Minnesota River, four miles to the south.

The movement of groundwater within the saturated zones of the surficial material is likely to the south towards the Minnesota River. Local flow direction in the water table is highly variable and may be influenced by local wells and wetlands, etc.

3.0 PROJECT RESULTS

3.1 Soil Borings

Geoprobe soil borings GP-1, GP-2, GP-3, and GP-4 were advanced through the area of the fill/distribution lines as shown on Figure 2. The borings were placed to best determine the presence, if any, and the extent of soil and groundwater contamination associated with the former fuel oil UST. The soil borings were advanced to depths of 21 to 24 feet below grade. The methods used in advancing the borings are described in Matrix Technologies, Inc., September 19, 1995, report and attached in Appendix B. The method of soil classifications and Maxim boring logs are presented in Appendix C & D respectively. The soil borings were sealed from bottom to top with a neat cement grout.

3.2 Soil Boring Lithology

The soil samples recovered from the borings reveal a stratigraphy of up to ½ foot of topsoil underlain by up to 7 feet of fill, underlain by alluvium to the terminal depths of the borings. The alluvium consists of layers of silty sand, sand and coarse sand. Groundwater was observed in the borings at depths of approximately 20 to 21 feet below grade. Water levels for all borings are recorded on the boring logs in Appendix D.

3.3 Soil Boring Sample Screening

As the soil samples were recovered from the borings, the soils were screened for the presence of organic vapors as indicators of hydrocarbon contamination using the methods outlined in Appendix C. The screening results are presented in Table 1 and on the soil boring logs in Appendix D. There were detectable concentrations of organic vapors in boring GP-1 of 311 ppm in the in the 4 to 6 foot interval and of 12 ppm in the 6 to 8 foot interval. In addition concentrations of 1.1 to 1.8 ppm were detected in the 10 to 12 foot and 16 to 20 foot intervals. Organic vapors were not detected in the samples from borings GP-2, GP-3 and GP-4.

3.4 Soil Boring Sample Field Analytical Results

Soil samples for field laboratory analysis were collected from the borings at the depths indicated on Table 2. Samples were collected at the intervals that had detectable concentrations of petroleum hydrocarbons, were the water table intervals or were at possible lithology changes. Soil samples were collected using the methods presented in Appendix C. The soil samples were analyzed for the presence and concentration of TPH-FO and BETX. The analytical results are presented in Table 2. The specific laboratory reports are included in Appendix B as part of the Matrix report. No parameters analyzed for were detected in the soil samples from borings GP-2, GP-3 or GP-4 and the 14 to 16 foot and 22 to 24 foot intervals of boring GP-1. Total petroleum hydrocarbons as fuel oil were detected in the 4 to 6 foot interval at a concentration of 3,000 ppm and in the 6 to 8 foot interval at a concentration of 930 ppm.

3.5 Boring Sample Laboratory Analytical Results

Soil samples for laboratory analysis were collected from the borings, at the water table interval, to confirm the results of the field analytical data. The samples were collected using the methods described in Appendix C. The samples were analyzed for DRO and BETX. There were no detectable concentrations of petroleum hydrocarbons except, the sample from boring GP-2 had a detectable concentration of 45 ppm DRO.

3.6 Groundwater Analytical Results

Groundwater samples for field laboratory analysis were collected from each of the borings using the methods described in the Matrix report attached in Appendix B. The samples were analyzed for TPH-FO and BETX. None of the groundwater samples had detectable concentrations of petroleum hydrocarbons.

4.0 DISCUSSION AND CONCLUSIONS

Review of the soil analytical results indicate contamination on the site consists of fuel oil.

The areal extent of soil contamination at the site extends from the area underneath the former fill/dispenser lines, south along the building to boring GP-2 and west underneath the building. The concentration detected in the sample from boring GP-2 at 19 to 21 feet was below the 50 ppm action level for sands.

The vertical extent of soil contamination does not appear to extend beyond the water table as the groundwater samples had no detectable concentrations of petroleum hydrocarbons. Based on the analytical data the does not appear to any impacts to the groundwater.

Based on the above information, it is our opinion further RI work is not warranted at this site. The MPCA Remedial Investigation Report Worksheet is included in Appendix H.

5.0 RECOMMENDATIONS

Based on the above information, Maxim recommends closure of the site.

6.0 STANDARD OF CARE

The conclusions contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report prepared by:

Susan K Jones
Susan K. Jones
Project Manager

This report reviewed by:

Kathryn J Kleiter
Kathryn J. Kleiter, CPG
Senior Project Manager



TABLES

**Table 1 - Organic Vapor Readings
East Building
Bloomington, Minnesota**

Depth (ft)	GP-1	GP-2	GP-3	GP-4
0-2	ND	ND	ND	ND
2-4	TR	ND	ND	ND
4-6	311	ND	ND	ND
6-8	12	ND	ND	ND
8-10	TR	ND	ND	ND
10-12	1.8	ND	ND	ND
12-14	TR	ND	ND	ND
14-16	ND	ND	ND	ND
16-18	1.1	ND	ND	ND
18-20	1.5	ND	ND	ND
20-22	ND		ND	ND
22-24	ND		ND	ND

All values are equal to parts-per-million (ppm)

-- No reading taken
 ND Not detected
 TR Less than 1 ppm detected

**Table 2 - Soil Analytical Results
East Building
Bloomington, Minnesota**

Boring/Depth (ft)	TPH-FO/DRO*	Benzene	Ethylbenzene	Toluene	Xylene
<u>Field Analysis</u>					
GP-1/(4-6)	3000	ND	ND	ND	ND
GP-1/(6-8)	930	ND	ND	ND	ND
GP-1/(14-16)	ND	ND	ND	ND	ND
GP-1/(22-24)	ND	ND	ND	ND	ND
GP-2/(11-15)	ND	ND	ND	ND	ND
GP-2/(15-17)	ND	ND	ND	ND	ND
GP-2/(19-21)	ND	ND	ND	ND	ND
GP-3/(8-12)	ND	ND	ND	ND	ND
GP-3/(20-22)	ND	ND	ND	ND	ND
GP-4/(8-12)	ND	ND	ND	ND	ND
GP-4/(20-22)	ND	ND	ND	ND	ND
<u>Laboratory Analysis</u>					
GP-1/(20-22)	ND	ND	ND	ND	ND
GP-2/(19-21)	45**	--	--	--	--
GP-3/(20-22)	ND	ND	ND	ND	ND
GP-4/(20-22)	ND	ND	ND	ND	ND

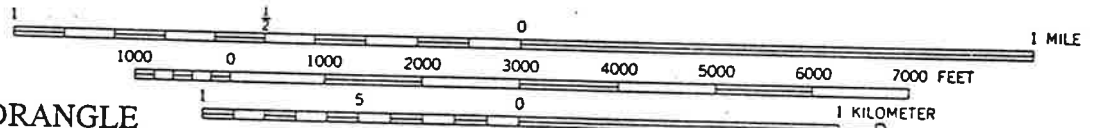
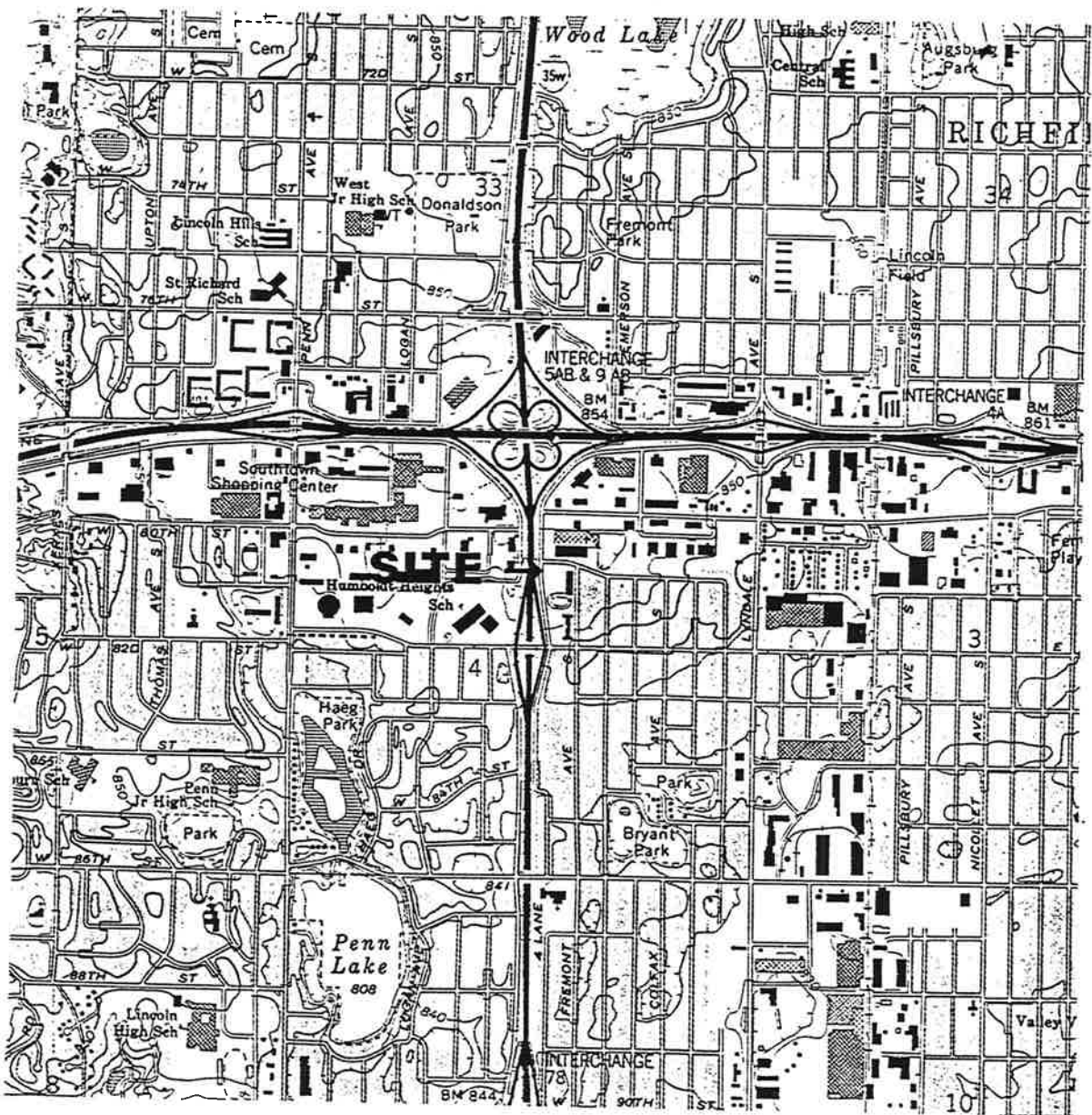
All Values are equal to parts-per-million

* Field analysis US EPA Method 8020 modified, Laboratory analysis Wisconsin Diesel Range Organics

** Higher boiling point hydrocarbons present

-- Not Analyzed

FIGURES



BLOOMINGTON QUADRANGLE
 MINNESOTA
 7.5 MINUTE SERIES (TOPOGRAPHIC)

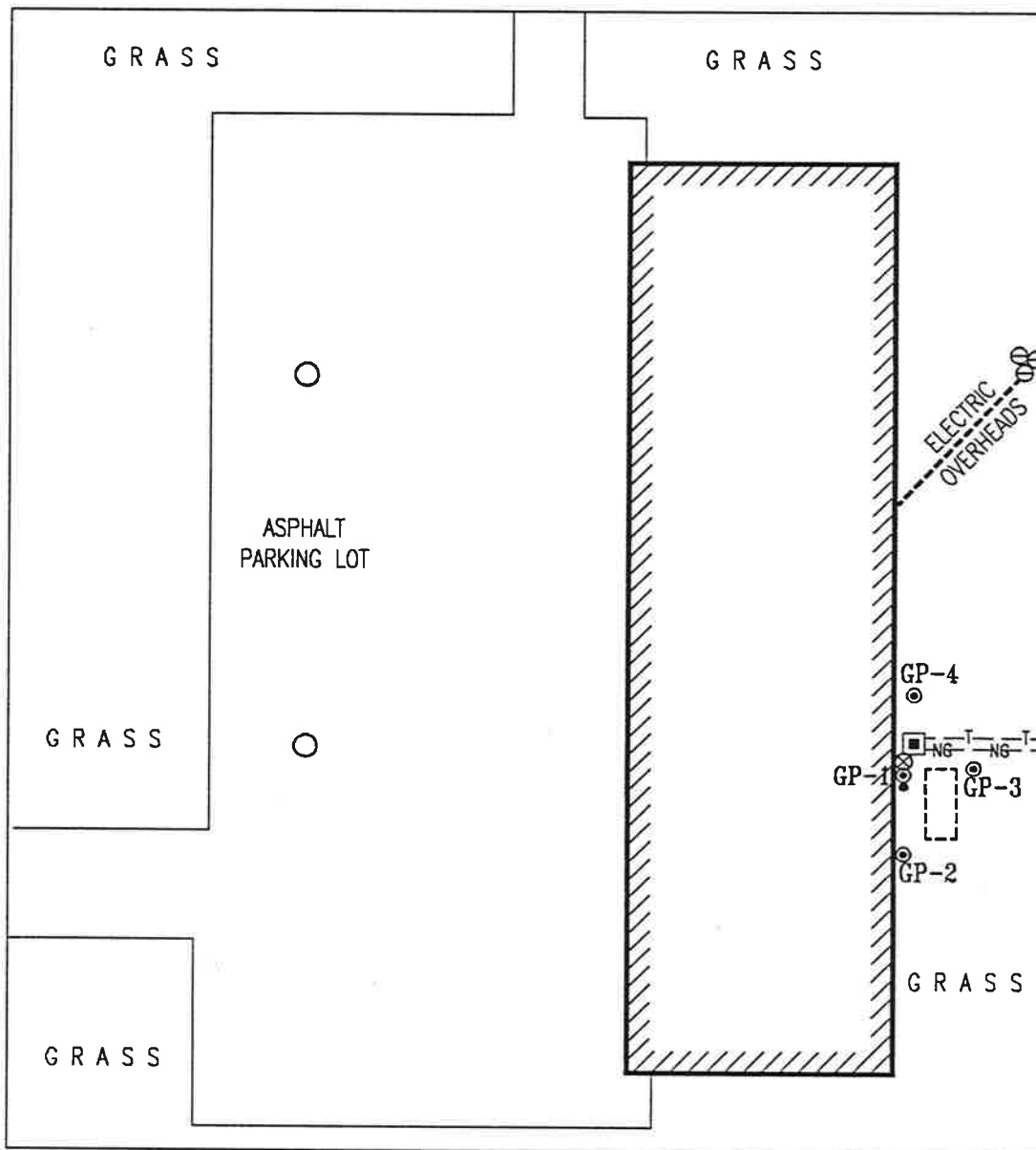


Huntingdon Engineering & Environmental, Inc.	SITE LOCATION AND LOCAL TOPOGRAPHY MAP		SCALE: 1:24,000
	Environmental Site Assessment East Building 8053 East Bloomington Freeway Bloomington, Minnesota	PROJECT NUMBER: 4233 95-1505	DATE: July 24, 1995	FIGURE NO: 1

80 1/2 th STREET

INTERSTATE 94

EAST BLOOMINGTON FREEWAY



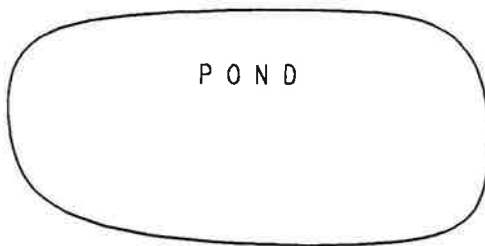
RESIDENCES

FREMONT AVENUE SOUTH

RESIDENCES

LEGEND:

- FORMER VENT PIPE
- ⊙ GEOPROBE LOCATIONS
- ⊖ POLE-MOUNTED TRANSFORMER
- ⊗ FORMER FILL PIPE
- STORM DRAIN
- NATURAL GAS METER
- NG- -NG- NATURAL GAS LINE
- T- -T- TELEPHONE LINE
- EXCAVATION OUTLINE



APARTMENTS

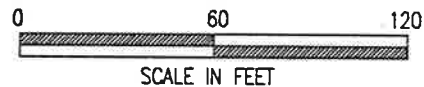


FIGURE NUMBER: 2	DATE: 7/25/95 | REV 10/16/95
SITE MAP & GEOPROBE LOCATIONS	
8053 EAST BLOOMINGTON FREEWAY	
BLOOMINGTON, MINNESOTA	
PROJECT NO. 4233 95-1505	
DRAWN BY: LINDA SIMMONS	
REVIEWED BY: SUSAN JONES	
SCALE: 1 INCH = 60 FEET	
AUTOCAD DWG: 4233 95-1505A	

APPENDIX A

MPCA EXCAVATION REPORT WORKSHEET

**EXCAVATION REPORT WORKSHEET
FOR PETROLEUM RELEASE SITES**

**East Building
Bloomington, Minnesota**

Maxim #4233 95-1505

MAXIM TECHNOLOGIES, INC.

**662 Cromwell Avenue
St. Paul, Minnesota 55114
(612) 659-7572**

August 9, 1995

EXCAVATION REPORT WORKSHEET FOR PETROLEUM RELEASE SITES

Fact Sheet #4

Minnesota Pollution Control Agency

LUST Cleanup Program

April 1993

Complete the information below and submit to the Minnesota Pollution Control Agency (MPCA) Tanks and Spills Section to document excavation and treatment of petroleum contaminated soil. Conduct excavations in accordance with "Excavation of Petroleum Contaminated Soil" (fact sheet #13). Please attach any available preliminary site investigation reports to this excavation report.

Attach additional pages if necessary. Please type or print clearly.

The excavation reporting deadline is 10 months from the date of receipt of the standard letter. A shorter deadline may be established by MPCA staff for high priority sites.

I. BACKGROUND

A. Site: East Building

Street: 8053 East Bloomington Freeway
City, Zip: Bloomington
County: Hennepin
MPCA Site ID#: LEAK0000

B. Tank Owner/Operator: East Bldg Partnership

Mailing Address: MPN Holdings
Street/Box: 115 93 Lombard
City, Zip: Winnipeg, Manitoba R3B3B1
Telephone: (204) 942-8200

C. Excavating Contractor
Environmental Contractors Corporation

Contact: Keith Cohrs
Telephone: (612) 482-0817
Tank Contractor Certification
Number: 0592

D. Consultant: Maxim Technologies, Inc.

Contact: Kate Kleiter
Street/Box: 662 Cromwell Avenue
City, Zip: St. Paul, MN 55114
Telephone: (612) 659-7572

E. Others on-site during site work (e.g., fire marshal, local officials, MPCA staff, etc.):
No others on site during site work

Note: If person other than tank owner and/or operator is conducting the cleanup, provide name, address, and relationship to site on a separate attached sheet.

II. DATES

A. Date release reported to MPCA: August 4, 1995

B. Dates site work performed:

Work Performed

300 Gallons of Fuel Oil pumped from tank
Tank removed and excavation backfilled
Tank cut and cleaned on site,
2 Gallons of tank bottoms

Date

August 4, 1995
August 4, 1995
August 4, 1995

III. RELEASE INFORMATION

A. Provide the following information for all removed tanks.

Tank 1: Capacity 3000 Gallons Type Steel Coated Age Unknown
Condition: Fair to Good, some rusting and pitting
Product history: Fuel Oil

Approximate quantity of petroleum released, if known: Unknown

Cause of release: The lines appear to be the source of the release.

Tank 2: Capacity _____ Type _____ Age _____
Condition: _____
Product history: _____

Approximate quantity of petroleum released, if known:

Cause of release:

B. Provide the following information for all existing tanks.

Tank No.	Capacity	Contents	Type	Age
----------	----------	----------	------	-----

No additional tanks known to exist at the site

C. If the release as associated with the lines or dispensers, briefly describe the problem:

The release appeared to be from either the fill line or feeder lines, near the building or under it.

D. If the release was a surface spill, briefly describe the problem:

The release did not appear to be a surface spill.

IV. EXCAVATION

A. Dimensions of excavation: Roughly 10 ft by 22 ft by 10 ft deep

B. Original tank backfill material (sand, gravel, etc.): Silty sand, fill

April 1993

- C. Native soil type (clay, sand, etc.): Sand
- D. Quantity of contaminated soil removed (cubic yards): Approximately 5 yds³
[Note: If more than 150 cubic yards removed, please attach copy of written approval from MPCA.]
- E. Was groundwater encountered or was there evidence of a seasonally high groundwater table? At what depth?

Groundwater was not encountered and there was no evidence of a seasonally high groundwater table.

- F. If a soil boring was required (see fact sheet #13, "Excavation of Petroleum Contaminated Soil," Part VI Additional Investigation) describe the soil screening and analytical results. Attach the boring logs and laboratory results to this report.

- G. If no soil boring was required, explain.

No soil boring has been completed at this time due to the limited vertical extent of contamination and because contamination extends under the building.

- H. If groundwater was encountered or if a soil boring was conducted, was there evidence of groundwater contamination? Specify, e.g., free product (specify thickness, product sheen, groundwater in contact with petroleum contaminated soil, water analytical results, etc.

[NOTE: If free product was observed, contact MPCA staff immediately as outlined in "Petroleum Tank Release Reports" (fact sheet #3). Also consult fact sheet #18, "Free Product: Evaluation and Recovery"].

There is no evidence of groundwater impacts.

- I. Was bedrock encountered in the excavation? At what depth?

Bedrock was not encountered in the excavation.

- J. Were other unique conditions associated with this site? If so, explain.

A Phase I environmental site assessment was completed by Maxim in July 1995 and a registered well was identified as being on site. The on-site well completed in 1967 is four inches in diameter and 328 feet deep. There is no casing record and no water levels. The boring log indicates bedrock is at a depth of 164 feet and is the Prairie Du Chien. A copy of the well log is attached.

April 1993

V. SAMPLING

- A. Briefly describe the field screening methods used to distinguish contaminated from uncontaminated soil:

The soil samples were screened with an hNu Photoionization detector equipped with a 10.2 eV lamp and calibrated for direct reading in ppm volume/volume for Benzene. A OVM was also used. Soil samples were collected and screened according to the "Jar Headspace Analytical Screening Procedure" recommended by the MCPA. Each bucket was also gross screened in the areas where contamination was detected.

- B. List soil vapor headspace analysis results. Indicate sampling locations using sample codes (with sampling depths in parentheses), e.g. R-1 (2 feet), R-2 (10 feet), etc. "R" stand for "removed." Samples collected at different depths at the same location should be labeled R-1A (2 feet), R-1B (4 feet), R-1C (6 feet), etc. If the sample was collected from the sidewall or bottom after excavation was complete, label it S-1 (for sidewall) or B-1 (for "bottom"). Be sure the sample codes correspond with the site map required in part VI, below.

Sample Code	Soil Type	Reading/Background ppm	Sample Code	Soil Type	Reading/Background ppm
R-1 (3-4')	Silty sand	ND/0.0	S-1 (7-8')	Sand	1.0/0.0
R-2 (2-3')	Silty sand	40/0.0	S-2 (6-7')	Sand	197.2/0.0
R-3 (8-9')	Sand	22/0.0	S-3 (½')	Silty sand/ topsoil	ND/0.0
R-4 (4-6')	Silty sand	ND/0.0	S-4 (½')	Silty sand/ topsoil	ND/0.0
R-5 (8-10')	Sand	11.5/0.0	S-5 (8-9')	Sand	ND/0.0
R-6 (14')	Sand	0.2/0.0	S-6 (8-9')	Sand	ND/0.0
			S-7 (8-9')	Sand	ND/0.0
			B-1 (9-10')	Sand	ND/0.0
			B-2 (9-10')	Sand	ND/0.0
			B-3 (9-10')	Sand	ND/0.0

- C. Briefly describe the soil analytical sampling and handling procedures used: Sediment samples were collected directly from the bucket and placed in glass chemical sample jars. The samples were shipped to the Maxim Sioux Falls Laboratory within prescribed holding times and were accompanied by proper chain-of-custody forms.

April 1993

- D. List below the soil sample analytical results from bottom and sidewall samples (i.e., soils left in place when excavation is complete). Code the samples with sampling depths in parentheses as follows: sidewall samples S-1 (8 feet), S-2 (4 feet), etc.; bottom samples B-1 (13 feet), B-2 (14 feet), etc. Be sure the sample codes correspond to the site map required in part VI. Do not include analyses from the stockpiled soils.

Sample Code	DRO	Benzene ppm	Ethylbenzene ppm	Toluene ppm	Xylene ppm
S-1 (7-8')	ND	ND	ND	ND	ND
S-2 (6-7')	3,000	NA	NA	NA	NA
B-1 (9-10')	ND	NA	NA	NA	NA
B-2 (9-10')	ND	NA	NA	NA	NA
B-3 (9-10')	ND	NA	NA	NA	NA

NOTE: ATTACH COPIES OF LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS
 NA = Not Analyzed ND = Not Detected

VI. FIGURES

Attach the following figures to this report:

1. Site location map.
2. Site map(s) drawn to scale illustrating the following:
 - a. Location (or former location) of all present and former tanks, lines, and dispensers;
 - b. Location of other structures (buildings, canopies, etc.);
 - c. Adjacent city, township, or county roadways;
 - d. Final extent and depth of excavation;
 - e. Location of soil screening samples (e.g. R-1), soil analytical samples (e.g., S-1 or B-1), and soil borings (e.g. SB-1). Also, attach all boring logs.
 - f. North arrow, bar scale and map legend.

VII. SUMMARY

Briefly summarize evidence indicating whether additional investigation is necessary at the site, as discussed in part VI of "Excavation of Petroleum Contaminated Soil" (fact sheet #13). If no further action is recommended, the MPCA staff will review this report following notification of soil treatment.

The source of contamination appears to be either the fill or feeder lines and the location of the release is near the edge or underneath the building. The release appears to have proceeded vertically until reaching 8 feet in depth and then spread out laterally. The vertical extent of the release does not appear to extend beyond 8 feet in depth. The areal extent of contamination is undefinable as it extends under the building.

Concentrations of up to 3,000 ppm DRO were detected in the soil sample collected at S-2, located within the contaminated layer that had migrated under the building. Groundwater does not appear to be in contact with contaminated soils. Depth to groundwater is expected to be at a depth of greater than 15 feet.

At this time we recommend placing up to three borings on site to a depth of 5 feet into the water table and for a limited remedial investigation at the site.

VIII. SOIL TREATMENT INFORMATION

- A. Soil Treatment method used (thermal, land application, other). If you choose "other" specify treatment method: 5 cubic yards of contaminated soil removed from the excavation was thin spread on top of the excavation after backfilling was complete.
- B. Location of treatment site/facility: N/A
- C. Date MPCA approved soil treatment (if thermal treatment was used after May 1, 1991, indicate date that the MPCA permitted thermal treatment facility agreed to accept soil):
N/A
- D. Identify the location of stockpiled contaminated soil:
There is no stockpile of contaminated soil

IX. CONSULTANT (OR OTHER) PREPARING THIS REPORT

Company Name: Maxim Technologies, Inc.

Street/Box: 662 Cromwell Ave.

City, Zip: St. Paul, MN 55114

Telephone: (612) 659-7572

Contact: Kate Kleiter

Signature: Kate Kleiter

Date: 8/9/95

Excavation Report Worksheet for Petroleum Release Sites

Page 7

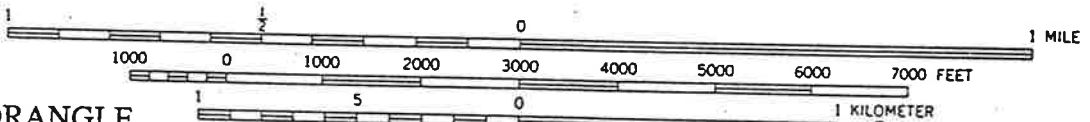
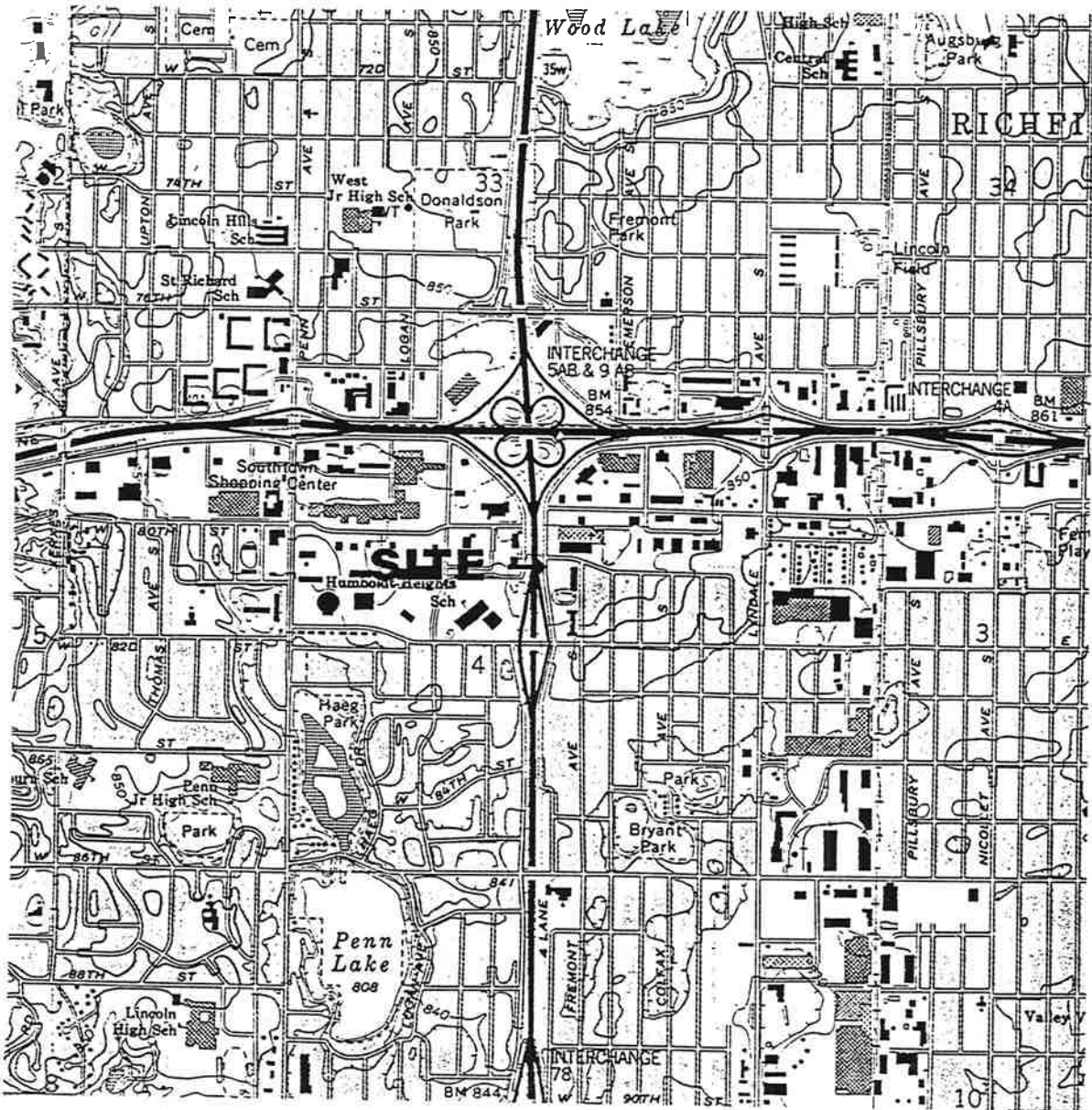
April 1993

If additional investigation is not required at the site, please mail this form and all necessary attachments to:

(Project Manager)
Minnesota Pollution Control Agency
Hazardous Waste Division
Tanks and Spills Section
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

If additional investigation is required at the site, include this form as an appendix to the Remedial Investigation/Corrective Action Design report. Excavation reports indicating a remedial investigation (RI) is necessary will not be reviewed by MPCA staff until the RI has been completed.

g:\shared\423\excav.#4



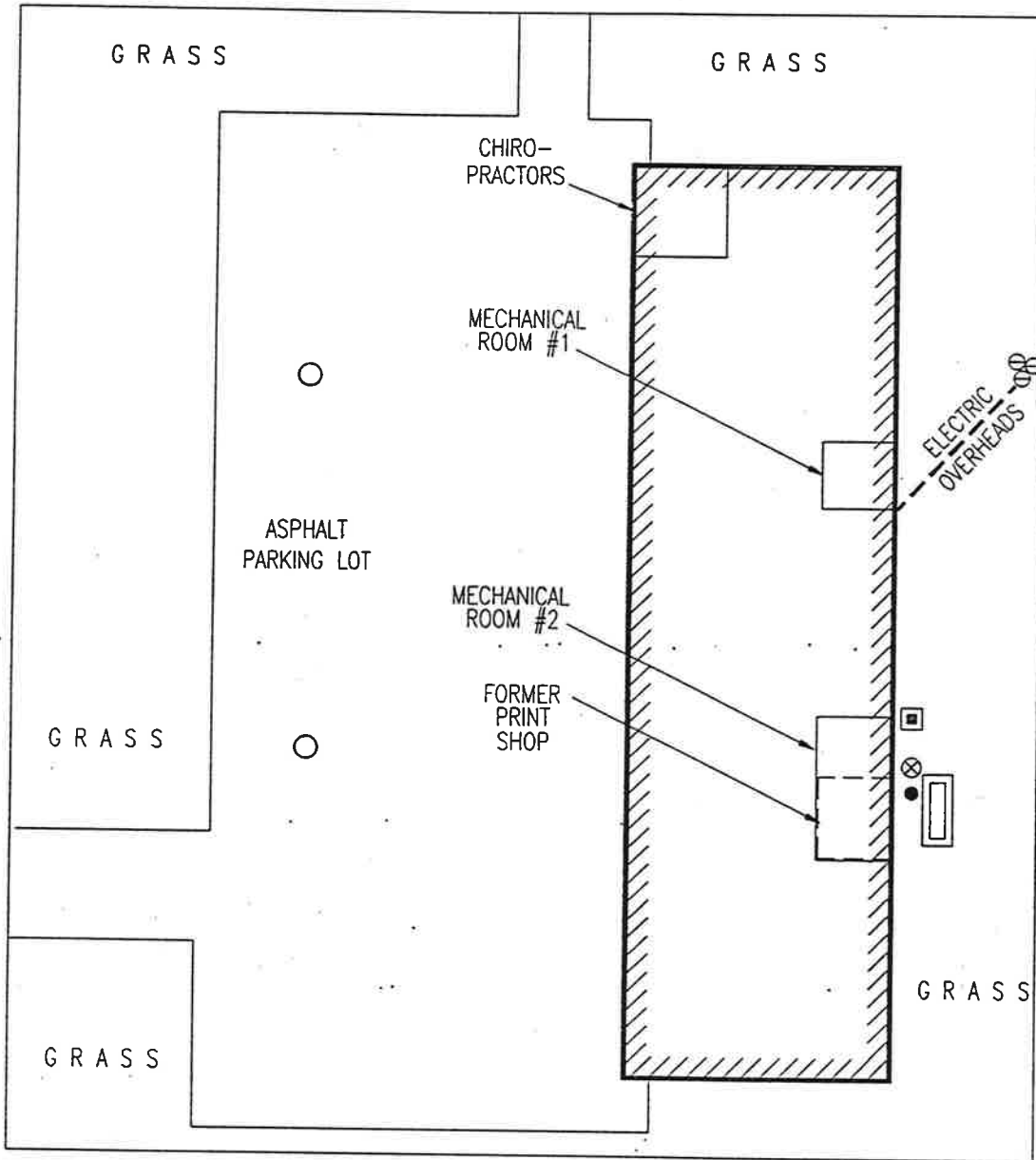
BLOOMINGTON QUADRANGLE
 MINNESOTA
 7.5 MINUTE SERIES (TOPOGRAPHIC)



Huntingdon Engineering & Environmental, Inc.	SITE LOCATION AND LOCAL TOPOGRAPHY MAP		SCALE: 1:24,000
	Environmental Site Assessment East Building 8053 East Bloomington Freeway Bloomington, Minnesota	PROJECT NUMBER: 4233 95-1505	DATE: July 24, 1995	FIGURE NO: 1

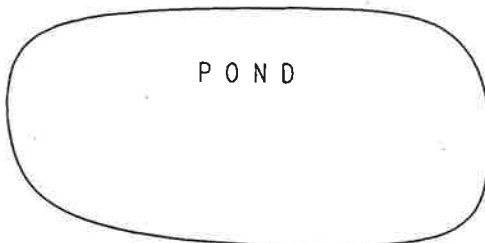
SEAGATE

80 1/2 th STREET



LEGEND:

- VENT PIPE
- ⊖ POLE-MOUNTED TRANSFORMER
- ⊗ FILL PIPE
- STORM DRAIN
- ▣ NATURAL GAS METER



APARTMENTS

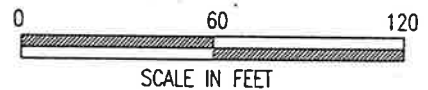
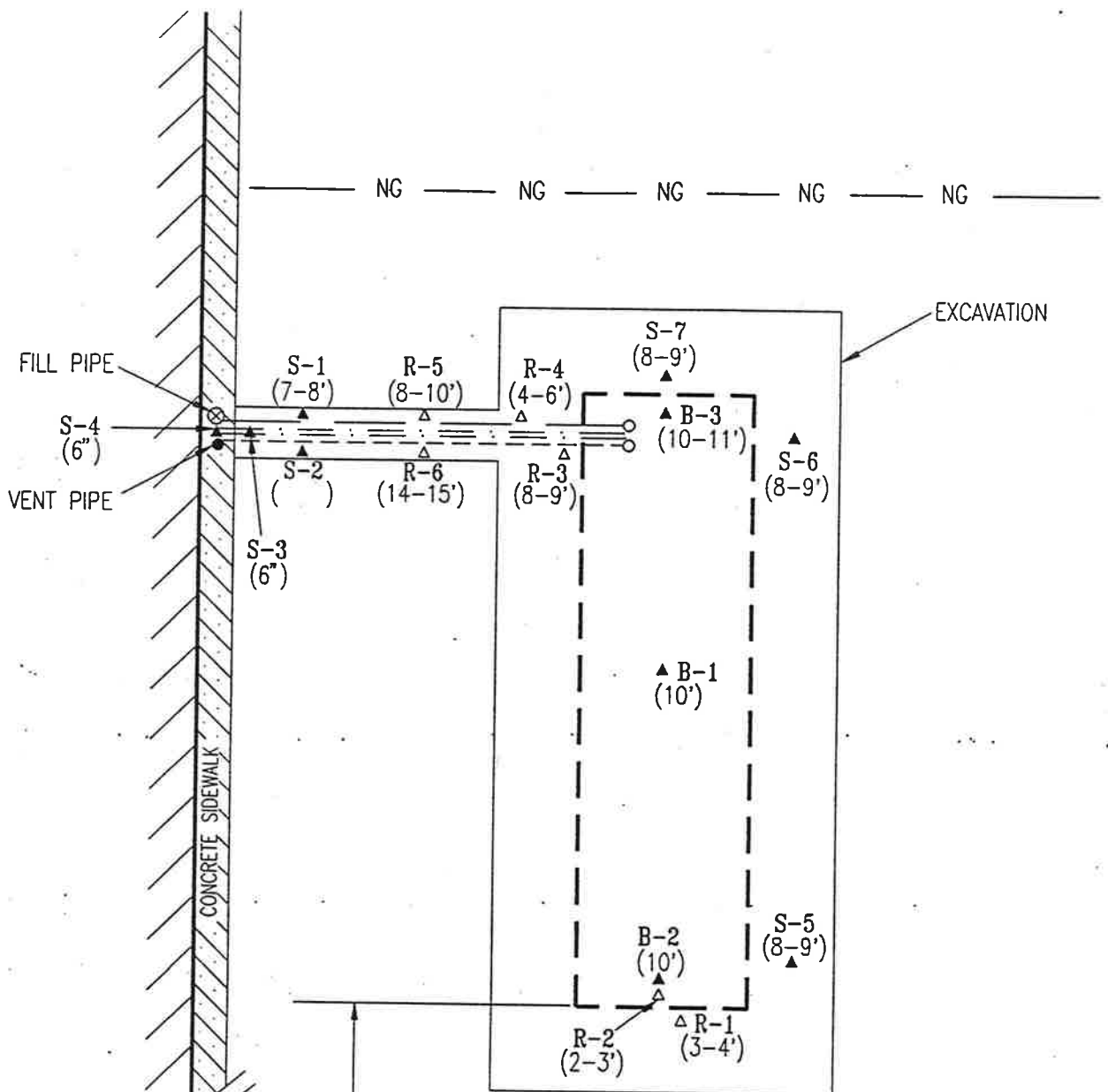


FIGURE NUMBER: 2	DATE: 7/25/95 | REV
SITE MAP 8053 EAST BLOOMINGTON FREEWAY BLOOMINGTON, MINNESOTA	PROJECT NO. 4233 95-1505
	DRAWN BY: LINDA SIMMONS
	REVIEWED BY: SUSAN JONES
	SCALE: 1 INCH = 60 FEET
	AUTOCAD DWG: 4233 95-1505A



- LEGEND:**
- R- Δ SOIL SAMPLE, REMOVED
 - B- \blacktriangle SOIL SAMPLE, BOTTOM
 - S- \blacktriangle SOIL SAMPLE, SIDEWALK
 - FILLPIPE
 - · - · - FEEDER LINES
 - - - - - VENT PIPE
 - NG ——— NATURAL GAS LINE
 - [] FORMER UST, FUEL OIL

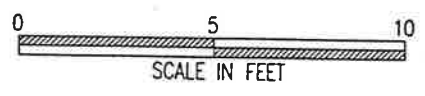


FIGURE NUMBER: 3	DATE: 8/8/95	REV
EXCAVATION DIAGRAM		
8053 EAST BLOOMINGTON FREEWAY		
BLOOMINGTON, MINNESOTA		
DRAWN BY: LINDA SIMMONS		REVIEWED BY: SUSAN JONES
SCALE: 1 INCH = 5 FEET		AUTOCAD DWG: 4233 95-1505B

MINNESOTA COUNTY WELL INDEX/WELL LOG.

UN.NO./CO. : 204990/27 NAME : PENTON INC.

WELL CONSTRUCTION.

DIAM(IN)	FROM(FT)	TO(FT)	[GROUT-----] MATERIAL	AMNT	UNITS
----------	----------	--------	--------------------------	------	-------

CASING 1 : 4

SCREEN: DATA UNAVAILABLE.

PUMP.

INSTLLD?: YES DATE : / /
 SIZE : 1 H.P. VOLTS: CAPACITY: GPM
 TYPE : SUBMERSIBLE DROP PIPE: FT. MATERIAL:

PUMPAGE TEST: DATA UNAVAILABLE.

DRILLER S/GEOLOGIC LOG

DEPTH	INTERVAL	DRILLER S DESCRIPTION	COLOR	HARDNESS
EL.TOP	]	[INTERPRETED LITHOLOGY	][CODE][	STRATIGRAPHIC UNIT(S)] [AGE]
28	]	NO RECORD	][NRCD][	NO RECORD] []
28	86	CLAY & BOULDERS		
	802]	CLAY, BOULDER	][QTUU][	TILL] [QUA]
86	132	GRAVEL		
	744]	GRAVEL	][QFUU][	SAND] [QUA]
132	164	SAND		
	698]	SAND	][QFUU][	SAND] [QUA]
164	178	SHALE		
	666]	DOLOMITE, SHALE	][OPDC][	PRAIRIE DU CHIEN GROUP] [ORD]
178	283	SANDSTONE		
	652]	SANDSTONE, DOLOMITE	][OPDC][	PRAIRIE DU CHIEN GROUP] [ORD]
283	297	SHALE		
	547]	DOLOMITE, SHALE	][OPDC][	PRAIRIE DU CHIEN GROUP] [ORD]
297	328	SANDSTONE		
	533]	SANDSTONE	][CJDN][	JORDAN] [CAM]

Huntingdon

Huntingdon Engineering & Environmental, Inc.
601 East 48th Street North
Sioux Falls, South Dakota 57104-0698
(605) 332-5371
Fax: (605) 332-8488

REPORT OF: CHEMICAL ANALYSIS

PROJECT: MPN HOLDINGS/EAST BUILDING

DATE: August 9, 1995

REPORTED TO: Maxim Technologies
Attn: Kate Kleiter
662 Cromwell Avenue
St. Paul, MN 55114

LABORATORY NO: 6610 05-223

Date Received: 8-8-95
Date Sampled: 8-4-95
Authorization: 4233 95-1505

The results of the DRO analysis are listed in Table 1. The results of the VOCs are listed in Table 2.

TABLE 1
DIESEL RANGE ORGANICS

<u>Sample Identification</u>	<u>Client Sample ID</u>	<u>Diesel Range Organics (mg/kg)</u>	<u>SURROGATE RECOVERY: Triacontane</u>
95-6678	S-2, 08041335	3,000	108%
95-6679	S-1, 04081330	<10	115%
95-6680	B-3 North, 04081100	<10	110%
95-6681	B-2 South, 04081030	<10	111%
95-6682	B-1 Center, 04081042	<10	120%
PQL		10	

All results are reported on a dry weight basis.
All values are in mg/kg which is equal to parts per million (ppm).
PQL - Practical Quantitation Limit
Date Extracted: 8-8-95
Date Analyzed: 8-8-95
Method: Wisconsin Diesel Range Organics

Technical Review: SVH

LABORATORY QUALITY CONTROL

<u>Parameter</u>	<u>ACCURACY DATA</u>		<u>PRECISION DATA</u>
	<u>Matrix Spike Percent Recovery</u>	<u>Matrix Spike Duplicate Percent Recovery</u>	<u>Relative Percent Difference</u>
DRO	115%	110%	4.3%
Surrogate Recovery	110%	104%	---

TABLE 2
VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in ug/Kg which is equal/equivalent to parts-per-billion)

Client ID:	S-1 95-6679	PQL
Compound:		
Acetone	<25	25
Allyl Chloride	<10	10
Benzene	<1	1
Bromobenzene	<1	1
Bromochloromethane	<1	1
Bromodichloromethane	<1	1
Bromoform	<5	5
Bromomethane	<2	2
n-Butylbenzene	<1	1
sec-Butylbenzene	<1	1
tert-Butylbenzene	<1	1
Carbon tetrachloride	<1	1
Chlorobenzene	<2	2
Chloroethane	<1	1
Chloroform	<5	5
Chloromethane	<1	1
2-Chlorotoluene	<1	1
4-Chlorotoluene	<5	5
1,2-Dibromo-3-chloropropane	<1	1
Dibromochloromethane	<2	2
1,2-Dibromoethane	<1	1
Dibromomethane	<1	1
1,2-Dichlorobenzene	<1	1
1,3-Dichlorobenzene	<1	1
1,4-Dichlorobenzene	<5	5
Dichlorodifluoromethane	<1	1
1,1-Dichloroethane	<1	1
1,2-Dichloroethane	<1	1
1,1-Dichloroethene	<1	1
cis-1,2-Dichloroethene	<1	1
trans-1,2-Dichloroethene	<1	1
Dichlorofluoromethane	<2	2
1,2-Dichloropropane	<1	1
1,3-Dichloropropane	<1	1
2,2-Dichloropropane	<1	1

PQL = Practical Quantitation Limit

TABLE 3 (cont.)
VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D

(All values are in ug/Kg which is equal/equivalent to parts-per-billion)

Client ID:	S-1 95-6679	PQL
Compound:		
1,1-Dichloropropene	<1	1
cis-1,3-Dichloropropene	<1	1
trans-1,3-Dichloropropene	<1	1
Ethyl Ether	<5	5
Ethylbenzene	<1	1
Hexachlorobutadiene	<1	1
Isopropylbenzene	<1	1
p-Isopropyltoluene	<1	1
Methyl Ethyl Ketone	<25	25
Methyl Isobutyl Ketone	<25	25
Methyl-tert-Butyl Ether	<1	1
Methylene chloride	<5	5
Naphthalene	<1	1
n-Propylbenzene	<1	1
1,1,1,2-Tetrachloroethane	<1	1
1,1,2,2-Tetrachloroethane	<1	1
Tetrachloroethene	<1	1
Tetrahydrofuran	<25	25
Toluene	<1	1
1,2,3-Trichlorobenzene	<1	1
1,2,4-Trichlorobenzene	<1	1
1,1,1-Trichloroethane	<2	2
1,1,2-Trichloroethane	<1	1
Trichloroethene	<1	1
Trichlorofluoromethane	<2	2
1,2,3-Trichloropropane	<1	1
Trichlorotrifluoroethane	<1	1
1,2,4-Trimethylbenzene	<1	1
1,3,5-Trimethylbenzene	<1	1

PQL = Practical Quantitation Limit

**TABLE 3 (cont.)
VOLATILE ORGANIC COMPOUNDS
MNDH METHOD 465D**

(All values are in ug/Kg which is equal/equivalent to parts-per-billion)

Client ID:	S-1 95-6679	PQL
<hr/>		
Compound:		
Vinyl chloride	<2	2
o-Xylene, Styrene ¹	<1	1
m-p-Xylenes ¹	<1	1
Surrogate Recoveries:		
2-Fluorochlorobenzene (PID)	103%	
2-Fluorochlorobenzene (HALL)	112%	
Fluorobenzene	103%	
1,1-Dichloropropane	100%	

¹ Compounds not separated by this method

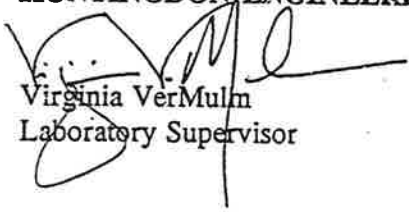
PQL=Practical Quantitation Limit

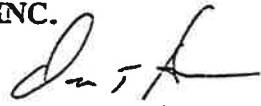
Date Analyzed: 8-8-95

Method: Minnesota Department of Health, Method 465D.

Technical Review: 

HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.


Virginia VerMulm
Laboratory Supervisor


Dan T. Hanson
Chemistry Manager

ENGINEERING & ENVIRONMENTAL, INC.

CLIENT NAME: MPN Holdings / East Building

CLIENT ADDRESS (STREET NUMBER, SUITE, ETC.):

CLIENT ADDRESS (CITY, STATE, ZIP):

CLIENT CONTACT/ADDRESS IF DIFFERENT FROM ABOVE: Susan K Jones / Susan K Jones

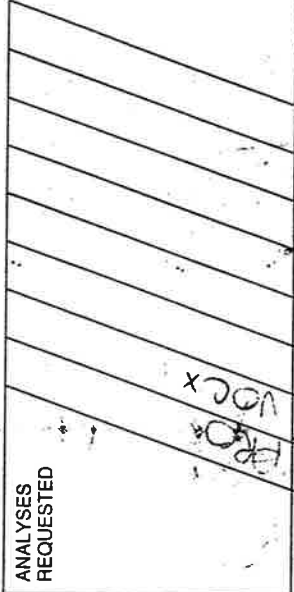
SAMPLED BY / PRINT NAME/SIGNATURE: Susan K Jones / Susan K Jones

POSSIBLE HAZARD: YES NO UNKNOWN (COMMENT BELOW)

SAMPLE DISPOSAL: RETURN TO CLIENT DISPOSAL BY LAB (ADDITIONAL CHARGES MAY BE ASSESSED)

HUNTINGDON CONTACT: Susan Jones
PROJECT NAME: East Building
CLIENT P.O. # / PROJECT NO.: 95-150945
BILL TO (CO. NAME, ADDRESS):

REPORT TO: Susan Jones / Kade Kleiter



ANALYSES REQUESTED

LAB SAMPLE NO.	ITEM NO.	CLIENT SAMPLE ID.	MATRIX	DATE SAMPLED	TIME SAMPLED	NO. & TYPE OF CONTAINERS
6678	1	0011525 S-2	X	8/4/95	1:35	1 (reel) 1 bag wt
6679	2	01001330 S-1	X		1:30	
6680	3	01001400 S-3	X		11:00	
Dispec	4	01001400 S-4	X		11:20	
6681	5	01001400 S-5	X		10:30	
6682	6	01001442 B-1 Center	X		10:12	
	7					
	8					
	9					
	10					

EXPECTED TURNAROUND TIME: Monday day 1 day

HUNTINGDON PROJECT NO.:

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Susan Jones / MPN	8/7/95	Susan Jones / East Building	8/8/95				
ADDITIONAL COMMENTS: Samples from Project # 9533-95-186. The actual project # is 423395-185							

APPENDIX B
MATRIX REPORT

SUBSURFACE ASSESSMENT RESULTS

**FORMER PRINT SHOP
BLOOMINGTON, MINNESOTA**

MATRIX PROJECT NO. 95183

Prepared by: MATRIX Technologies, Inc.
8631 Jefferson Highway
Osseo, MN 55369
(612) 424-4803

September 19, 1995

SUBSURFACE ASSESSMENT RESULTS

FORMER PRINT SHOP
BLOOMINGTON, MINNESOTA

MATRIX PROJECT NO. 95183

1.0 INTRODUCTION

MATRIX Technologies, Inc. (MATRIX), was authorized by Ms. Susan Jones of Maxim Technologies, Inc. (Maxim) to perform a subsurface assessment at the Former Print Shop site located in Bloomington, Minnesota. The purpose of the assessment was to collect soil and ground water samples for on-site laboratory analysis of petroleum hydrocarbons. Probe locations were directed by Ms. Susan Jones.

2.0 SCOPE OF WORK

The scope of services provided by MATRIX included the following:

- ◆ Contacted the state one call system and arranged for all public utilities in the investigation area to be located (Ticket No. 332218).
- ◆ Advanced four (4) probes to depths ranging from twenty-one (21) to twenty-four (24) feet bgs for the purpose of collecting soil samples for logging, screening, and sample collection.
- ◆ Analyzed eleven (11) soil samples in the field with a laboratory grade purge & trap sample concentrator and gas chromatograph for BTEX and TPH as fuel oil in accordance with US EPA Method 8020 Modified and the WDNR Modified GRO Method.
- ◆ Advanced four (4) probes to depths ranging from twenty-five (25) to twenty-seven (27) feet bgs for the purpose of collecting ground water samples for on-site laboratory analysis.
- ◆ Analyzed four (4) ground water samples in the field with a laboratory grade purge & trap sample concentrator and gas chromatograph for BTEX and TPH as fuel oil in accordance with US EPA Method 8020 Modified.

- ◆ Abandoned all probe points with a neat cement grout mixture according to Minnesota Department of Health guidelines.

3.0 SOIL SAMPLING

On September 18, 1995, MATRIX advanced four (4) probes to depths ranging from twenty-one (21) to twenty-four (24) feet bgs for the purpose of collecting soil samples. Two feet and four feet soil core samples were collected at continuous intervals below the ground surface at each probe location. This procedure utilizes 1-inch O.D. steel probes and the large bore and/or macro soil core sampler (See Attached Figures). The probe rods and sampling unit were driven to the desired sampling depth by a carrier vehicle mounted Geoprobe® sampling unit. The probe rods and sampler were advanced by the static weight of the carrier vehicle and hydraulic hammer percussion.

While driving the large bore soil core sampler to the desired depth, a pin stops the end point and piston from sliding into the collection tube. At the desired sampling depth, the pin was removed and the probe rods were advanced approximately 24-inches. The piston and end point are forced up into the collection tube by the sample being collected. Sample cores were collected in a 1-1/8 inch diameter removable acetate liner. The assembly was then brought back to the surface and the soil sample collected, and placed into a sample jar.

After each sample was collected the probe rods and soil core sampling equipment were washed in a Alconox/water mixture and rinsed with water. Acetate liners were discarded after each sample was collected and a new liner used for the collection of the next sample.

4.0 GROUND WATER SAMPLING

On September 18, 1995, MATRIX advanced four (4) probes to depths ranging from twenty-five (25) to twenty-seven (27) feet bgs for the collection of ground water samples. The procedure utilizes 1-inch outside diameter steel probes and the screened point ground water sampler driven to the desired sampling depth by a carrier vehicle mounted Geoprobe® sampling unit. The probe rods and sampler were advanced by the static weight of the carrier vehicle and hydraulic hammer percussion.

When the sampling depth was reached, small diameter extension rods were run through the steel probe rods to push out the expendable drive point and stainless steel sampling screen. Polyethylene tubing with a check valve in the bottom was then inserted through the steel probe rods and a steady up and down motion repeated until water was captured in the tubing. Ground water samples were then collected in 40-ml vials for laboratory analysis (Figure Attached).

After each sample was collected the probe rods and screened point ground water sampler were washed in a Alconox/water mixture and rinsed with water. The polyethylene tubing was discarded after each sample was collected and new tubing used for the collection of the next sample.

Probe locations were abandoned by filling with a neat cement grout mixture. A copy of the Minnesota Department of Health Sealing Report is included in Appendix A (Minnesota Well and Boring Sealing No. 74954).

5.0 CHEMICAL ANALYSIS

Soil and ground water samples collected were quantified for benzene, toluene, ethyl benzene, xylenes, and TPH as fuel oil in accordance with US EPA Method 8020 modified. Soil and ground water samples were concentrated with an OI-Analytical Model 4560 purge and trap sample concentrator. The purge and trap sample concentrator is directly connected to a Hewlett Packard 5890 Series II gas chromatograph (GC). The soil and ground water samples were analyzed by PID and FID detectors in series. The results of the chemical analysis are summarized in Table 1.

The following quality assurance/quality control measures were conducted to ensure the validity of the analytical results:

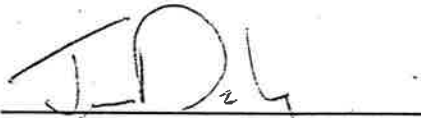
- ◆ A five point calibration curve for the method target compounds was established.
- ◆ A prepared standard was run to verify the calibration curve.
- ◆ A reagent water blank was run to assure the entire analytical system was free of interferences prior to any sample analysis.
- ◆ A surrogate standard (4-bromofluorobenzene) was run with each sample to monitor retention time accuracy and concentration efficiency.
- ◆ A matrix spike and a matrix spike duplicate were run to confirm precision and accuracy of the analytical system and to identify possible matrix effects.

6.0 GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon data obtained from the soil and ground water samples collected at the indicated locations and from other information discussed in this report. This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. No warranties, expressed or implied are intended or made.

This report was prepared by:

MATRIX Technologies, Inc.



for Dan A. Pipp
Environmental Chemist

Date



James D. Dzubay, M.S.
Operations Manager/President

9/19/95

Date

TABLES

LABORATORY RESULTS

Client: Maxim Technologies Date(s) Analyzed: 9/18/95
 Project Name: Former Print Shop MATRIX Project #: 95183
 Project Location: Bloomington, MN Client Project #: 4233 95-1505

ANALYTE	GP-1 4'-6' mg/kg ¹	GP-1 6'-8' mg/kg	GP-1 14'-16' mg/kg	GP-1 22'-24' mg/kg	GP-2 11'-15' mg/kg	GP-2 15'-17' mg/kg	GP-2 19'-21' mg/kg	GP-3 8'-12' mg/kg	GP-3 20'-22' mg/kg	GP-4 8'-12' mg/kg	GP-4 20'-22' mg/kg
Benzene ²	<0.005 ²	<0.250	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Toluene	<0.005	<0.250	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ethyl Benzene	<0.005	<0.250	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Xylenes	<0.005	<0.250	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
TPH as Fuel Oil ⁴	3000.	930.	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
1,4-Bromoflourobenzene ⁵	* ⁶	106. %	76.0%	82.0%	88.0%	47.0% ⁷	87.0%	51.0% ⁷	78.0%	83.0%	64.0%

1 -Soil sample results reported in milligrams per kilogram (mg/kg).
 2 -<0.005 represents less than the method practical quantitation limit.
 3 -Analyte results quantified in accordance with US EPA Method 8020 modified
 4 -TPH as Fuel Oil results quantified in accordance with the US EPA Method 8020 modified
 5 -Surrogate standard added to confirm retention time and concentration accuracy.
 6 - * - Not quantifiable due to sample interference.
 7 -Low surrogate recovery due to matrix effect.

LABORATORY RESULTS

Client: Maxim Technologies
 Project Name: Former Print Shop
 Project Location: Bloomington, MN
 Date(s) Analyzed: 9/18/95
 MATRIX Project #: 95183
 Client Project #: 4233 95-1505

ANALYTE	GP-1	GP-2	GP-3	GP-4
	23'-25' ug/L ¹	23'-25' ug/L	23'-25' ug/L	23'-25' ug/L
Benzene ²	<1.0 ²	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0
Xylenes	<1.0	<1.0	<1.0	<1.0
TPH as Fuel Oil ⁴	<250.	<250.	<250.	<250.
1,4-Bromoflourobenzene ⁵	99.0%	90.0%	91.0%	80.0%

1 - Water sample results reported in micrograms per liter (ug/L).
 2 - <1.0 represents less than the method practical quantitation limit.
 3 - Analyte results quantified in accordance with US EPA Method 8020 modified
 4 - TPH as Fuel Oil results quantified in accordance with the US EPA Method 8020 modified
 5 - Surrogate standard added to confirm retention time and concentration accuracy.
 6 - * - Not quantifiable due to sample interference.

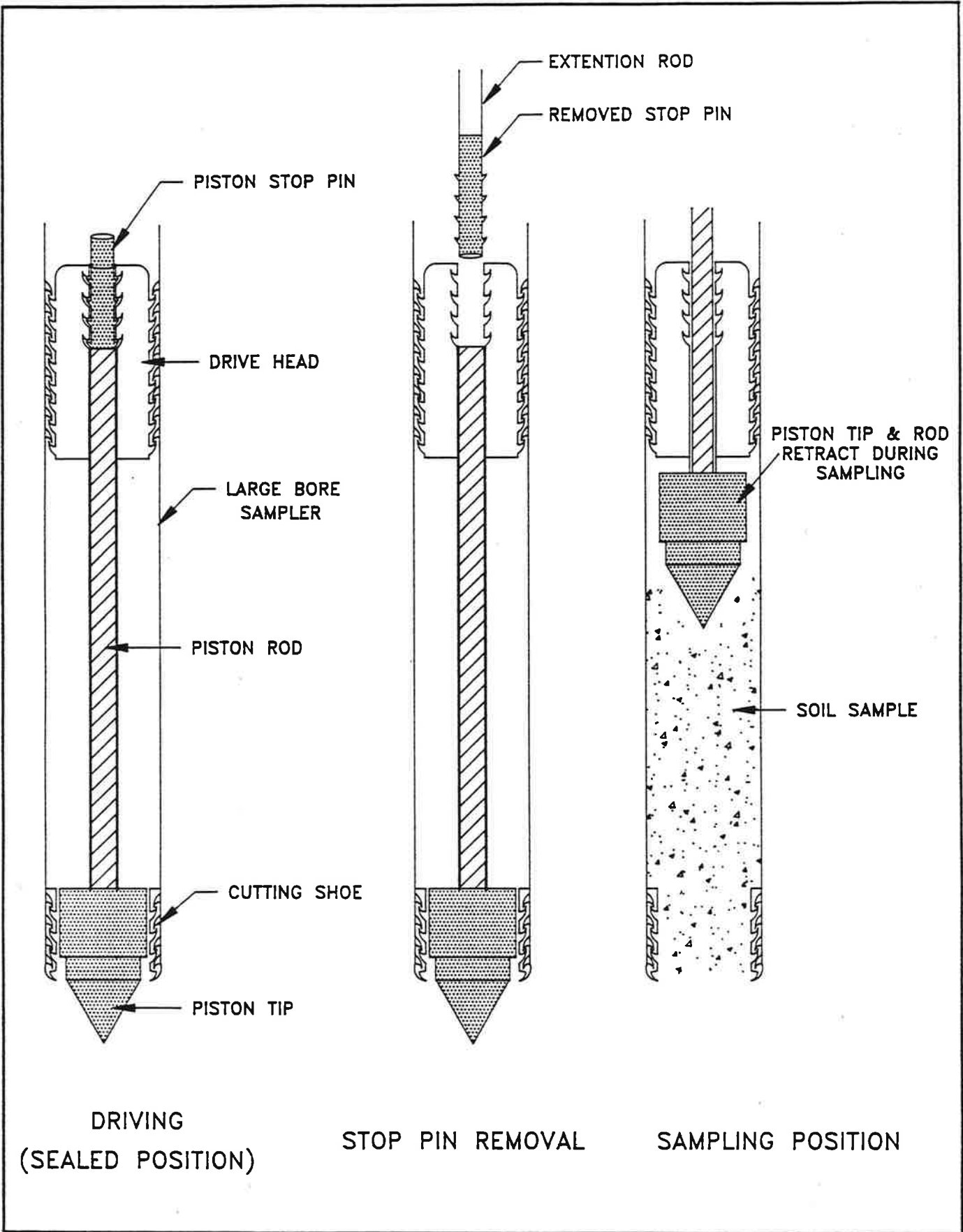
LABORATORY RESULTS

Client:	Maxim Technologies	Date Analyzed:	9/18/95
Project Name:	Former Print Shop	Matrix Project #:	95183
Project Location:	Bloomington, MN	Client Project #:	4233 965-1505

QUALITY ASSURANCE/ QUALITY CONTROL DATA

ANALYTE	MATRIX SPIKE	MATRIX SPIKE	RELATIVE PERCENT DIFFERENCE
	% RECOVERY	DUPLICATE % RECOVERY	
Benzene	94.	94.	0
Toluene	94.	93.	1.1
Ethyl Benzene	98.	98.	0
Xylenes	99.	100.	1.0
TPH as Fuel Oil	88.	69.	24.

FIGURES



DRIVING
(SEALED POSITION)

STOP PIN REMOVAL

SAMPLING POSITION



FIGURE
LARGE BORE SOIL SAMPLER

Drive Head

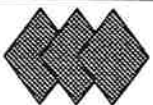
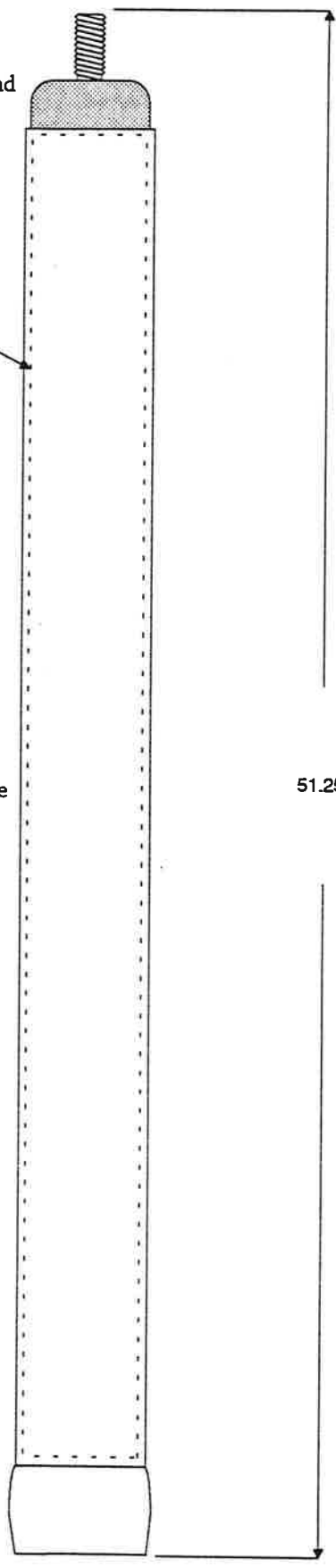
PETG Clear
Plastic Liner

Sample Tube

51.25'

Cutting Shoe

1.5"



MATRIX
Technologies, Inc

Figure
Macro - Core Sampler

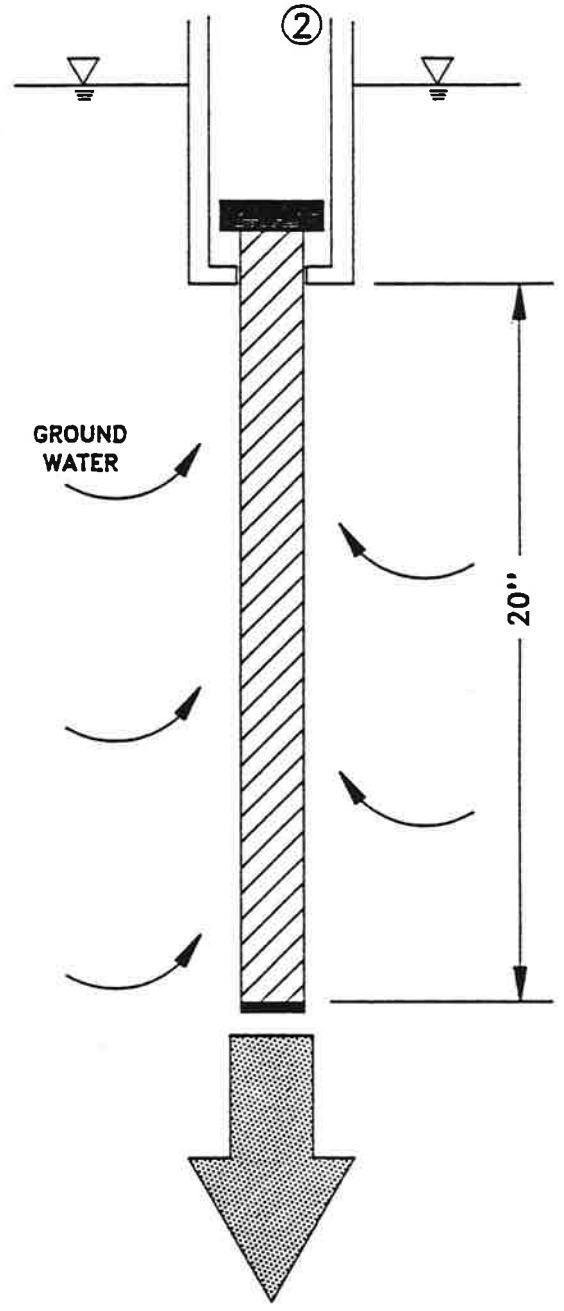
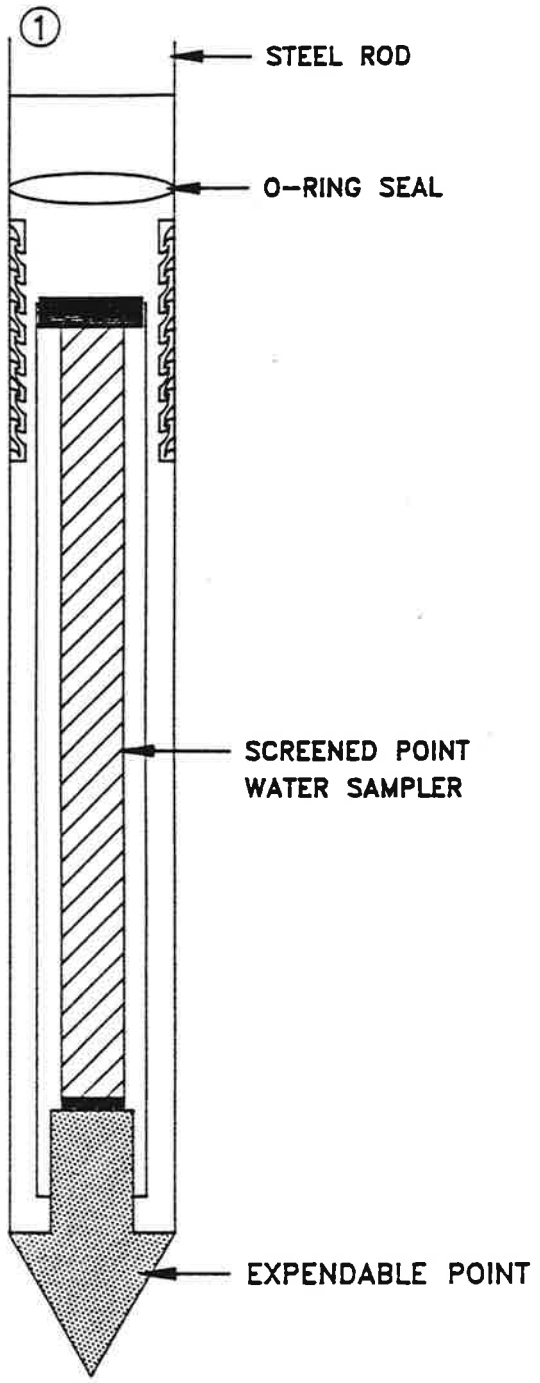


FIGURE
GROUND WATER SAMPLING USING THE
SCREENED POINT WATER SAMPLER

APPENDIX A

MDH SEALING REPORT

WELL OR BORING LOCATION

County Name

Hennepin

Township Name

Township No

Range No

Section No

Fraction (sm. - lg.)

1/4 1/4 1/4

Date Sealed

9/18/95

Approximate Date Well or Boring Constructed

9/18/95

Numerical Street Address or Fire Number and City of Well or Boring Location

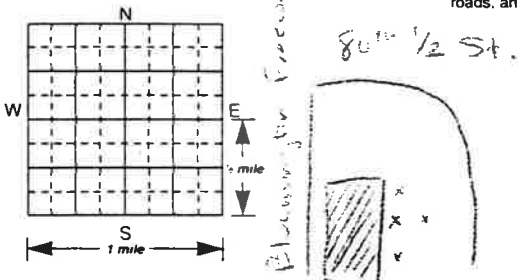
2053 C. Bloomington Freeway

Depth Before Sealing 25'-27' ft.

Original Depth 75'-27' ft.

Show exact location of well or boring in section grid with 'X'

Sketch map of well or boring location, showing property lines, roads, and buildings.



Static Water Level Accurate Approximate

23-24' ft. below above land surface

Single Aquifer Multiaquifer

CASING TYPE

Steel Plastic Tile Other Concrete Casing

Screen from NA to ft. Open Hole from to ft.

OBSTRUCTION/DEBRIS/FILL

Obstruction Debris Fill

Type of debris/obstruction NA

Obstruction/Debris/Fill removed? Yes No

PUMP

Removed Not Present Other NA

CASING

GEOLOGICAL MATERIAL	COLOR	HARDNESS OF FORMATION	FROM	TO	Diameter	Depth	Set in oversize hole?	Annular space initially grouted?
Sand	tan	soft	0	27	NA	in. from to ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
						in. from to ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
						in. from to ft.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown

METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:

- No Annular Space Exists
 - Annular space grouted with tremie pipe
 - Casing Perforation/Removal
- NA in. from to ft. Perforated Removed
- in. from to ft. Perforated Removed

GROUTING MATERIAL

Grouting material Mortar Cement from 0 to 27 ft. 15 gal. yards bags

from to ft. yards bags

from to ft. yards bags

from to ft. yards bags

REMARKS, SOURCE OF DATA, DIFFICULTIES IN SEALING

UNSEALED WELLS AND BORINGS

Other unsealed well or boring on property? Yes No

LICENSED OR REGISTERED CONTRACTOR CERTIFICATION

This well or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

MATRIX Technologies, Inc. Contractor Business Name

M0128 License or Registration No

Authorized Representative Signature

9/19/95 Date

Tina Allic Name of Person Sealing Well or Boring

LOCAL COPY

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APPENDIX C

METHODS

C-1 Soil Classification

As the samples were obtained in the field, they were visually and manually classified by the crew chief in accordance with ASTM:D2488-84. Representative portions of the samples were then returned to the laboratory for further examination and for verification of the field classification. Logs of the borings were prepared indicating the depth and identification of the various strata, water level information and pertinent information regarding the method of maintaining and advancing the drill holes (Appendix B). Charts illustrating the soil classification procedure, the descriptive terminology and symbols used on the borings logs are also provided in Appendix B.

C-2 Soil Sample Screening

The soil samples were screened with an hNu photoionization detector equipped with a 10.2 eV lamp and calibrated for direct reading in ppm volume/volume of Benzene. Soil samples were collected and screened according to the "Jar Headspace Analytical Screening Procedure" recommended by the MPCA.

C-3 Soil Sampling for Chemical Analysis

Sediment samples were collected directly from the split-barrel and placed in glass chemical sample jars. The samples were taken to the Maxim Technologies, Inc. Sioux Falls Laboratory within prescribed holding times and were accompanied by proper chain-of-custody forms.

C-4 Groundwater Sampling

To ensure that each sample was representative of the ambient groundwater, a minimum of five well volumes were removed from each monitoring well prior to sampling. Groundwater samples were collected using dedicated, bottom-loading, laboratory-cleaned, Teflon bailers and new nylon rope. The water samples for VOC and GRO analyses were collected in 40 ml, laboratory-cleaned, glass purge-and-trap vials with Teflon-lined, septum-sealed caps containing HCl as a preservative. Water samples for DRO analysis were collected in 1 liter amber bottles. All sample containers were placed in an ice-filled cooler immediately after collection and transported to the laboratory in the cooler.

APPENDIX D
SOIL BORING LOGS

LOG OF TEST BORING

JOB NO. 3009502994 VERTICAL SCALE 1" = 4' BORING NO. GP-1
 PROJECT EAST BUILDING, BLOOMINGTON, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL ↓ SURFACE ELEVATION _____	GEOLOGIC ORIGIN	N or CR	SAMPLE		SAMPLE		ORGANIC VAPOR			
				WL	NO.	TYPE	W	D	hNu (ppm)	bkgd (ppm)	
7.0	FILL - silty sand, moist, dark brown	Fill			1				ND		
					2					TR	
					3					311	
					4					12	
14.0	SAND, fine grained, moist, brown.	Coarse Alluvium			5				TR		
					6					1.8	
					7					TR	
					8					ND	
18.0	SILTY SAND, fine grained, moist, light gray.				9				1.1		
					10					1.5	
20.0	SAND, medium grained, moist, brown.				11				ND		
					12					ND	
24.0	SAND, coarse grained, wet, brown to gray.										
End of Boring											

WATER LEVEL MEASUREMENTS							START <u>9-18-95</u>	COMPLETE <u>9-18-95</u>
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL	METHOD <u>a</u>	
<u>9-18-95</u>						<u>21'</u>	<u>Continuous Sampling from 0 to 24 feet.</u>	
							NORTH:	EAST:
							CREW CHIEF	<u>Allie</u>

MAXIM

LOG OF TEST BORING

JOB NO. 3009502994 VERTICAL SCALE 1" = 4' BORING NO. GP-3
 PROJECT EAST BUILDING, BLOOMINGTON, MINNESOTA

DEPTH IN FEET	DESCRIPTION OF MATERIAL ↓ SURFACE ELEVATION _____	GEOLOGIC ORIGIN	N or CR	SAMPLE		SAMPLE		ORGANIC VAPOR		
				WL	NO.	TYPE	W	D	hNu (ppm)	bkgd (ppm)
0.5	TOPSOIL - black organics, moist.	Topsoil			1				ND	
	FILL - silty sand, moist, dark brown to brown.	Fill							ND	
					2				ND	
					3				ND	
10.0	SAND, moist, gray.	Coarse Alluvium							ND	
12.0	SILTY SAND, fine grained, black silt layer, moist, gray.				4				ND	
14.0	SAND, fine grained with silt layers, moist, gray.				5				ND	
					6				ND	
18.0	SAND, coarse grained, moist, gray.				7				ND	
20.0	SAND, coarse grained, wet, brown.				8				ND	
22.0	SILTY SAND, fine grained, wet, dark gray.				9				ND	
24.0	End of Boring									

WATER LEVEL MEASUREMENTS							START <u>9-18-95</u>	COMPLETE <u>9-18-95</u>
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL	METHOD <u>a</u>	
<u>9-18-95</u>						<u>20.5'</u>	<u>Continuous Sampling from 0 to 24 feet. Macro Core 4' sample to 12', 2' Core from 12-24'.</u>	
							NORTH:	EAST:
							CREW CHIEF	<u>Allie</u>

MAXIM

