

ROCHESTER SCHOOL BUS

LIMITED REMEDIAL INVESTIGATION

RSB Coaches

2021 32nd Avenue NW
Rochester, Minnesota

5617

Huntingdon-Twin City Testing
3908 Commerce Court SW
Rochester, Minnesota 55902
(507) 288-7060

TCT #4800 93-040

February 11, 1993

February 11, 1993

Mr. Don Hoffman
RSB Coaches
2101 NW 32nd Avenue
Rochester, Minnesota 55903

Subject: Limited Remedial Investigation
RSB Coaches
Rochester, Minnesota
TCT# 4800 93-040
LEAK# 00005617

Dear Mr. Hoffman:

This report presents the results of the Limited Remedial Investigation work performed by Twin City Testing Corporation (TCT) at the above referenced site. Our work was performed in accordance with our signed October 21, 1992 proposal and is concluded with this report.

We appreciate the opportunity to have been of service to you on this project. If you have any questions regarding the information presented in this report, or if we can be of additional service, please contact us at your convenience. I can be reached at 507/288-7060.

Sincerely,


Lin M. Nelson

Environmental Project Manager

/lmm

pc: Ms. Kris Coe
Minnesota Pollution Control Agency - Rochester



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LIMITED REMEDIAL INVESTIGATION

Rochester Bus Company
2021 32nd Avenue NW
Rochester, Minnesota
LEAK# 00005617

1.0 INTRODUCTION

1.1 Purpose

This report presents the results of the Limited Remedial Investigation performed by Twin City Testing (TCT) for Rochester Bus Company (RSB) at the above referenced site. The purpose of this investigation was to define the magnitude and extent of petroleum contamination encountered at the project site. TCT was authorized to perform this work by Mr. Don Hoffman, owner of RSB on October 21, 1992.

1.2 Scope of Services

The scope of work performed for the project was limited to the following:

1. Drilling three standard penetration soil borings to groundwater (approximately 15 feet below grade) at the project site.
2. Screening soils in the field with a 10.2 eV hNu Model 101 photoionization detector for evidence of contamination.
3. Collecting and analyzing selected soil samples for petroleum contamination including: gasoline range organics (GRO); diesel range organics (DRO); benzene, ethyl benzene, toluene and total xylenes (BETX); and methyl-tertiary-butyl ether (MTBE).
4. Collecting a groundwater sample, collected through the auger, from each of the center of the borings analyzing it for: GRO, DRO, BETX, and MTBE.
5. Preparing a written report including logs of soil borings, results of the soil screening, field observations and chemical analyses, and our opinions and recommendations regarding additional environmental work.

10000 gallon - U/L UST
10000 gallon - U/L
560 gallon - kabe oil
560 gallon - kabe oil
1000 gallon - waste
560 gallon - waste

1.3 Background Information

The project site referenced in this remedial investigation is located at 2021 32nd Avenue NW in Rochester, Minnesota (see Figure 1).

Site activities and site features include three bus storage garages located west of the office/shop building. Buses were also observed on the property outside of the garages on a packed gravel surface. There are two bus fueling islands located south of the office/shop building which dispense both unleaded gasoline and diesel fuel from two 10,000 gallon underground storage tanks (USTs). Three other USTs are present at the site, along the western edge of the office/shop building: two lubricating oil tanks (one 560 gallon tank and one 1,000 gallon tank) and one 560 gallon waste oil tank.

A LP fueling station is present in the southeastern portion of the site, however it is no longer in use. According to Mr. Hoffman, an aboveground LP tank was removed from the site approximately two years ago.

The office/shop building faces 32nd Avenue N.W. to the east. The portion of the site adjacent to the office/shop building is primarily covered in asphalt, with some landscaping, and concrete pads over the USTs. The western portion of the site is covered with compacted sand and gravel.

The site is bordered by a wooded ditch followed by agricultural fields to the west, a warehouse and grassy field to the north, a truck rental and leasing facility and a delivery operation across 32nd Avenue to the east, and a screen print company and agricultural fields to the south.

IT Corporation performed a Phase I Environmental Site Assessment at the site in August of 1992. During the assessment four soil borings were advanced in the areas of the tank locations to determine subsurface soil conditions. The soil samples collected were screened using a photoionization detector (PID) and jar headspace techniques. PID readings were not detected in the soil screened, a soil sample was then pulled from three of the borings at the groundwater/soil interface and in one of the borings a sample was taken at the 14' to 16' depth. A groundwater sample was also collected and analyzed for total petroleum hydrocarbons, benzene, ethyl benzene, toluene, and xylenes. The TPH method used for this project was not the same as that required by the State of Minnesota.

Chemical analysis of these samples indicated slight petroleum contamination in one of the soil borings and in the groundwater sampled. IT reported the chemistry results to the MPCA, at which time they requested additional subsurface investigation to determine the extent and magnitude of contamination.

2.0 PROJECT RESULTS

2.1 SOILS

2.1.1 Soil Borings

Three standard penetration soil borings, numbered B-1 through B-3, were advanced to groundwater at the RSB site on November 2, 1992. Depth to groundwater ranged from 13 feet below grade in boring B-1 to 15 feet below grade in boring B-3. The methods used advance these soil borings are described in Appendix A. The soil boring locations were advanced in the area of the former regular/unleaded gasoline tank (Figure 2). Logs of the soil borings are included in Appendix B. All borings were abandoned by filling with neat cement grout.

2.1.2 Site Geology

The soils encountered at the site were primarily silt and clayey silt, with a sand lens at approximately 15 feet below ground surface. The soils were generally soft with increasing stiffness at depth. Detailed soil descriptions are presented in the boring logs included in Appendix C.

Groundwater was encountered at the site approximately 13 to 15 feet below grade. This depth is approximate as it is based on the soil conditions portrayed in the split spoon sampler, which are often difficult to assess in silts and clays. Although no groundwater monitoring wells exist at the site or were observed nearby, it is likely that groundwater in the surficial aquifer flows toward the south-southeast, towards the Cascade Creek.

2.1.3 Evidence of Contamination

An hNu Model 101 portable photoionization detector (PID) equipped with a 10.2 eV lamp was utilized in the field to obtain relative concentrations of organic vapors from recovered soil samples. The presence of organic vapors above background levels is an indication that the soils may have been impacted by volatile organic concentration. The methods used to obtain these readings are presented in Appendix B. The PID readings determined in the field are included on the soil boring logs in Appendix C.

PID readings of 1.0 parts-per-million (ppm) or less, above background levels, were not detected in soil borings B-1 thru B-3.

2.2 Analytical Results

Soil samples were collected from each boring at the termination depth, generally the groundwater interface depth. In addition, a soil sample was collected from the interval exhibiting the highest PID reading and a groundwater sample was collected from each boring. The groundwater sample was collected through the hollow stem auger in order to confirm the analytical results obtained during the excavation work. A complete report of the chemical analyses performed, including analytical methodologies used, are attached in Appendix C. A summary of the chemical results is presented in the following tables.

TABLE 1

**Analytical Results Summary
 of Soil Samples (ppm)**

<u>Parameter</u>	<u>H₂O at 15 ft</u>	<u>H₂O at 13.5 ft</u>	<u>H₂O at 10.5 ft</u>	<u>MPCA Action Levels</u>
	<u>B-1, 17-19'</u>	<u>B-2, 14.5-16.5'</u>	<u>B-3, 12-14'</u>	
GRO	ND	ND	ND	50
DRO	28	ND	11	10
Benzene	ND	ND	ND	---
Toluene	.12	ND	ND	---
Xylenes	.066	ND	.086	---
Ethyl Benzene	ND	ND	ND	---
MTBE	ND	ND	ND	---

ppm = parts-per-million
 ND = not detected
 MTBE = Methyl-tertiary-butyl Ether

TABLE 2
Analytical Results Summary
of the Groundwater Sample (ppb)

<u>Parameter</u>	<u>B-1,</u>	<u>B-2</u>	<u>B-3</u>	<u>RAIs</u>
GRO	71, 071 ppm	35, 035 ppm	ND	---
DRO	ND	ND	ND	---
Benzene	ND	ND	ND	10
Toluene	ND	ND	ND	1,000
Xylenes	ND	ND	ND	10,000
Ethyl Benzene	ND	ND	ND	700
MTBE	5	ND	ND	---

ppb = parts-per-billion

RAIs = Minnesota Department of Health's Recommended Allowable Limits

ND = not detected

3.0 DISCUSSION

The results of our subsurface investigation indicates a generalized profile of fill overlying silt and clayey silt. Groundwater was encountered at the site approximately 13 to 15 feet below grade. PID readings above background were not detected in the three soil borings advanced at the project site.

Chemical analysis of the soil samples, collected at the termination depth interval, indicated the presence of petroleum contaminated soils in borings B-1 and B-3. Concentrations of DRO were 28 ppm in boring B-1 at the 17 to 19 foot interval and 11 ppm in boring B-3 at the 12 to 14 foot interval. These petroleum concentrations are below the MPCA action level of 50 ppm diesel range organics.

Chemical analysis of the groundwater sample, collected from B-1 and B-2, indicated the presence of GRO. Concentrations of gasoline hydrocarbons was 71 ppb in B-1 and 35 ppb in B-2. Concentrations of DRO, BETX, and MTBE were not detected in the groundwater analyzed.

4.0 CONCLUSIONS

Based on our limited investigation, our conclusions are:

1. Hydrocarbon contamination was present in the soils at the Rochester School Bus site at concentrations below the MPCA general analytical guideline of 50 ppm.
2. Groundwater was encountered in each of the three soil borings at approximately 13 to 15 feet below grade.
3. Chemical analysis of the soil samples detected hydrocarbon contamination present in the 17 to 19 foot interval of B-1 and at the 12 to 14 foot interval of B-3. These hydrocarbon concentrations below the MPCA action guidelines.
4. Hydrocarbon contamination, at concentrations significantly below the RAL standards, were detected in the groundwater sample collected from B-1 and B-2.

PID readings above background were not detected in the three soil borings advanced at the project site.

contamination below water table

Chemical analysis of the soil samples, collected at the termination depth interval, indicated the presence of petroleum contaminated soils in borings B-1 and B-3. Concentrations of DRO were 28 ppm in boring B-1 at the 17 to 19 foot interval and 11 ppm in boring B-3 at the 12 to 14 foot interval. These petroleum concentrations are below the MPCA action level of 50 ppm diesel range organics.

Chemical analysis of the groundwater sample, collected from B-1 and B-2, indicated the presence of GRO. Concentrations of gasoline hydrocarbons was 71 ppb in B-1 and 35 ppb in B-2. Concentrations of DRO, BETX, and MTBE were not detected in the groundwater analyzed.

4.0 CONCLUSIONS

Based on our limited investigation, our conclusions are:

1. Hydrocarbon contamination was present in the soils at the Rochester School Bus site at concentrations below the MPCA general analytical guideline of 50 ppm.
2. Groundwater was encountered in each of the three soil borings at approximately 13 to 15 feet below grade.
3. Chemical analysis of the soil samples detected hydrocarbon contamination present in the 17 to 19 foot interval of B-1 and at the 12 to 14 foot interval of B-3. These hydrocarbon concentrations below the MPCA action guidelines.
4. Hydrocarbon contamination, at concentrations significantly below the RAL standards, were detected in the groundwater sample collected from B-1 and B-2.

5.0 RECOMMENDATIONS

The following recommendations are made:

1. The limited remedial investigation has satisfactory determined the extent and magnitude of soil contamination at the Rochester School Bus site. In addition, the impact to the groundwater quality, beneath this area of the site, appears to be minimal.
2. Additional investigation does not appear necessary at the Rochester School Bus site at this time.

6.0 STANDARD OF CARE

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

TWIN CITY TESTING CORPORATION

This report was prepared by:


Lin M. Nelson

Environmental Project Manager

This report was reviewed by:



Barry J. Hentz
Environmental Project Manager

/lmn

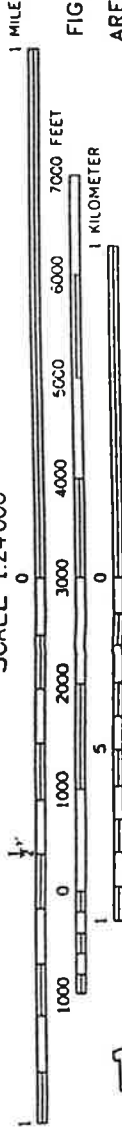
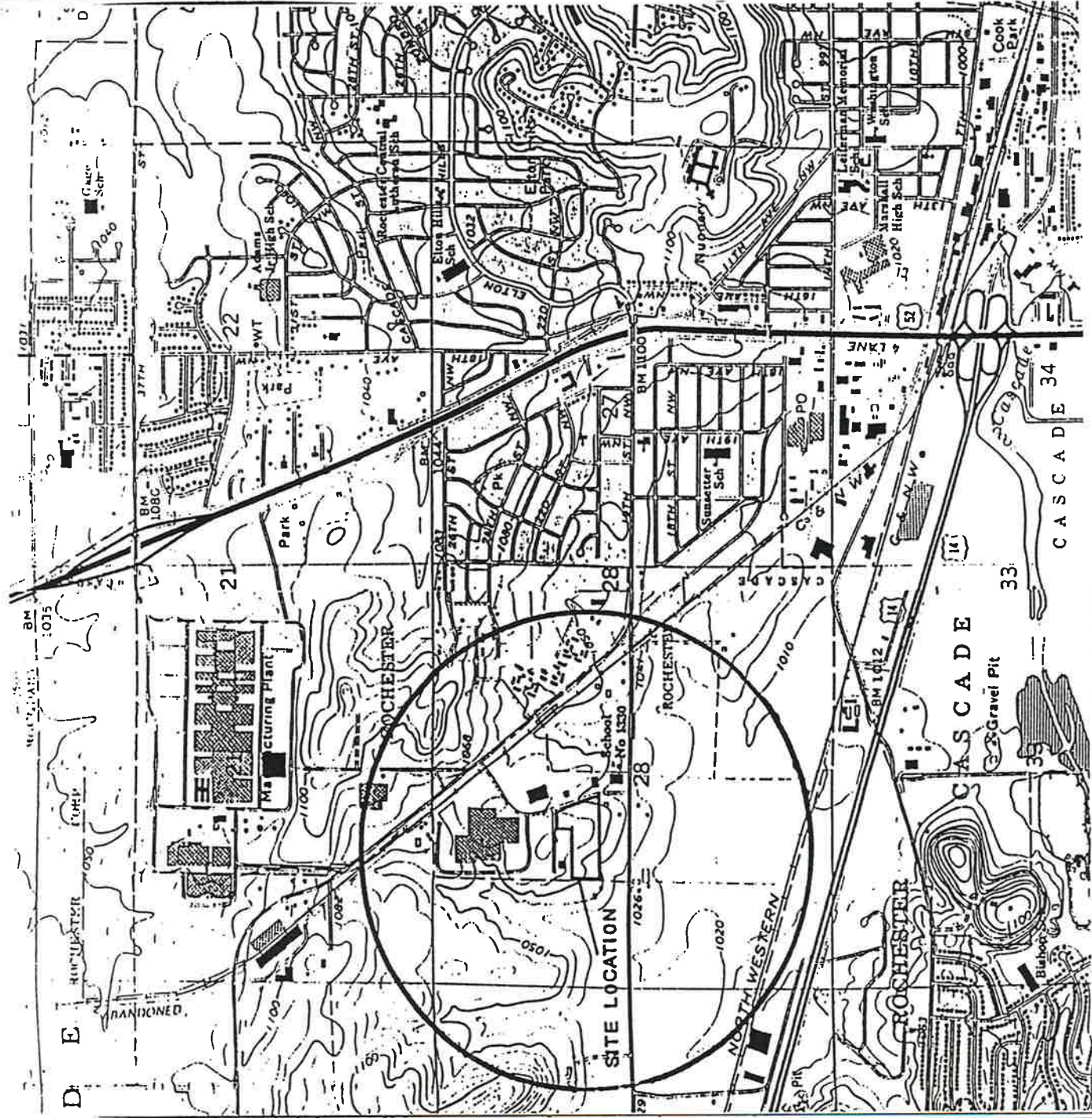


FIGURE 1
AREA MAP
ROCHESTER SCHOOL BUS

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

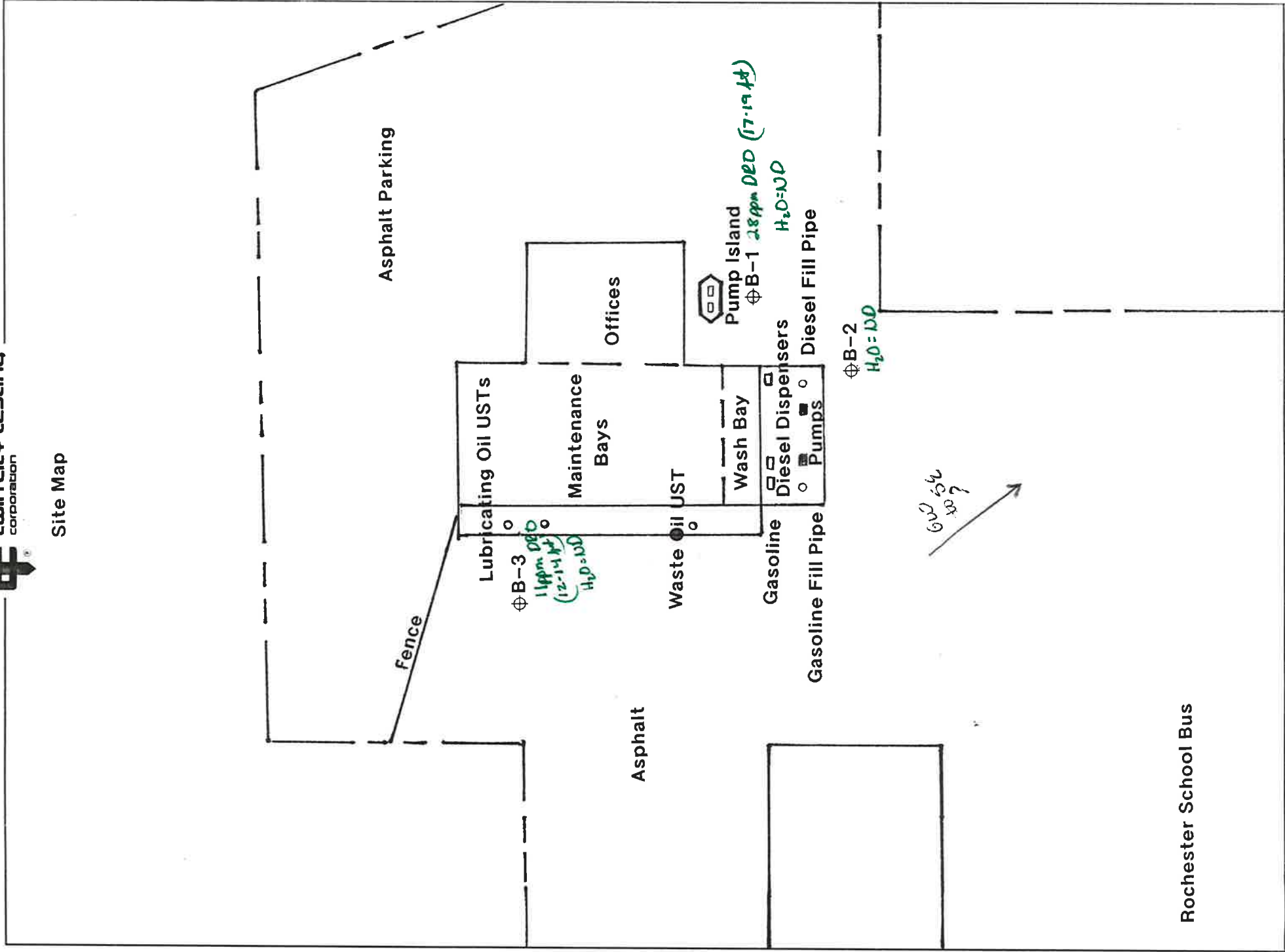


QUADRANGLE LOCATION

SOURCE: USGS 7.5 MINUTE SERIES
DOUGLAS, MN AND ROCHESTER MN QUADRANGLE MAPS
(REVISED 1982 AND 1979, RESPECTIVELY)



Site Map



Rochester School Bus

APPENDIX A
METHODS and PROCEDURES

Contamination Reduction

The drill rig and/or downhole tools were steam cleaned prior to mobilization and between each boring as necessary. The wash water was disposed of on site. Cuttings were thin-spread on site.

The split barrel sampler was washed with a biodegradable low-phosphate detergent solution and rinsed with potable water prior to collecting each sample. Wash and rinse water were disposed of on site.

Soil Sampling

Soil sampling was performed in accordance with ASTM:D1586-84. Using this procedure, a 2 inch O.D. split barrel sampler is driven into the soil by a 140 pound weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as the penetration resistance or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils.

Soil Classification

As the samples were obtained in the field, they were visually and manually classified in accordance with ASTM:D2487-85 and D2488. 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 indicating the depth and identification of the various strata, the N value, water level information, contamination observations and pertinent information regarding the method of maintaining and advancing the drill holes are attached.

Soil Screening

Soils were screened for the presence of organic vapors using an hNu Model 101 photoionization detector equipped with a 10.2 eV lamp and calibrated for direct reading in parts-per-million volume/volume of benzene. Fresh soil surfaces were exposed and the hNu probe immediately placed within one to two inches of the soil surface.

One sample was collected in a clean soil jar at each sampling location at the time of digging. The jar was covered with a sheet of clean aluminum foil and screw cap tightly applied. The jar was inverted for transport to the lab.

In the lab, the jar was warmed to room temperature and righted. Each jar was agitated for 10 seconds, allowed to "rest" for approximately 10 minutes, and agitated again. The screw lids were removed and foil seals exposed. The foil seal was quickly punctured with the instrument probe and the highest meter response recorded as the jar headspace concentration 2 to 5 seconds after insertion.

Soil Sample Collection and Chain of Custody

Soil samples were collected from the split barrel sampler directly, placed in approved laboratory prepared containers, and transported to the laboratory in an ice-filled cooler. A sampling information form was filled out for each sample indicating pertinent details of the sample collection process.

Upon collection of a sample, a chain of custody log was initiated. The chain of custody record includes the following information: project, work order number, shipped by, shipped to, sampling point, location, field ID number, date and time taken, sample type, number of containers, analysis required, sampler(s) signature(s), and other necessary information. As few people as possible handled the sample containers.

APPENDIX B
SOIL BORING LOGS

LOG OF TEST BORING

JOB NO. 4800-93-040 VERTICAL SCALE 1" = 3'
 PROJECT RSB COACHES - 2102 32ND AVE NW, ROCHESTER, MN BORING NO. B1



DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N OF CR	SAMPLE		TESTS		ORGANIC VAPOR bkqd (ppm)
				ML NO.	TYPE	W	D	
0.5	ASPHALT PAVING	ASPHALT						
1.0	FILL, mostly silty clay, dark brown to grayish brown, a little gravel	FILL	10	1	HSA			0.0
1.5				2	SB			0.2
2.0	ORGANIC CLAY, black, medium, a few roots (OL)	TOPSOIL	8	3	SB			0.2
4.0	SILTY CLAY, dark brown to gray to brown and gray mottled (CL-ML)	FINE ALLUVIUM	6	4	SB			0.2
5.0			4	5	SB			0.1
6.0			3	6	SB			0.0
7.0			5	7	SB			0.0
8.0			6	8	SB	<i>0.71 ppm</i> <i>GED</i>		0.0
17.0	SANDY LEAN CLAY WITH A LITTLE GRAVEL, gray, brown and gray mottled, medium (CL)	MIXED ALLUVIUM	8	9	SB	<i>23 GED</i>		0.0
19.0	END OF BORING							



WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL
11-02	10:00	19.0'	17.0'	17.5'		16.0'
11-02	10:20	19.0'	17.0'	19.0'		15.0'

START	11-2-92	COMPLETE	11-2-92
METHOD	3-1/4" HSA 0'-17.0' (Continuous sampling @ 10:00)		

CREW CHIEF R. Smith

LOG OF TEST BORING

JOB NO. 4800-93-040 VERTICAL SCALE 1" = 3'
 PROJECT RSB COACHES - 2102 32ND AVE NW, ROCHESTER, MN BORING NO. B2



DEPTH IN FEET	DESCRIPTION OF MATERIAL SURFACE ELEVATION <u>99.5</u>	GEOLOGIC ORIGIN	N OF CR	SAMPLE		TESTS		ORGANIC VAPOR	
				WL	NO. TYPE	W	D	hNu (ppm)	bkgd (ppm)
0.5	ASPHALT PAVING	ASPHALT							
	FILL, mostly crushed limestone, brownish tan	X	13		1 HSA			2.0	0.0
2.0	SILTY CLAY, brown to brown and gray mottled, rather stiff to soft to medium to soft to medium, a few lenses of sand below 14' (CL-ML)	/	9		2 SB			0.0	0.0
			3		3 SB			0.0	0.0
			3		4 SB			0.0	0.0
			5		5 SB			0.0	0.0
			3		6 SB			0.0	0.0
			5		7 SB			0.0	0.0
			5		8 SB			0.0	0.0
16.5	END OF BORING								

Handwritten notes: 14.5' and 6ft

WATER LEVEL MEASUREMENTS

START 11-2-92 COMPLETE 11-2-92

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	BAILED DEPTHS	WATER LEVEL	METHOD
11-02	11:40	16.5'	14.5'	16.5'		13.5'	3-1/4" HSA 0'-16.5'
							@ 11:20

CREW CHIEF R. Smith

twin city testing
corporation

LOG OF TEST BORING



JOB NO. 4800-93-040 VERTICAL SCALE 1" = 3' BORING NO. **B3**

PROJECT RSB COACHES - 2102 32ND AVE NW, ROCHESTER, MN

DEPTH IN FEET	DESCRIPTION OF MATERIAL	GEOLOGIC ORIGIN	N OF CR	SAMPLE		TESTS		ORGANIC VAPOR hNu (ppm)	ORGANIC VAPOR bkgd (ppm)
				ML NO.	TYPE	W	D		
0.5	ASPHALT PAVING	ASPHALT							
	FILL, mostly crushed limestone, brownish tan	FILL	11	1	HSA			0.0	0.0
				2	SB			0.0	0.0
2.0	SILTY CLAY, brown to brown and gray mottled, soft to medium (CL-ML)	FINE ALLUVIUM	4	3	SB			0.0	0.0
			3	4	SB			0.0	0.0
			4	5	SB			0.0	0.0
12.0	SANDY LEAN CLAY, rather stiff, brown, a few lenses of sand (CL)	MIXED ALLUVIUM	9	6	SB		NP	0.0	0.0
14.0	END OF BORING			7	SB		11 ppm DRO	0.0	0.0

WATER LEVEL MEASUREMENTS				START	COMPLETE
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	11-2-92	11-2-92
11-02	15:30	14.0'	12.0'		
11-02	15:45	14.0'	12.0'		

METHOD	WATER LEVEL	BALLED DEPTHS	CAVE-IN DEPTH
3-1/4" HSA 0'-12.0' (Continuous Sampling 0'-14.0')	12.0'		14.0'
	10.5'		14.0'

CREW CHIEF	R. Smith
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twin city testing
corporation

SOIL SAMPLING FORM

PROJECT R&B Corridor W.O. # 9806-93-010 RECORDED BY L. Madsen

BORING B-1 LOCATION 2021 32nd Ave NW Rochester, MN

DESCRIBE SAMPLING POINT SEE SITE MAP

REVIEWED BY _____ ORGANIC VAPOR DETECTOR 10.2 cv LNA

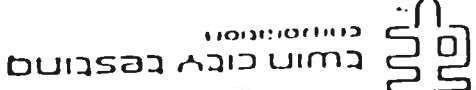
SAMPLING METHOD 3 1/4" HSA

CONTAMINATION OBSERVATIONS

DEPTH	SAMPLE ID	SOIL TYPE	SAMPLES COLLECTED	ORGANIC VAPORS
0' - 2'	---	Asphalt cement limestone Fill	---	0% no core detected, no groundwater observed
2' - 4'	---	Fill Black Limestone	---	0%
4 1/2' - 6 1/2'	---	Grey sandy lean clay	---	2% 0%
7' - 9'	---	Greenish sandy clay	---	2% 0%
9 1/2' - 11 1/2'	---	Brown sandy clay	---	1% 0%
12' - 14'	---	Brown sandy clay	---	0% 0%
14 1/2' - 16 1/2'	---	Brownish grey silt clay	---	0% 0%
17' - 19'	1102921005	Brownish clay Region Brown silt stone	2-20gms	0% 0%

DEPTH TO GROUND WATER 15' BORING ADVANCEMENT METHOD Gravity

COMMENTS Groundwater Sample Collected



SOIL SAMPLING FORM

BORING B2 PROJECT RSB COLLECT W.O.# 4800-93-040 RECORDED BY L. J. JENSEN

LOCATION 32nd Ave NW, Rochester, MN. CLEANING ALLOWED/WATER STOPPED DATE 11-02-92

DESCRIBE SAMPLING POINT SEE SITE MAP REVIEWED BY _____

SAMPLING METHOD 3 1/4" HSA ORGANIC VAPOR DETECTOR 10.2 eV LNL

DEPTH	SAMPLE ID	SOIL TYPE	SAMPLES COLLECTED	ORGANIC VAPORS (PPM)	CONTAMINATION OBSERVATIONS
0' - 1/2'	—	Asphalt/Fill	—	2.0/0	PETROLEUM COLE DETECTED, NO CONTAMINATION OBSERVED
1/2' - 2'	—	Grained Limestone Fill	—	0/0	NO COLE DETECTED, NO CONTAMINATION OBSERVED
2' - 4'	—	Reddish Brown Silty Sand	—	0/0	
4 1/2' - 6 1/2'	—	Reddish Brown Silty Sand	—	0/0	
7' - 9'	—	Brown Silty Clay	—	0/0	
9 1/2' - 11 1/2'	—	Brown Silty Clay	—	0/0	
12' - 14'	—	Brownish Green Silty Clay	—	0/0	
14 1/2' - 16 1/2'	1102921140	Brownish Green Silty Clay Reddish Brown Silty Sand	2-2oz jars	0/0	

DEPTH TO GROUND WATER 13' BORING ABANDONMENT METHOD Seal

COMMENTS Groundwater Sample Collected



Twin City Testing Corporation

SOIL SAMPLING FORM

BORING B3 PROJECT RSB (CARDS) W.O. # 4800 93-040 RECORDED BY L. NELSON

LOCATION 2021 32nd AVE NW ROCKET CITY, WA CLEANING ALUMINUM/WATER SYSTEM DATE 11-02-92

REVIEWED BY

DESCRIBE SAMPLING POINT SEE SITE MAP

SAMPLING METHOD 3 1/4 HSA

ORGANIC VAPOR DETECTOR 10.2 eV HVA

CONTAMINATION OBSERVATIONS

NO CO2 DETECTED, NO CONTAMINATION OBSERVED

DEPTH SAMPLE ID SOIL TYPE SAMPLES COLLECTED ORGANIC VAPORS (PPM)

DEPTH	SAMPLE ID	SOIL TYPE	SAMPLES COLLECTED	ORGANIC VAPORS (PPM)	CONTAMINATION OBSERVATIONS
0'-2'	---	Asphalt cement Limestone fill	---	0/0	NO CO2 DETECTED, NO CONTAMINATION OBSERVED
2'-4'	---	Fill Brown silt clay	---	0/0	" " " " " "
4'-6 1/2'	---	Brown silt clay	---	0/0	" " " " " "
7'-9'	---	Brown silt clay	---	0/0	" " " " " "
9'-11 1/2'	---	Reddish brown silt clay	---	0/0	" " " " " "
12'-14'	1102921526	Brown silt clay Reddish brown silt sand	2 - 2oz/nd	0/0	" " " " " "

DEPTH TO GROUND WATER BORING ABANDONMENT METHOD

COMMENTS

APPENDIX C

REPORT OF THE CHEMICAL ANALYSIS



TWIN CITY TESTING
CORPORATION

662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSES

DATE: November 18, 1992

PROJECT: RSB COACHES, 4800 93-0040

REPORTED TO: Twin City Testing Corporation
Attn: Lin Nelson
3908 Commerce CT SW
Rochester, MN 55902-1252

LABORATORY NO: 4410 03-0335

INTRODUCTION

This report presents the results of the analyses of six samples received on November 3, 1992, from a representative of Twin City Testing Corporation, Rochester branch. The scope of our services was limited to the parameters listed in the attached tables.

METHODOLOGY

Analyses are performed according to Twin City Testing Standard Operating Procedures. The procedures are based on the references stated in the analytical results tables.

DISCUSSION

No sampling containers for moisture determination were submitted to the laboratory for samples B-1 17-19', B-2 14.5-16.5' and B-3 12-14'. Therefore, the results for these samples are reported on a wet weight basis.

RESULTS

The results are listed in the attached tables.

REMARKS

The samples were collected on November 2, 1992. If samples are not consumed in the analysis, they are held for three months from the date of sample receipt and then disposed, unless written instructions to the contrary are received.

TWIN CITY TESTING CORPORATION

Nancy J. Whaley
Nancy J. Whaley
Project Manager

NJW\SDM\ml

Susan D. Max
Susan D. Max
Director, Environmental Chemistry

VOLATILE ORGANIC COMPOUND RESULTS
EPA METHOD 8020

(All values are in mg/Kg which is equal to parts-per-million)

Client ID:	B-1*	B-2*	B-3*	Method
	17-19'	14.5-16.5'	12-14'	Blank
TCT ID:	301038	301039	301045	

Parameter:

Benzene	ND	ND	ND	ND	<u>PQL</u>	0.050
Toluene	0.12	ND	ND	ND		0.050
Ethyl benzene	ND	ND	ND	ND		0.050
Total xylenes	0.066	ND	0.086	ND		0.050
Methyl-tert-Butyl Ether	ND	ND	ND	ND		0.050

Surrogate Recovery:

α, α, α -Trifluorotoluene 101% 107% 102% 101%

Gasoline Range Organics ND ND ND ND 10

Surrogate Recovery:

α, α, α -Trifluorotoluene 97% 101% 97% 97%

Date Collected:	11/2/92	11/2/92	11/2/92
Date Extracted:	11/2/92	11/2/92	11/2/92
Date Analyzed:	11/11/92	11/10/92	11/10/92

* No containers were received for moisture determination. The results are reported on a wet weight basis.

PQL = Practical Quantitation Limit
 ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

Wisconsin Department of Natural Resources, PUBL-SW-140, April 1992.

VOLATILE ORGANIC COMPOUND RESULTS EPA METHOD 8020

(All values are in $\mu\text{g/L}$ which is equivalent to parts-per-billion)

Client ID: B1 Water B2 Water B3 Water Method Blank

TCT ID: 301042 301043 301044

Parameter: PQL

Benzene	ND	ND	ND	5
Toluene	ND	ND	ND	5
Ethyl benzene	ND	ND	ND	5
Total xylenes	ND	ND	ND	5
Methyl-tert-Butyl Ether	5 .005ppm	ND	ND	5

Surrogate Recovery:

α, α, α -Trifluorotoluene 110% 98% 106% 101%

Gasoline Range Organics 71 35 ND ND 30

Surrogate Recovery:

α, α, α -Trifluorotoluene 104% 95% 103% 97%

Date Collected: 11/2/92 11/2/92 11/2/92

Date Analyzed: 11/9/92 11/9/92 11/9/92 11/10/92

PQL = Practical Quantitation Limit

ND = Not Detected

Reference: EPA Test Methods for Evaluating Solid Waste, SW-846, November 1986, 3rd Edition.

Wisconsin Department of Natural Resources, PUBL-SW-140, April 1992.

DIESEL RANGE ORGANIC RESULTS MODIFIED DRO METHOD

(All values are in mg/Kg which is equal to parts-per-million)

<u>Sample Identification</u>	<u>TCT ID</u>	<u>Diesel Range Organics</u>	<u>Triacotane Recovery (%)</u>	<u>Practical Quantitation Limit</u>
B-1 17-19*	301038	28	96	8
B-2 14.5-16.5*	301039	ND	107	8
B3 12-14*	301045	11	100	8
Blank		ND	96	10
Method Spike		81% Recovery	104	
Method Spike Duplicate		84% Recovery	107	

Date Collected: 11/2/92

Date Extracted: 11/9/92

Date Analyzed: 11/12/92

* No containers were received for moisture determination. The results are reported on a wet weight basis.

ND = Not Detected

Reference: Wisconsin Department of Natural Resources, PUBL-SW-141, April 1992.

DIESEL RANGE ORGANIC RESULTS MODIFIED DRO METHOD

(All values are in $\mu\text{g/L}$ which is equivalent to parts-per-billion)

<u>Sample Identification</u>	<u>TCT ID</u>	<u>Diesel Range Organics</u>	<u>Triacotane Recovery (%)</u>	<u>Practical Quantitation Limit</u>
B3 Water	301044	ND	92	220
B2 Water	301043	ND	87	240
B1 Water	301042	ND	89	240
Blank		ND	86	200
Method Spike		104% Recovery	102	
Method Spike Duplicate		100% Recovery	96	

Date Extracted: 11/6/92

Date Analyzed: 11/12/92

ND = Not Detected

Reference: Wisconsin Department of Natural Resources, PUBL-SW-141, April 1992.



CHAIN-OF-CUSTODY RECORD

TCT NO. 03981

RSB COACHES
 CLIENT NAME
 2021 32nd AVE NW
 CLIENT ADDRESS
 DON HOFFMAN
 CONTACT ADDRESS IF DIFFERENT FROM ABOVE PHONE

LIN NELSON
 TCT CONTACT
 RSB COACHES
 PROJECT NAME
 4800-93-040
 CLIENT P.O. # / PROJECT NO.
 TCT ROCHESTER
 BILL TO (CO. NAME, ADDRESS)
 TCT ROCHESTER
 REPORT TO

TCT USE ONLY
 PROJ. MGR. Nancy
 PRIORITY = Asst. Dir. + the
 INVOICE # 4410 03-0335
 JOB NAME ROC-RSB.2
 CUSTODY SEAL INTACT/NUMBER Y/N N/A
 TEMPERATURE OF CONTAINER 4.5 °C
 SAMPLE CONDITION OK

LIN NELSON
 SAMPLED BY PRINT NAME/SIGNATURE
 11-02-92
 DATE/TIME SAMPLED

ANALYSES REQUEST	FILTERED (YES/NO)	PRESERVED (CODE)	REFRIGERATED (Y/N)
			4 4 4 4
			GRO DRO BETX MTBE

CODE A - NONE
 B - HNO3
 C - H2SO4
 D - NaOH
 E - HCl
 F -

POSSIBLE HAZARD: YES _____ UNKNOWN (COMMENT BELOW)
 SAMPLE DISPOSAL: RETURN TO CLIENT _____ DISPOSAL BY LAB
 (ADDITIONAL CHARGES MAY BE ASSESSED)

PREPAY Y/N
 CHECK NO.
 CHECK AMOUNT

ITEM NO.	CLIENT SAMPLE ID.	MATRIX	NO. OF CONTAINERS	CONTAINER TYPE	REMARKS	TCT NO.
2	1102921005 B-1 17'-19'	SOIL	2	2 OZ JARS	X X X X	300-301138
2	1102921140 B2 14'12"-16'12"	SOIL	2	2 OZ JARS	X X X X	301 139
2	1102921520 B3 12'-14'	SOIL	2	2 OZ JARS	X X X X	301 145
4	1102921005 B1	H2O	2	1 DET, 1 AMBER	X X X X	301 142
4	1102921140 B2	H2O	2	1 DET, 1 AMBER	X X X X	301 143
4	1102921520 B3	H2O	2	1 DET, 1 AMBER	X X X X	301 144
7						
8						
9						
10						

Additional Comments	ITEM NO.	RELINQUISHED BY / AFFILIATION	ACCEPTED BY / AFFILIATION	DATE	TIME
			<i>[Signature]</i>	4/1/92	1530