

REQUEST FOR SITE CLOSURE

**THIRTY-SEVENTH STREET SCHOOL
Milwaukee, Wisconsin**

**January 1998
Project No. P96.553**



ENVIRONMENTAL & REGULATORY SERVICES
101 West Pleasant Street
Suite 205
Milwaukee, Wisconsin 53212
Fax: (414) 220-5374
Tommy G. Thompson, Governor
William J. McCoshen, Secretary

April 14, 1998

Mr. Gordon Harris
Milwaukee Public Schools
1124 N. 11th St.
Milwaukee, WI 53205

MP5 9804R15PM12:34

Subject: **Commerce #53208-1811-15**
Thirty Seventh Street School, 1715 N. 37th St., Milwaukee

No further action required

Dear Mr. Harris:

On March 16, 1998, we received the information that was requested on March 3 for a complete closure review. On April 14, 1998 the above site was reviewed for closure by the Site Review staff of the PECFA Bureau. Using the standards established in NR 700, the Department has determined that this site has been investigated/remediated to a level protective of the environment and human health. The Department considers this site to meet environmental standards and no further action is necessary.

If, in the future, site conditions indicate that any contamination that might remain poses a threat, the need for further investigation/remediation would be determined and required if necessary. If subsequent information indicates a need to reopen this case, any original claim under the PECFA fund would also reopen and you may apply for assistance to the extent of remaining eligibility.

Thank you for your efforts in the protection of the environment. If you have any questions, please contact me at (414) 220-5373.

Sincerely,

Jennifer Skinner
Hydrogeologist
PECFA Site Review Section

cc: Thomas Puchalski, Fluid Management
Electronic case file

January 7, 1998

Mr. Mike Farley
Wisconsin Department of Natural Resources
4041 North Richards Street
P.O. Box 12436
Milwaukee, Wisconsin 53212

**Re: Request for Site Closure per NR 720.19
Thirty-Seventh Street School Site
Milwaukee, Wisconsin
WDNR ID No. 241901990
BRRS No. 03-41-110427
FMI Project No. 96.553**

Dear Mr. Farley:

This letter serves as request for unrestricted site closure. A completed Case Summary and Close Out form is attached (Attachment A). A list of acronyms used in this letter report is included at the back of this report.

The Milwaukee Public School system's Thirty-Seventh Street School (37th Street) site is located in Milwaukee, Wisconsin. The site is located in the NE 1/4, SW 1/4, Sec. 24, T7N, R21E in Milwaukee County. Figure 1 illustrates the site location. The site address is:

1715 North 37th Street
Milwaukee, Wisconsin 53208-1811

The 37th Street site is currently being operated as an elementary school by the Milwaukee Public School system. The school, constructed in 1902, is a large multistory building with a large, paved parking lot. The school is bounded by 37th Street on the east, West Robert Street on the north, West Walnut Street on the south, and single family homes on the west. The area surrounding the 37th Street site is primarily residential. One 7,500-gallon

underground storage tank (UST), installed in 1970, was used for the storage of heating fuel oil until the tank was removed. The surface cover of the site is predominately asphalt and concrete. Figure 2 illustrates the site plan view.

Fluid Management (FMI) performed a UST closure assessment on September 30, 1996, during the removal of the 7,500-gallon UST. The UST was cleaned and removed. Three soil samples were collected from the UST cavity (S-1 through S-3). Sample S-3, located in the north sidewall of the UST cavity, was laboratory-analyzed for diesel range organics (DRO). The laboratory analytical results indicated a DRO concentration of 860 ppm. The laboratory analytical report and chain-of-custody documentation are included in Attachment B. The UST was replaced with an aboveground storage tank (AST) which was installed in the basement of the building.

Soil Contaminant Investigation Results

On October 17, 1997, FMI conducted a site investigation. The purpose of the soil contaminant investigation was to delineate the source, nature, degree, and extent of petroleum hydrocarbon soil contamination caused by the past operation of the UST at the 37th Street site. The investigation was conducted using the methods described in FMI's Standard Operating Procedures (SOP), which is provided in Attachment C.

The soil contaminant investigation was performed using a Geoprobe. The five Geoprobe sampling locations (GP-1 through GP-5) are presented in Figure 2. Soil samples were collected continuously from ground surface to an approximate depth of 13 to 17 feet below ground surface (bgs). Soil samples were characterized as to soil type by FMI professional staff. Boring logs were developed indicating the sample depth intervals, observations, identification of stratigraphic units, soil moisture content, and other geologic information. Geoprobe borehole logs are presented in Attachment D.

A portion of each sample collected was field-screened for volatile organic vapors with a portable 11.7 eV photoionization detector (PID). The PID was used to screen for gross contamination in order to allow selection of samples for laboratory analysis. To document the soil contaminant investigation field results, select soil samples were prepared and submitted to a state-certified laboratory for analysis. The following samples were selected for laboratory analysis:

- Samples exhibiting the highest PID reading from each boring located in the zone of contamination; and
- Samples from below the zone of field-detectable contamination to document the vertical extent of soil contamination.

Soil samples for laboratory analyses were collected in proper sample containers, appropriately preserved, and stored on ice in a cooler at approximately 4°C. Samples sent to the laboratory were analyzed for DRO and volatile organic compounds (VOCs). Other quality assurance/quality control procedures included analysis of blanks to verify the quality of the data. The analytical reports were reviewed by FMI's chemist and are presented in Attachment B.

DRO was detected in sample GP-1 at 5.8 ppm in the 11 to 13 foot interval. This is below the Wisconsin Administrative Code, Chapter NR 720 generic soil standard of 100 ppm. There were no detections of DRO or VOC contaminants in the remaining samples. A summary of results is provided in Table 1.

Evaluation of the Residual Soil Contaminant Concentrations

An evaluation was conducted to determine whether the residual soil contamination at the site poses a risk to the environment or public health, safety, and welfare. According to NR 720.05 (3), the Wisconsin Department of Natural Resources (WDNR) will not require active remediation unless the soil contamination meets any of the following criteria:

- (a) Presents a threat to the public through direct contact or to the environment
- (b) Will cause a violation of a groundwater quality standard contained in NR 140
- (c) Will cause a violation of a surface water quality standard contained in NR 102 to 106
- (d) Will cause a violation of an air quality standard contained in NR 400 to 409

The nearest surface water body is a lagoon at Washington Park, approximately 1,600 feet west of the site. Contaminant migration from the site to this lagoon is unlikely because of its distance from the site, its upgradient location, and the lack of significant soil contamination having been detected in the site investigation.

There are no wetlands on or immediately adjacent to the 37th Street site. To the best of FMI's knowledge, there are no sensitive ecosystems or habitats and no state or federally listed threatened or endangered species on or adjacent to the site.

Based on a review of the National Register of Historic Places and State Register of Historic Places in Wisconsin, there are no historical or archaeological sites located on or adjacent to the site. Based on a review of NR 102.10 and NR 102.11, there are no outstanding or exceptional resource waters on or near the site.

Based on the depths, low concentrations, and low volatility of soil contaminants, emissions (volatilization) of the contaminants into the ambient air would not be in such quantity, concentration, or duration as to be injurious to human health or plant or animal life. Field screening of the ambient air at the site using a PID did not reveal the presence of contaminants.

Conclusions and Recommendations

Soil sample analytical results for samples collected during the site investigation did not indicate the presence of significant contamination. Based on our closure criteria evaluation, the soil contaminants associated with the release from a heating oil UST removed from the 37th Street site would not appear to pose a risk to human health through direct contact. The DRO detected during the initial site assessment was limited to a small area of the excavation sidewall. Subsequent follow-up soil sampling performed during the site investigation detected a significantly lower DRO concentration in only one sample.

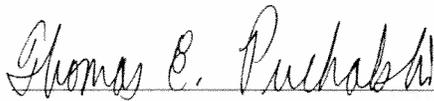
Site soil contaminants should not cause a violation of surface water or air quality standards and are not likely to detrimentally affect groundwater quality. The extent of soil contamination is fully defined. Based on the available information, **the site does not**

require further investigation or monitoring and should be unconditionally closed.

Sincerely,

FLUID MANAGEMENT
A DIVISION OF ENVIROGEN, INC.

I, Thomas E. Puchalski, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Thomas E. Puchalski
Senior Hydrogeologist
Report Preparer

TEP:dlb

cc: Pat O'Donnell, Milwaukee Public Schools
Gordon Harris, Milwaukee Public Schools

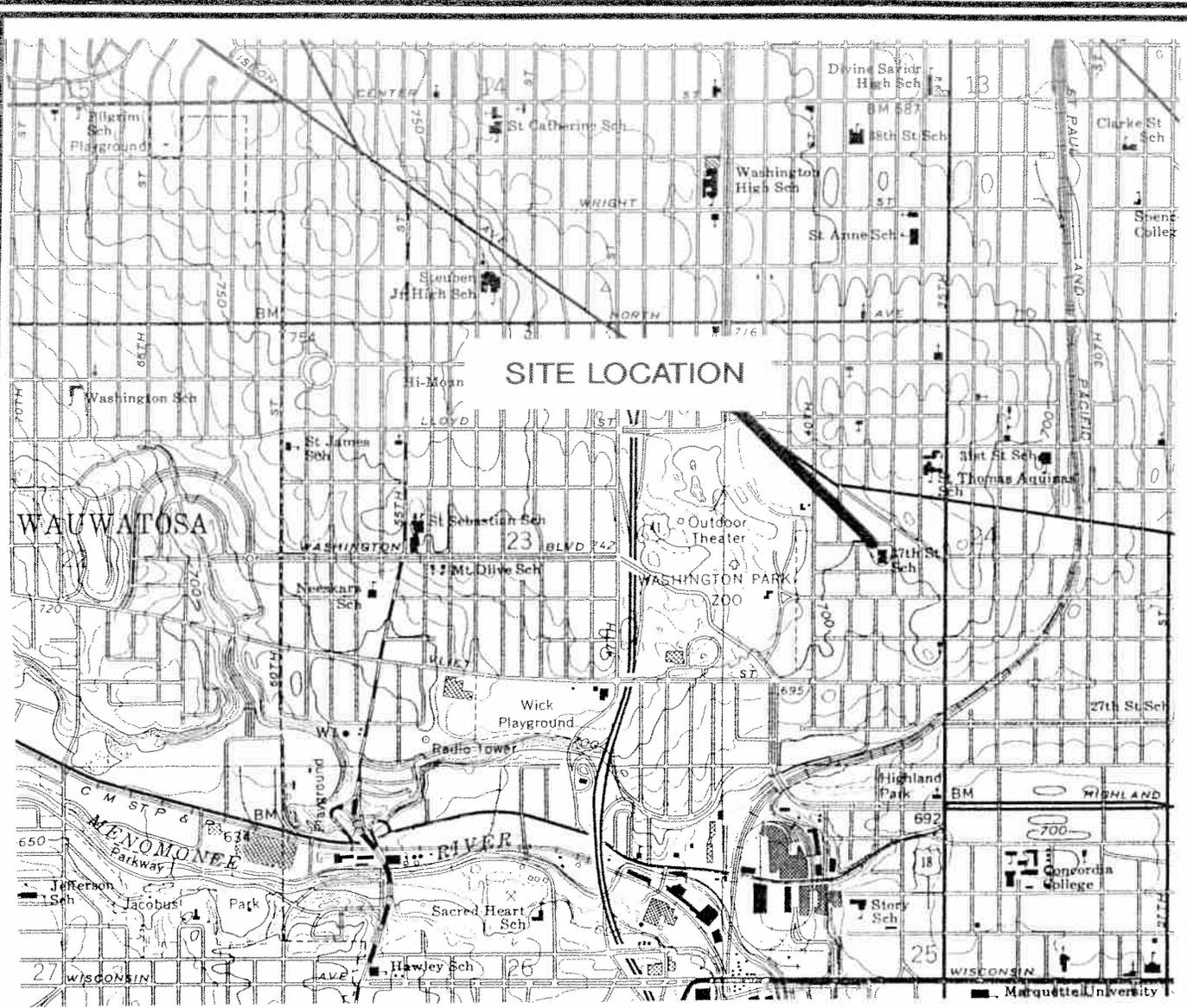
LIST OF ACRONYMS

bgs -	below ground surface
DRO -	diesel range organics
FMI -	Fluid Management
PID -	photoionization detector
SOP -	Standard Operating Procedures
UST -	underground storage tank
VOC -	volatile organic compounds
WDNR -	Wisconsin Department of Natural Resources

LIST OF FIGURES

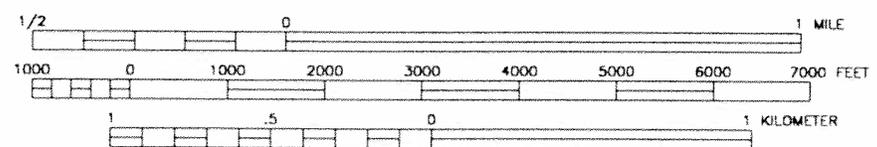
- 1 Site Location
- 2 Geoprobe Boring Configuration

DRAWING NO. 96.553R1
 DRAWN BY: LME
 11/26/97
 CHECKED BY: jmc
 1/7/98
 APPROVED BY: AFD
 1/7/98



(UNITED STATES GEOLOGICAL SURVEY 1958, REVISED 1971, MILWAUKEE QUADRANGLE, WISCONSIN MAP, 7.5 MINUTE SURVEY)

SCALE
1:24000



CONTOUR INTERVAL 10 FEET



LOCATION

Site Location Map
Thirty-Seventh Street School Site
Milwaukee, Wisconsin

FIGURE NO.
1

THE INTERPRETATIONS IN THIS FIGURE ARE BASED ON KNOWN POINTS IN TIME AND SPACE AND ARE INTEGRAL TO A WRITTEN REPORT AND SHOULD BE REVIEWED IN THAT CONTEXT.

TANK LEGEND

① FORMER 7,500-GALLON FUEL OIL UST

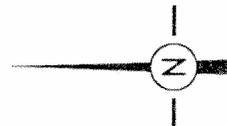
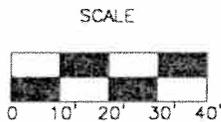
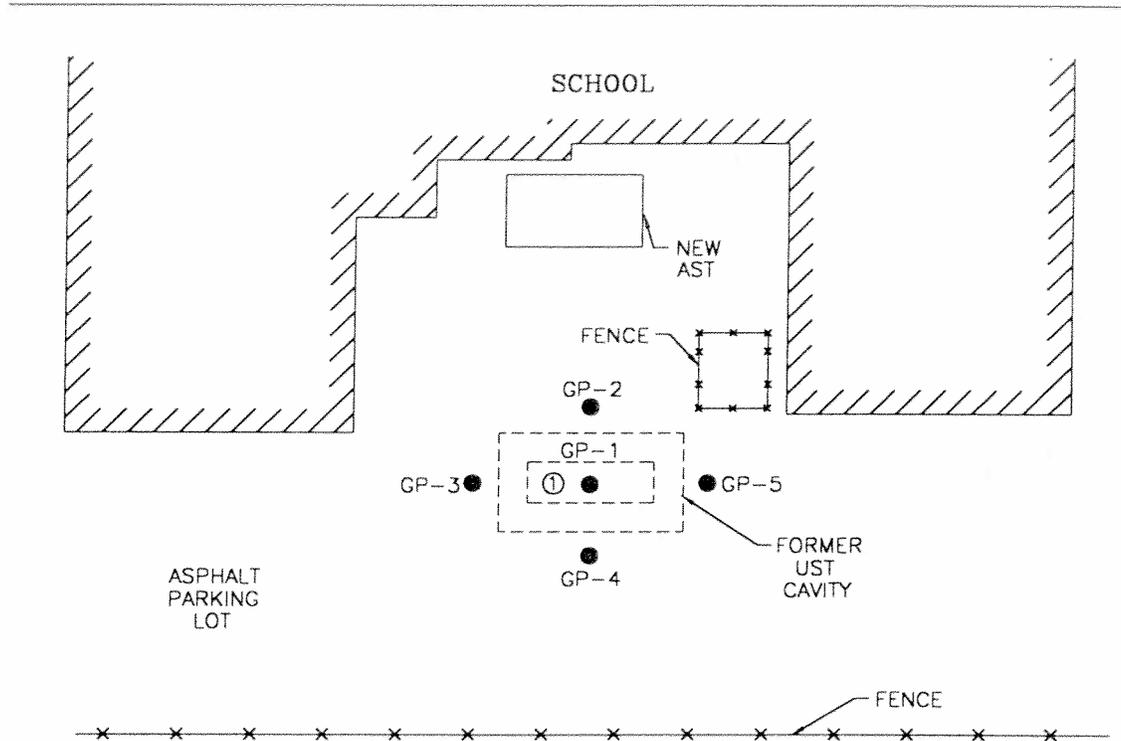
LEGEND

● GEOPROBE BORING LOCATION

NOTE: THE AST IS LOCATED IN THE BASEMENT.

DRAWING NO. 96.553R2
DRAWN BY: LME 11/26/97
CHECKED BY: [Signature] 1/1/98
APPROVED BY: [Signature] 1/2/98

37TH STREET



*Geoprobe Boring Configuration
Thirty-Seventh Street School Site
Milwaukee, Wisconsin*

FIGURE NO.

2

THE INTERPRETATIONS IN THIS FIGURE ARE BASED ON KNOWN POINTS IN TIME AND SPACE AND ARE INTEGRAL TO A WRITTEN REPORT AND SHOULD BE REVIEWED IN THAT CONTEXT.

LIST OF TABLES

Table 1 Summary of Geoprobe Soil Sample Analytical Results

TABLE I

Summary of Geoprobe Soil Sample Analytical Results
 Thirty-Seventh Street School site
 Milwaukee, Wisconsin
 October 17, 1997

Boring Location	Sample Depth Interval (feet bls)	Benzene	Ethylbenzene	MTBE Toluene	Toluene	1,2,4 - TMB	1,3,5 - TMB	Xylenes	DRO (ppm)
GP-1	11-13	<25	<25	<25	<25	<25	<25	<25	5.8
GP-1	13-17	<25	<25	<25	<25	<25	<25	<25	<4.2
GP-2	13-15	<25	<25	<25	<25	<25	<25	<25	<4.2
GP-3	11-13	<25	<25	<25	<25	<25	<25	<25	<4.4
GP-4	9-13	<25	<25	<25	<25	<25	<25	<25	<5.2
GP-5	11-13	<25	<25	<25	<25	<25	<25	<25	<4.6
NR 720 Generic Soil Standard		5.5	2,900	NS	1,500	NS	NS	4,100	100

Notes:

The official Wisconsin Department of Natural Resources reporting limit for volatile organic compounds is 25 ppb

- TMB: Trimethylbenzene
- DRO: Diesel range organics
- MTBE: Methyl t-butyl ether
- bls: below land surface
- NS: No standard

Checked by: *[Signature]* 10/18/97
 Approved by: *[Signature]* 10/18/97

LIST OF ATTACHMENTS

- | | |
|--------------|--|
| Attachment A | Case Summary and Close Out Form |
| Attachment B | Soil Sample Laboratory Analytical Report |
| Attachment C | Standard Operating Procedure for Site Investigations |
| Attachment D | Geoprobe Borehole Logs and Abandonment Forms |

**ATTACHMENT A
CASE SUMMARY AND CLOSE OUT FORM**

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CASE SUMMARY AND CLOSE OUT FORM

update 3/14/96

UID # _____ WCNR IO No 241901990
GRANTS No 03-41-110427

Responsible Party Name/ Full Address: Gordon Harris
Milwaukee Public Schools 1124 N 11th St
Milwaukee, WI 53205

Site Name/Full Address: 37th Street School / 1715 North 37th Street, Milw., WI 53208-1811

Legal Description: NE 1/4, SW 1/4, Sec 24, T 7 N, R 21 (E/W) DNR Case No. 241901990 County: Milwaukee

Contaminant Type(s) HEATING OIL Quantity Released Unknown

Incident Type: (amount released if known): Unknown

Date of Incident/Discovered: 9-30-96 Incident = LUST : Form 4 Pending? Yes No

Depth to Groundwater/Flow Direction: 12-15 ft/East Perched Water? Y N Depth: NA

Soil Type CL Depth to Bedrock > 50 feet

Potential Receptors: Surface water at Washington Park Zoo, 1600 feet west of site

Site Assessment Consultant: Fluid Management a Division of Envirogen (FMI)

Investigation/Remediation Consultant: FMI

Certified Lab Testing Soils/Water: En Chem, Inc. 1795 Industrial Drive, Green Bay, WI 54302

Status of water supply wells within 1200 feet of the site? None

Date Closure Submitted to DNR: 12/97 Enforcement Actions or Permits Closed Out? Yes No

CLOSE OUT COMMITTEE SIGN OFF: _____ Date: _____

(Signature)

(Signature)

(Signature)

(Signature)

Form completed by:

I certify that, to the best of my knowledge, the information presented on and attached to this form are true and accurate. This recommendation for case closure is based upon all available data as of 12/97 (date). I have read the Case Summary and Close Out Form Instructions and all required information has been included.

Name: Thomas Puchalski Firm Name: FMI

Affiliation with Site Owner: Consultant

Address: 2831 N. Grandview Blvd, P.O. Box 90

City: Pewaukee State: WI Zip: 53072-0090

Telephone Number: (414) 549-6898

Thomas Puchalski
(Signature)

COMMITTEE RECOMMENDATION: _____ Date: _____

ATTACHMENT B
SOIL SAMPLE LABORATORY ANALYTICAL REPORT



RECEIVED
OCT 29 1997

01873618-2
1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
WI DNR LAB ID : 405132750

Client: FLUID MANAGEMENT INC
Report Date : 10/27/97

Sample No.	Field ID	Collection Date	Sample No.	Field ID	Collection Date
873618-001	GP-1 11-13'	10/17/97			
873618-002	GP-1 13-17'	10/17/97			
873618-003	GP-4 9-13'	10/17/97			
873618-004	GP-3 11-13'	10/17/97			
873618-005	GP-2 13-15'	10/17/97			
873618-006	GP-5 11-13'	10/17/97			

The "Q" flag is present when a parameter has been detected below the LOQ. This indicates the results are qualified due to the uncertainty of the parameter concentration between the LOD and the LOQ.

Soil VOC detects are corrected for the total solids, unless otherwise noted.

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample narrative. Release of this final report is authorized by Laboratory management, as is verified by the following signature.

M. Suha
Approval Signature

10/27/97
Date

J. Durancean
Project Manager

10/27/97
Date



1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Lab#:	TestGroupID:	Comment:
873618-001	DRO-S	Late eluting hump present along with diesel range peaks.



503-4.XLS

1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
FAX: 920-469-8827

PVOC Meoh Blanks
Anal by: PMS
Anal date: 10/23/97
Blank #: 503-4

	REPORTED			UNITS	QUALIFIER
	LOD	LOQ	RESULT		
Benzene	25	60	ND	ug/L	
Ethylbenzene	25	60	ND	ug/L	
Methyl tert-butyl ether	25	60	ND	ug/L	
Toluene	25	60	ND	ug/L	
1,2,4-Trimethylbenzene	25	60	ND	ug/L	
1,3,5-Trimethylbenzene	25	60	ND	ug/L	
m/p-Xylene	25	60	ND	ug/L	
o-Xylene	25	60	ND	ug/L	
a,a,a-Trifluorotoluene			101.73	% recov	



410-41.XLS

1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
FAX: 920-469-8827

PVOC BS BSD sheet

Anal by: PMS

Anal date: 10/23/97

Blank # 503-04

BS #: 410-41-35

BSD # 410-41-36

	BS % Rec.	BSD % Rec	% RPD
Methyl tert-butyl ether	98.4	96.4	2.07
Benzene	100.1	98.4	1.68
Toluene	99.3	98.7	0.64
Ethylbenzene	97.8	97.5	0.36
m/p-Xylene	98.9	98.8	0.02
o-Xylene	101.4	101.8	0.37
1,3,5-Trimethylbenzene	95.6	95.5	0.10
1,2,4-Trimethylbenzene	98.0	97.9	0.09



1795 Industrial Drive
 Green Bay, WI 54302
 920-469-2436
 800 7-ENCHEM
 FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
 Project Number : 96.553
 Field ID : GP-1 11-13'
 Lab Sample Number : 873618-001
 WI DNR LAB ID : 405132750

Client : FLUID MANAGEMENT INC
 Report Date : 10/27/97
 Collection Date : 10/17/97
 Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	83.8				%		10/22/97	SM2540G	SM2540G	PHS

Organic Results

Preservation Date : 10/21/97

DIESEL RANGE ORGANICS - SOIL Prep Method: WI MOD DRO Prep Date: 10/22/97 Analyst: PHS

Anaiyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	5.8			4.4	mg/kg		10/23/97	WI MOD DRO
Blank spike	78			50	%Recov		10/23/97	WI MOD DRO
Blank spike duplicate	72			50	%Recov		10/23/97	WI MOD DRO
Blank	< 5.0			5.0	mg/kg		10/23/97	WI MOD DRO

Organic Results

PVOC - METHANOL PRESERVED SOIL Prep Method: SW846 5030 Prep Date: 10/21/97 Analyst: PMS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	103				%Recov		10/24/97	SW846 8020
Benzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Ethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		10/24/97	SW846 8020
Toluene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylenes, -m, -p	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylene, -o	< 25	25	60		ug/kg		10/24/97	SW846 8020

All soil results are reported on a dry weight basis unless otherwise noted.



1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
Field ID : GP-1 11-13'
Lab Sample Number : 873618-001
WI DNR LAB ID : 405132750
Client : FLUID MANAGEMENT INC
Report Date : 10/27/97
Collection Date : 10/17/97
Matrix Type : SOIL

Organic Results

PVOC BLANK

Prep Method: Prep Date: Analyst: pms

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PVOC Blank	503-4						10/23/97	

All soil results are reported on a dry weight basis unless otherwise noted.



1795 Industrial Drive
 Green Bay, WI 54302
 920-469-2436
 800-7-ENCHEM
 FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
 Project Number : 96.553
 Field ID : GP-1 13-17'
 Lab Sample Number : 873618-002
 WI DNR LAB ID : 405132750

Client : FLUID MANAGEMENT INC
 Report Date : 10/27/97
 Collection Date : 10/17/97
 Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	88.5				%		10/22/97	SM2540G	SM2540G	PHS

Organic Results

Preservation Date : 10/21/97

DIESEL RANGE ORGANICS - SOIL
 Prep Method: WI MOD DRO Prep Date: 10/22/97 Analyst: PHS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	< 4.2			4.2	mg/kg		10/23/97	WI MOD DRO
Blank spike	78			50	%Recov		10/23/97	WI MOD DRO
Blank spike duplicate	72			50	%Recov		10/23/97	WI MOD DRO
Blank	< 5.0			5.0	mg/kg		10/23/97	WI MOD DRO

Organic Results

PVOC - METHANOL PRESERVED SOIL
 Prep Method: SW846 5030 Prep Date: 10/21/97 Analyst: PMS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	103				%Recov		10/24/97	SW846 8020
Benzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Ethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		10/24/97	SW846 8020
Toluene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylenes, -m, -p	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylene, -o	< 25	25	60		ug/kg		10/24/97	SW846 8020

All soil results are reported on a dry weight basis unless otherwise noted.



1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
Field ID : GP-1 13-17'
Lab Sample Number : 873618-002
WI DNR LAB ID : 405132750
Client : FLUID MANAGEMENT INC
Report Date : 10/27/97
Collection Date : 10/17/97
Matrix Type : SOIL

Organic Results

PVOC BLANK		Prep Method:			Prep Date:		Analyst: pms	
Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PVOC Blank	503-4						10/23/97	

All soil results are reported on a dry weight basis unless otherwise noted.



1795 Industrial Drive
 Green Bay, WI 54302
 920-469-2436
 800-7-ENCHEM
 FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
 Project Number : 96.553
 Field ID : GP-4 9-13'
 Lab Sample Number : 873618-003
 WI DNR LAB ID : 405132750

Client : FLUID MANAGEMENT INC
 Report Date : 10/27/97
 Collection Date : 10/17/97
 Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	75.0				%		10/22/97	SM2540G	SM2540G	PHS

Organic Results

Preservation Date : 10/21/97

DIESEL RANGE ORGANICS - SOIL

Prep Method: WI MOD DRO Prep Date: 10/22/97 Analyst: PHS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	< 5.2			5.2	mg/kg		10/23/97	WI MOD DRO
Blank spike	78			50	%Recov		10/23/97	WI MOD DRO
Blank spike duplicate	72			50	%Recov		10/23/97	WI MOD DRO
Blank	< 5.0			5.0	mg/kg		10/23/97	WI MOD DRO

Organic Results

PVOC - METHANOL PRESERVED SOIL

Prep Method: SW846 5030 Prep Date: 10/21/97 Analyst: PMS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	103				%Recov		10/24/97	SW846 8020
Benzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Ethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		10/24/97	SW846 8020
Toluene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylenes, -m, -p	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylene, -o	< 25	25	60		ug/kg		10/24/97	SW846 8020

All soil results are reported on a dry weight basis unless otherwise noted.



1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
Field ID : GP-4 9-13'
Lab Sample Number : 873618-003
WI DNR LAB ID : 405132750

Client : FLUID MANAGEMENT INC
Report Date : 10/27/97
Collection Date : 10/17/97
Matrix Type : SOIL

Organic Results

PVOC BLANK

Prep Method:

Prep Date:

Analyst: pms

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PVOC Blank	503-4						10/23/97	

All soil results are reported on a dry weight basis unless otherwise noted.



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 Green Bay, WI 54302
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 800-7-ENCHEM
 Fax: 920-469-8827

- Analytical Report -

Project Name : MPS	Client : FLUID MANAGEMENT INC
Project Number : 96.553	Report Date : 10/27/97
Field ID : GP-3 11-13'	Collection Date : 10/17/97
Lab Sample Number : 873618-004	Matrix Type : SOIL
WI DNR LAB ID : 405132750	

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	86.2				%		10/22/97	SM2540G	SM2540G	PHS

Organic Results

							Preservation Date :	10/21/97				
DIESEL RANGE ORGANICS - SOIL							Prep Method:	WI MOD DRO	Prep Date:	10/22/97	Analyst:	PHS
Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method				
DIESEL RANGE ORGANICS	< 4.4			4.4	mg/kg		10/23/97	WI MOD DRO				
Blank spike	78			50	%Recov		10/23/97	WI MOD DRO				
Blank spike duplicate	72			50	%Recov		10/23/97	WI MOD DRO				
Blank	< 5.0			5.0	mg/kg		10/23/97	WI MOD DRO				

Organic Results

PVOC - METHANOL PRESERVED SOIL							Prep Method:	SW846 5030	Prep Date:	10/21/97	Analyst:	PMS
Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method				
a,a,a-Trifluorotoluene	103				%Recov		10/24/97	SW846 8020				
Benzene	< 25	25	60		ug/kg		10/24/97	SW846 8020				
Ethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020				
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		10/24/97	SW846 8020				
Toluene	< 25	25	60		ug/kg		10/24/97	SW846 8020				
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020				
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020				
Xylenes, -m, -p	< 25	25	60		ug/kg		10/24/97	SW846 8020				
Xylene, -o	< 25	25	60		ug/kg		10/24/97	SW846 8020				

All soil results are reported on a dry weight basis unless otherwise noted.



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FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
Field ID : GP-3 11-13'
Lab Sample Number : 873618-004
WI DNR LAB ID : 405132750
Client : FLUID MANAGEMENT INC
Report Date : 10/27/97
Collection Date : 10/17/97
Matrix Type : SOIL

Organic Results

PVOC BLANK		Prep Method:			Prep Date:		Analyst: pms	
Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PVOC Blank	503-4						10/23/97	

All soil results are reported on a dry weight basis unless otherwise noted.



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 Green Bay, WI 54302
 920-469-2436
 800-7-ENCHEM
 FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
 Project Number : 96.553
 Field ID : GP-2 13-15'
 Lab Sample Number : 873618-005
 WI DNR LAB ID : 405132750

Client : FLUID MANAGEMENT INC
 Report Date : 10/27/97
 Collection Date : 10/17/97
 Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	84.4				%		10/22/97	SM2540G	SM2540G	PHS

Organic Results

Preservation Date : 10/21/97

DIESEL RANGE ORGANICS - SOIL

Prep Method: WI MOD DRO Prep Date: 10/22/97 Analyst: PHS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	< 4.2			4.2	mg/kg		10/23/97	WI MOD DRO
Blank spike	78			50	%Recov		10/23/97	WI MOD DRO
Blank spike duplicate	72			50	%Recov		10/23/97	WI MOD DRO
Blank	< 5.0			5.0	mg/kg		10/23/97	WI MOD DRO

Organic Results

PVOC - METHANOL PRESERVED SOIL

Prep Method: SW846 5030 Prep Date: 10/21/97 Analyst: PMS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	103				%Recov		10/24/97	SW846 8020
Benzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Ethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		10/24/97	SW846 8020
Toluene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylenes, -m, -p	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylene, -o	< 25	25	60		ug/kg		10/24/97	SW846 8020

All soil results are reported on a dry weight basis unless otherwise noted.



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Green Bay, WI 54302
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800-7-ENCHEM
FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
Field ID : GP-3 11-13'
Lab Sample Number : 873618-004
WI DNR LAB ID : 405132750
Client : FLUID MANAGEMENT INC
Report Date : 10/27/97
Collection Date : 10/17/97
Matrix Type : SOIL

Organic Results

PVOC BLANK

Prep Method: Prep Date: Analyst: pms

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PVOC Blank	503-4						10/23/97	

All soil results are reported on a dry weight basis unless otherwise noted.



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Green Bay, WI 54302
920-469-2436
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Fax: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
Field ID : GP-2 13-15'
Lab Sample Number : 873618-005
WI DNR LAB ID : 405132750
Client : FLUID MANAGEMENT INC
Report Date : 10/27/97
Collection Date : 10/17/97
Matrix Type : SOIL

Organic Results

PVOC BLANK		Prep Method:			Prep Date:		Analyst: pms	
Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PVOC Blank	503-4						10/23/97	

All soil results are reported on a dry weight basis unless otherwise noted.



1795 Industrial Drive
 Green Bay, WI 54302
 920-469-2436
 800-7-ENCHEM
 Fax: 920-469-8827

- Analytical Report -

Project Name : MPS
 Project Number : 96,553
 Field ID : GP-5 11-13'
 Lab Sample Number : 873618-006
 WI DNR LAB ID : 405132750

Client : FLUID MANAGEMENT INC
 Report Date : 10/27/97
 Collection Date : 10/17/97
 Matrix Type : SOIL

Inorganic Results

Test	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Prep Method	Analysis Method	Analys
Solids, percent	83.6				%		10/22/97	SM2540G	SM2540G	PHS

Organic Results

Preservation Date : 10/21/97

DIESEL RANGE ORGANICS - SOIL

Prep Method: WI MOD DRO Prep Date: 10/22/97 Analyst: PHS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
DIESEL RANGE ORGANICS	< 4.6			4.6	mg/kg		10/23/97	WI MOD DRO
Blank spike	78			50	%Recov		10/23/97	WI MOD DRO
Blank spike duplicate	72			50	%Recov		10/23/97	WI MOD DRO
Blank	< 5.0			5.0	mg/kg		10/23/97	WI MOD DRO

Organic Results

PVOC - METHANOL PRESERVED SOIL

Prep Method: SW846 5030 Prep Date: 10/21/97 Analyst: PMS

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
a,a,a-Trifluorotoluene	103				%Recov		10/24/97	SW846 8020
Benzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Ethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Methyl-tert-butyl-ether	< 25	25	60		ug/kg		10/24/97	SW846 8020
Toluene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,3,5-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
1,2,4-Trimethylbenzene	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylenes, -m, -p	< 25	25	60		ug/kg		10/24/97	SW846 8020
Xylene, -o	< 25	25	60		ug/kg		10/24/97	SW846 8020

All soil results are reported on a dry weight basis unless otherwise noted.



1795 Industrial Drive
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
FAX: 920-469-8827

- Analytical Report -

Project Name : MPS
Project Number : 96.553
Field ID : GP-5 11-13'
Lab Sample Number : 873618-006
WI DNR LAB ID : 405132750

Client : FLUID MANAGEMENT INC
Report Date : 10/27/97
Collection Date : 10/17/97
Matrix Type : SOIL

Organic Results

PVOC BLANK

Prep Method:

Prep Date:

Analyst: pms

Analyte	Result	LOD	LOQ	EQL	Units	Code	Analysis Date	Analysis Method
PVOC Blank	503-4						10/23/97	

All soil results are reported on a dry weight basis unless otherwise noted.

10-10-96

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OCT 9 1996

5260



...chemistry for the environment

1795 Industrial Drive
Green Bay, WI 54302
414-469-2436
800-7-ENCHEM
FAX: 414-469-8827

Lab Certification No. 405132750
Location : 37TH STREET SCHOOL/#96533
En Chem Proj# : 9610013
Date Reported : 10/04/1996

Report to: FLUID MANAGEMENT, INC *RMB*

Thank you for using En Chem! Samples were analyzed according to strict EPA or Wisconsin DNR methodology. Any comments or problems associated with the receipt of or analysis are reported below:

Project Manager: *Karnie Welfel*





...chemistry for the environment

1795 Industrial Drive
Green Bay, WI 54302
414-469-2436
800-7-ENCHEM
FAX:414-469-8827

Lab Certification No. 405132750
Location : 37TH STREET SCHOOL/#96533
Your Sample ID: S-3
Sample Desc. : SIDEWALL TANK EX
Sample Matrix : SOIL Date Collected: 09/30/1996
En Chem Proj# : 9610013 Date Received : 10/01/1996
En Chem Lab # : 199660 Date Reported : 10/04/1996

Report to: FLUID MANAGEMENT, INC
2831 N GRANDVIEW BLVD
P.O. BOX 90
PEWAUKEE, WI 53072-0090

Bill to: FLUID MANAGEMENT, INC

Analysis	Parameter	Result	Units	Detection Limit	Prep Method	Prep Date	Analysis Method	Analysis Date	Analyzed By
TSOLID	Total Solids	74	percent				SM2540G	10/02/1996	PHS
DRO-S	Diesel Range Organics(DRO)-Soil	860	mg/kg	31		10/02/1996	WDNR MOD DRO	10/03/1996	PHS
	Soil spike	88	% RECOV	50					
	Soil spike duplicate	78	% RECOV	50					

"ND" Indicates no detectable analyte at or above the listed detection limit. All results reported on a dry weight basis. All subcontracted analyses are performed by Wisconsin DNR certified laboratories.

These results have been reviewed and their authenticity verified by:



ATTACHMENT C
STANDARD OPERATING PROCEDURE FOR SITE INVESTIGATIONS

FLUID MANAGEMENT
A DIVISION OF ENVIROGEN, INC. (FMI)
STANDARD OPERATING PROCEDURES (SOP)
FOR THE PERFORMANCE OF SITE INVESTIGATION ACTIVITIES

Geoprobe Soil Sampling Methods and Procedures

Standard Geoprobe penetrations will be performed with a vehicle-mounted penetration rig. Geoprobe penetration is performed by the pneumatic hammering action of a 1-inch outside diameter steel rod. For the pneumatic advancement of the Geoprobe extensions, a 2- to 4-foot long, 1-inch diameter, closed, piston-tipped sample barrel or a 2- to 4-foot long, 2-inch diameter, split-barrel sampler is mounted on the leading end of the penetration probe rods. A threaded stop-pin located at the back of the sample barrel secures the piston rod and piston tip during advancement of the piston-type sampler. Once the sampler is advanced to the desired test depth, the threaded stop-pin is removed using extension rods inserted down the inside diameter of the probe rods. The sampler and probe rods are then advanced allowing soil to enter the sample barrel as the piston retracts. The sample barrel assembly is then removed and the soil sample extruded for analysis. Following the removal of the probe rods, the penetration holes are filled with granular bentonite to approximately 6 inches from ground surface. The remaining annular space is filled by a surface seal consistent with the immediately surrounding surface media (e.g., concrete, asphalt, gravel or soil).

Geoprobe Groundwater Sampling Methods and Procedures

To collect groundwater samples with the Geoprobe rig, the lead probe rod will have either an expendable drive point at the tip or a slotted (0.020-inch vertical slots) probe rod similar to a well screen. The expendable drive point or slotted screened section is driven below the water table. When the probe tip reaches the desired depth, the rods are retracted exposing the end of the probe rod to the water-bearing soils. Water samples are collected by one of the following methods:

- Clean polyethylene tubing with a stainless steel check valve is inserted into the probe rods to collect a groundwater sample. A peristaltic or other suction pump is then used to withdraw the groundwater sample. New clean polyethylene tubing is used at each sampling location.

- Polyethylene tubing with a stainless steel check valve assembly is inserted to the bottom of the rods and is manually shaken up and down. The motion creates a pumping action and the water is extracted through the polyethylene tube. A new clean polyethylene tube is used at each sampling location.
- A disposable polyethylene bailer is lowered down the well and retrieved to collect a sample. A new, clean bailer is used at each sampling location. Groundwater samples are placed into clean, volatile organic analysis (VOA) glass vials having Teflon-lined caps, labeled, and placed in a cooler on ice.

Subsurface Boring and Probe Methods

Drilling activities are conducted in general accordance with ASTM:D1586. Borings are advanced using hollow-stem auger/split-spoon sample drilling methods or rotary drilling methods (when required).

Split-spoon soil samples are collected at 2.5-foot intervals of each boring. A portion of each sample is immediately placed in a Ziploc bag and sealed. Each sample is then warmed to approximately 70°F and agitated. At this time, headspace analysis is performed using a portable photoionization detector (PID) to puncture the bag and record peak values of organic vapors. The PID is equipped with an 11.8 eV lamp calibrated on-site to a 100 ppm Isobutylene (in air) standard. A second portion of each sample is containerized, preserved with methanol (if appropriate), and stored on ice in a cooler for potential laboratory analysis. Soil samples are logged in the field by FMI personnel according to the Unified Soil Classification System (USCS).

Drill rig equipment is cleaned with a high-pressure steam wash between borings to avoid cross contamination. The split-spoons are also cleaned between samples using a triple-rinse process consisting of a detergent and water rinse, a clear water rinse, and a distilled water rinse. Fresh decontamination water is prepared after each boring.

Two soil samples from each boring or probe are typically chosen for laboratory analysis based on the following selection process:

- One sample is collected at the vertical extent of field-detectable contamination
- A second sample is collected at the zone of highest field-detectable contamination
- If no field-detectable contamination is present, one sample is collected at the water table and the second is collected halfway between the surface and the water table

Note: Borings should be advanced 1 meter deeper than the vertical extent of field-detectable contamination

The samples chosen for laboratory analysis are kept on ice in a cooler or in a refrigerator to maintain a temperature of approximately 4°C during transfer to a certified laboratory using chain-of-custody procedures. The samples are analyzed for specific analytical parameters based on the contaminants of concern as outlined in the LUST and Quality Assurance Guidance, WDNR, July 1993. The analytical methods used for each analytical parameter are summarized as follows:

<u>Parameter</u> <u>Limit</u>	<u>Method</u>	<u>Method Detection</u>
Gasoline Range Organics (GRO)	WDNR Modified GRO	10 ppm
Diesel Range Organics (DRO)	WDNR Modified DRO	10 ppm
Petroleum Volatile Organic Compounds (PVOCs)	EPA Method 8020	5 ppb
Total Lead	EPA 7000 Series	2.5 ppm
Volatile Organic Compounds (VOCs)	EPA Method 8021 or 8260	5.0 ppb

In addition, quality assurance samples are collected to verify the quality of FMI field techniques including decontamination, handling, storage, and transportation procedures. Quality assurance samples and collection frequency are summarized as follows:

- One temperature blank per batch of samples.
- One methanol trip blank per sampling event (at each site, on each day). Methanol trip blanks are only required when methanol preservation is used.

Drill cuttings are contained in Department of Transportation (DOT)-approved 55-gallon drums for later disposal at a landfill or asphalt batching facility. All drums are labeled in a manner that identifies the source and contents of each drum. Decontamination water is also stored in drums for later disposal at a water treatment plant. Other drilling wastes (used bags, latex gloves, etc.) are generally disposed of in on-site waste receptacles.

Borehole Abandonment

Borehole abandonment is completed by backfilling the borehole to the ground surface with bentonite chips. Boreholes advanced through paved surfaces are capped with concrete or asphalt patch as appropriate. Upon completion of the borehole abandonment, the WDNR Borehole Abandonment Form (3300-5B) is completed and signed by the person overseeing the work.

Monitoring Well Construction and Development Procedures

All monitoring wells are constructed using Schedule 40 polyvinyl chloride (PVC) riser and 10- to 15-foot well screens (0.010 inch slot). Screens are placed to intercept the water table. Piezometers

are constructed in a manner similar to monitoring wells, using 5 feet of well screen installed below the water table. Wells constructed to depths greater than 100 feet below land surface in unconsolidated formations are constructed using Schedule 80 PVC. The wells are constructed using hollow-stem auger techniques in general accordance with the State of Wisconsin Administrative Code Chapter NR 141 regulations summarized below:

- Well screen: 2-inch diameter, factory-slotted, PVC screen
- Well riser: 2-inch diameter, flush joint, threaded PVC
- PVC bottom cap
- Sealed, locking top cap
- Sand pack material (0.5 feet below to 2.0 feet above top of screen)
- Fine sand (2.0 feet above sand pack - when space permits)
- Pelletized bentonite seal (2.0 feet above fine sand)
- Chipped bentonite annular space seal (from bentonite seal to surface seal)
- Cement surface seal
- Flush-mounted or stickup protective casing grouted or concreted into the boring in accordance with site conditions.

Well development is performed in accordance with Chapter NR 141, Wisconsin Administrative Code to remove fine-grained sediment from the sand pack and provide a proper hydraulic connection between the well and the surrounding aquifer.

Prior to developing the monitoring wells FMI personnel collect a static water level measurement from each well for groundwater elevation data purposes.

FMI uses a vacuum truck to remove 10 well volumes of groundwater or to pump the well dry during well development. Vacuum truck equipment is decontaminated prior to initiating development activities as well as between sampling points. As a quality assurance/quality control measure, FMI collects a decontamination field blank from the vacuum truck equipment and submits it for laboratory analysis. This groundwater development technique has been approved by the WDNR through FMI.

Site Survey and Fluid Level Measurements

A mark is placed on the top of each monitoring well casing for use as a reference point when measuring water elevations. The water level is then recorded to the nearest 0.01 foot in each monitoring well using an electronic sensing device. Water level data are gathered by proceeding from the well with the least known or suspected contamination to the well with the greatest known or suspected contamination. The water level indicator is decontaminated after each measurement

in order to prevent cross contamination. The top-of-casing (TOC) elevation of each well is then surveyed to the nearest 0.01 foot and referenced to a site datum. The water level is referenced to the TOC elevation to determine the water table elevation.

If free product is known or suspected to be present, its presence and thickness are evaluated and recorded by lowering a transparent bailer into each well.

Groundwater Sampling

Prior to collection of groundwater samples, five well volumes are removed or the well is pumped dry. The wells are typically pumped by a vacuum pump truck. The water is then hauled to a wastewater treatment plant.

Groundwater samples are collected from each monitoring well with a dedicated, disposable Teflon bailer, containerized, and preserved in accordance with the LUST and Petroleum Analytical and Quality Assurance Guidance, WDNR, July 1993. Prior to preservation, and within two hours of sample collection, dissolved lead samples are filtered with a 0.45-micron filter. The groundwater samples are labeled and transported to a WDNR-certified laboratory using chain-of-custody procedures. The samples are analyzed for specific analytical parameters based on the contaminants of concern as outlined in the LUST and Quality Assurance Guidance, WDNR, July 1993.

The analytical methods used for each analytical parameter is summarized as follows:

<u>Parameter</u>	<u>Method</u>	<u>Method Detection Limits</u>
GRO	WDNR Modified GRO	50 ppb
DRO	WDNR Modified DRO	0.1 ppm
VOCs	EPA Method 8021 or 8260	5.0 ppb
Dissolved Lead	EPA 7000 Series	0.0015 ppb

In addition, quality assurance samples are collected to verify the quality of FMI field techniques including decontamination, handling, storage, and transportation procedures. Quality assurance samples and collection frequency are summarized as follows:

- One duplicate sample with every 10 samples (or less) collected
- One field blank with every 10 samples (or less) collected
- One trip blank per blank per batch of samples. Trip blanks are only required if volatiles (GRO, VOCs, and PVOCs) are included in the batch
- One temperature blank per batch of samples

In-Situ Aquifer Testing Methodology

In-situ aquifer testing is performed in general accordance with the instantaneous recharge and discharge method described by Bouwer and Rice (1976). The method involves displacing a volume of water in the well with a solid cylinder (slug) causing an almost instantaneous increase in the water level. Time-versus-water-level data are recorded as the water level drops back to the equilibrium level (falling head test). The cylinder is then removed causing an almost instantaneous decrease in water level. The time-versus-water-level data are again recorded as the well recharges to equilibrium (rising head). It should be noted, however, that according to the Bouwer and Rice Slug Test - An Update (1989), a falling head test is not valid if the equilibrium water level is below the screened section. The pressure transducer and slug are decontaminated with an ethanol/distilled water rinse between wells.

The time-versus-drawdown data are recorded using a downhole relative pressure transducer connected to an analog-to-digital field computer system (Hermit 2000). The data are then analyzed using computer curve-matching software to provide estimates of hydraulic conductivity.

ATTACHMENT D
GEOPROBE BOREHOLE LOGS AND ABANDONMENT FORMS

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County Milwaukee	Original Well Owner (If Known) Milwaukee Public Schools	
1/4 of 1/4 of Sec. _____; T. _____ N. R. _____ <input type="checkbox"/> E <input type="checkbox"/> W		Present Well Owner Same	
(If applicable) Gov't Lot _____ Grid Number _____		Street or Route 37th Street	
Grid Location _____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code Milwaukee WI	
Civil Town Name Milwaukee		Facility Well No. and/or Name (If Applicable) GP-5	
Street Address of Well 37th Street		Reason For Abandonment Pore	
City/Village Milwaukee		Date of Abandonment 10/17/97	

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet)	
Original Well/Drillhole/Borehole Construction Completed On (Date) 10/17/97		Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole		Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
Construction Report Available? <input type="checkbox"/> Yes <input type="checkbox"/> No		Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (Specify) Geoprobe		Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		If No, Explain NA	
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ From ground surface		Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No NA <input checked="" type="checkbox"/>	
Casing Depth (ft.) _____		Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		(5) Required Method of Placing Sealing Material	
		<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input checked="" type="checkbox"/> Other (Explain) Gravity	
		(6) Sealing Materials	
		<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Chipped Bentonite	
		For monitoring wells and monitoring well boreholes only: <input type="checkbox"/> Bentonite Pellets <input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Cement Grout	

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Granular Bentonite	Surface	13	1/4	100% Granular

Comments: Bore Holes Filled After completion

Name of Person or Firm Doing Sealing Work Brioth / Fluid management	
Signature of Person Doing Work	Date Signed 10/18/97
Street or Route 331 N. Grandview	Telephone Number (414) 509 6894
City, State, Zip Code Milwaukee WI 53072	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Renewal/Inspector	
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County Milwaukee	Original Well Owner (If Known) Milwaukee Public Schools	
1/4 of 1/4 of Sec. _____; T. _____ N. R. _____	<input type="checkbox"/> E <input type="checkbox"/> W	Present Well Owner Same	
(If applicable)	Gov't Lot _____ Grid Number _____	Street or Route 37th street	
Grid Location _____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code Milwaukee WI	
Civil Town Name Milwaukee		Facility Well No. and/or Name (If Applicable) GP-2	WI Unique Well No. _____
Street Address of Well 37th street		Reason For Abandonment Pore	
City, Village Milwaukee		Date of Abandonment 10/17/97	

WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Well/Drillhole/Borehole Construction Completed On
(Date) 10/17/97

Monitoring Well
 Water Well
 Drillhole
 Borehole

Construction Report Available?
 Yes No

Construction Type:
 Drilled Driven (Sandpoint) Dug
 Other (Specify) Geoprobe

Formation Type:
 Unconsolidated Formation Bedrock

Total Well Depth (ft.) _____ Casing Diameter (ins.) _____
From ground surface

Casing Depth (ft.) _____

Was Well Annular Space Grouted? Yes No Unknown
If Yes, To What Depth? _____ Feet

(4) Depth to Water (Feet)

Pump & Piping Removed? Yes No Not Applicable
Liner(s) Removed? Yes No Not Applicable
Screen Removed? Yes No Not Applicable
Casing Left in Place? Yes No
If No, Explain NA

Was Casing Cut Off Below Surface? Yes No NA
Did Sealing Material Rise to Surface? Yes No
Did Material Settle After 24 Hours? Yes No
If Yes, Was Hole Retopped? Yes No

(5) Required Method of Placing Sealing Material
 Conductor Pipe-Gravity Conductor Pipe-Pumped
 Dump Bailer Other (Explain) Gravity

(6) Sealing Materials For monitoring wells and monitoring well boreholes only

Neat Cement Grout
 Sand-Cement (Concrete) Grout
 Concrete
 Clay-Sand Slurry
 Bentonite-Sand Slurry
 Chipped Bentonite

Bentonite Pellets
 Granular Bentonite
 Bentonite - Cement Grout

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards of Sealant or Volume	Mix Ratio or Mud Weight
Granular Bentonite	Surface	15	1/4	100%

Comments: Bore Holes Filled After completion

Name of Person or Firm Doing Sealing Work
Briotta / Fluid management

Signature of Person Doing Work
Briotta

Date Signed
10/15/97

Street or Route
331 N. Grandview

Telephone Number
(414) 509-6898

City, State, Zip Code
Milwaukee WI 53072

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected _____ District/County _____

Reviewer/Inspector _____

Follow-up Necessary _____

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County Milwaukee	Original Well Owner (If Known) Milwaukee Public Schools	
1/4 of 1/4 of Sec. : T. N. R. <input type="checkbox"/> E <input type="checkbox"/> W		Present Well Owner Same	
(If applicable) Gov't Lot Grid Number		Street or Route 37th Street	
Grid Location ft. <input type="checkbox"/> N <input type="checkbox"/> S. ft. <input type="checkbox"/> E <input type="checkbox"/> W.		City, State, Zip Code Milwaukee WI	
Civil Town Name Milwaukee		Facility Well No. and/or Name (If Applicable) GP-3	WI Unique Well No.
Street Address of Well 37th Street		Reason For Abandonment Pump	
City/Village Milwaukee		Date of Abandonment 10/17/97	

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet)	
Original Well/Drillhole/Borehole Construction Completed On Date: 10/17/97		Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Explain: NA	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input type="checkbox"/> Yes <input type="checkbox"/> No	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No NA <input checked="" type="checkbox"/> Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (Specify) Casing Probe		(5) Required Method of Placing Sealing Material	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input checked="" type="checkbox"/> Other (Explain) Gravity	
Total Well Depth (ft.) from ground surface: _____ Casing Diameter (ins.) _____ Casing Depth (ft.) _____ Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		(6) Sealing Materials	
		For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite - Cement Grout <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Chipped Bentonite	

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards of Sealant or Volume	Mix Ratio or Mud Weight
Granular Bentonite	Surface	15	1/4	100%

Comments: (2nd Holes Filled After completion)

Name of Person or Firm Doing Sealing Work Briohn Fluid Management	
Name of Person Doing Work [Signature]	Date Signed 10/18/97
Street or Route 331 N. Grandview	Telephone Number (414) 569-6894
City, State, Zip Code Milwaukee WI 53072	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Renewal/Inspector	
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location <u>milwaukee</u>	County <u>milwaukee</u>	Original Well Owner (If Known) <u>milwaukee Public Schools</u>	
1/4 of 1/4 of Sec. : T. N. R. <input type="checkbox"/> E <input type="checkbox"/> W		Present Well Owner <u>S&W</u>	
(If applicable) Gov't Lot Grid Number		Street or Route <u>37th street</u>	
Grid Location ft. <input type="checkbox"/> N. <input type="checkbox"/> S. ft. <input type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code <u>milwaukee WI</u>	
Civil Town Name <u>milwaukee</u>		Facility Well No. and/or Name (If Applicable) <u>GP-4</u>	
Street Address of Well <u>37th street</u>		Reason For Abandonment <u>Porin</u>	
City, Village <u>milwaukee</u>		Date of Abandonment <u>10/17/97</u>	

WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) Depth to Water (Feet)	
Original Well/Drillhole/Borehole Construction Completed On Date) <u>10/17/97</u>		Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole		Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
Construction Report Available? <input type="checkbox"/> Yes <input type="checkbox"/> No		Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (Specify) <u>Geoprobe</u>		Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Information Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		If No, Explain <u>NA</u>	
Total Well Depth (ft.) from ground surface _____ Casing Diameter (ins.) _____		Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <u>NA</u> <input checked="" type="checkbox"/>	
Casing Depth (ft.) _____		Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Is Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown. If Yes, To What Depth? _____ Feet		Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
		If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		(5) Required Method of Placing Sealing Material	
		<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped	
		<input type="checkbox"/> Dump Bailer <input checked="" type="checkbox"/> Other (Explain) <u>Gravity</u>	
		(6) Sealing Materials	
		For monitoring wells and monitoring well boreholes only	
		<input type="checkbox"/> Neat Cement Grout	
		<input type="checkbox"/> Sand-Cement (Concrete) Grout	
		<input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite Pellets	
		<input type="checkbox"/> Clay-Sand Slurry <input checked="" type="checkbox"/> Granular Bentonite	
		<input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Bentonite - Cement Grout	
		<input type="checkbox"/> Chipped Bentonite	

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Gals. Sealant or Volume	Mix Ratio or Mud Weight
Granular Bentonite	Surface	15	1/4	100%

Comments: Bores Holes Filled After completion

Name of Person or Firm Doing Sealing Work <u>Brioth / Fluid management</u>	
Signature of Person Doing Work <u>[Signature]</u>	Date Signed <u>10/18/97</u>
Street or Route <u>31 N. Grandview</u>	Telephone Number <u>(414) 509-6814</u>
City, State, Zip Code <u>milwaukee WI 53072</u>	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

1) GENERAL INFORMATION		2) FACILITY NAME	
Well/Drillhole/Borehole Location Milwaukee	County Milwaukee	Original Well Owner (If Known) Milwaukee Public Schools	
1/4 of 1/4 of Sec. : T. N. R. <input type="checkbox"/> E <input type="checkbox"/> W	Gov't Lot	Present Well Owner SAMP	
Grid Location ft. <input type="checkbox"/> N. <input type="checkbox"/> S. ft. <input type="checkbox"/> E. <input type="checkbox"/> W.	Grid Number	Street or Route 37th street	
Civil Town Name Milwaukee	Street Address of Well 37th street	City, State, Zip Code Milwaukee WI	
City, Village Milwaukee		Facility Well No. and/or Name (If Applicable) GP-1	
		Reason For Abandonment Poring	
		Date of Abandonment 10/17/97	

WELL/DRILLHOLE/BOREHOLE INFORMATION

3) Original Well/Drillhole/Borehole Construction Completed On (Date) 10/17/97		4) Depth to Water (Feet)	
<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input type="checkbox"/> Yes <input type="checkbox"/> No	Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Explain NA	
Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoints) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (Specify) Geoprobe	Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No NA Did Sealing Material Rise to Surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Total Well Depth (ft.) _____ Casing Diameter (ins.) _____ (From ground surface)	Casing Depth (ft.) _____	5) Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input checked="" type="checkbox"/> Other (Explain) Gravity	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet		6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Chipped Bentonite <input type="checkbox"/> Bentonite Pellets <input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Cement Grout	

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Granular Bentonite	Surface	17	1/4	100%

Comments: (Bore Holes Filled After completion)

Name of Person or Firm Doing Sealing Work Orion / Fluid management	
Signature of Person Doing Work <i>[Signature]</i>	Date Signed 10/18/97
Street or Route 2831 N. Grandview	Telephone Number (414) 509-6898
City, State, Zip Code Milwaukee WI 53072	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

Facility/Project Name: Milwaukee Public Schools License/Permit/Monitoring Number: _____ Boring Number: GP-1

Boring Drilled By (Firm name and name of crew chief): (BrioHD) Duv Date Drilling Started: 10/17/97 Date Drilling Completed: 10/17/97 Drilling Method: Geo Probe

NR Facility Well No.: _____ WI Unique Well No.: _____ Common Well Name: NA Final Static Water Level: _____ Feet MSL Surface Elevation: _____ Feet MSL Borehole Diameter: 2 inches

Boring Location State Plane: _____ N, _____ E S/C/N Lat: _____ Local Grid Location (If applicable): _____
 _____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____ E/W Long _____ Feet _____ S _____ Feet _____ W

County: Milwaukee DNR County Code: 41 Civil Town/City/ or Village: Milwaukee

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties				RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit		P 200
	12	NA		3/4" Gravel				2		D				
	4"	NA		bottom 2" Brown Clay				12		M				
	1"	NA		Gravelly clay trace sand				97		M				
	NR	NA		Back id spoon				NA		NA				
	6	NA		tan sand & clay				6		S				
	4	NA		tan sand & clay				5.8		S				
	12	NA		Clay trace silt				NA		M				
	NR	NA		Refused 12'										
				EOB - 17'										
				* sample to lab										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [Signature] Firm: Fluid Management Inc.

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Facility/Project Name: Milwaukee Public Schools License/Permit/Monitoring Number: _____ Boring Number: GP-2

Boring Drilled By (Firm name and name of crew chief): (Drioth) Duv Date Drilling Started: 10/17/97 Date Drilling Completed: 10/17/97 Drilling Method: Geoprobe

DR Facility Well No.: _____ WI Unique Well No.: _____ Common Well Name: NA Final Static Water Level: _____ Feet MSL Surface Elevation: _____ Feet MSL Borehole Diameter: 2 inches

Boring Location: State Plane _____ N, _____ E S/C/N Lat _____ Local Grid Location (If applicable) _____ N _____ E _____ S _____ W
 1/4 of _____ 1/4 of Section _____, T _____ N, R _____ E/W Long _____ Feet _____

Country: Milwaukee DNR County Code: 41 Civil Town/City/ or Village: Milwaukee

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties				RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	
18				Brn Clay trace silt				.8	m				
13				Brn clay + Rubble				1.3	m				
12				Brn clay same silt + sand				1.7	m				
12				SAND				1.5	m				
12				SAND				2.3	m				
24				SAND				3.5	m				
24				SAND				1.8	s				
				* Sample to Lab EOB-15'									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [Signature] Firm: Fluid Management Inc.

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both, for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Facility/Project Name: Milwaukee Public Schools License/Permit/Monitoring Number: _____ Boring Number: GP-3

Boring Drilled By (Firm name and name of crew chief): Dr. H. D. D. Date Drilling Started: 10/17/97 Date Drilling Completed: 10/17/97 Drilling Method: GeogRobe

NR Facility Well No.: _____ WI Unique Well No.: _____ Common Well Name: NA Final Static Water Level: _____ Feet MSL Surface Elevation: _____ Feet MSL Borehole Diameter: 2 inches

Boring Location: State Plane _____ N, _____ E S/C/N | Lat _____ Local Grid Location (If applicable): _____ Feet N _____ Feet E
 _____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____ E/W | Long _____ Feet S _____ Feet W

County: Milwaukee DNR County Code: 41 Civil Town/City/ or Village: Milwaukee

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PIFYD	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
12	NA		0-5	Silty Clay Sand + Gravel				1.3	m					
24			5-10	Sand				0.5	m					
12			10-15	Sand				6.5	m					
24			15-20	mottled silty clay				0.4	m					
24			20-25	Sand				1.1	m					
24			25-30	clayey silt				3	s					
8			30-35	Extremely Hard stiff clay				4						
			35-40	EOB - 15'										
			40-45	* sample to lab										

I hereby certify that the information on this form is true and correct to the best of my knowledge.
 Signature: _____ Firm: Fluid Management Inc.

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Facility/Project Name: Milwaukee Public Schools License/Permit/Monitoring Number: _____ Boring Number: GP-4
 Boring Drilled By (Firm name and name of crew chief): (Drioth) DW Date Drilling Started: 10/17/97 Date Drilling Completed: 10/17/97 Drilling Method: Geo Probe
 NE Facility Well No.: _____ WI Unique Well No.: _____ Common Well Name: NA Final Static Water Level: _____ Feet MSL Surface Elevation: _____ Feet MSL Borehole Diameter: 2 inches

Boring Location: State Plane _____ N, _____ E S/C/N | Lat _____ Local Grid Location (If applicable): _____ Feet N E
 _____ 1/4 of _____ 1/4 of Section _____, T _____ N, R _____ E/W Long _____ Feet S _____ Feet W
 County: Milwaukee DNR County Code: 41 Civil Town/City/ or Village: Milwaukee

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	P/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
12	NA		0-5	Brd Silty clay sand steel				4.5						
13			5-10	SAND				8.7						
14			10-15	SAND				10.2						
12			15-20	Silty clay				4.7						
24			20-25	Silty clay trace sand				6.3						
NA			25-30	NO RECOVERY										
4			30-35	Silty clay trace sand				3.5						
			35-40	EOB - 15'										
			40-45	* sample to lab										

I hereby certify that the information on this form is true and correct to the best of my knowledge.
 Signature: [Signature] Firm: Fluid Management, Inc.

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Facility/Project Name: Milwaukee Public Schools License/Permit/Monitoring Number: _____ Boring Number: G-5

Boring Drilled By (Firm name and name of crew chief): (Drioth) Duv Date Drilling Started: 10/17/97 Date Drilling Completed: 10/17/97 Drilling Method: Geo P-068

NR Facility Well No.: _____ WI Unique Well No.: _____ Common Well Name: NA Final Static Water Level: _____ Feet MSL Surface Elevation: _____ Feet MSL Borehole Diameter: 2 inches

Boring Location: State Plane _____ N, _____ E S/C/N | Lat _____ Local Grid Location (if applicable): N E
 _____ 1/4 of _____ 1/4 of Section _____, T _____ N. R. _____ E/W Long _____ Feet S _____ Feet W

County: Milwaukee DNR County Code: 41 Civil Town/City/ or Village: Milwaukee

Sample Number	Length Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200		
1	NA			3/4 TB				nil		m					
12			5	Brd mottled clay sand silt				nil		m					
12				SAND				nil		m					
24			10	clay sand silt trace sand				nil		m					
24				Brd silty clay				nil		m					
24				SAND				nil		s					
			20	sample to lab *											
				EOB - 13'											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [Signature] Firm: Fluid Management Inc.

This form is authorized by Chapters 144.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.