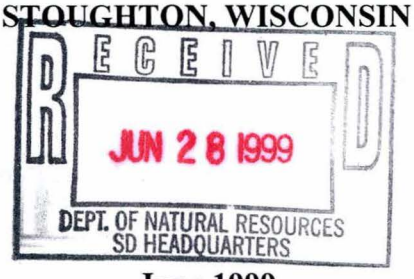
GROUNDWATER SAMPLING MEMORANDUM
STOUGHTON CITY LANDFILL
STOUGHTON, WISCONSIN



June 1999

Prepared For:

U.S. Environmental Protection Agency
Superfund Division
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

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24 June 1999

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77 West Jackson Boulevard
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U.S. EPA Contract No.: 68-W7-0026

Work Assignment No.: 001-RARA-05T2

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Subject: Groundwater Sampling Memorandum
Stoughton City Landfill

Dear Mr. Schorle:

Roy F. Weston, Inc. (WESTON®) is pleased to submit two copies of the Groundwater Sampling Memorandum for the Stoughton City Landfill. The memorandum includes the results of the Gas Monitoring Well results.

Please contact me at (847) 918-4042 if you have any additional comments and/or questions.

Very truly yours,

ROY F. WESTON, INC.

William F. Karlovitz, P.E.
Site Manager

WFK:me
Enclosure

Cc: P. Kozol, WDNR
P. Vogtman, U.S. EPA (Letter only)

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SECTION 1
INTRODUCTION

This memorandum presents the procedures and results of groundwater sampling conducted during the post-remedial action groundwater monitoring (April 1999) at the Stoughton City Landfill (SCL) site in Stoughton, Wisconsin. Roy F. WESTON, Inc. (WESTON®) conducted the sampling in accordance with the Quality Assurance Project Plan Revision 1.

The objective of this sampling effort was to monitor site groundwater quality and site gas/vapor quality after the placement of the landfill cap, remedial action activities. Prior to starting the field activities, WESTON prepared a Health and Safety Plan, Quality Assurance Project Plan (QAPP), and the Field Sampling Plan (FSP). The QAPP and FSP addendum were submitted to the United States Environmental Protection Agency (U.S. EPA) on 27 March 1998. Due to the low detection limits for the three special volatile organic compounds (trichlorofluoromethane, dichlorodifluoromethane, and tetrahydrafuran) WESTON had to procure a lab to do the special analytical services request. WESTON procured the services of Chemtech, of Englewood, New Jersey to perform the special analysis.

The field procedures and groundwater sampling results are presented in Sections 2 and 3, respectively.

SECTION 2

FIELD PROCEDURES

This section describes the field procedures for the baseline groundwater sampling.

2.1 GROUNDWATER MONITORING WELL SAMPLING

Monitoring wells were sampled using a submersible Grundfos pump. Sampling equipment was decontaminated pursuant to protocols described in Subsection 2.2. Samples were collected using the following methodology:

Upon removing the protective cap to the monitoring well riser, the head space was monitored with a CGI/O_2 (Combustible Gas Indicator/Oxygen meter) and an OVM (Organic Vapor Monitor).

- The depth to the water level in the well and the total depth of the well was measured with an electrical sounding device (accuracy $\pm$ 0.01 feet). The reference point for these depths was the top of the well riser pipe.
- The volume of standing water in the well was calculated. Volume of water in a 2-inch diameter well (gallons) = water depth (feet) x 0.16 (gallons/foot). For a 4-inch diameter well (gallons) = water depth (feet) x 0.65 (gallons/foot). For a 6-inch diameter well (gallons) = length (feet) x 1.47 (gallons/foot).
- A Grundfos pump was used for purging and sampling, and was decontaminated prior to being used in the well. Well purging was done with the pump intake just above or within the screened interval. The pump was not lowered as far into the couple of wells that are artesian and free flowing. Field measurements of pH, temperature, conductivity, dissolved oxygen, and turbidity were taken over time. Stabilization of these well purging parameters ($\pm$.25 units for pH, $\pm$0.5C for temperature, $\pm$10 percent for conductivity, $\pm$0.1 mg/L for dissolved oxygen, and $\pm$1unit for turbidity) indicated equilibrated conditions. Well purging continued until the turbidity decreased to 5 NTU or less, or until five purge volumes were removed.
- Samples were collected directly from the pump after the well purging was completed. One sample was collected at each location. One sample was collected for special VOC analysis (trichlorofluoromethane, dichlorodifluoromethane, and tetrahydrafuran). The special VOCs sample was prepreserved with hydrochloric acid. The samples were placed in a cooler on ice immediately following sample collection.

Table 2-1 presents the sampling order, sampling date, and field parameters during monitoring well sampling.

2.2 DECONTAMINATION PROCEDURES

The submersible pump decontamination consisted of submerging the pump in a 5-gallon pail of tap water and detergent (alconox) solution. Tap water was obtained from a City of Stoughton water system connection located outside a hotel in Stoughton. Approximately 3 to 4 gallons of the alconox solution was pumped through the pump and tubing. This was followed by pumping approximately 3 to 4 gallons of deionized water through the pump and tubing. The pump casing was sprayed off using deionized water in a hand-held spray bottle. Alconox water solution followed by deionized water was poured over the outside of the tubing and the pump electrical cord.

2.3 MANAGEMENT OF INVESTIGATIVE DERIVED WASTE

Investigation derived wastes (IDWs) are defined as purge water and decontamination water generated during the groundwater sampling. Decontamination and purge water collected during sampling was stored in DOT-approved drums. Purge water from monitoring well clusters 3, 4, 5, 8, 12, 14, and 15 was not containerized as these are upgradient wells. In addition, water from wells that were naturally flowing (monitoring well clusters 7, 10, 12, 13 and EW01) was not containerized. Gallons of water from these wells are being released to the ground surface every day. Drums of purge and decontamination water from sampling locations that are below the Wisconsin PALs will be dumped on the ground. Drums with elevated levels of special VOCs will be disposed of properly.

2.4 LANDFILL GAS MONITORING PROCEDURES

Gas monitoring probes (GMP) measurements were recorded using a CGI/0_2 and an OVM. Measurements were recorded using the following methodology:

The CGI/0_2 and the OVM were calibrated. Upon removing the protective cap from the GMP riser pipe, the CGI/0_2 probe was inserted a few inches into the riser pipe. The lower exposure limit (LEL) reading and the percent of oxygen reading were taken and recorded at each GMP. The OVM

probe was inserted a few inches into the GMP riser pipe. The organic vapor reading was taken and recorded as parts per million (ppm).

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW15S	4/13/99	2	7.5	7.3	562	1.2	4.6
		4	7.5	7.3	588	1.25	0.64
		7	7.5	7.3	640	1.3	0.16
		9	7.8	7.3	595	1.25	0.17
		10.5	7.3	7.3	589	1.25	0.17
MW15I	4/13/99	9	10.2	7.6	574	2.5	0.40
		20	10.3	7.5	580	2.5	0.54
		30	10.7	7.5	582	2.55	0.34
MW15D	4/13/99	13	10.9	7.4	710	5.9	0.33
		25	10.9	7.3	472	5.9	0.54
		40	10.7	7.3	467	5.9	0.55
		55	10.7	7.3	509	5.9	0.51

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW7S	4/13/99	4.5	13.8	7.3	685	3.4	125
		5.5	15.6	7.4	733	2.3	147
		7.5	12.8	7.4	661	5.2	193
		8.5	12.9	7.4	693	4.9	176
MW7I	4/13/99	8	10.4	7.5	627	1.0	3.57
		18	10.4	7.5	646	1.0	2.40
		30	10.3	7.5	622	1.1	1.75
MW7B	4/13/99	10	9.6	7.3	561	5.9	0.14
		25	9.5	7.3	563	5.9	0.20
		40	9.5	7.3	563	5.9	0.20

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW8S	4/13/99	5	10.7	7.4	585	5.2	1.44
		10	10.8	7.4	580	5.0	0.52
		15	10.7	7.4	584	5.1	0.20
MW8B	4/13/99	12	10.1	7.4	622	4.8	2.21
		25	9.9	7.4	638	4.8	1.80
		40	9.9	7.4	640	4.8	2.7
MW8I	4/14/99	40	10.1	7.1	--	0.8	1.52
		80	10.3	7.4	--	0.8	0.61
		120	10.5	7.4	--	0.8	0.20
		160	10.7	7.5	--	0.8	0.43

-- No measurement taken, conductivity meter malfunction

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW13S	4/14/99	2.5	11.5	7.6	369	1.75	> 200
		4.5	11.3	7.7	431	1.7	> 200
		8.0	11.2	7.7	439	1.7	> 200
		10.5	11.3	7.7	435	1.7	113.4
MW9I	4/14/99	7.0	11.4	7.6	527	0.5	1.05
		14.0	11.3	7.6	524	0.5	0.62
		21.0	11.4	7.6	536	0.6	0.58
MW9S	4/14/99	5.0	12.2	7.6	551	0.9	80.6
		10	10.6	7.6	539	1.0	> 200
		15	12.2	7.5	576	1.05	23.9
		20	12.3	7.6	566	1.0	25.4
		25	12.6	7.6	572	1.0	19.5

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW14S	4/14/99	3.5	11.7	7.4	384	1.75	9.69
		7.0	11.4	7.5	370	1.80	11.32
		10.5	11.3	7.5	379	1.75	7.52
		15.0	11.3	7.5	386	1.75	2.69
MW14I	4/14/99	8.0	11.5	7.6	347	0.75	0.82
		16.0	11.3	7.6	501	0.8	0.70
		24.0	11.2	7.6	510	0.8	0.44
		32.0	11.2	7.6	514	0.75	0.38
MW14D	4/14/99	15.0	10.5	7.6	540	4.2	9.40
		30.0	10.5	7.6	532	4.2	4.32
		45.0	10.5	7.6	542	4.2	3.06

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW10S	4/15/99	2.5	9.5	7.2	374	2.2	> 200
		6.0	9.6	7.6	454	2.2	> 200
		7.5	7.7	7.4	467	2.2	151.2
MW4S	4/15/99	1.5	8.0	7.5	380	5.7	38.2
		3.0	8.1	7.5	384	5.8	12.48
		4.5	8.0	7.6	353	5.7	6.32
		6.0	8.1	7.5	347	5.7	5.80
		7.5	8.1	7.5	370	5.7	3.42
MW4D	4/15/99	11.0	10.0	7.3	856	1.8	1.61
		22.0	10.0	7.3	896	1.8	1.18
		35.0	10.1	7.3	895	1.8	1.14

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW5S	4/15/99	1.5	8.5	7.5	330	5.2	62.8
		3.0	8.4	7.5	331	5.3	23.8
		4.5	8.4	7.5	327	5.3	10.1
		6.0	8.4	7.5	330	5.3	6.8
		7.5	8.3	7.5	328	5.3	5.29
MW5D	4/15/99	11.0	10.2	7.3	676	0.7	44.1
		23.0	10.2	7.3	657	0.75	32.9
		35.0	10.3	7.3	654	0.75	23.2
		46.0	10.3	7.3	640	0.75	13.85
		57.0	10.3	7.3	669	0.8	11.86

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW3S	4/15/99	1.5	9.4	7.4	347	5.3	176.8
		4.0	9.6	7.4	348	5.3	92.7
		6.0	9.4	7.5	340	5.4	54.7
		7.5	9.4	7.5	339	5.3	35.5
MW3D	4/15/99	10.5	10.3	7.4	642	0.75	12.36
		21.0	10.3	7.4	663	0.80	4.93
		32.0	10.3	7.4	676	0.80	4.97
MW3B	4/15/99	13.5	10.1	7.3	436	3.6	2.23
		27.0	10.0	7.3	481	3.7	0.85
		40.5	10.0	7.2	475	3.6	0.40

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW13I	4/16/99	10.0	10.0	7.5	378	0.7	0.06
		20.0	9.7	7.5	419	0.6	0.05
		30.0	9.7	7.5	445	0.6	0.02
		40.0	9.8	7.5	448	0.6	0.02
MW13B	4/16/99	20.0	9.8	7.3	538	4.5	1.33
		35.0	9.7	7.2	531	4.5	0.02
		50.0	9.8	7.2	530	4.5	0.02
EW01	4/16/99	25.0	9.7	7.3	570	1.0	0.16
		50.0	9.7	7.2	570	1.0	0.02
		65.0	9.8	7.2	569	1.0	0.02
MW10B	4/16/99	15.0	9.8	7.3	548	4.5	1.39
		30.0	9.9	7.2	553	4.5	0.84
		45.0	9.9	7.2	553	4.5	0.23

Table 2-1
Summary of Field Parameters
Baseline Groundwater Sampling
Stoughton Landfill
Stoughton, Wisconsin
(Continued)

Monitoring Well No.	Date of Sample	Purged Vol. (Gal.)	Temperature °C	pH (units)	Conductivity (microsiemens/cm) (s/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
MW10D	4/16/99	10.0	9.6	7.1	608	2.2	0.02
		15.0	9.6	7.1	617	2.2	0.02
		20.0	9.6	7.1	618	2.2	0.02

SECTION 3
GROUNDWATER SAMPLING RESULTS

This section describes the post-remedial action groundwater sampling results. The groundwater samples were analyzed for three special VOCs (trichlorfluoromethane, dichlorodifluoromethane, and tetrahydrafuran). The special VOCs were analyzed by Chemtech in Englewood, New Jersey. Table 3-1 presents the special SAS VOC results.

3.1 SPECIAL VOLATILE ORGANIC COMPOUNDS

The post-remedial action special VOC results in shallow, intermediate, and deep monitoring wells are discussed below. The Preventive Action Levels (PAL) for trichlorofluoromethane (TCFM), dichlorodifluoromethane (DCDFM), and tetrahyrafuran (THF) are 698 μg/L, 200 μg/L, and 10 μg/L, respectively. The Enforcement Standards (ES) for TCFM, DCDFM, and THF, are 3,490 μg/L, 1000 μg/L, and 50 μg/L, respectively.

3.1.1 Shallow Monitoring Wells

Ten shallow monitoring wells were analyzed for the three special VOCs. TCFM was detected in MW9S and MW14S. Concentrations found in MW9S and MW14S were below the PAL at 3.3 ug/L and 3 μg/L, respectively.

DCDFM was detected in three monitoring wells MW9S, MW10S, and MW14S. It was reported below the contract required detection limit (CRDL) in MW10S. Concentrations found in MW9S and MW14S were 400 μg/L and 710 μg/L, respectively. The concentrations in MW9S and MW14S exceeded the PAL of 200 μg/L. Figure 3-1 shows the areal extent of DCDFM contamination in groundwater.

THF was detected in three monitoring wells, MW9S, MW10S, and MW14S. Concentrations were reported below the PAL in MW10S and MW14S. The concentration in MW9S (22 μg/L) exceeds the PAL of 10 μg/L. Figure 3-2 shows the areal extent of THF contamination in groundwater.

Table 3-1
Monitoring Well Analytical Results
Special Volatiles
Stoughton, Wisconsin
(μg/L)

Sample Number:	MW3B	MW03D	MW3S	MW4D	MW4D-DP	MW4S	MW05D	MW5S
EPA Number:	99ZG06S26	99ZG06S25	99ZG06S24	99ZG06S21	99ZG06D21	99ZG06S20	99ZG06S23	99ZG06S22
Sample Date:	4/15/99	4/15/99	4/15/99	4/15/99	4/15/99	4/15/99	4/15/99	4/15/99
PARAMETER								
Dichlorodifluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	11	10 U
Trichlorofluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	1.3 J	10 U
Tetrahydrofuran	10 RU	230 RD	10 RU	10 RU	10 RU	10 RU	10 RU	10 RU

R - Result is unusable
U - Compound was not detected.
J - Estimated value.
D - Value from dilution
☐ - Compound was detected

Table 3-1
Monitoring Well Analytical Results
Special Volatiles
Stoughton, Wisconsin
(μg/L)
(Continued)

Sample Number:	MW7B	MW7I	MW7S	MW8B	MW8I	MW8S	MW09I	MW09I-DP
EPA Number:	99ZG06S09	99ZG06S08	99ZG06S07	99ZG06S11	99ZG06S12	99ZG06S10	99ZG06S14	99ZG06D14
Sample Date:	4/13/99	4/13/99	4/13/99	4/13/99	4/14/99	4/13/99	4/14/99	4/14/99
PARAMETER								
Dichlorodifluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	340D	350D
Trichlorofluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	6.1 J	6.4 J
Tetrahydrofuran	10 U	10 U	10 U	10 U	10 RU	10 U	10 RU	10 RU

R - Result is unusable
U - Compound was not detected.
J - Estimated value.
D - Value from dilution
☐ - Compound was detected

Table 3-1
Monitoring Well Analytical Results
Special Volatiles
Stoughton, Wisconsin
(μg/L)
(Continued)

Sample Number:	MW09S	MW10B	MW10I	MW10S	MW12D	MW12I	MW12S	MW13B
EPA Number:	99ZG06S15	99ZG06S30	99ZG06S29	99ZG06S19	99ZG06S03	99ZG06S02	99ZG06S01	99ZG06S28
Sample Date:	4/14/99	4/16/99	4/16/99	4/15/99	4/12/99	4/12/99	4/12/99	4/16/99
PARAMETER								
Dichlorodifluoromethane	400D	0.8 J	280D	2.4 J	10 U	10 U	10 U	10 U
Trichlorofluoromethane	3.3 J	10 UJ	2.6 J	10 U	10 U	10 U	10 U	10 U
Tetrahydrofuran	22 J	10 U	10 U	0.7 J	10 U	10 U	10 U	10 UJ

R - Result is unusable
U - Compound was not detected.
J - Estimated value.
D - Value from dilution
☐ - Compound was detected

Table 3-1
Monitoring Well Analytical Results
Special Volatiles
Stoughton, Wisconsin
(μg/L)
(Continued)

Sample Number:	MW13I	MW13S	MW14D	MW14I	MW14S	MW15D	MW15D-DP	MW15I
EPA Number:	99ZG06S27	99ZG06S13	99ZG06S18	99ZG06S17	99ZG06S16	99ZG06S06	99ZG06D06	99ZG06S05
Sample Date:	4/16/99	4/14/99	4/14/99	4/14/99	4/14/99	4/13/99	4/13/99	4/13/99
PARAMETER								
Dichlorodifluoromethane	0.7 J	10 U	1.5 J	590D	710D	10 U	10 U	10 U
Trichlorofluoromethane	10 U	10 U	10 U	5 J	3 J	10 U	10 U	10 U
Tetrahydrofuran	20	10 RU	10 RU	3.2 J	3.8 J	10 U	10 U	10 U

R - Result is unusable
U - Compound was not detected.
J - Estimated value.
D - Value from dilution
☐ - Compound was detected

Table 3-1
Monitoring Well Analytical Results
Special Volatiles
Stoughton, Wisconsin
(μg/L)
(Continued)

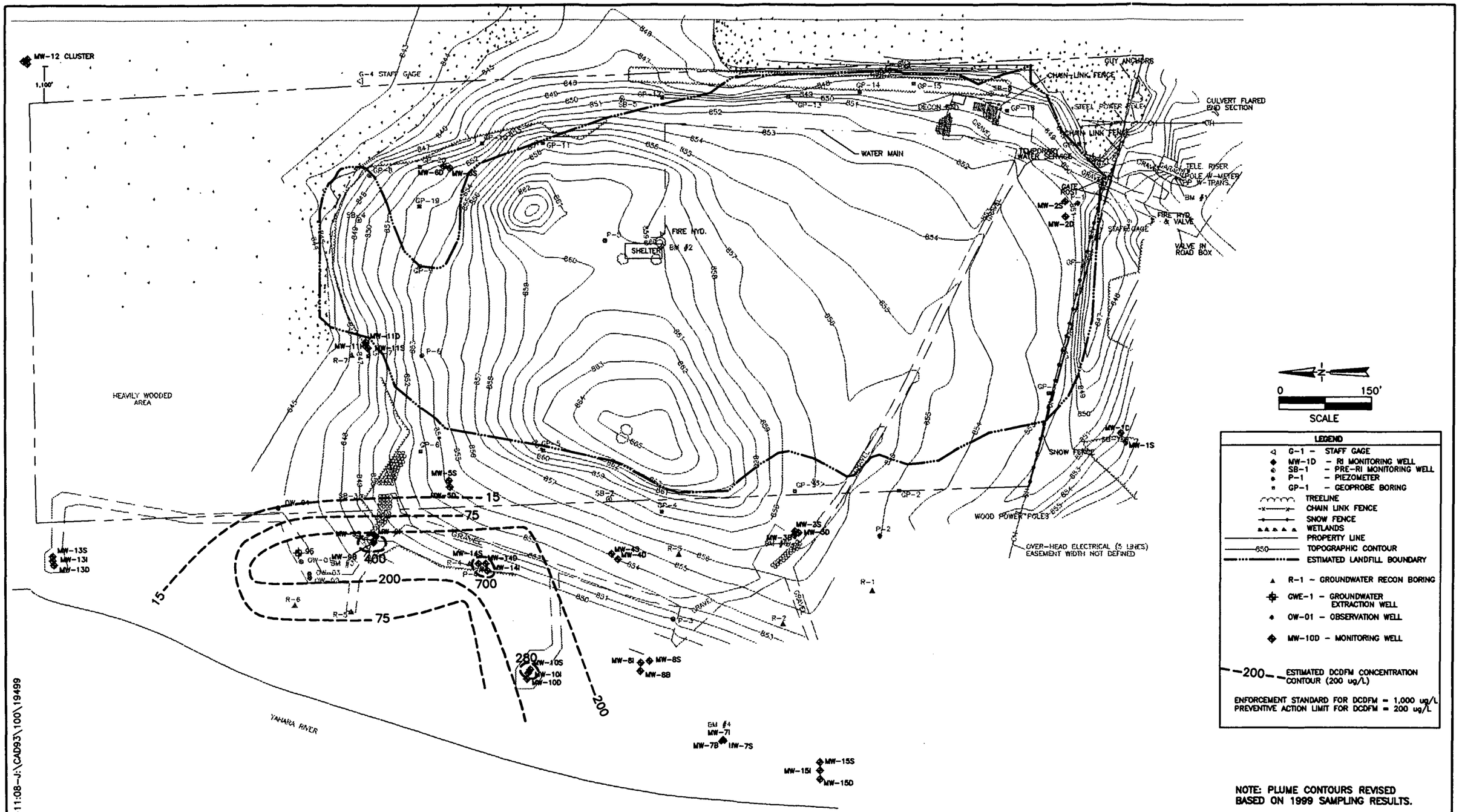
Sample Number:	MW15S	EW01	EW01-DP	FB01	FB02	FB03	FB04	TB01
EPA Number:	99ZG06S04	99ZG06S31	99ZG06D31	99ZG06R01	99ZG06R02	99ZG06R04	99ZG06R06	99ZG06R03
Sample Date:	4/13/99	4/16/99	4/16/99	4/13/99	4/14/99	4/15/99	4/16/99	4/14/99
PARAMETER								
Dichlorodifluoromethane	10 U	83	100	10 U	2.1 J	10 U	10 U	10 U
Trichlorofluoromethane	10 U	3.6 J	4.2 J	10 U	10 U	10 U	10 UJ	10 U
Tetrahydrofuran	10 U	10 U	18	10 U	10 RU	10 RU	10 U	10 U

R - Result is unusable
U - Compound was not detected.
J - Estimated value.
D - Value from dilution
☐ - Compound was detected

Table 3-1
Monitoring Well Analytical Results
Special Volatiles
Stoughton, Wisconsin
(μg/L)
(Continued)

Sample Number:	**TB02**	**TB03**						
EPA Number:	**99ZG06R05**	**99ZG06R07**						
Sample Date:	**4/15/99**	**4/16/99**						
PARAMETER								
Dichlorodifluoromethane	10 U	10 U						
Trichlorofluoromethane	10 U	10 U						
Tetrahydrofuran	10 RU	10 U						

R - Result is unusable
U - Compound was not detected.
J - Estimated value.
D - Value from dilution.
☐ - Compound was detected



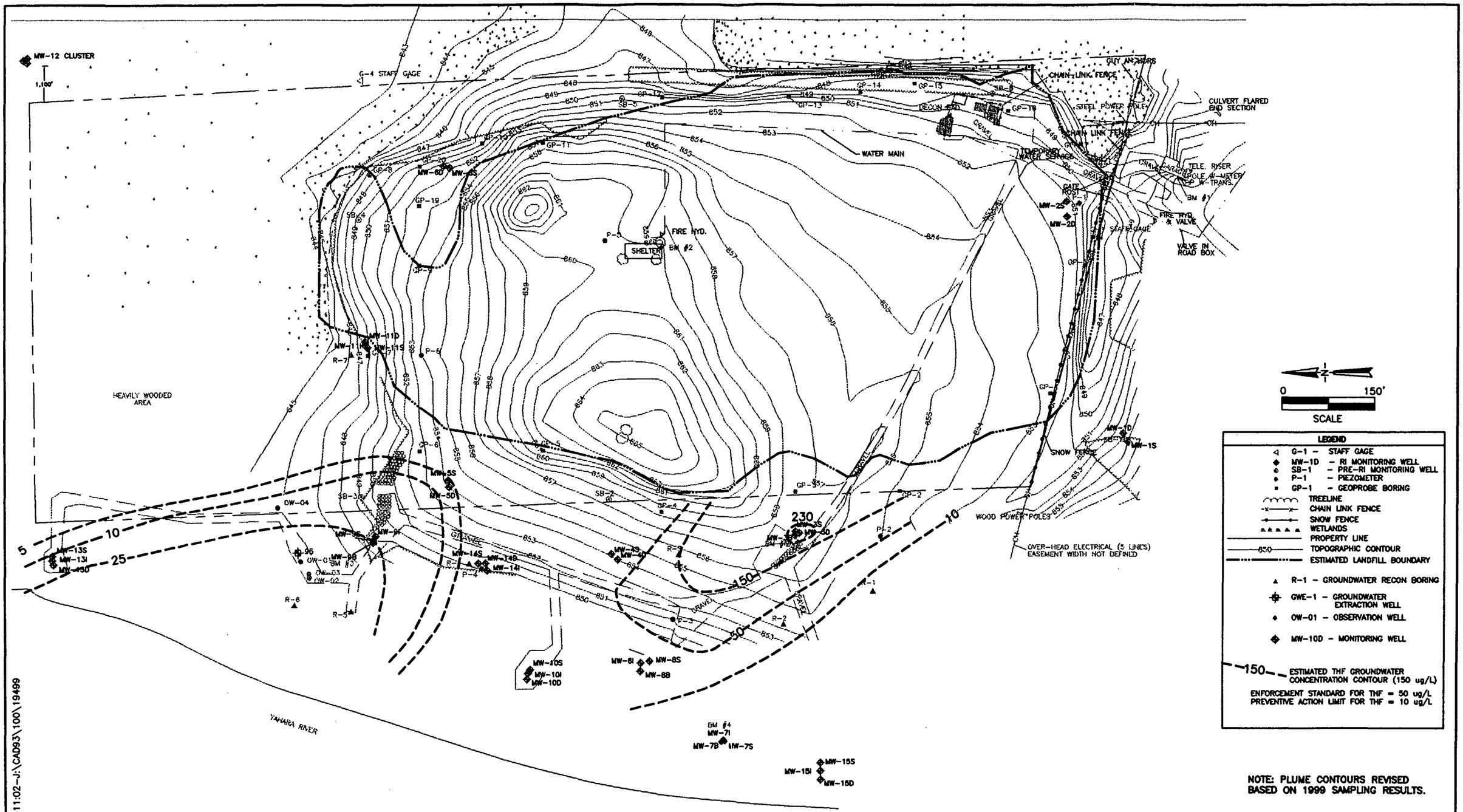
NOTE: PLUME CONTOURS REVISED BASED ON 1999 SAMPLING RESULTS.

HERNANDD-06/24/99-11:08-J:\CAD93\100\19499

FIGURE 3-1

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68-W7-0026
WORK ASSIGNMENT No. 001-RARA-05T2
DOCUMENT CONTROL No. 11821-001-2A-ACSU

AREAL EXTENT OF DCDFM CONTAMINATION IN THE GROUNDWATER
STOUGHTON CITY LANDFILL
Stoughton, Wisconsin



NOTE: PLUME CONTOURS REVISED BASED ON 1999 SAMPLING RESULTS.

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FIGURE 3-2

RESPONSE ACTION CONTRACT
U.S. EPA CONTRACT No. 68-W7-0026
WORK ASSIGNMENT No. 001-RARA-0572
DOCUMENT CONTROL No. 11821-001-2A-ACSU

AREAL EXTENT OF THF CONTAMINATION IN THE GROUNDWATER
STOUGHTON CITY LANDFILL
Stoughton, Wisconsin

3.1.2 Intermediate and Deep Monitoring Wells

There were 18 intermediate and deep monitoring wells that were sampled at the site. TCFM was detected in five monitoring wells, MW9I, MW10I, MW13I, MW14I, and EW01. Concentrations in all five wells were below the PAL.

DCDFM was detected in eight monitoring wells, MW05D, MW9I, MW10B, MW10I, MW13I, MW14I, MW14D, and EW01. Concentrations were below the PAL in MW5D, MW10B, MW14D, MW13I, and EW01. Concentrations in MW9I, MW10I, and MW14I ranged from 280 to 590 μg/L, which were above the PAL.

THF was detected in four monitoring wells, MW3D, MW13I, MW14I and the duplicated sample in EW01. The concentration was below the detection limit in MW14I. Concentrations in MW3D, MW13I and EW01 ranged from 18 to 230 μg/L. Concentrations in these three wells exceeded the PAL. Figure 3-2 shows the areal extent of tetrahydrafuran contamination in groundwater.

3.1.3 Summary of Special VOCs

The ES for TCFM and DCDFM, was not exceeded in any of the wells during the April 1999 sampling round. THF was also detected above the ES in monitoring well MW3D (230 μg/L). In the 1998 sampling effort, THF was also detected above the ES in monitoring wells MW3D (310 μg/L), MW8I (120 μg/L), and EW01 (67 μg/L). The concentrations are lower in 1999 for theses three wells. There were no wells during the 1999 sampling round which exceeded the PAL or ES for the first time.

SECTION 4

GAS MONITORING PROBE RESULTS

Three gas monitoring probes (GMP-1, GMP-2, and GMP-3) were monitored for percent oxygen, combustible gas, and organic vapors. The results of the gas probe monitoring are shown in Table 4-1. GMP-2 and GMP-3 had slight oxygen deficient environments. All three LEL measurements were zero. No significant organic vapors were present in any of the gas probes. However, a slight reading of 1.1 ppm was detected in GMP-3.

TABLE 4-1

GAS MONITORING PROBE RESULTS
STOUGHTON, WISCONSIN

Gas Monitoring Probe	Percent Oxygen (%)	Combustble Gas Indicator (% LEL)	Organic Vapor Monitor (ppm)
GMP-1	20.8	0	0
GMP-2	16.5	0	0
GMP-3	14	0	1.1