QUARTERLY PROGRESS REPORT #1

October through December 1998

N.W. MAUTHE GROUNDWATER TREATMENT SYSTEM

Appleton, Wisconsin

Prepared For The

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

MCO

Midwest Contract Operations, Inc.

March 17, 1999
MCO. No. M050-98808.14
JMS:smd:car

MCO
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March 17, 1999

Ms. Jennifer Huffman
Wisconsin Department Of Natural Resources
3369 West Brewster Street
Appleton, WI 54912-1602

Re: N.W. Mauthe Groundwater Treatment System
Appleton, Wisconsin
Quarterly Progress Report #1
MCO. No. M050-98808.14

Dear Ms. Huffman:

Enclosed, please find Midwest Contract Operations, Inc.'s "Quarterly Progress Report #1" for the N.W. Mauthe Groundwater Treatment System, 725 South Outagamie Street, Appleton, Wisconsin.

The Progress Report includes a brief background of the site history, a summary of any sampling results at the site or in the adjacent groundwater monitoring wells, and operation and maintenance activities. This quarterly report includes the months of October, November and December 1998.

If you have any questions or require additional information, feel free to contact me.

Very truly yours,

MIDWEST CONTRACT OPERATIONS, INC.

John M. Stoeger
Project Manager

Thomas J. Kispert, P.E.
Senior Project Engineer

JMS:smd
Enclosure: Quarter Progress Report #1
cc: Jessica Garratt – City of Appleton
Marie Stewart – WDNR Madison

Professional Qualifications Statement

"I, Thomas J. Kispert, hereby certify that I am a Registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. 700 to 726, Wis. Adm. Code."

Thomas J. Kispert, P.E., C.C.S. / P.E. No. E-26225
Senior Project Engineer

3-18-99
Date

P.E. Stamp

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Table Of Contents

List Of Figures

List Of Tables

List Of Appendices

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October through December 1998

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Appleton, Wisconsin

Prepared For The
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I. SITE BACKGROUND

The N.W. Mauthe site is a former electroplating facility, located at 725 South Outagamie Street, Appleton, Wisconsin (See Figure #1 – Site Location Map). The property was used for a chrome plating company, from 1960 until 1976. Electroplating of zinc, cadmium and, possibly, copper and silver was conducted from 1978 to 1987 in an adjacent building on the same property. After 1987, all plating operations ceased on the property.

Concerns over sub-surface discharges to the surrounding environment led the Wisconsin Department of Natural Resources (DNR) and United States Environmental Protection Agency (USEPA) to conduct a remedial investigation and clean up of the N.W. Mauthe site and surrounding properties.

The investigation determined the N.W. Mauthe site was contaminated with zinc, cadmium, chromium and cyanide. Additionally, several organic compounds were also present.

Based upon the findings of the remedial investigation, the following actions were taken to remediate the N.W. Mauthe site and adjacent properties of the sub-surface contamination.

A. Demolition and removal of the buildings on the N.W. Mauthe property.

B. Excavation and off-site treatment of soils with a total chromium concentration of greater than 500 mg/kg.

C. Backfilling of the excavation with clean soils, capping the site with 2-feet of clay and topsoil, and the establishment of vegetative cover.

D. Installation of groundwater collection trenches and construction and operation of a groundwater treatment facility to contain and/or control groundwater contamination with ultimate compliance with groundwater Applicable or Relevant and Appropriate Requirements (ARAR's).

E. Improvement or installation of foundation drain systems and cleaning, painting or sealing of basement walls and floors, as needed, for homes or businesses in the area of the site, to prevent seepage of contaminated water into the buildings.

The groundwater collection trench system, the location of a sump pump and drain connections and the groundwater monitoring wells associated with the site are shown in Figure #2.

Midwest Contract Operations, Inc. (MCO) began operating the groundwater treatment system in February 1997. CH_2M Hill, the site engineer and project manager for the U.S. EPA, retained responsibility for the overall site operations and the groundwater monitoring wells associated with the treatment system.

The objectives of the collection and treatment system are to reduce the contaminant concentrations in the groundwater to achieve federal drinking water standards and/or state groundwater quality standards, whichever are more stringent.

In October 1998, after the first year of operation and maintenance of the remediation system, the Wisconsin DNR assumed the responsibility from the U.S. EPA for all operation and maintenance of the site. MCO was retained by the Wisconsin DNR for the operation and maintenance of the entire groundwater treatment system, including the groundwater monitoring wells. To date, MCO has competed one round of groundwater sampling and is operating the batch treatment process, which is designed to remove chromium from the groundwater. A description of the batch process will be discussed in the following section of this report.

II. BATCH TREATMENT PROCESS

As part of the remediation phase at the N.W. Mauthe site, a groundwater collection system was installed on and adjacent to the N.W. Mauthe property. Approximately 1,000 lineal feet of coarse sand filled trenching was installed to draw groundwater from

the contaminated areas to two collection sumps. From the collection sumps, groundwater is pumped to a 9,000 gallon holding tank, located within the treatment building.

Each batch of groundwater to be treated is pumped from the storage tank to the reaction tank. The batch process treatment system utilizes ferrous sulfate and caustic additions to treat the contaminated groundwater. Through chemical addition, mixing, aeration and settling, the chromium is removed from the groundwater. The fully automated process treats approximately 2,600 gallons per batch (based on physical tank measurements) and is capable of treating four batches per day.

Treated groundwater decants from the reaction tank to the City of Appleton sanitary sewer system. The chromium containing sludge settles to the bottom of the reaction tank. Excess sludge is pumped to a sludge storage tank, also located within the treatment building.

During each discharge, the effluent is tested for hexavalent chromium using a Hach Test kit. The pH is recorded off two meters, located in the reaction tank. The pH values from the two meters are recorded as the high and low pH values on a daily log sheet. The average of the two pH values is calculated. The effluent wastewater is tested quarterly for total chromium at a DNR approved environmental laboratory. The total chromium concentration for the sample collected at outfall 001 on 10/27/98 was 94 ug/L. Selected metals are sampled from outfall 001 yearly. Additionally, the City of Appleton conducts semi-annual compliance testing of the treatment system effluent.

On October 7, 1998, an effluent sample was collected by the City of Appleton at Outfall 001. The collected sample was analyzed for total cadmium, total chromium, total copper, total lead, total nickel, and total zinc at the City of Appleton Wastewater Treatment Facility analytical laboratory. Additionally, the sample was analyzed at the Robert E. Lee Analytical Laboratory, Green Bay, Wisconsin, for total arsenic (EPA Method 206.2), total aluminum (EPA Method 200.7), total cyanide (EPA Method 335.4) and total mercury (EPA Method 245.1).

The sampling was conducted to monitor compliance with the City issued industrial user discharge Permit #97-21. The analytical results for the latest effluent sampling (10/7/98) did not contain any exceedances of the local permit limits. Table #6 summarizes the historical sampling results for the local permit requirements. The historical analytical data provided by the City of Appleton is contained in Appendix B.

For the months of September, October and November 1998, a total of 69,663 gallons of contaminated groundwater was treated and discharged. Using an average groundwater concentration of 1.3 mg/l hexavalent chromium, the calculated reduction in hexavalent chromium would be .75 pounds over the three month period. The effluent flows are recorded based upon the effluent meter reading. These readings generally overstate the

effluent flows as compared to volumetric tank measurements, due to design constraints regarding the flow meter installation. The flow meter totals have been the accepted method for recording effluent flows. Therefore, all references to flow and calculations are based upon the flow meter readings.

A summary of batches of groundwater treated, for the period of October through December 1998, is included in Table #1.

III. GROUNDWATER SAMPLING

A. Groundwater Sampling Procedures

A total of 11 groundwater monitoring wells are associated with the groundwater treatment system. Additionally, four piezometers were installed to measure the effectiveness of the groundwater collection trench system.

Groundwater levels are measured in the monitoring wells and the piezometers, relative to the north side of the top of the well casing. A summary of the current groundwater levels for the site is included in Table #2. The groundwater contours for groundwater monitoring wells, relative to site, are shown on Figure #3. The groundwater contours for the piezometers, relative to the site, are shown on Figure #4.

The 11 groundwater monitoring wells were sampled on October 27, 1998. A dedicated submersible pump was installed in each well. Each well was slowly pumped dry and allowed to recharge for approximately 3-hours. The wells were then pumped dry again. Upon recharge, the wells were sampled. Two duplicate samples were also collected as a quality control measure. Purge water from the wells was collected and dumped into the collection sumps. The pump water volumes collected from the groundwater wells and the field testing data are included in Table #5.

The sampling process utilized a flow through cell to read the pH, temperature, conductivity, redox potential and dissolved oxygen in each well. The flow through cell consisted of a 1-liter laboratory beaker placed over a 5-gallon bucket. Flow through the cell was maintained at approximately 250 ml/min. utilizing a resister to control pump flow. The same approximate flow rate was maintained for purging and sampling. Groundwater samples were collected upon stabilization of the conductivity in each monitoring well. The pH, conductivity, redox potential and dissolved oxygen readings for each monitoring well were recorded upon stabilization of the conductivity. The groundwater samples were then collected in the order of VOC vials first and metal samples second. The metal samples were

not filtered. The laboratory containers supplied for metals analysis included NA0H and HN03 as preservatives. The collected samples were submitted to Northern Lake Service, Inc., Crandon, Wisconsin. The collected samples were analyzed for selected metals and Volatile Organic Compounds (VOC's), as specified by the Wisconsin DNR. Alkalinity and ferrous iron testing was conducted using Hach test kits.

B. Groundwater Sampling Results

The collected groundwater samples were analyzed for seven metals and VOC's, per the analytical parameters summarized in Tables #3 and #4. Additionally, field analysis was conducted at each well for pH, temperature, conductivity, dissolved oxygen, Redox potential, alkalinity and ferrous iron. The field analysis sampling results will track the ability of the soil and groundwater to naturally bio-remediate the residual volatile organic compounds at the site.

The laboratory analytical results indicate that levels of total chromium exceed the DNR NR 140.10 Groundwater Enforcement Standard in monitoring wells MW-104 and MW-107 (150 ug/L and 7100 ug/L, respectively). These wells are the closest down-gradient wells to the remediation building. Additionally, three VOC compounds in MW-107 (1,1-Dichloroethene, 1,1,1-Trichloroethane and Trichloroethane) were detected in excess of either the NR 149.21(9) maximum contaminant levels (MCL's) or the NR 140.10 Groundwater Enforcement Standards (ES). Exceedances of the MCL and ES for manganese have been found in all of the groundwater wells since sampling began in February 1997. These exceedances also appear in the background wells (MW-02 & MW-108) which would indicate that the high levels of manganese in the groundwater occurs naturally. The laboratory analytical results are contained in Tables #3 and #4. The field testing results are contained in Table #5. An Isoconcentration map for total chromium concentrations is shown in Figure #5. The chain of custody forms and laboratory analytical data are included in Appendix A.

The effectiveness of the existing groundwater treatment system will require analysis of data over an extended period of time to evaluate trends in metals and VOC reductions.

IV. PUBLIC CONTACTS

During the quarterly monitoring period, the following public contacts were made requiring the operation and maintenance of the remediation site.

A. On October 7, 1998, representatives of the City of Appleton wastewater treatment facility collected an outfall sample for metals analysis.

B. On October 21, 1998, Ms. Jessica Garratt, the Pretreatment Coordinator for the City of Appleton Wastewater Utility, was on-site to inspect the site and to discuss the City issued discharge permit and reporting requirements.

No other significant public contacts were made during the monitoring period.

V. CONCLUSIONS & RECOMMENDATIONS

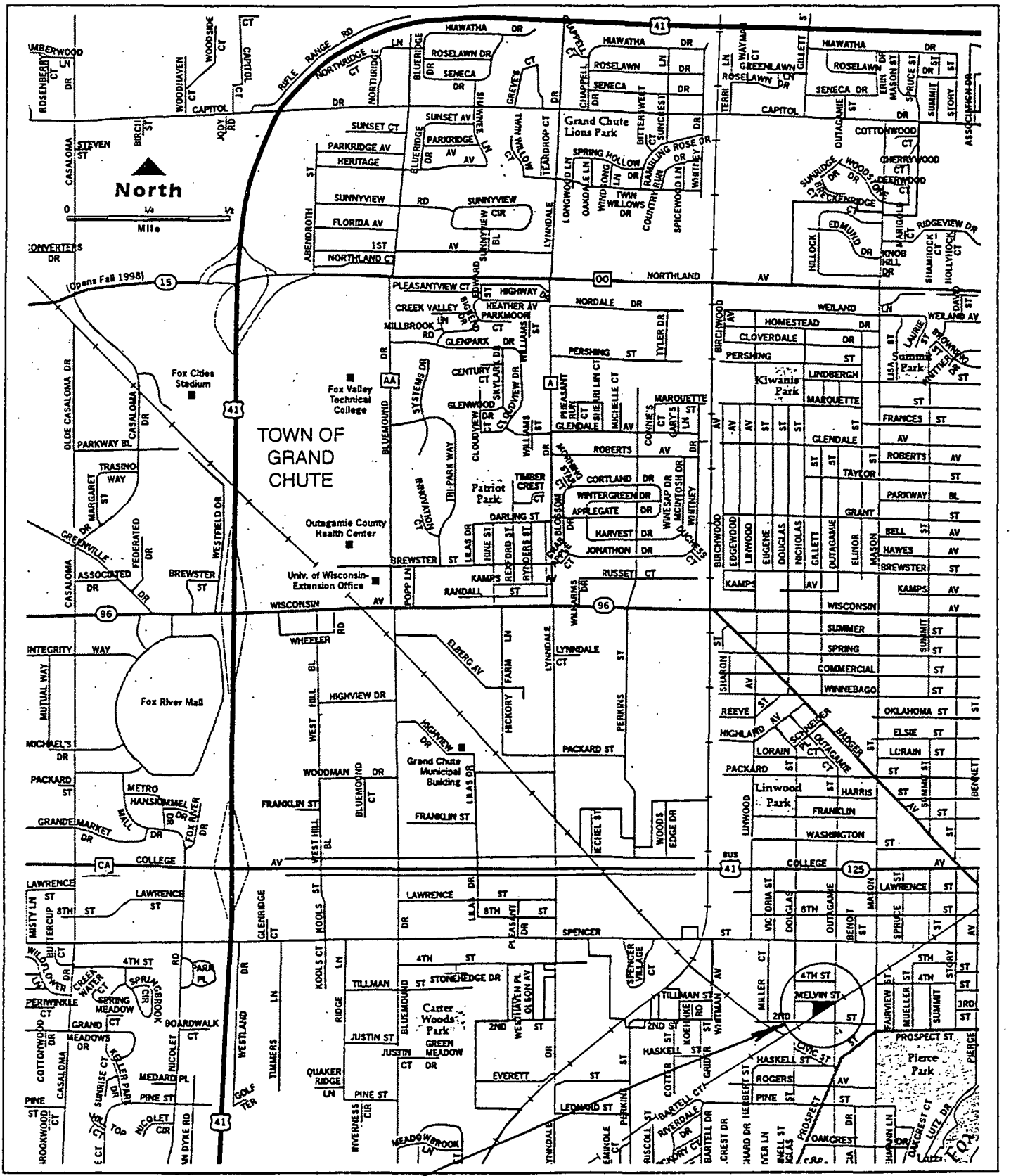
Groundwater level data collected from the 11 monitoring wells and four piezometers associated with the N.W. Mauthe groundwater treatment system indicate the groundwater collection trenches, installed as part of the site remediation system, have created a capture zone that directs the groundwater flows in the remediation area to the collection trenches and, ultimately, to the groundwater treatment system.

The purpose of creating the capture zone is to contain the migration of the contamination down-gradient of the contamination source and to direct impacted groundwater to the collection system and, ultimately, treatment in the batch process.

The latest round (October 27, 1998) of groundwater samples collected from the 11 monitoring wells, indicates residual chromium contamination above the DNR NR 140.10 ES exists in monitoring wells MW-104 and MW-107. Additionally, three VOC compounds in excess of the NR 140.10 ES or the NR 149.21(9) maximum contaminant levels (MCL's) were detected in MW-107. High levels of manganese, noted historically in all wells, appears to occur naturally and may not be related to the past site uses.

A total of 69,663 gallons of impacted groundwater has been treated during the months of October, November and December 1998, and discharged to the City of Appleton municipal sanitary sewer system. Analysis by the City of Appleton of the treatment system effluent did not indicate any exceedances of the local discharge permit limits for the site.

Based upon the results of the October 27, 1998 groundwater sampling results and the batch treatment process analytical results, MCO recommends continued operation of the groundwater treatment system at the N.W. Mauthe groundwater remediation site.



SITE LOCATION

FIGURE 1

SITE LOCATION MAP

N.W. MAUTHE SUPERFUND SITE
APPLETON, WI

MCO #M050-98808.14 JANUARY 1999

McMAHON
ASSOCIATES, INC.
ENGINEERS • ARCHITECTS
SCIENTISTS • SURVEYORS

N

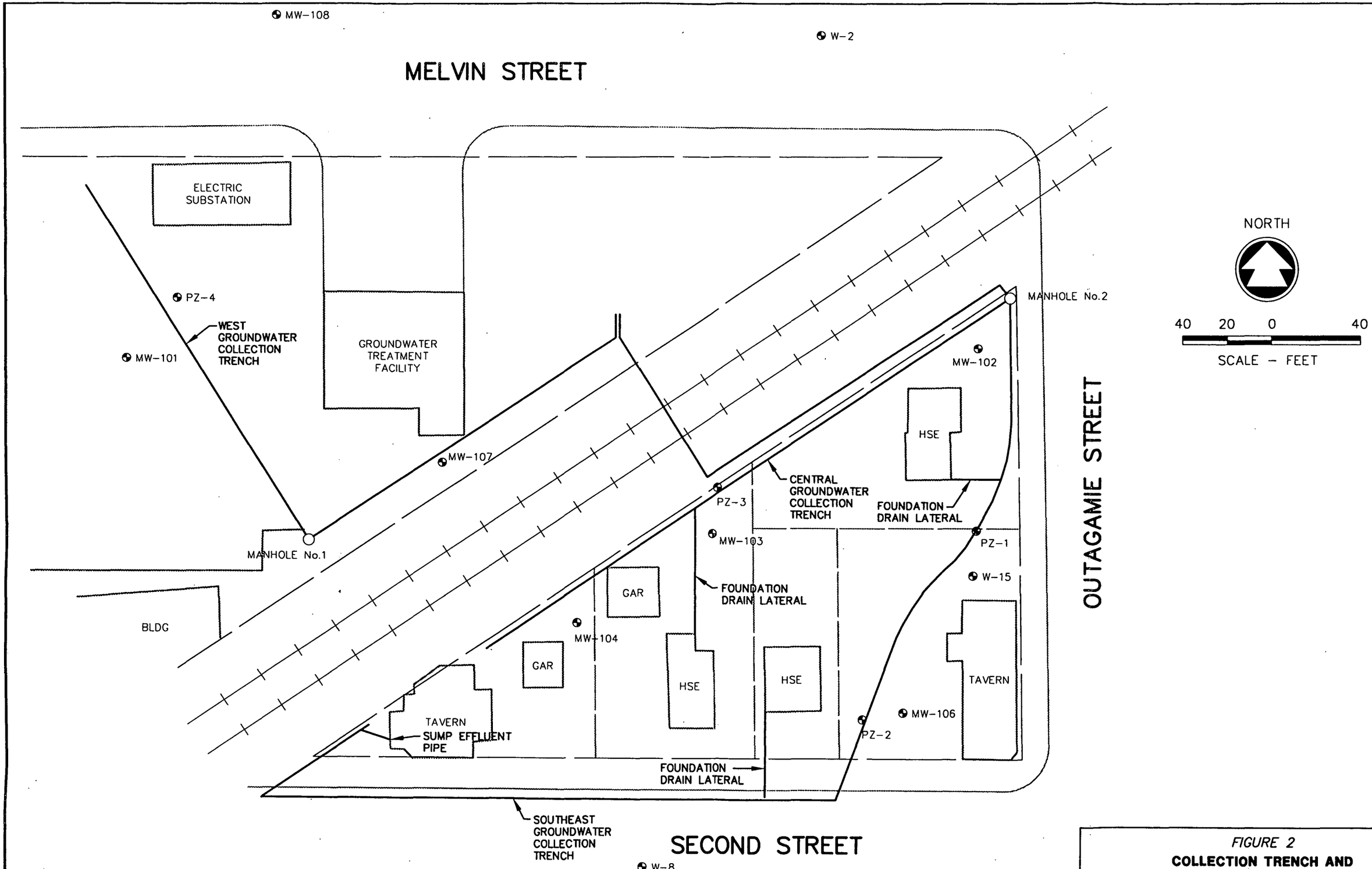


FIGURE 2

COLLECTION TRENCH AND MONITORING WELL LOCATIONS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-98808.14 OCTOBER 27, 1998

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MW-108
799.63

W-2
798.81

MELVIN STREET

799

799

798

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4

MW-101
797.33

798

GROUNDWATER TREATMENT FACILITY

797

MW-107
798.30

MANHOLE No.2

780

781

782

783

784

785

786

787

788

789

790

791

792

MW-102
780.34

HSE

CENTRAL GROUNDWATER COLLECTION TRENCH

PZ-3

FOUNDATION DRAIN LATERAL

MW-103
791.78

PZ-1

W-15
795.81

MANHOLE No.1

793

794

795

GAR

BLDG

MW-104
796.77

FOUNDATION DRAIN LATERAL

796

GAR

HSE

HSE

TAVERN

PZ-2

MW-106
795.96

797

TAVERN SUMP EFFLUENT PIPE

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

798

MW-105
798.55

SECOND STREET

W-8
796.95

OUTAGAMIE STREET

NORTH

40 20 0 40

SCALE – FEET

GROUNDWATER FLOW DIRECTION

FIGURE 3

GROUNDWATER MONITORING WELLS LOCATIONS & GROUNDWATER CONTOURS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-98808.14 OCTOBER 27, 1998

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MW-108

W-2

MELVIN STREET

ELECTRIC SUBSTATION

WEST GROUNDWATER COLLECTION TRENCH

PZ-4
792.12

MW-101

GROUNDWATER TREATMENT FACILITY

MW-107

MANHOLE No.1

BLDG

GAR

GAR

MW-104

FOUNDATION DRAIN LATERAL

HSE

HSE

TAVERN

SUMP EFFLUENT PIPE

TAVERN

FOUNDATION DRAIN LATERAL

SOUTHEAST GROUNDWATER COLLECTION TRENCH

MW-105

CENTRAL GROUNDWATER COLLECTION TRENCH

MANHOLE No.2

MW-102

HSE FOUNDATION DRAIN LATERAL

PZ-3
780.91

MW-103

PZ-1
786.74

W-15

PZ-2
788.98

MW-106

TAVERN

790

789

788

787

786

785

784

783

782

781

791

792

OUTAGAMIE STREET

SECOND STREET

W-8

NORTH

40 20 0 40

SCALE – FEET

GROUNDWATER FLOW DIRECTION

FIGURE 4

PIEZOMETER LOCATIONS AND GROUNDWATER CONTOURS N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-98808.14 OCTOBER 27, 1998

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MW-108
8.9 ug/L

W-2
3.6 ug/L

MELVIN STREET

ELECTRIC SUBSTATION

PZ-4

GROUNDWATER TREATMENT FACILITY

MW-101
3.2 ug/L

MW-107
7100 ug/L

MANHOLE No.2

MW-102
<.98 ug/L

HSE

PZ-3

MW-103
6.3 ug/L

PZ-1

W-15
6.8 ug/L

MANHOLE No.1

BLDG

GAR

MW-104
150 ug/L

GAR

HSE

HSE

TAVERN

TAVERN

PZ-2

MW-106
3.2 ug/L

OUTAGAMIE STREET

SECOND STREET

W-8
3.9 ug/L

MW-105
8.8 ug/L

3
200
1000

NORTH

40 20 0 40

SCALE – FEET

3 ISOCONCENTRATION OF CHROMIUM (ESTIMATED)

< LESS THSN THE DETECTION LIMIT

ug/L MICROGRAM.LITER

MW-102 MONITORING WELL

FIGURE 5

ISOCONCENTRATION MAP
TOTAL CHROMIUM ug/L In Groundwater
N.W. MAUTHE SUPERFUND SITE

APPLETON, WISCONSIN

McM# M050-98808.14 OCTOBER 27, 1998

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Table #1

BATCH DISCHARGES
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14

Sample Date	Batch No.	Effluent Meter	Gallons Discharged	High pH	Low pH	Average pH	Hexavalent* Chrome Concentration
10/06/98	100698A	1,242,249	3,275	8.40	8.28	8.34	0
10/07/98	100798A	1,245,427	3,178	8.26	8.07	8.17	0
10/10/98	101098A	1,248,605	3,178	8.18	7.96	8.07	0
10/11/98	101198A	1,251,773	3,168	8.10	8.00	8.05	0
10/15/98	101598A	1,254,940	3,167	8.18	8.06	8.12	0
10/19/98	101998A	1,258,103	3,163	8.08	8.00	8.04	0
10/23/98	102398A	1,261,250	3,147	8.16	8.01	8.09	0
10/27/98	102798A	1,264,459	3,209	8.22	7.94	8.08	0
10/28/98	102898A	1,267,622	3,163	8.40	8.16	8.28	0
11/03/98	110398A	1,270,781	3,159	8.10	8.00	8.05	0
11/09/98	110998A	1,273,924	3,143	8.16	8.05	8.10	0
11/12/98	111298A	1,277,141	3,217	8.04	7.98	8.01	0
11/16/98	111698A	1,280,298	3,157	8.16	8.04	8.10	0
11/17/98	111798A	1,283,456	3,158	8.20	8.13	8.16	0
11/23/98	112398A	1,286,662	3,202	8.02	7.80	7.91	0
11/25/98	112598A	1,289,843	3,181	8.08	7.94	8.01	0
11/30/98	113098A	1,292,996	3,153	8.15	8.01	8.08	0
12/01/98	120198A	1,296,147	3,151	8.18	8.06	8.12	0
12/04/98	120498A	1,299,330	3,183	8.14	8.01	8.07	0
12/10/98	121098A	1,302,434	3,104	8.04	7.99	8.01	0
12/15/98	121598A	1,305,590	3,156	8.09	8.01	8.05	0
12/31/98	123198A	1,308,641	3,051	8.16	8.01	8.09	0
TOTAL			69,663				

* As tested with a Hach Hexavalent Chromium Field Test Kit.

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Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
W-2	02/97	-		798.66
	05/97	-		801.01
	09/97	-		800.28
	12/97	-	804.66	797.69
	03/98	-		802.08
	06/98	-		799.38
	10/27/98	5.85		798.81
W8	02/97	-		797.22
	05/97	-		797.66
	09/97	-		798.01
	12/97	-	803.36	796.52
	03/98	-		798.16
	06/98	-		797.31
	10/27/98	6.41		796.95
W-15	02/97	-		793.97
	05/97	-		796.92
	09/97	-		797.23
	12/97	-	803.76	795.52
	03/98	-		796.78
	06/98	-		796.32
	10/27/98	7.95		795.81
MW-101	02/97	-		797.16
	05/97	-		799.99
	09/97	-		798.67
	12/97	-	807.59	798.21
	03/98	-		803.43
	06/98	-		800.48
	10/27/98	10.26		797.33
MW-102	02/97	-		780.72
	05/97	-		780.89
	09/97	-		780.79
	12/97	-	804.45	780.95
	03/98	-		780.47
	06/98	-		780.72
	10/27/98	24.11		780.34
MW-103	02/97	-		795.29
	05/97	-		791.83
	09/97	-		789.60
	12/97	-	803.74	787.78
	03/98	-		791.03
	06/98	-		789.13
	10/27/98	11.96		791.78

Table #2

GROUNDWATER ELEVATIONS
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14
(continued)

Well Name	Date Measured	Depth To Water (feet)	Reference Elevation (To Top PVC) (feet)	Groundwater Elevation (feet)
MW-104	02/97	-		792.94
	05/97	-		789.91
	09/97	-		798.59
	12/97	-	807.28	795.70
	03/98	-		799.46
	06/98	-		796.60
	10/27/98	10.51		796.77
MW-105	02/97	-		793.74
	05/97	-		800.60
	09/97	-		800.37
	12/97	-	803.96	799.03
	03/98	-		800.08
	06/98	-		800.50
	10/27/98	5.41		798.55
MW-106	02/97	-		794.75
	05/97	-		797.23
	09/97	-		796.91
	12/97	-	804.08	795.48
	03/98	-		797.37
	06/98	-		796.76
	10/27/98	8.12		795.96
MW-107	02/97	-		788.23
	05/97	-		796.60
	09/97	-		797.64
	12/97	-	809.01	796.49
	03/98	-		796.68
	06/98	-		796.31
	10/27/98	10.71		798.30
MW-108	02/97	-		798.36
	05/97	-		793.32
	09/97	-		790.53
	12/97	-	806.61	788.65
	03/98	-		795.59
	06/98	-		789.30
	10/27/98	6.98		799.63
PZ-01	10/27/98	17.43	804.17	786.74
PZ-02	10/27/98	14.66	803.64	788.98
PZ-03	10/27/98	22.71	803.62	780.91
PZ-04	10/27/98	15.18	807.30	792.12

Table #3

LABORATORY ANALYTICAL RESULTS
Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/L)	Mercury (ug/l)	Zinc (ug/l)
W-2	02/20/97	NA	15	26	NA	1,460	NA	49
	05/27/97	0.43	8.5	<10	NA	170	<.2	30
	09/18/97	0.27	4.5**	9.5**	3**	116	<.03	16.9
	12/12/97	.13*	6.2	<9.7	<.8	133	.06*	20.4
	03/25/98	0.08	<3.9	<9.5	<1.7	83.8	.007*	18.6
	06/10/98	.31*	16.4	18.6**	<1.7	1,466	.027*	40.8
	10/27/98	.51*	3.60	4.7*	<.0032	69	<.05	170
W-8	02/20/97	NA	17	22	NA	820	NA	34
	05/27/97	1.6	37	27	NA	670	<.2	54
	09/18/97	0.45	14.4	14.6**	1**	338	.11**	31.8
	12/12/97	0.5*	5.7	<9.7	<.8	147	.07*	17.1
	03/25/98	0.43	10.1	15**	<1.7	205	.007*	21
	06/10/98	0.54	9.9	12.6**	<1.7	264	.016*	21.6
	10/27/98	0.80	3.90	4.8*	<.0032	64	<.05	85
W-15	02/20/97	NA	32	52	NA	456	NA	88
	05/27/97	0.27	5.9	15	NA	97	<.2	39
	09/18/97	0.31	13.9	18.8**	<.78	325	<.03	35.5
	12/12/97	.12*	5.7	9.7**	<.8	809	.03*	18.5
	03/25/98	.04*	<3.9	<9.5	<1.7	857	.038*	13.7
	06/10/98	.11*	10	13.2**	<1.7	147	.016*	18.8
	10/27/98	.41*	6.80	7.40	<.0032	116	<.05	100
MW-101	02/20/97	NA	36	41	NA	825	NA	49
	05/27/97	<.2	10	11	NA	170	<.03	18
	09/18/97	.06**	11.9	10.7**	1**	145	<.05	18.2
	12/12/97	.06*	12.8	<9.7	<.8	176	.05*	20.7
	03/25/98	.04*	20.9	21.6**	<1.7	233	.007*	32.7
	06/10/98	.27*	48.2	46.8	<1.7	604	.044*	75.9
	10/27/98	<.16	3.20	4.2*	<.0032	24	<.05	54
MW-102	02/20/97	NA	26	38	NA	670	NA	34
	05/27/97	0.21	48	77	NA	920	<.2	73
	09/18/97	.08**	<3.92	6.9**	2**	302	<.03	8.7
	12/12/97	.04*	<3.9	<9.7	<.8	38	.04*	10.9
	03/25/98	.11*	<3.9	9.5**	<1.7	302	.007*	7.4*
	06/10/98	.04*	<3.9	<9.8	<1.7	318	.018*	9.5
	10/27/98	.27*	.98*	3.2*	<.0032	340	<.05	24
MW-103	02/20/97	NA	1,300	47	NA	800	NA	27
	05/27/97	<.2	1,600	31	NA	900	<.2	29
	09/18/97	.06**	35.2	13.5**	3**	267	<.03	13.7
	12/12/97	.04*	16.3	<9.7	<.8	343	.09*	21.4
	03/25/98	.04*	15.5	<9.5	<1.7	186	.007*	7.5*
	06/10/98	.15*	57.6	27.5	<1.7	417	.02*	33.7
	10/27/98	<.16	6.30	2.3*	<.0032	27	<.05	78
MW-104	02/20/97	NA	5.9	15	NA	550	NA	6.9
	05/27/97	<.02	6.9	11	NA	470	<.2	5.2
	09/18/97	<.04	35.6	5**	3**	235	<.03	4.74
	12/12/97	.04*	61.8	9.8**	<.8	279	.05*	14
	03/25/98	.04*	66.8	<9.5	<1.7	79.6	.008*	7.4*
	06/10/98	.04*	219	<9.8	<1.7	197	.016*	12.8
	10/27/98	.29*	150	2.3*	<.0032	25	<.05	30

JMS:car

Table #3

LABORATORY ANALYTICAL RESULTS
Selected Metals
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14
(continued)

Well Name	Sample Date	Cadmium (ug/l)	Chromium (ug/l)	Copper (ug/l)	Cyanide (ug/l)	Manganese (ug/L0	Mercury (ug/l)	Zinc (ug/l)
MW-105	02/20/97	NA	21	22	NA	1,100	NA	23
	05/27/97	<.2	5	<10	NA	120	<.2	12
	09/18/97	.14**	29.5	28.3	1**	632	<.03	46
	12/12/97	.36*	15.8	12.5**	<.8	297	.03*	27.1
	03/25/98	.04*	30.8	27.6	<1.7	518	.064*	44
	06/10/98	.048*	13.7	15.3**	<1.7	217	.016*	22.1
	10/27/98	.29*	8.80	8.20	<.0032	150	<.05	70
MW-106	02/20/97	NA	21	24	NA	320	NA	26
	05/27/97	<.02	40	35	NA	590	<.2	68
	09/18/97	.05**	5.5	6.2**	1**	56.9	<.03	35.6
	12/12/97	.04*	9.2	9.7**	<.08	155	.03*	18.4
	03/25/98	NA	13.40	14.4**	<1.7	150	.007*	18.5
	06/10/98	.04*	<3.9	10.2**	<1.7	10	.016*	10.9
	10/27/98	.27*	3.20	4.3*	<.0032	38	<.05	88
MW-107	02/20/97	NA	2,000	13	NA	190	NA	6.9
	05/27/97	<.2	3,600	<10	NA	91	<.2	10
	09/18/97	<.04	2,670	<8.1	1**	593	<.03	33.5
	12/12/97	.04*	2,310	<9.7	<.8	48.4	.1*	6.7
	03/25/98	.04*	11,200	12.1**	<1.7	682	.041*	9.3*
	06/10/98	.11*	6,240	13.8**	<1.7	161	.027*	17.3*
	10/27/98	<.16	7,100	1.2*	<.0032	28	<.05	94
MW-108	02/20/97	NA	25	23	NA	490	NA	31
	05/27/97	<.2	11	13	NA	210	<.2	15
	09/18/97	.14**	27.4	22.4**	1**	462	<.03	36.6
	12/12/97	.04*	5.6	<9.7	<.8	74.8	.03*	27.9
	03/25/98	.04*	9.4	10.4**	<1.7	142	.007*	13.8
	06/10/98	.14*	28.4	25.5	<1.7	478	.021*	40.5
	10/27/98	.26*	8.90	7.40	<.0032	88	<0.5	44
Maximum Contaminant Level (MCL)		5	100	100	200	50	2	5,000
Enforcement Standard Chapter NR 140.10		5	100	1,300	200	50	2	5,000
Preventive Action Limit Chapter NR 140.10		0.5	10	130	40	25	0.2	2,500

EXPLANATION:

Samples collected prior to 10/27/98 were collected by CH2M Hill personnel.
* = Estimated concentration of compound.
** = Compound was found in sample and blank.
ND = Not detected above the analytical laboratories method detection limit
NA = Not Analyzed
MW-104 = Was tested for Aluminum, Nickel, Arsenic & Lead. No quantifiable detections were noted for any of the analytes.
ug/L = Microgram/Liter
mg/L = Milligram / Liter
= Indicates an exceedances of the NR 140.10 Groundwater Quality Enforcement Standard

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	CIS-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)
W-02	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
W-08	02/20/97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<40	<7	<7	<124	<68	<40	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<40	<7	<7	<.4	<68	<40	<.5	<.5	.4**
	03/25/98	<.5	<.6	<85	<40	<7	<7	<.3	<68	<40	<.5	<.5	.3**
	06/10/98	<.5	<.6	<85	<40	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
W-15	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	0.22	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4**
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
MW-101	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	.491*	.353*	<7	<7	<124	<68	3.03	<.5	3.31	<124
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
MW-102	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<.85	<85	<7	<7	<124	<68	<40	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<85	<7	<7	<.4	<68	<40	<.5	<.5	.4*
	06/10/98	<.5	<.6	<85	<85	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14
(continued)

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	CIS-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)
MW-103	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
MW-104	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	.324*	<.5	<.5	<124
	12/12/97	<.5	<.6	0.4	<.7	<7	<7	<120	<68	1*	<.5	0.9	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	.8*	<.5	<.5	<120
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	2*	<.5	<.5	<120
	10/27/98	<.24	<.23	.35*	<.28	<.27	<.26	<.17	<.21	1.8	<.23	<.29	<.36
MW-105	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<.4	<68	<40	<.5	<.5	.4*
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
MW-106	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	2.73*	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	10/27/98	<.24	<.23	<.27	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
MW-107	02/20/97	<.5	0.3	11	[redacted]84	0.7	<.7	<.5	<.5	81	0.6	[redacted]50	<.5
	05/27/97	0.09	1.10	36	[redacted]240	3.1	<3.1	<.5	0.34	[redacted]390	3.5	[redacted]420	<.5
	09/18/97	<10	<12	47.6*	[redacted]221	2.61*	<2.61	<2480	<68	[redacted]266	2.83	[redacted]295	<2480
	12/12/97	<10	<12	56*	[redacted]226	3*	<3	<2500	<68	[redacted]280	3	[redacted]290	<2500
	03/25/98	<25	<30	61*	[redacted]269	5*	<5	<17	<68	[redacted]720	[redacted]5	[redacted]620	17*
	06/10/98	<12	<15	59*	[redacted]258	<3	<3	<3100	63*	[redacted]340	4*	[redacted]390	<3100
	10/27/98	<.24	1.4	62	[redacted]246	3.6	.51*	<.17	<.21	[redacted]550	4.9	[redacted]640	<.36

Table #4

LABORATORY ANALYTICAL RESULTS
Volatile Organic Compounds (VOC's)
N.W. Mauthe Superfund Site - Appleton, Wisconsin
MCO No. M050-98808.14
(continued)

Well Name	Sample Date	Benzene (ug/l)	Chloroform (ug/l)	1,1-Dichloroethane (ug/l)	1,1-Dichloroethene (ug/l)	CIS-1,2,-Dichloroethene (ug/l)	Trans-1,2,-Dichloroethene (ug/l)	Ortho-Xylene (ug/l)	Toluene (ug/l)	1,1,1-Trichloroethane (ug/l)	1,1,2-Trichloroethane (ug/l)	Trichloroethene (ug/l)	Meta, para Xylene (ug/l)
MW-108	02/20/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	05/27/97	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
	09/18/97	<.5	<.6	<85	<.7	<7	<7	<124	<68	<40	<.5	<.5	<124
	12/12/97	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	03/25/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<40	<.5	<.5	<120
	06/10/98	<.5	<.6	<85	<.7	<7	<7	<120	<68	<44	<.5	<.5	<120
	10/27/98	<.24	<.23	<.22	<.28	<.27	<.26	<.17	<.21	<.26	<.23	<.29	<.36
MCL NR 149.21 (9)		5.0	-	-	7.0	70	100	-	1,000	200	5.0	5.0	10,000
Enforcement Standards (ES) 140.10		5	6	850	7	70	100	620**	343	200	5	5	620**
Preventive Action Plan (PAL) 140.10		0.5	0.6	85	0.7	7	20	124**	686	40	0.5	0.5	124**

EXPLANATION:

Results prior to 10/27/98 for CIS-1,2,-Dichloroethene and Trans-1,2 Dichloroethene were listed as Total Dichloroethene and were placed in this table under the heading CIS-1,2,-Dichloroethene.
Results prior to 10/27/98 for Ortho Xylene and Meta, para Xylene were listed as Total Xylenes and were placed in this table under the heading Meta, para Xylene.
* = Detection of compound in area of less certain quantification
** = Standard includes Ortho-, Meta, para-Xylenes
ND = Not Detected
NA = Not Analyzed
MCL = Maximum Contaminant Levels
[redacted] = Indicates an exceedance of the MCL 149.21(9) or ES 140.10

Table #5

NATURAL ATTENTUTION PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-98808.14

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-02	2/20/97	NR	8.0	6	750 us	NA	NA	NA	NA
	5/27/97	NR	7.74	10.1	NA	NA	NA	NA	NA
	9/18/97	NR	7.01	14.5	910 us	NA	NA	NA	NA
	12/12/97	NR	7.33	9.5	820 us	NA	NA	NA	NA
	3/25/98	NR	7.96	7.9	1235 us	NA	NA	NA	NA
	6/10/98	NR	6.59	10.2	1057 us	NA	NA	NA	NA
	10/27/98	4	7.93	14.8	1278 us	1.4	119	12	0
MW-08	2/20/97	NR	8.20	7.5	1000 us	NA	NA	NA	NA
	5/27/97	NR	7.30	10.4	NA	NA	NA	NA	NA
	9/18/97	NR	7.07	17	1250 us	NA	NA	NA	NA
	12/12/97	NR	7.32	11.2	1090 us	NA	NA	NA	NA
	3/25/98	NR	7.34	7.9	1590 us	NA	NA	NA	NA
	6/10/98	NR	6.95	11.5	1407 us	NA	NA	NA	NA
	10/27/98	5	7.42	16.7	1459 us	1.3	97	14.4	0.2
MW-15	2/20/97	NR	8.15	9.0	920 us	NA	NA	NA	NA
	5/27/97	NR	7.66	10.0	NA	NA	NA	NA	NA
	9/18/97	NR	7.22	16.0	1300 us	NA	NA	NA	NA
	12/12/97	NR	7.18	10.4	1180 us	NA	NA	NA	NA
	3/25/98	NR	7.70	8.4	1450 us	NA	NA	NA	NA
	6/10/98	NR	6.46	11.6	1496 us	NA	NA	NA	NA
	10/27/98	4	7.27	16.0	1551 us	0.8	137	14.4	0
MW-101	2/20/97	NR	7.12	8.0	1400 us	NA	NA	NA	NA
	5/27/97	NR	7.56	12.9	NA	NA	NA	NA	NA
	9/18/97	NR	6.54	14.0	1380 us	NA	NA	NA	NA
	12/12/97	NR	6.64	11.4	1390 us	NA	NA	NA	NA
	3/25/98	NR	7.58	10.5	2142 us	NA	NA	NA	NA
	6/10/98	NR	6.29	11.5	2116 us	NA	NA	NA	NA
	10/27/98	9	7.13	14.1	2.27 ms	0.5	116	12	0
MW-102	2/20/97	NR	8.00	10.5	700 us	NA	NA	NA	NA
	5/27/97	NR	7.47	10.5	NA	NA	NA	NA	NA
	9/18/97	NR	6.99	13.0	810 us	NA	NA	NA	NA
	12/12/97	NR	7.23	8.5	690 us	NA	NA	NA	NA
	3/25/98	NR	7.68	10.2	1145 us	NA	NA	NA	NA
	6/10/98	NR	6.97	10.3	1046 us	NA	NA	NA	NA
	10/27/98	2	8.07	13.0	1197 us	1.5	103	17.6	0.4
MW-103	2/20/97	NR	6.30	6.0	700 us	NA	NA	NA	NA
	5/27/97	NR	7.67	11.6	NA	NA	NA	NA	NA
	9/18/97	NR	7.21	10.5	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.43	9.0	970 us	NA	NA	NA	NA
	3/25/98	NR	7.82	9.4	1441 us	NA	NA	NA	NA
	6/10/98	NR	6.24	9.9	1356 us	NA	NA	NA	NA
	10/27/98	8	7.66	12.7	1566 us	0.7	147	12	0.2
MW-104	2/20/97	NR	7.43	8.0	1000 us	NA	NA	NA	NA
	5/27/97	NR	8.00	12.0	NA	NA	NA	NA	NA
	9/18/97	NR	7.13	10.5	1030 us	NA	NA	NA	NA
	12/12/97	NR	7.10	9.6	1000 us	NA	NA	NA	NA
	3/25/98	NR	7.94	8.3	1378 us	NA	NA	NA	NA
	6/10/98	NR	6.53	9.7	1101 us	NA	NA	NA	NA
	10/27/98	8	7.84	13.2	1272 us	0.9	103	16.4	0.4
MW-105	2/20/97	NR	7.70	7.0	1600 us	NA	NA	NA	NA
	5/27/97	NR	7.44	10.5	NA	NA	NA	NA	NA
	9/18/98	NR	6.89	16.0	2150 us	NA	NA	NA	NA
	12/12/97	NR	7.04	12.0	2050 us	NA	NA	NA	NA
	3/25/98	NR	7.35	6.7	2878 us	NA	NA	NA	NA
	6/10/98	NR	6.25	11.1	2695 us	NA	NA	NA	NA
	10/27/98	5	7.57	16.8	2.87 ms	0.1	121	13.6	0

Table #5

NATURAL ATTENTUTION PARAMETERS
N.W. Mauthe Supefund Site - Appleton, Wisconsin
MCO No. M050-98808.14
(continued)

Well Name	Sample Date	Purge* Volume (gallons)	pH (units)	Temperature (degree C)	Conductivity (units as shown)	Dissolved Oxygen (ppm)	Redox (mV)	Alkalinity (gpg)	Ferrous Iron (mg/l)
MW-106	2/20/97	NR	7.75	10.0	1000 us	NA	NA	NA	NA
	5/27/97	NR	7.47	10.1	NA	NA	NA	NA	NA
	9/18/97	NR	7.19	15.0	1310 us	NA	NA	NA	NA
	12/12/97	NR	7.06	11.5	1260 us	NA	NA	NA	NA
	3/25/98	NR	7.61	8.7	1716 us	NA	NA	NA	NA
	6/10/98	NR	7.11	11.6	1604 us	NA	NA	NA	NA
	10/27/98	4	7.31	16.8	1824 us	1.2	138	12.8	0
MW-107	2/20/97	NR	7.46	9.0	650 us	NA	NA	NA	NA
	5/27/97	NR	7.12	10.8	NA	NA	NA	NA	NA
	9/18/97	NR	7.07	12.5	700 us	NA	NA	NA	NA
	12/12/97	NR	7.08	10.5	730 us	NA	NA	NA	NA
	3/25/98	NR	7.87	10.2	1081 us	NA	NA	NA	NA
	6/10/98	NR	7.17	10.6	1042 us	NA	NA	NA	NA
	10/27/98	10	7.41	12.1	1179 us	1.1	62	20	10
MW-108	2/20/97	NR	8.10	10.0	100 us	NA	NA	NA	NA
	5/27/97	NR	6.02	11.4	NA	NA	NA	NA	NA
	9/18/97	NR	6.51	12.0	1160 us	NA	NA	NA	NA
	12/12/97	NR	6.98	10.4	1130 us	NA	NA	NA	NA
	3/25/98	NR	7.64	10.2	1568 us	NA	NA	NA	NA
	6/10/98	NR	6.54	10.7	1525 us	NA	NA	NA	NA
	10/27/98	10	7.95	14.3	1696 us	1.4	116	12.8	0.2

ppm = parts per million
US/cm = microsiemens / centimeter
mV = millivolts
gpg = grains per gallon
ms/cm = millisiemans / centimeter
NA = not analyzed
NR = not recorded
* = Each monitoring well was purged dry twice prior to sampling
The second purging was conducted approximately 3-hrs after initial purging. The volume of purge water collected represents the total of the two well purges. Purge volumes prior to 10/27/98 were not available.

JMS:car
L:\D:\Report\M050\98808\Qtrly-PR#1-JMS.xls

Table #6

LABORATORY ANALYTICAL RESULTS

Effluent Point 001

N.W. Mauthe Superfund Site - Appleton, Wisconsin

MCO No. M050-98808.14

Sample Name	Sample Date	Aluminum (mg/l)	Arsenic (mg/l)	Cadmium (mg/l)	Chromium Total (mg/l)	Copper (mg/l)	Cyanide (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Zinc (mg/l)	Hexavalent Chromium
Outfall 001*	02/20/97	<.02	<.003	<.00050	0.04	<.01	<.00001	<.005	<.0002	<.005	0.0051	<.01
Outfall 001*	05/27/97	NA	NA	NA	0.26	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	09/11/97	NA	NA	NA	0.557	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	12/12/97	NA	NA	NA	0.279	NA	NA	NA	NA	NA	NA	NA
Outfall 001*	03/24/98	0.0152	<.002	<.00004	0.0637	<.0095	<.0017	<.0006	<.000015	<.0095	0.0046	0.1
Outfall 001**	04/29/98	<.011	<.002	<.005	0.22	<.05	0.002	<.1	<.0002	<.04	<.005	NA
Outfall 001*	06/10/98	NA	NA	NA	0.0784	NA	NA	NA	NA	NA	NA	NA
Outfall 001**	10/07/98	<.011	<.002	0.005	0.17	<.05	<.001	<.1	<.0002	<.04	0.025	NA
Outfall 001***	10/27/98	NA	NA	NA	0.094	NA	NA	NA	NA	NA	NA	NA
Effluent Limits Permit #97-21		70	1.0	0.3	7.0	3.5	1.0	2.0	0.002	2.0	10.0	4.5

mg/l = milligram / liter
ug/l = microgram / liter
NA = not analyzed
* = Sampled by CH2M Hill
** = Sampled by the City of Appleton
*** = Sampled by MCO

APPENDIX A

Laboratory Analytical Results
Groundwater Monitoring Wells

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

November 17, 1998

Mr. John M. Stoeger
McMahon Associates, Inc.
P.O. Box 1025
Neenah, WI 54957

Dear Mr. Stoeger:

In compliance with Wisconsin Administrative Code NR 149.21(9), the intent of this letter is to advise you of exceedances of Maximum Contaminant Levels and/or Action Levels on drinking water samples collected on 10/28/98.

Sample ID	Analyte	Concentration	Exceedance	Limit
MW-107	1,1-Dichloroethene	46 ug/L	MCL	7 ug/L
MW-107	1,1,1-Trichloroethane	550 ug/L	MCL	200 ug/L
MW-107	Trichloroethene	640 ug/L	MCL	5 ug/L

Please forward this information to your DNR contact person.

Sincerely,

Steven R. Krueger

fax R.T. Krueger, Lab Manager
NORTHERN LAKE SERVICE, INC.

RTK:lw
encs.

NORTHERN LAKE SERVICE, INC.

400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715)478-2777

ORDER OF ANALYSIS

RESULTS ORDERED BY:	CHAIN OF CUSTODY RECORD NUMBER:
John M Stoeger McMahon Associates Inc 1445 McMahon Drive Neenah WI 54956	29476 & 29477
	QUOTATION NUMBER:
	98682
	ANALYZE FOR DISSOLVED OR TOTAL PARAMETERS?
	T
SEND RESULTS TO:	SEND INVOICE TO:
John M Stoeger	McMahon Associates Inc

Note "L" for low level ICP analysis, and "Z" for furnace analysis.

Samples on line #s: GW to be analyzed for the parameters checked below:

- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ B.O.D.-5
- ☐ Boron
- ☒ Cadmium
- ☐ Calcium
- ☐ C.O.D.
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hexavalent
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total
- ☐ Color
- ☐ Conductivity
- ☒ Copper
- ☐ _____
- ☒ Cyanide, total
- ☐ Amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Lead
- ☐ Magnesium
- ☒ Manganese
- ☒ Mercury
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, total
- ☐ Ammonia
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl
- ☐ Total Organic
- ☐ Oil & Grease
- ☐ pH
- ☐ _____
- ☐ _____
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Tot. reactive
- ☐ Dis. reactive
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Tot. dissolved
- ☐ Tot. suspended
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ T.O.C.
- ☐ Turbidity
- ☐ Vanadium
- ☒ Zinc
- ☐ Munic.Sludge,WI List
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ Chlorinated Hydrocarbons by 612
- ☐ Haloethers by 611
- ☐ Nitrosamines by 607
- ☐ Pesticides-Organochlorine by 608/8080
- ☐ Pesticides-Organophosphate by 8141
- ☐ PCBs by 608/8080
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8150
- ☐ TCLP-metals ☐ TCLP-VOCs ☐ TCLP-BNAs
- ☐ TCLP-pesticides/herbicides
- ☐ VOCs by EPA 601+602 or 8010+8020
- ☐ -by EPA 8021
- ☐ -by EPA 624/8260
- ☒ -by EPA 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified ☐ GRO + PVOCs
- ☐ DRO-WI Modified
- ☐ PAHs by 610LC/8310

Samples on line #s: Process Water to be analyzed for the parameters checked below:

- ☐ Alkalinity, total
- ☐ Alkalinity, bicarb.
- ☐ Aluminum
- ☐ Antimony
- ☐ Arsenic
- ☐ Barium
- ☐ Beryllium
- ☐ B.O.D.-5
- ☐ Boron
- ☐ Cadmium
- ☐ Calcium
- ☐ C.O.D.
- ☐ Chloride
- ☒ Chromium
- ☐ Chromium, hexavalent
- ☐ Cobalt
- ☐ Coliform, fecal
- ☐ Coliform, total
- ☐ Color
- ☐ Conductivity
- ☐ Copper
- ☐ _____
- ☐ Cyanide, total
- ☐ Amenable
- ☐ Fluoride
- ☐ Hardness
- ☐ Iron
- ☐ Lead
- ☐ Magnesium
- ☐ Manganese
- ☐ Mercury
- ☐ Molybdenum
- ☐ Nickel
- ☐ Nitrogen, total
- ☐ Ammonia
- ☐ Nitrate
- ☐ Nitrite
- ☐ Nitrate + Nitrite
- ☐ Total Kjeldahl
- ☐ Total Organic
- ☐ Oil & Grease
- ☐ pH
- ☐ _____
- ☐ _____
- ☐ Phenols
- ☐ Phosphorus, total
- ☐ Tot. reactive
- ☐ Dis. reactive
- ☐ Potassium
- ☐ Selenium
- ☐ Silica
- ☐ Silver
- ☐ Sodium
- ☐ Solids, total
- ☐ Tot. dissolved
- ☐ Tot. suspended
- ☐ Sulfate
- ☐ Sulfide
- ☐ Surfactants (MBAS)
- ☐ Thallium
- ☐ Tin
- ☐ T.O.C.
- ☐ Turbidity
- ☐ Vanadium
- ☐ Zinc
- ☐ Munic.Sludge,WI List
- ☐ Acid Extractables by 625/8270
- ☐ Base/Neutral Extractables by 625/8270
- ☐ BNAs by 625/8270
- ☐ Chlorinated Hydrocarbons by 612
- ☐ Haloethers by 611
- ☐ Nitrosamines by 607
- ☐ Pesticides-Organochlorine by 608/8080
- ☐ Pesticides-Organophosphate by 8141
- ☐ PCBs by 608/8080
- ☐ Phenols by GC 604/8040
- ☐ Phenoxy Acid Herbicides by 8150
- ☐ TCLP-metals ☐ TCLP-VOCs ☐ TCLP-BNAs
- ☐ TCLP-pesticides/herbicides
- ☐ VOCs by EPA 601+602 or 8010+8020
- ☐ -by EPA 8021
- ☐ -by EPA 624/8260
- ☐ -by EPA 524.2 (SDWA)
- ☐ BTEX by 8020
- ☐ PVOCs by 8020
- ☐ GRO-WI Modified ☐ GRO + PVOCs
- ☐ DRO-WI Modified
- ☐ PAHs by 610LC/8310

SPECIAL INSTRUCTIONS: _____

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 29476

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

CLIENT: McMAHON ASSOCIATES INC	DNR LICENSE:	FID:
ADDRESS: 1445 McMAHON DRIVE	PROJECT TITLE: N W Mautha Site GWM	
CITY: NEENAH STATE: WI ZIP: 54956	PROJECT NO.:	P.O. NO.: NLS98662
	CONTACT: John M Stoeger	PHONE: 920/751-4200

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE VH	PN	PUS		COLLECTION REMARKS
1.		MW-02		10-28-98	1:00PM	GW	G	2	1	1		
2.		MW-08										
3.		MW-15										
4.		MW-101										
5.		MW-D101										
6.		MW-102										
7.		MW-103										
8.		MW-104										
9.		MW-D104										
10.		MW-105										
11.		MW-106										
12.		MW-107		"	"	"	"	"	"	"		

SAMPLE TYPE:
SW=surface water, WW=wastewater, GW=groundwater, DW=drinking water, TIS=tissue, AIR=air, PROD=product, SOIL=soil, SED=sediment, describe others

CONTAINER: P = plastic, G = glass, V = glass vial, B = plastic bag, describe others

PRESERVATIVES & PREPARATION: NP = nothing added, S = sulfuric acid, N = nitric acid, Z = zinc acetate, OH = sodium hydroxide, HA = hydrochloric & ascorbic acid, H = hydrochloric acid, F = field filtered

COLLECTED BY (signatures): John M Stoeger — CUSTODY SEAL NO. (IF ANY) — DATE/TIME

RELINQUISHED BY (signature): John M Stoeger TO UPS — RECEIVED BY (signature) — DATE/TIME: 10-29-98 3:00PM

RELINQUISHED BY (signature) — RECEIVED BY (signature) — DATE/TIME

DISPATCHED BY (signature) — METHOD OF TRANSPORT — DATE/TIME

RECEIVED AT NLS BY (Signature) — DATE/TIME — CONDITION — TEMP

SEAL INTACT? ☒ YES ☐ NO — SEAL # — REMARKS & OTHER INFORMATION

1105

IMPORTANT: 1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

DUPLICATE COPY

NORTHERN LAKE SERVICE, INC.

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298
Tel: (715) 478-2777 • Fax: (715) 478-3060

NO. 29477

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

Wisconsin Lab Cert. No. 721026460

RETURN THIS FORM WITH SAMPLES.

CLIENT: McMAHON ASSOCIATES INC	DNR LICENSE:	FID:
ADDRESS:	PROJECT TITLE: N W Mauthe Site GWM	
CITY: STATE: ZIP:	PROJECT NO.:	P.O. NO.: NLS98682
	CONTACT:	PHONE:

ITEM NO.	NLS LAB. NO.	SAMPLE ID	DNR ID	COLLECTION DATE	COLLECTION TIME	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE VH	DM	PDH		COLLECTION REMARKS
1.		MW-108		10-28-98	1:30pm	GW	G	2	1	1		
2.		Process Water		10-29-98	8:30AM	GW	G		1			
3.		VOC Trip Blank				TB	---	1				
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												

SAMPLE TYPE:
SW=surface water, WW=wastewater, GW=groundwater, DW=drinking water, TIS=tissue, AIR=air, PROD=product, SOIL=soil, SED=sediment
describe others

CONTAINER
P = plastic, G = glass, V = glass vial, B = plastic bag
describe others

PRESERVATIVES & PREPARATION
NP = nothing added, S = sulfuric acid, N = nitric acid, Z = zinc acetate, OH = sodium hydroxide, HA = hydrochloric & ascorbic acid, H = hydrochloric acid, F = field filtered

COLLECTED BY (signatures): [signature]
CUSTODY SEAL NO. (IF ANY):
DATE/TIME:

RELINQUISHED BY (signature): [signature] To UPS
RECEIVED BY (signature):
DATE/TIME: 10-28-98 3:30pm

RELINQUISHED BY (signature):
RECEIVED BY (signature):
DATE/TIME:

DISPATCHED BY (signature):
METHOD OF TRANSPORT: UPS
DATE/TIME:

RECEIVED AT NLS (if mailed):
DATE/TIME:
CONDITION:
TEMP °C:

SEAL INTACT? ☐ YES ☐ NO
SEAL NO.:

REMARKS & OTHER INFORMATION

IMPORTANT:
1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE SHIPPER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP PINK COPY.

DUPLICATE COPY

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Tel:(715)478-2777 Fax:(715)478-3060

WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 44569

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: MW-02 **NLS#: 183772**
Ref. Line 1 of COC 29476 Description: MW-02
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.51 >	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	3.6	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 4.7 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	10/30/98	721026460
Manganese, tot. as Mn by ICP	69	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	170	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	10/30/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

Sample ID: MW-08 **NLS#: 183773**
Ref. Line 2 of COC 29476 Description: MW-08
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	0.80	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	3.9	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 4.8 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	64	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	85	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

NORTHERN LAKE SERVICE, INC.
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WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

NLS PROJECT# 44569

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: MW-15 **NLS#: 183774**
Ref. Line 3 of COC 29476 Description: MW-15
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.41 >	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	6.8	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	7.4	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	110	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	100	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

Sample ID: MW-101 **NLS#: 183775**
Ref. Line 4 of COC 29476 Description: MW-101
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	3.2	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 4.2 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	24	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	54	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

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WIS. LAB CERT. NO. 721026460

ANALYTICAL REPORT

 NLS PROJECT# 44569

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: MW-D 101 **NLS#: 183776**
Ref. Line 5 of COC 29476 Description: MW-D 101
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	< 1.5 >	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 2.1 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	12	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	27	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

Sample ID: MW-102 **NLS#: 183777**
Ref. Line 6 of COC 29476 Description: MW-102
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.27 >	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	< 0.98 >	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 3.2 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	340	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	24	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

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ANALYTICAL REPORT

NLS PROJECT# 44569

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: MW-103 **NLS#: 183778**
Ref. Line 7 of COC 29476 Description: MW-103
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	6.3	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 2.3 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	27	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	78	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

Sample ID: MW-104 **NLS#: 183779**
Ref. Line 8 of COC 29476 Description: MW-104
Collected. 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.29 >	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	150	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 2.3 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	25	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	30	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

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ANALYTICAL REPORT

 NLS PROJECT# 44569

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: MW-D 104 **NLS#: 183780**
Ref. Line 9 of COC 29476 Description: MW-D 104
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	140	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 2.9 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	37	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	49	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/03/98	721026460

Sample ID: MW-105 **NLS#: 183781**
Ref. Line 10 of COC 29476 Description: MW-105
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.29 >	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	8.8	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	8.2	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	150	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	70	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/04/98	721026460

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ANALYTICAL REPORT

NLS PROJECT# 44569

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: MW-106 **NLS#: 183782**
Ref. Line 11 of COC 29476 Description: MW-106
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.27 >	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	3.2	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 4.3 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	38	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	88	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/04/98	721026460

Sample ID: MW-107 **NLS#: 183783**
Ref. Line 12 of COC 29476 Description: MW-107
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	ND	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	7100	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	< 1.2 >	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/05/98	721026460
Manganese, tot. as Mn by ICP	28	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	94	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/05/98	721026460

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ANALYTICAL REPORT

NLS PROJECT# 44569

NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: MW-108 **NLS#: 183784**
Ref. Line 1 of COC 29477 Description: MW-108
Collected: 10/28/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Cadmium, tot. as Cd by ICP	< 0.26 >	ug/L	0.16	0.58	SW846 6010	11/09/98	721026460
Chromium, tot. as Cr by ICP	8.9	ug/L	0.54	1.9	SW846 6010	11/09/98	721026460
Copper, tot. as Cu by ICP	7.4	ug/L	0.80	5.0	SW846 6010	11/09/98	721026460
Cyanide, tot. (distilled) as CN	ND	mg/L	0.0032	0.011	EPA 335.4	11/10/98	721026460
Manganese, tot. as Mn by ICP	88	ug/L	0.42	1.5	SW846 6010	11/09/98	721026460
Mercury, tot. as Hg	ND	ug/L	0.050	0.050	EPA 245.7M	11/10/98	721026460
Zinc, tot. as Zn by ICP	44	ug/L	12	12	SW846 6010	11/09/98	721026460
Metals digestion - total (water) ICP	yes				SW846 3010	11/02/98	721026460
VOCs by EPA 524.2	see attached				EPA 524.2	11/04/98	721026460

Sample ID: Process Water **NLS#: 183785**
Ref. Line 2 of COC 29477 Description: Process Water
Collected: 10/29/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
Chromium, tot. as Cr by ICP	94	ug/L	0.54	1.9	EPA 200.7	11/09/98	721026460
Metals digestion - total (water) ICP	yes				EPA 200.7	11/02/98	721026460

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ANALYTICAL REPORT

 NLS PROJECT# 44569
NLS CUST# 20239

Client: McMahon Associates, Inc.
Attn: John M. Stoeger
1445 McMahon Drive
P.O. Box 1025
Neenah, WI 54957

Project Description: NW Mauthe Site GM

Sample ID: Trip blank NLS#: 183786
Ref. Line 3 of COC 29477 Description: Trip Blank
Collected: 10/29/98 Received: 10/29/98 Reported: 11/11/98

Parameter	Result	Units	LOD	LOQ	Method	Analyzed	Lab
VOCs by EPA 524.2	see attached				EPA 524.2	11/04/98	721026460

Values in brackets represent results greater than the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than the LOQ are considered to be in the region of "Certain Quantitation".

LOD = Limit of Detection
LOQ = Limit of Quantitation
ND = Not Detected
DWB = Dry Weight Basis
NA = Not Applicable
%DWB = (mg/kg DWB)/10000

Reviewed by:

Authorized by:
R. T. Krueger
Laboratory Manager

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183772 MW-02 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 111 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 110 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183773 MW-08 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 97.0 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 93.0 %					

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183774 MW-15 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 105 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 100 %					

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183775 MW-101 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 104 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 104 %					

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183776 MW-D 101 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 105 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 106 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183777 MW-102 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 102 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 101 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183778 MW-103 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 101 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 101 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183779 MW-104 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	< 0.35 >	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	1.8	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 100 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 98.0 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183780 MW-D 104 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	< 0.35 >	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	1.9	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 101 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 101 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183781 MW-105 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 107 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 108 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183782 MW-106 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 107 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 106 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183783 MW-107 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	1.4	1	0.23	0.79	
1,1-Dichloroethane	62	50	14	47	
1,1-Dichloroethene	< 46 >	50	14	47	7.0
cis-1,2-Dichloroethene	3.6	1	0.27	0.92	70
trans-1,2-Dichloroethene	< 0.51 >	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	550	50	13	45	200
1,1,2-Trichloroethane	4.9	1	0.23	0.79	5.0
Trichloroethene	640	50	14	50	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 110 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 110 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183784 MW-108 ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 106 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 103 %					

ANALYTICAL RESULTS: GCMS 524.2 Safe Drinking Water Analysis

Customer: McMahon Associates, Inc.
Project Description: NW Mauthe Site GM
Northern Lake Service Project Number: 44569

Analyte Name	183786 Trip Blank ug/L	DILUTION FACTOR	LOD ug/L	LOQ ug/L	MCL ug/L
Benzene	ND	1	0.24	0.81	5.0
Chloroform	ND	1	0.23	0.79	
1,1-Dichloroethane	ND	1	0.27	0.93	
1,1-Dichloroethene	ND	1	0.28	0.95	7.0
cis-1,2-Dichloroethene	ND	1	0.27	0.92	70
trans-1,2-Dichloroethene	ND	1	0.26	0.89	100
ortho-Xylene	ND	1	0.17	0.60	
Toluene	ND	1	0.21	0.74	1000
1,1,1-Trichloroethane	ND	1	0.26	0.90	200
1,1,2-Trichloroethane	ND	1	0.23	0.79	5.0
Trichloroethene	ND	1	0.29	1.0	5.0
meta,para-Xylene	ND	1	0.36	1.2	10000
Surrogate Recovery on 4-Bromofluorobenzene = 101 %					
Surrogate Recovery on 1,2-Dichlorobenzene-d4 = 99.0 %					

APPENDIX B

Industrial Pretreatment Monitoring Report
Outfall 001

City Of Appleton

DEPARTMENT OF UTILITIES

WASTEWATER DIVISION • CENTRAL BUILDING MAINTENANCE DIVISION
2006 East Newberry Street • Appleton, WI 54915-2758
920/832-5945 • 920/832-5514 • FAX 920/832-5949

February 19, 1999

John M. Stoeger
Project Manager
N.W. Mauthe Superfund Site
c/o Midwest Contract Operations, Inc.
P. O. Box 418
Menasha, Wisconsin 54952-0418

RE: Semi-annual Compliance Monitoring Results

Dear Mr. Stoeger:

The City of Appleton, Pretreatment Program staff recently visited your facility in order to obtain a sample of the wastewater discharged from your site to the sanitary sewer.

This outfall(s) sample(s) was tested for process-specific pollutants, if applicable, identified in your wastewater discharge permit and Local Limit pollutant parameters identified in your discharge permit and the sewer use ordinance, Chapter 20, Utilities.

The City of Appleton, Pretreatment Program conducts this analysis for compliance monitoring twice, annually for each permitted industry. Pretreatment compliance monitoring is a required component of the state and federal mandated program implementation.

Your facility's effluent was analyzed for the pollutants listed in FORM 13 (attached) that have sample results indicated. This form is the monitoring summary which is submitted to the Wisconsin Department of Natural Resources on a semi-annual basis to reflect all monitoring for the City of Appleton Pretreatment Program.

Your wastestream was Compliant for all parameters indicated above for the sample(s) identified on Form 13.

Thank you for accommodating the laboratory staff during these often unannounced visits. This format lends true credibility to our compliance monitoring program and demonstrates the high level of cooperation the City shares with local industries.

Best regards,

Jessica A. Garratt

Jessica A. Garratt
Pretreatment Coordinator
comply951/enc.

Form 13
Evaluation Form 1

INDUSTRIAL USER MONITORING SUMMARY REPORT
(Summation of POTW Compliance Monitoring and Industrial Self-Monitoring)

Industrial User Name N. W. Mauthe Superfund Site / SIU 97 - 21
Location 725 South Outagamie Street

Sampling Point (Refer to Control Document) 001 discharge valve in Pretreatment Facility

SAMPLE TYPE			FP TC (G)	FP TC (G)	FP TC (G)	FP TC (G)	FP TC G	FP TC G	FP TC G	FP TC G
			SAMPLE 03/24/98	SAMPLE 04/29/98	SAMPLE 06/10/98	SAMPLE 10/07/98	SAMPLE	SAMPLE	SAMPLE	SAMPLE
			MO DAY YR SELF X SCHEDUL	MO DAY YR SELF SCHEDUL X	MO DAY YR SELF X SCHEDUL	MO DAY YR SELF SCHEDUL X	MO DAY YR SELF SCHEDUL	MO DAY YR SELF SCHEDUL	MO DAY YR SELF SCHEDUL	MO DAY YR SELF SCHEDUL
PARAMETERS	UNIT	LIMITS MAX / AVG	UNSCHED DEMAND	UNSCHED DEMAND	UNSCHED DEMAND	UNSCHED DEMAND	UNSCHED DEMAND	UNSCHED DEMAND	UNSCHED DEMAND	UNSCHED DEMAND
Flow, Regulated	GPD									
Flow, Unregulated	GPD									
Flow, Dilutional	GPD									
Flow, Total	GPD									
Arsenic	mg/L	1.0	< 0.002	< 0.002		< 0.002				
Cadmium	mg/L	0.3	< 0.00004	< 0.005		< 0.005				
Chromium	mg/L	7.0	0.0637	0.22	0.0784	0.17				
Copper	mg/L	3.5	< 0.0095	< 0.05		< 0.05				
Cyanide	mg/L	1.0	< 0.0017	0.002		< 0.001				
Lead	mg/L	2.0	< 0.0006	< 0.1		< 0.1				
Nickel	mg/L	2.0	< 0.0095	< 0.04		< 0.04				
Silver	mg/L									
Zinc	mg/L	10.0	0.0046	< 0.005		0.025				
Total Toxic Organics	mg/L									
Aluminum	mg/L	70.0	< 0.0152	< 0.011		< 0.011				
Hex Chromium	mg/L	4.5	0.1							
Mercury	mg/L	0.002	< 0.000015	< 0.0002		< 0.0002				
	mg/L									
	mg/L									
pH	s. u.	5.0-12.4		8.55		7.9				
Oil & Grease	mg/L									
Phosphorus	mg/L									