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November 21, 2005

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William J. Ryan
Remedial Project Manager (SRF-5J)
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Subject: July 2005 Groundwater Sampling Event Memorandum
Oconomowoc Electroplating Co. Site, Ashippun, Wisconsin
WA No. 236-RALR-05M8, Contract No. 68-W6-0025

Dear Mr. Ryan:

Enclosed please find two copies of the July 2005 Groundwater Sampling Event Memorandum for the Oconomowoc Electroplating Co. Site in Ashippun, Wisconsin for your review. These copies follow the electronic file submitted to you on November 10, 2005.

If you have any questions, please feel free to call me at 414-847-0386.

Sincerely,

CH2M HILL

Jeff Danko
Site Manager

Enclosures

c: Stephen Nathan, PO/U.S. EPA, Region 5 (w/o enclosure)
Dave Alberts, CO/U.S. EPA, Region 5 (w/o enclosure)
Edward Lynch/WDNR, Madison
Ike Johnson, PM/CH2M HILL, Milwaukee
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Cherie Wilson, AA/CH2M HILL, Milwaukee

July 2005 Groundwater Sampling Event
Oconomowoc Electroplating Site
WA No. 236-RALR-05M8/Contract No. 68-W6-0025

TO: William Ryan/USEPA Region 5 WAM

FROM: Jeff Danko
Cindi Cruciani

DATE: November 8, 2005

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1 July 2005 and October 2004 Analytical results summary by well

2 Measured Groundwater Elevations—July 2005

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1 Site Map and Monitoring Locations

Attachment

A Data Validation Memorandum—July 2005 Data

Introduction

The Oconomowoc Electroplating Company (OEC) site is currently undergoing groundwater monitoring in accordance with the *Groundwater Management Plan* (GMP) prepared by CH2M HILL for the site, dated March 2005. The 10-acre study area comprises the former 4-acre OEC site (bounded by Elm, Oak, and Eva Streets, and Town of Ashippun buildings) located at 2572 Oak Street in Ashippun, Wisconsin, and 6 acres of a wet, low-lying area located adjacent to the southwest portion of the former site (Figure 1). This low-lying area is referred to in historical and recent project plans as a wetland area.

Details on historical site activities, previous remedial actions, and previous groundwater analytical results are fully described in the GMP. This memorandum documents the procedures used and provides the results for the quarterly groundwater sampling performed from July 11 to 14, 2005, that included regulatory compliance and natural attenuation (NA) sampling of 22 groundwater monitoring wells and 10 residential drinking water wells. Collection of 3 surface water samples for regulatory compliance and natural attenuation monitoring parameters was planned for locations coincident with three staff gages. However, the unusually dry conditions in Southeastern Wisconsin in July of 2005 resulted in the absenceof ample water at these locations from which to collect samples for analytical testing. Sampling and analysis was completed in accordance with the *Sampling and Analysis Plan* (SAP) dated October 2004. Data evaluation of analytical results and trends will be included in a future deliverable and will cover multiple data collection events.

Groundwater monitoring results both for regulatory compliance and natural attenuation monitoring are summarized in Table 1. Measured groundwater depths and resultant groundwater elevations are included in Table 2. Monitoring locations are indicated in Figure 1.

Compliance Monitoring

Compliance monitoring sample locations included 10 private water supply wells (within 250 feet of the site) and 22 groundwater monitoring wells. Groundwater samples collected for regulatory compliance testing were analyzed for volatile organic compounds (VOCs) using method SW 846 8260. An offsite laboratory subcontracted by CH2M HILL analyzed the groundwater compliance samples for VOCs using the appropriate analytical methods to reach the project-specific analytical requirements. The analytical results were then validated by the U.S. Environmental Protection Agency (USEPA).

Natural Attenuation

Groundwater samples were collected from 12 monitoring wells for evaluation of NA parameters. Surface water samples were not collected because of dry conditions as described above. Samples collected from the locations selected for NA evaluation were analyzed for the following parameters: nitrate, dissolved manganese, total and dissolved iron, sulfate, sulfide, methane, ethane, ethane, chloride, alkalinity; and soluble organic carbon; VOCs; and field parameters. Field parameters obtained using in- field meters included: water level, temperature, pH, specific conductance, dissolved oxygen, and oxidation reduction potential. Because NA data are being collected to evaluate the effectiveness of natural processes to remediate the site and, thus, serve as engineering data, an offsite laboratory subcontracted by CH2M HILL analyzed the groundwater samples using the appropriate analytical methods to reach the project-specific analytical requirements.

For NA monitoring locations that correspond to compliance sample locations, VOC analysis was also performed in accordance with the methods specified for compliance monitoring.

Sampling Approach

Monitoring Well and Piezometer Sampling

Water levels were measured and recorded for all accessible groundwater monitoring wells, drive point piezometers, and staff gauges during the first day of the sampling event. The measured water levels and well depths (described in *FOP No. 2 – Groundwater Level Measurements)* were used to calculate a purge volume and to assess the thickness of solids deposited at the bottom of the well screen. Resultant groundwater elevations are shown in Table 2. Wells were purged and sampled as described in *FOP No. 1 – Low-Flow Groundwater Sampling Procedures*. Groundwater field parameters were monitored with a multimeter and flow-through cells during well purging. The wells were purged continuously until monitored field parameters stabilized within the limits specified in *FOP No. 1 – Low-Flow Groundwater Sampling*. Procedures for field filtering all groundwater samples were followed per *FOP No. 5 – Field Filtering Samples*. Non-dedicated sampling equipment was decontaminated between locations using *FOP No. 6 – Field Sampling Equipment Decontamination*. Samples were collected immediately following the stabilization of groundwater field parameters. The samples were processed, packaged, and shipped on the day of collection.

Private Well Purging and Sampling

All property owners were notified of the need to access their property before sampling of private water supply wells commenced. Notification included a letter issued to the owner at least 1 month before sampling. This letter detailed the preferred sampling dates and asked for permission to utilize the outdoor faucet/spigot closest to the wellhead for sampling. The notification letter was followed by a phone call, placed at least 1 week before sampling, requesting confirmation of permission to access the owner's property and to utilize their sampling point.

The specific equipment used and detailed procedures for private water supply well sampling are presented in *FOP No. 10 – Private Residential Well Groundwater Sampling Procedures*. Private water supply wells were sampled only after completely opening the tap for 15 minutes and after any holding or storage tanks were drained. An attempt was made to collect the sample at a tap nearest to the wellhead and before any water softeners or similar treatment equipment. Field parameters (pH, specific conductance, dissolved oxygen, oxygen-reduction potential, and temperature; Table 2) were collected at all private water supply well locations following well purging and before collecting groundwater samples. For any samples that required field filtering, procedures are provided in *FOP No. 5 – Field Filtering Samples*. Non-dedicated sampling equipment was decontaminated between locations using *FOP No. 6 – Field Sampling Equipment Decontamination*.

Data Management

USEPA software Forms II Lite 5.1 was used in the field to enter field sample data and create the chain-of-custody (COC) forms. The USEPA copies of the COCs were used to enter sample information into the sample tracking spreadsheet. Upon receipt of the samples, the laboratories transmitted an electronic sample receipt, which was then compared to the COC and entered into the sample tracking spreadsheet. Within 21 days of receipt of the last sample, the laboratory provided CH2M HILL with an electronic data deliverable (EDD), two hard copy data packages and a .pdf file of the data package. After receipt and completeness check, one hard copy data package was sent to USEPA for validation of the compliance sample data.

Data Validation

USEPA performed data validation on the compliance sample analytical data. The CH2M HILL project chemist performed data validation on the NA sample analytical data in a manner consistent with *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (October 1999) and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (July 2002). Data were deemed valid for use, with the exceptions noted in Attachment A, Data Validation Memorandum.

Analytical Results

Validated analytical results for July 2005 are shown side by side with October 2004 sample results in Table 1. Laboratory analytical data sheets have been placed in the project record. The October 2004, July 2005, and subsequent sample data collected in 2005 will be used to evaluate seasonable variability of groundwater flow patterns and chlorinated VOC

distributions for the study area, and to confirm trends in NA data. This evaluation will be documented in a NA Evaluation Memorandum.

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-001S		MW-004D	MW-005D	MW-012B	MW-012S		MW-012D		MW-013S	MW-013D		MW-014D		MW-015B
				Oct 04	Jul 05	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05
Field Parameters																		
Dissolved Oxygen (DO)	mg/L			1.82	28.8%	0.92	10.9%	10.2%	0.34	6.5%	0.18	7.6%	3.19	0.31	7.1%	0.45	1.24	9.7%
Oxidation Reduction Potential (ORP)	millivolts			73.5	214.6	-55.7	28.6	29.8	14.6	68.7	-81.6	-71.7	241.4	-85.7	-69.2	43.4	15.1	-43.9
pH	pH units			6.93	6.51	7.81	6.51	7.77	7.26	7.15	7.33	7.08	6.42	7.16	7.12	7.28	7.02	6.86
Specific Conductivity	mmhos/cm			0.956	0.668	0.955	2.364	1.116	1.522	1.180	1.587	1.522	0.972	2.081	1.394	0.947	0.883	0.898
Temperature	deg c			16.34	15.88	11.97	13.53	17.40	12.84	13.76	11.05	13.52	12.39	12.35	11.99	13.20	11.99	14.96
Depth to water	feet			8.56	8.24	9.78	5.05	5.69	5.47	5.69	4.39	4.80	7.02	6.12	6.38	5.88	5.64	9.34
Natural Attenuation Parameters																		
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	370	350				391	370	392	400		475	390	347	350	
Chloride (as Cl)	mg/L	125	250	65.9	24				**207**	**140**	**224**	**230**		**271**	**180**	82.9	45	
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U				0.5 U	0.5 U	0.5 U	0.5 U		2.5 U	0.5 U	0.5 U	0.5 U	
Ethene	µg/L	N/A	N/A	0.5 U	0.5 U				0.82 J	0.5 U	1.4 J	0.5 U		2.5 U	0.5 U	0.5 U	0.5 U	
Iron, total	µg/L	150	300	**281** J	**468**				**499**	**300**	**2060**	**1210**		**2180**	**983**	7 U	25.6 J	
Iron, dissolved	µg/L	150	300	14 U	25 U				19.4 J	25 U	**1010**	**993**		**2180**	**820**	14 U	25 U	
Manganese, total	µg/L	25	50		15.2					**114**		**31.5**			**48.3**		**81.6**	
Manganese, dissolved	µg/L	25	50	14.6	1.2 U				**123**	**109**	**42.5**	**29.7**		**65.5**	**45.1**	**67**	**69.2**	
Methane	µg/L	N/A	N/A	2.3 J	0.5 U				130	32	31	43		66	17	14	4.3	
Nitrogen, nitrate (as N)	mg/L	2	10	0.4 J	1				0.06 U	0.06 J	0.06 U	0.04 U		0.06 U	0.28	0.97 J	1.6	
Sulfate (as SO4)	mg/L	125	250	47.2	24				60	**220**	85.2	93		**225**	93	32.4	40	
Sulfide	mg/L	N/A	N/A	1 UJ	1 U				1 UJ	1 U	1 UJ	1 U		1 UJ	1 U	1 UJ	1 U	
Total Organic Carbon	mg/L	N/A	N/A	1.6 J	1.1 J				4.7	3.3	4.6	4.1		4.9	2.2 J	2.7 J	1.4 J	
VOCs																		
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	**66**	**74** J	25	12 J	0.18 J	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	**0.36** U	0.018 U	**0.09** U	0.018 UJ	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	**1.8** U	0.09 U	0.45 U	0.09 UJ	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.031 U	17	0.031 U	43	25	46	34	0.062 J	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	**3**	0.06 U	**7.1**	**5**	**3.9**	**1.1**	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U	0.08 U	0.4 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026** U	**0.026** R	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.52** U	**0.026** U	**0.13** U	**0.026** UJ	**0.026** U	**0.026** U	**0.026** U	**0.026** R	**0.026** U
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.46 U	0.023 U	0.12 U	0.023 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.04 U	**1.3**	0.04 U	0.04 U	**0.8** U	0.27	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	**1.2** U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,3-Dichlorobenzene	µg/L	125	1250	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	0.4 R	0.4 R	0.4 R	0.4 R	0.4 UJ	8 R	0.4 UJ	2 R	0.4 R	0.4 UJ	0.4 R	0.4 UJ	0.4 R	0.4 R
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	10 UJ	0.5 U	2.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ	0.6 U	12 UJ	0.6 U	3 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Acetone	µg/L	200	1000	1.5 UJ	1.5 R	1.5 R	1.5 R	1.5 R	1.5 UJ	30 R	1.5 UJ	7.5 R	1.5 R	1.5 UJ	1.5 R	1.5 UJ	1.5 R	1.5 R
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.085 UB	1 U	0.069 UB	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.8** U	0.04 U	**0.2** U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	**1.4** U	0.07 U	0.35 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 U	**1.2** U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ
Carbon disulfide	µg/L	200	1000	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2 U	0.1 U	0.5 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE 1
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October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-001S		MW-004D	MW-005D	MW-012B	MW-012S		MW-012D		MW-013S	MW-013D		MW-014D		MW-015B
				Oct 04	Jul 05	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05
VOCs Continued																		
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	2.2	0.06 U	0.6 J	1.2 U	0.16 J	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.1 UB	1.7	0.07 U	0.35 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.24	0.05 U	0.05 UJ	0.05 UJ
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.06 U	250	0.06 U	29	17	13	7.1	0.14 J	0.21 J	0.26	0.06 U	0.06 U	0.06 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.32 U	0.016 U	0.08 U	0.016 UJ	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	1.8 U	0.09 U	0.45 U	0.09 UJ	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Dichlorodifluoromethane	µg/L	200	1000	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.6 U	0.03 U	0.15 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
m,p-Xylene (sum of isomers)	µg/L	1000	10000	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	2.4 U	0.12 U	0.6 U	0.12 UJ	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Methyl tert-butyl ether	µg/L	12	60	0.15 J	0.05 U	0.05 U	0.22	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.28	0.05 U	0.05 U	0.05 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	2.2 UJ	0.11 UJ	0.55 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 J	1 U	0.05 U	0.25 U	0.097 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	200	1000	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U	0.08 U	0.4 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.04 U	9.7	0.04 U	16 J	16	3.2	1.6	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.3 U	0.015 U	0.075 U	0.015 UJ	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Trichloroethene	µg/L	0.5	5	0.07 J	0.03 U	0.03 U	180	0.03 U	120	100	10	3.8	0.33 J	0.03 U	0.03 U	0.03 U	0.041 J	0.03 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	3.8	0.018 U	0.38	0.36 U	3	2.4 J	0.018 UJ	0.23	0.028	0.018 U	0.018 U	0.018 U

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-015S		MW-015D		MW-016S		MW-101B	MW-102D	MW-103S		MW-103D		MW-105B	MW-105S		MW-105D	
				Oct 04	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05
Field Parameters																				
Dissolved Oxygen (DO)	mg/L			8.47	93.9%	0.43	0.79	3.33	5.6%	0.58	8.1%	0.38	0.96	0.35	6.5%	0.86	0.19	11.9%	6.09	1.04
Oxidation Reduction Potential (ORP)	millivolts			72.0	28.1	60.5	258.2	-157.8	75.1	-35.7	23.6	197.7	205.3	24.8	98.2	-51.8	-32.8	-50.1	-56.3	-15.3
pH	pH units			7.46	7.24	7.12	6.27	7.03	6.69	7.02	6.88	6.95	6.44	7.12	7.04	6.45	7.31	7.02	7.34	5.86
Specific Conductivity	mmhos/cm			0.480	0.621	1.832	1.447	3.293	3.459	1.167	1.470	1.249	1.462	1.565	1.373	1.105	1.620	1.714	1.299	1.411
Temperature	deg c			15.83	14.97	14.20	13.95	12.87	15.14	13.23	13.79	16.17	14.39	14.35	13.41	12.90	12.98	12.71	12.10	11.08
Depth to water	feet			10.43	10.21	11.31	11.62	4.17	4.93	7.14	9.83	7.60	7.56	7.73	7.67	5.08	5.16	5.55	5.01	5.51
Natural Attenuation Parameters																				
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	229	300	422	370	930	840			445	450	452	410		367	370	362	400
Chloride (as Cl)	mg/L	125	250	9.86 J	32	**291**	**200**	**155**	**170**			**218**	**160**	**200**	**170**		**281**	**290**	**159**	**200**
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	1.8 J	1.3 J			0.5 U	0.5 U	0.6 J	0.5 U		1.4 J	0.5 U	0.62 J	0.5 U
Ethene	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	12	4.1			0.5 U	0.5 U	0.96 J	0.5 U		0.61 J	0.5 U	0.8 J	0.5 U
Iron, total	µg/L	150	300	**224** J	59.7 J	7.2 J	25 UJ	**6450**	**8260**			**154**	69.9 J	29.6	25 U		**384**	**930**	**845** J	**1090**
Iron, dissolved	µg/L	150	300	14 U	25 U	14 U	25 U	**5830**	**7420**			139	43.6 J	14 U	25 U		**338**	**557**	**863** J	**984**
Manganese, total	µg/L	25	50		8.2		**276**		**78.1**				**395**		**284**			**241**		**69.5**
Manganese, dissolved	µg/L	25	50	9.6	1.2 U	**314**	**250**	**81.5**	**71.2**			**402**	**375**	**283**	**272**		**227**	**229**	**67.5**	**66.4**
Methane	µg/L	N/A	N/A	1 J	0.5 U	4.6 J	1.4 J	680	530			7.5 J	62	72	73		110	42	1900	170
Nitrogen, nitrate (as N)	mg/L	2	10	**4.65** J	0.8	0.16 J	0.18	0.06 U	0.052 J			0.19 J	0.28	0.06 UJ	0.04 U		0.06 UJ	0.04 U	0.06 UJ	0.05 J
Sulfate (as SO4)	mg/L	125	250	13.1 J	15	43.8	43	**941** J	**1000**			**128**	74	60	47		77.5	68	75.9	58
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 UJ	1 U	1 UJ	1 U			1 UJ	1 U	1 UJ	1 U		1 UJ	1.3 J	1 UJ	1 J
Total Organic Carbon	mg/L	N/A	N/A	1.5 J	2 J	3.3	2.5 J	5	3.9			6.6	6.1	5.3	3.7		3.5	2.6 J	4.1	3.7
VOCs																				
1,1,1-Trichloroethane	µg/L	40	200	1.1	0.39	0.07 U	0.35 U	0.07 U	1.8 U	0.07 U	0.07 UJ	**140**	**150**	**480**	**450** J	0.07 UJ	0.64 J	0.45	0.5 J	1.4 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	**0.09** U	0.018 U	**0.45** U	0.018 U	0.018 UJ	0.018 U	**0.9** U	0.018 U	**9** U	0.018 UJ	0.018 U	0.018 U	0.018 U	**0.36** U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.45 U	0.09 U	**2.3** U	0.09 U	0.09 UJ	0.09 U	**4.5** U	**0.7**	**45** U	0.09 U	0.09 U	0.09 U	0.09 U	**1.8** U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.13 J	0.16 U	0.067 J	0.78 U	0.031 U	0.031 UJ	7.6	16 J	**120**	**89** J	0.095 J	4.8	6.5	16	15 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.3	0.3 U	0.12 J	**1.5** U	0.06 U	0.06 UJ	**3.5**	**6.9** J	**80**	**85** J	0.06 U	**0.94**	0.52	**2.6**	**2.4** U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.4 U	0.08 U	2 U	0.08 U	0.08 U	0.08 U	4 UJ	0.08 U	40 UJ	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	1.5 U	0.06 U	0.06 U	0.06 U	3 UJ	0.06 U	**30** UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026** U	**0.026** U	**0.026** U	0.13 U	**0.026** U	**0.65** U	**0.026** U	**0.026** U	**0.026** U	1.3 R	**0.026** U	**13** R	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.52** U
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.12 U	0.023 U	**0.58** U	0.023 U	0.023 U	0.023 U	**1.2** U	0.023 U	**12** U	0.023 UJ	0.023 U	0.023 U	0.023 U	0.46 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 U	0.04 U	2 U	0.04 U	20 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.16 J	0.2 U	**0.54**	1 U	0.04 U	0.071 J	0.26	2 U	**0.75**	**20** U	0.04 UJ	0.04 U	0.04 U	0.17 J	**0.8** U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	**1.5** U	0.06 U	0.06 UJ	0.06 U	**3** U	0.06 U	**30** U	0.06 UJ	0.06 U	0.06 U	0.06 U	**1.2** U
1,3-Dichlorobenzene	µg/L	125	1250	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 U	0.04 U	2 U	0.04 U	20 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 U	0.05 U	2.5 U	0.05 U	**25** U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	0.4 R	0.4 UJ	2 R	0.4 UJ	10 R	0.4 R	0.4 R	0.4 UJ	20 R	0.4 UJ	200 R	0.4 R	0.4 UJ	0.4 R	0.4 UJ	8 R
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	2.5 U	0.5 U	13 U	0.5 U	0.5 UJ	0.5 U	25 U	0.5 U	250 U	0.5 UJ	0.5 U	0.5 U	0.5 U	10 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 U	3 U	0.6 U	15 U	0.6 U	0.6 UJ	0.6 U	30 U	0.6 U	300 U	0.6 UJ	0.6 U	0.6 U	0.6 U	12 U
Acetone	µg/L	200	1000	1.5 UJ	1.5 R	1.5 UJ	7.5 R	1.5 UJ	38 R	1.5 R	1.5 R	1.5 UJ	75 R	1.5 UJ	**750** R	1.5 R	1.5 UJ	1.5 R	1.5 UJ	30 R
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.11 UB	0.25 U	0.05 U	**1.3** U	0.05 U	0.05 U	0.096 UB	**2.5** U	0.18 UB	**25** U	0.05 U	0.056 UB	0.05 U	0.05 U	1 U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 U	0.05 U	2.5 U	0.05 U	25 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	**0.2** U	0.04 U	1.1	0.04 U	0.04 UJ	0.04 U	2 U	0.04 U	**34** J	0.04 U	0.04 U	0.04 U	0.04 U	**0.8** U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.35 U	0.07 U	**1.8** UJ	0.07 U	0.07 U	0.07 U	**3.5** UJ	0.07 U	**35** UJ	0.07 UJ	0.07 U	0.07 UJ	0.07 U	**1.4** UJ
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.06 U	0.3 UJ	0.06 U	**1.5** U	0.06 UJ	0.06 UJ	0.06 U	**3** UJ	0.06 U	**30** UJ	0.06 UJ	0.06 U	0.06 U	0.06 U	**1.2** U
Carbon disulfide	µg/L	200	1000	0.1 U	0.1 U	0.1 U	0.5 U	0.1 U	2.5 U	0.13 UB	0.1 U	0.1 U	5 U	0.1 U	50 U	0.12 J	0.1 U	0.1 U	0.1 U	2 U

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-015S		MW-015D		MW-016S		MW-101B	MW-102D	MW-103S		MW-103D		MW-105B	MW-105S		MW-105D	
				Oct 04	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05
VOCs Continued																				
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 UJ	0.05 U	2.5 U	0.05 U	25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	1 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	4.1	3.3	0.05 U	1.3 U	0.05 U	0.05 UJ	3.5	3 J	0.073 J	25 U	0.05 U	0.6	0.58	0.05 U	1 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	1.5 U	0.06 U	0.06 UJ	0.37 J	3 U	0.98 J	30 U	0.06 UJ	0.06 U	0.06 U	0.06 U	1.2 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.35 U	0.07 U	1.8 U	0.07 U	0.07 UJ	0.24 UB	3.5 U	1.2 UB	35 U	0.07 U	0.07 U	0.07 U	0.07 U	1.4 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 UJ	0.05 U	2.5 U	0.05 U	25 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	6	2.5	190	330	0.18	12 J	21	47 J	360	280 J	0.18 J	58	69	56	29
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.08 U	0.016 U	0.4 U	0.016 U	0.016 UJ	0.016 U	0.8 U	0.016 U	8 U	0.016 U	0.016 U	0.016 U	0.016 U	0.32 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.45 U	0.09 U	2.3 U	0.09 U	0.09 UJ	0.09 U	4.5 U	0.09 U	45 U	0.09 U	0.09 U	0.09 U	0.09 U	1.8 U
Dichlorodifluoromethane	µg/L	200	1000	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	1.5 U	0.06 U	0.06 U	0.06 U	3 UJ	0.06 U	30 UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 UJ	0.05 U	2.5 U	0.05 U	25 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.15 U	0.03 U	0.75 U	0.03 U	0.03 U	0.03 U	1.5 U	0.03 U	15 U	0.03 U	0.03 U	0.03 U	0.03 U	0.6 U
m,p-Xylene (sum of isomers)	µg/L	1000	10000	0.12 U	0.12 U	0.12 U	0.6 U	0.12 U	3 U	0.12 U	0.12 U	0.12 U	6 U	0.12 U	60 U	0.12 U	0.12 U	0.12 U	0.12 U	2.4 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.69 J	0.25 U	0.05 U	1.3 U	0.29	0.45 J	0.05 U	2.5 U	0.05 U	25 U	0.05 U	0.17 J	0.33	0.05 U	1 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.11 UJ	0.55 UJ	0.11 UJ	2.8 UJ	0.11 UJ	0.11 UJ	0.11 UJ	5.5 UJ	0.11 UJ	55 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	2.2 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 U	0.04 U	2 U	0.04 U	20 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 UJ	0.04 U	2 U	0.04 U	20 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 UJ	1.4	2.5 U	0.05 U	25 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
Toluene	µg/L	200	1000	0.08 U	0.08 U	0.08 U	0.4 U	0.08 U	2 U	0.08 U	0.08 UJ	0.08 U	4 U	0.08 U	40 U	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.6 J	0.3	5	6.2	0.04 U	0.6 J	0.35 J	2 U	5.5	20 U	0.04 U	0.71 J	1.6	2.6	1
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.075 U	0.015 U	0.38 U	0.015 U	0.015 UJ	0.015 U	0.75 U	0.015 U	7.5 U	0.015 U	0.015 U	0.015 U	0.015 U	0.3 UJ
Trichloroethene	µg/L	0.5	5	0.15 J	0.03 U	41	30	0.03 U	0.75 J	0.03 U	0.76 J	200	230	2200	2000	0.09 J	63	76	240	130
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.074	0.09 U	85	58	0.018 U	0.018 U	0.4	0.9 U	2.9	9 U	0.059	2.3	2.3	1.5	1.1

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-106S	MW-106D	PW-01	PW-02	PW-03	PW-04	PW-05	PW-07	PW-08	PW-09	PW-10	PW-11
				Jul 05	Jul 05	Jul 05	Jul 05	Jul 05	Jul 05	Jul 05	Jul 05	Jul 05	Jul 05	Jul 05	Jul 05
Field Parameters															
Dissolved Oxygen (DO)	mg/L			10.1%	0.97	4.5	2.94	5.51	9.2	4.69	2.79	3.41	6.27	6.22	3.29
Oxidation Reduction Potential (ORP)	millivolts			23.1	-66.7	-80.8	-77.2	-101.8	-82.7	-62.1	-90	-70.9	-82.6	-32.6	-74.4
pH	pH units			6.79	7.09	6.8	6.77	7.02	7.28	7.16	6.92	6.73	6.97	6.76	6.62
Specific Conductivity	mmhos/cm			0.960	1.231	0.674	0.64	0.985	1.033	0.962	1.237	1.243	1.101	1.069	0.989
Temperature	deg c			11.81	10.94	14.36	15.66	12.89	13.75	12.98	14.09	13.79	14.33	15.61	13.63
Depth to water	feet			5.80	5.40										
Natural Attenuation Parameters															
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A												
Chloride (as Cl)	mg/L	125	250												
Ethane	µg/L	N/A	N/A												
Ethene	µg/L	N/A	N/A												
Iron, total	µg/L	150	300												
Iron, dissolved	µg/L	150	300												
Manganese, total	µg/L	25	50												
Manganese, dissolved	µg/L	25	50												
Methane	µg/L	N/A	N/A												
Nitrogen, nitrate (as N)	mg/L	2	10												
Sulfate (as SO4)	mg/L	125	250												
Sulfide	mg/L	N/A	N/A												
Total Organic Carbon	mg/L	N/A	N/A												
VOCs															
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.047	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.16 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,3-Dichlorobenzene	µg/L	125	1250	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Acetone	µg/L	200	1000	1.5 R	3.4 J	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Bromomethane	µg/L	1	10	0.06 UJ	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.06 U
Carbon disulfide	µg/L	200	1000	0.1 U	0.1 U	0.1 U	0.21 U	0.1 U	0.13	0.11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-106S Jul 05	MW-106D Jul 05	PW-01 Jul 05	PW-02 Jul 05	PW-03 Jul 05	PW-04 Jul 05	PW-05 Jul 05	PW-07 Jul 05	PW-08 Jul 05	PW-09 Jul 05	PW-10 Jul 05	PW-11 Jul 05
VOCs Continued															
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.18	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 UJ	0.05 U	0.05 U	0.064 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.06 U	0.06 U	0.58	0.97	1.4	2.3	1.3	4.4	0.06 U	0.41
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Dichlorodifluoromethane	µg/L	200	1000	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.19	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
m,p-Xylene (sum of isomers)	µg/L	1000	10000	0.12 U	0.12 U	0.12 U	1.3	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.05 U	0.05 U	0.64	0.6	1	0.57	0.6	0.74	0.13 J	0.74
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	1.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	200	1000	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.075	0.12	0.19	0.078	0.38	0.04 U	0.043
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Trichloroethene	µg/L	0.5	5	0.03 U	0.03 U	0.03 U	0.03 U	0.42	0.03 U	0.11	0.03 U	0.17	0.064	0.03 U	0.03 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	**0.042** J	0.018 U	0.05 J	0.018 U	0.018 U

J indicates that the value was between the method detection limit and the limit of quantitation and, therefore, is estimated.
U indicates that the constituent was not detected above the method detection limit.
UJ indicates that the constituent was not detected above the estimated method detection limit.
R indicates that the initial calibration report associated with this SDG contained relative response factors (RRFs) lower than 0.05 for acetone, 2-Butanone and 1,2-dibromo-3-chloropropane. Non-detected concentrations were qualified and flagged "R" as rejected.
UB indicates that the constituent is considered to be below the detection limit listed due to blank contamination.
Bolded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Preventative Action Limit (PAL).
Shaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

TABLE 2
Groundwater Elevations
Oconomowoc Electroplating

Well ID	Top of Casing Elevation (ftamsl)	Water Level Depth July 11, 2005	Groundwater Elevation July 11, 2005
MW-1S	853.42	8.24	845.18
MW-1D	853.14	7.74	845.40
MW-2D	852.36	7.28	845.08
MW-3S	853.39	dry	dry
MW-3D	853.51	NM	well casing compromised
MW-4S	854.58	9.63	844.95
MW-4D	852.08	9.78	842.30
MW-5	848.35	NM	Likely compro-mised, outer casing visibly damaged
MW-5D	847.28	5.05	842.23
MW-9S	849.30	7.07	842.23
MW-12S	849.17	5.69	843.48
MW-12D	848.31	4.80	843.51
MW-12B	849.40	5.69	843.71
MW-13S	850.91	7.02	843.89
MW-13D	850.02	6.38	843.64
MW-14D	850.58	5.64	844.94
MW-15S	854.68	10.21	844.47
MW-15D	855.30	11.62	843.68
MW-15B	854.35	9.34	845.01
MW-16S	847.90	4.93	842.97
MW-101S	851.24	6.30	844.94
MW-101B	851.08	7.14	843.94
MW-102S	853.65	9.30	844.35
MW-102D	853.70	9.83	843.87
MW-103S	851.84	7.56	844.28
MW-103D	851.97	7.67	844.30
MW-104S	850.56	6.39	844.17
MW-104D	850.57	6.45	844.12
MW-105S	849.01	5.55	843.46
MW-105D	848.90	5.51	843.39
MW-105B	848.90	5.08	843.82
MW-106S	848.92	5.80	843.12
MW-106D	849.01	5.40	843.61

Note: NM = Not Measured

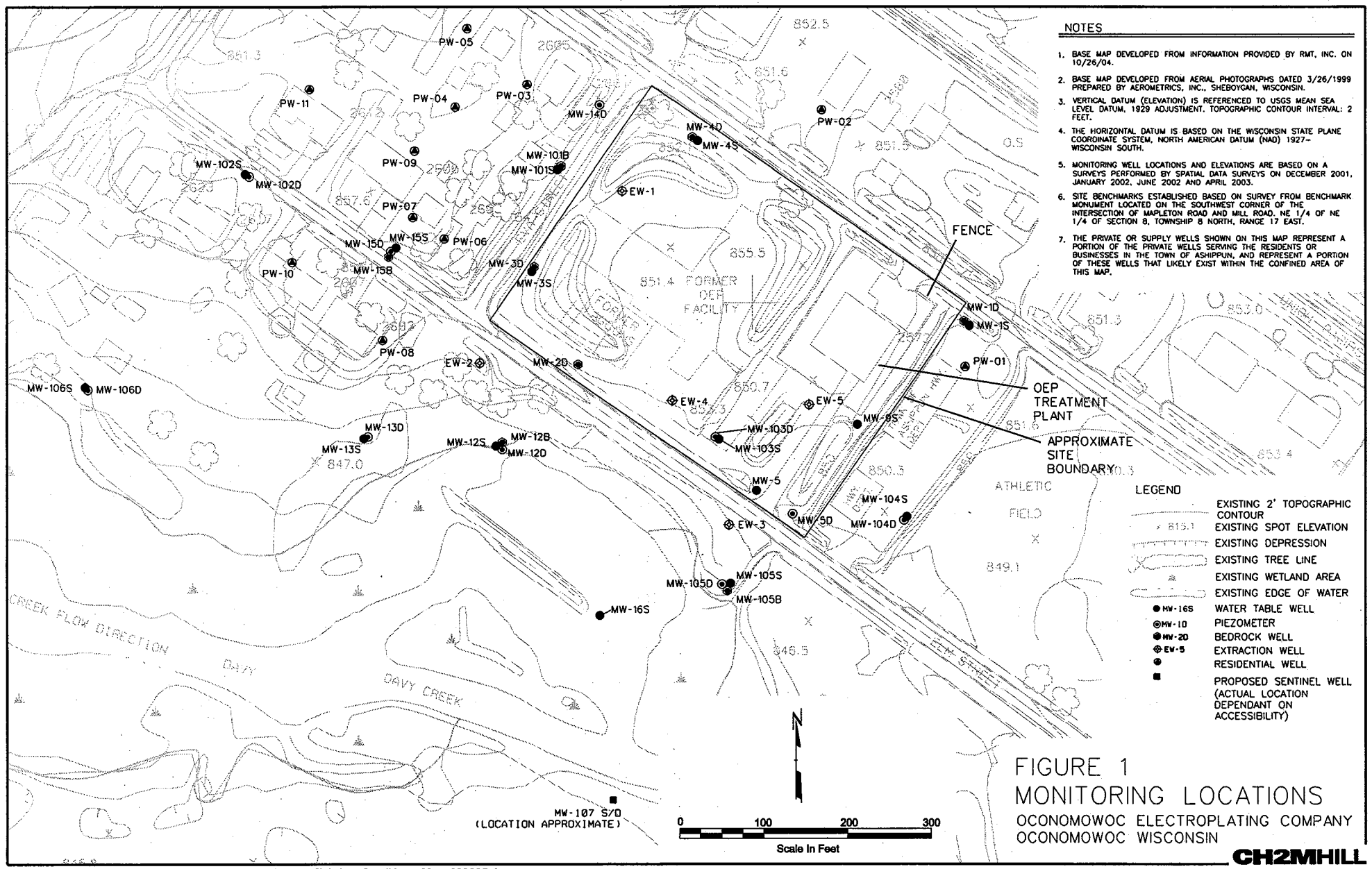

FIGURE 1
MONITORING LOCATIONS
OCONOMOWOC ELECTROPLATING COMPANY
OCONOMOWOC WISCONSIN

CH2MHILL

I:\OconomowocElectropla\317734\RawFiles_RMT\Figure1_Existing_Conditions_Map_022805.dgn 07-NOV-2005 11:24:54

Oconomowoc Electroplating - Data Review SDG 48108

PREPARED FOR: Jeff Danko/CH2M HILL

PREPARED BY: Heather Hodach, Steve Paukner/CH2M HILL

DATE: November 8, 2005

This memorandum presents a review of the results within Sample Delivery Group (SDG) 48108 from the Oconomowoc Electroplating sampling event conducted July 11-14, 2005. Compliance and Natural Attenuation (NA) samples were collected, analyzed, and validated. All of the samples were analyzed by CT Laboratories of Baraboo, Wisconsin. The NA data were reviewed by CH2M HILL and the Compliance data were reviewed by a USEPA contractor (see Attachment A1) to assess its' accuracy, precision, and completeness using the criteria established in the *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (October 1999) and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (July 2002). Data quality control (QC) summary forms and data reports were reviewed. Data qualifiers were added when the QC data indicated a bias. These changes and comments are noted below.

Standard data qualifiers were used as a means of classifying the data as to their conformance to QC requirements. The data qualifiers are defined as follows:

[UJ] The component was analyzed for but not detected at a level equal to or greater than the reporting limit. This flag was used when the QC data indicated a bias in the analytical data but the direction of bias was unknown.

[J] Estimated. Used when the data indicated the presence of a component was below the stated reporting limit or when the direction of analytical bias was unknown.

[R] Rejected. The data is of insufficient quality to be deemed acceptable as reported or otherwise qualified. The analytical data was reviewed against the following QA/QC parameters:

- Completeness (were all the samples analyzed for the requested analytical parameters)
- Holding times prior to extraction and analysis
- Continuing calibration precision and accuracy
- Blank results
- Laboratory control sample (LCS) precision and accuracy
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Field duplicate precision
- Overall assessment of data

The QA/QC parameters were within acceptable control limits accept where noted below.

Volatiles

The initial calibration report associated within this SDG contained relative response factors (RRFs) lower than 0.05 for acetone, 2-Butanone and 1,2-dibromo-3-chloropropane. Detected

concentrations in samples associated with this continuing calibration report were qualified and flagged "J" while non-detected concentrations were qualified and flagged "R" as rejected. The following samples and corresponding analytes were qualified and flagged:

- 05CA40-08, 05CA40-16, 05CA40-24, 05CA40-26
  - Acetone (R)
  - 2-Butanone (R)
  - 1,2-dibromo-3-chloropropane (R)

The continuing calibration report associated with analytical run number 31245 within this SDG demonstrated percent differences (%D) below the QC limit of ± 25% for bromomethane, methylene chloride, 1,2,4-trichlorobenzene, chloromethane and dichlorodifluoromethane. Detected concentrations in samples associated with this continuing calibration report were qualified and flagged "J" while non-detected concentrations were qualified and flagged "UJ" as estimated in quantity. The following samples and corresponding analytes were qualified and flagged:

- 05CA40-08, 05CA40-16
  - bromomethane (UJ)
  - methylene chloride (UJ)
  - 1,2,4-trichlorobenzene (UJ)
  - chloromethane (UJ)
  - dichlorodifluoromethane (UJ)

The continuing calibration report associated with analytical run number 31293 within this SDG demonstrated percent differences (%D) below the QC limit of ± 25% for bromomethane, methylene chloride, bromoform, 1,2,4-trichlorobenzene, 1,2,3-trichlorobenzene and dichlorodifluoromethane. Detected concentrations in samples associated with this continuing calibration report were qualified and flagged "J" while non-detected concentrations were qualified and flagged "UJ" as estimated in quantity. The following samples and corresponding analytes were qualified and flagged:

- 05CA40-24, 05CA40-26
  - bromomethane (UJ)
  - methylene chloride (UJ)
  - bromoform (UJ)
  - 1,2,4-trichlorobenzene (UJ)
  - 1,2,3-dichlorobenzen (UJ)
  - dichlorodifluoromethane (UJ)

Total and Dissolved Metals

The laboratory duplicate for samples 05CA40-02 and 05CA40-16 demonstrated relative percent differences (%RPD) for total iron of 37% and 60% respectively, which were outside the QC criteria of ± 20%. Detected concentrations of total iron in these samples were qualified and flagged "J" while non-detected concentrations were qualified and flagged "UJ" as estimated in quantity. The following samples and corresponding analytes were qualified and flagged:

- 05CA40-02
  - total iron (UJ)

- 05CA40-16
  - total iron (J)

Field duplicate 05CA40-28, exhibited a RPD for total iron of 87.2% when compared to native sample 05CA40-26, which exceeded the QC limit of 30% for aqueous samples. The detected concentrations of the affected analytes in both the native and duplicate samples were qualified and flagged "J" as detected and estimated in quantity. Non detected concentrations were qualified and flagged "UJ". The following samples and corresponding analytes were qualified and flagged:

- 05CA40-26, 05CA40-28
  - total iron (J)

General Chemistry

All QC data were within applicable limits, therefore no further corrective action was deemed necessary or taken.

Conclusion

The rejection of the acetone, 2-Butanone and 1,2-dibromo-3-chloropropane in 4 samples was due to extremely low response factors. A response factor of less than 0.05 indicates poor response of a compound on the instrument and therefore, the laboratory cannot, with confidence, report that the related compounds are not present in the sample. Therefore, nondetect results were rejected and must be considered "unusable" by the data user.

Overall, the analytical results are acceptable as reported unless otherwise qualified herein. Therefore the validated analytical results can be used to make project decisions.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Region V CLP Data
Received for Review on: 08/17/2005

FROM: Stephen L. Ostrodka, Chief (SRT-4J)
Superfund Field Services Section

TO: Data User: CH2M Hill

We have reviewed the data for the following case:

SITE Name: Oconomowoc Electroplating (WI)

Case Number: 05CA40 SDG Number: 48108-VOC

Number and Type of Samples: 44 Water Samples

Sample Numbers: 5CA40-01, -02, -04, -06 through -08, -10 through -16, -18 through -20, -22, -24, -26, -28, -30, -31 through -33, -35, -37 through -40, -42 through -44, -46, -48 through -58

Laboratory: CTL Hrs for Review:

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SRT-4J

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Forty four (44) water samples, numbered 05CA40-01, -02, -04, -06 through -08, -10 through -16, -18 through -20, -22, -24, -26, -28, -30, -31 through -33, -35, -37 through -40, -42 through -44, -46, -48 through -58 were received by CTL for the analyses of low concentrations of VOCs according to SW-846, Method 8260B and the SAS contract. The SAS analyte list consisted of the following analytes:

Acetone	Benzene	Bromodichloromethane
Bromoform	Bromomethane	2-Butanone (MEK)
Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene
Chloroethane	Chloroform	Chloromethane
Dibromochloromethane	1,1-Dichloroethane	1,2-Dichloroethane
1,1-Dichloroethene	Cis-1,2-Dichloroethene	Trans-1,2-Dichloroethene
1,2-Dichloropropane	Cis-1,3-Dichloropropene	Trans-1,3-Dichloropropene
Ethylbenzene	2-Hexanone	4-Methyl-2-pentanone (MIBK)
Methylene Chloride	Styrene	1,1,2,2-Tetrachloroethane
Tetrachloroethene	Toluene	1,1,1-Trichloroethane
1,1,2-Trichloroethane	Trichloroethene	Vinyl Chloride
Xylenes		

Samples 05CA40-01, -02, -04 and -06 were collected on 07/11/2005 and received 07/12/2005. The date/time of collection or sample receipt temperature could not be ascertained for the rest of the samples because no COC or any other official documentation was provided. According to the Laboratory's own paperwork samples 05CA40-07 through -08, -10 through -16, -18 through -20, -22, -24, -26, -28, -30, -31 through -33, -35, -37 through -40,-42 through -44, -46 were collected between 07/12/2005 and 07/14/2005 and received between 07/13/2005 and 07/15/2005, while samples 05CA40-48 through -58 were collected on 07/14/2005 and received on 07/15/2005.

Case Number: 05CA40 SDG Number: 48108-VOC
Site Name: Oconomowoc Electroplating (WI) Laboratory: CTL

The EPA samples and their corresponding CTL Lab IDs are presented in the following table:

EPA ID	CTL ID	EPA ID	CTL ID	EPA ID	CTL ID
05CA40-01	327317	05CA40-22	327911	05CA40-44	328115
05CA40-02	327333	05CA40-24	327913	05CA40-46	328116
05CA40-04	327335	05CA40-26	327918	05CA40-48	328117
05CA40-06	327337	05CA40-28	327920	05CA40-49	328118
05CA40-07	327597	05CA40-30	327915	05CA40-50	328119
05CA40-08	327602	05CA40-31	327916	05CA40-51	328120
05CA40-10	327607	05CA40-32	327917	05CA40-52	328121
05CA40-11	327608	05CA40-33	327922	05CA40-53	328122
05CA40-12	327609	05CA40-35	327923	05CA40-54	328123
05CA40-13	327610	05CA40-37	327908	05CA40-55	328124
05CA40-14	327611	05CA40-38	327925	05CA40-56	328125
05CA40-15	327612	05CA40-39	328104	05CA40-57	328126
05CA40-16	327618	05CA40-40	328106	05CA40-58	328127
05CA40-18	327614	05CA40-42	328107		
05CA40-20	327909	05CA40-43	328114	05CA19	327617

Samples 05CA40-06, 05CA40-18, 05CA19, 05CA40-37, -38, and-39 are trip blank according to the laboratories "Sample Delivery Group" form provided.

Sample 05CA40-40 is listed as an Equipment Blank in the laboratories "Sample Delivery Group" form provided. Sample 05CA40-42 is listed as a Field Blank in the laboratories "Sample Delivery Group" form provided. Sample 05CA40-55 is listed as a Field Replicate of sample 05CA40-54 in the laboratories "Sample Delivery Group" form provided.

The sample IDs documented on the laboratory's "Sample Delivery Group" form indicate that sample 05CA40-11 may be a field replicate of sample 05CA40-10, 05CA40-28 may be a field replicate of 05CA40-26 and 05CA40-31 may be a field replicate of 05CA40-30.

It appears that EPA sample 05CA40-19 was mis-identified by the laboratory as sample 05CA19.

The VOA analyses were performed within the technical holding time of 14 days after sample collection; therefore, the results are acceptable.

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

1. HOLDING TIME

Forty four (44) water samples, numbered 05CA40-01, -02, -04, -06 through -08, -10 through -16, -18 through -20, -22, -24, -26, -28, -30, -31 through -33, -35, -37 through -40, -42 through -44, -46, -48 through -58 were received by CTL for the analyses of low concentrations of VOCs according to SW-846, Method 8260B and the SAS contract.

Samples 05CA40-01, -02, -04 and -06 were collected on 07/11/2005 and received 07/12/2005. The date/time of collection or sample receipt temperature could not be ascertained for the rest of the samples because no COC or any other official documentation was provided. According to the Laboratory's own paperwork samples 05CA40-07 through -08, -10 through -16, -18 through -20, -22, -24, -26, -28, -30, -31 through -33, -35, -37 through -40,-42 through -44, -46 were collected between 07/12/2005 and 07/14/2005 and received between 07/13/2005 and 07/15/2005, while samples 05CA40-48 through -58 were collected on 07/14/2005 and received on 07/15/2005.

The VOA analyses were performed within the technical holding time of 14 days after sample collection; therefore, the results are acceptable.

2. GC/MS TUNING AND GC INSTRUMENT PERFORMANCE

All GC/MS tuning complied with the mass list and ion abundance criteria for BFB, and all samples were analyzed within the twelve (12) hour periods for instrument performance checks.

3. CALIBRATION

A 7-pt initial calibration curve that included the Target compounds listed in Table 1 of the SAS was analyzed on 07/18/2005. Continuing Calibration Verification standards and samples were analyzed between 07/19/2005 and 07/26/2005. Initial and continuing calibrations of the Volatile standards were evaluated for the target compound list and outliers are recorded on the outlier forms included as part of this narrative.

4. BLANKS

In the method blank (MB 330706) analyzed on 07/19/2005, Carbon Disulfide was detected as a contamination. The concentrations of Carbon Disulfide were qualified as blank contamination in samples 05CA40-06, 05CA40-14 and 05CA40-18 because their concentrations were less than 5X the method blank concentration.

All of the other Method Blanks (MB 330709 analyzed on 07/21/2005 and MB 330712 analyzed on 07/23/2005), were free of contaminants. The volatile method blank summaries (Form IV VOA) list the samples associated with each blank.

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

4-Bromofluorobenzene, Dibromofluoromethane, 1,2-Dichloroethane-d_4, and Toluene-d_8 were used as system monitoring compounds. The recoveries of the system monitoring compounds were within the SAS limits of 75% - 135% for all samples; therefore, the results are acceptable.

6a. LABORATORY CONTROL SAMPLES

Only LCSs, Laboratory Control Samples, were analyzed. The SAS limits for the %Recoveries are 60% - 130%. The table below list the LCSs analyzed and the analytes that were out, if any, in each one of them:

LCS1 (07/19/05 08:26)	LCS2 (07/21/05 08:38)	LCS3 (07/23/05 16:32)
Bromomethane (47%)	Acetone (148%)	Chloromethane (132%)
		Vinyl Chloride (134%)
		Chloroethane (136%)
		Acetone (178%)
		1,2-Dichloroethane (149%)
		1,1,1-Trichloroethane (136%)
		Carbon Tetrachloride (138%)
		1,2-Dichloropropane (148%)
		Trans-1,3-dichloropropene (142%)
		Bromoform (136%)
		1,1,2,2-Tetrachloroethane (140%)

For the samples associated with LCS1 (samples associated with method blank 330706) the results for the listed analyte should be qualified as estimated "J" for detects and "UJ" for non-detects. For the samples associated with LCS2 (samples associated with method blank 330709) and LCS3 (samples associated with method blank 330712) positive results should be qualified as estimated "J" and non-detects are not qualified.

6b. MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Three sets of Matrix Spike samples were analyzed. The SAS limits for the %Recoveries are 60% - 130% with an RPD < 30%. The following tables list the MS/MSD analyzed and the analytes that were out in each one of them:

The %RPD was outside the SAS limits in the 05CA40-15 MS/MSD set for the following samples: Methylene Chloride (40%) and 2-Hexanone (32%). In the unspiked sample, 05CA40-15, detects for these analytes should be qualified as estimated "J" and non-detects should be qualified as estimated "UJ".

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

05CA40-15 MS	05CA40-15 MSD
Chloromethane (136%)	Chloromethane (165%)
Vinyl Chloride (135%)	Vinyl Chloride (162%)
	Chloroethane (159%)
	Methylene Chloride (140%)
Acetone (156%)	Acetone (210%)
1,1-Dichloroethane (132%)	1,1-Dichloroethene (144%)
	1,1-Dichloroethane (161%)
	Chloroform (156%)
1,2-Dichloroethane (152%)	1,2-Dichloroethane (183%)
	2-Butanone (145%)
1,1,1-Trichloroethane (134%)	1,1,1-Trichloroethane (161%)
Carbon Tetrachloride (134%)	Carbon Tetrachloride (166%)
	Bromodichloromethane (136%)
1,2-Dichloropropane (136%)	1,2-Dichloropropane (169%)
	Cis-1,3-Dichloropropene (140%)
	Trichloroethene (156%)
	Dibromochloromethane (131%)
	1,1,2-Trichloroethane (162%)
	Benzene (148%)
	Trans-1,3-Dichloropropene (144%)
	4-Methyl-2-pentanone (138%)
	2-Hexanone (150%)
	Tetrachloroethene (144%)
1,1,2,2-Tetrachloroethane (146%)	1,1,2,2-Tetrachloroethane (172%)
	Toluene (138%)
	Chlorobenzene (140%)
	Ethylbenzene (132%)
Styrene (15%)	Styrene (17%)
Cis-1,2-Dichloroethene (155%)	Cis-1,2-Dichloroethene (290%)
	Trans-1,2-Dichloroethene (142%)

05CA40-16 MS	05CA40-16 MSD
Chloromethane (144%)	Chloromethane (135%)
Vinyl Chloride (134%)	Vinyl Chloride (132%)
	Chloroethane (132%)
Acetone (132%)	Acetone (153%)
1,2-Dichloroethane (134%)	1,2-Dichloroethane (141%)
1,1,1-Trichloroethane (133%)	
Carbon Tetrachloride (136%)	Carbon Tetrachloride (134%)
	1,2-Dichloropropane (135%)

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1,1,2,2-Tetrachloroethane (170%)	1,1,2,2-Tetrachloroethane (152%)

The %RPD was outside the SAS limits in the 05CA40-32 MS/MSD set for the following samples: Methylene Chloride (51%). In the unspiked sample, 05CA40-15, detects for these analytes should be qualified as estimated "J" and non-detects should be qualified as estimated "UJ".

05CA40-32 MS	05CA40-32 MSD
Chloroethane (134%)	None Out
Acetone (156%)	
1,2-Dichloroethane (147%)	
1,1,1-Trichloroethane (136%)	
Carbon Tetrachloride (136%)	
1,2-Dichloropropane (136%)	
1,1,2,2-Tetrachloroethane (155%)	

For the analytes listed in the above tables, in the unspiked sample, detects should be qualified as estimated "J" and non-detects results are not affected.

7. FIELD BLANK AND FIELD DUPLICATE

Samples 05CA40-06, 05CA40-18, 05CA19, 05CA40-37, -38, and-39 are trip blank according to the laboratories "Sample Delivery Group" form provided. Methylene Chloride was detected in sample 04CA40-37 (0.32µg/L) and 04CA40-38 (0.32µg/L). Acetone was detected in sample 04CA40-39 (1.7µg/L).

Sample 05CA40-40 is listed as an Equipment Blank in the laboratories "Sample Delivery Group" form provided. No compounds of interest were detected in this sample.

Sample 05CA40-42 is listed as a Field Blank in the laboratories "Sample Delivery Group" form provided. No compounds of interest were detected in this sample.

Sample 05CA40-55 is listed as a Field Replicate of sample 05CA40-54 in the laboratories "Sample Delivery Group" form provided. No analytes of interest were detected in sample 05CA40-54. 1,1-Dichloroethane (0.047µg/L) and 1,2-Dichloroethane (0.16µg/L) were detected in sample 05CA40-55.

The sample IDs documented on the laboratory's "Sample Delivery Group" form indicate that sample 05CA40-11 may be a field replicate of sample 05CA40-10, 05CA40-28 may be a field replicate of 05CA40-26 and 05CA40-31 may be a field replicate of 05CA40-30.

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

	05CA40-10	05CA40-11	05CA40-26	05CA40-28	05CA40-30	05CA40-31
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Vinyl Chloride	3.8	3.6		0.54		
Chloroethane	2.2	2.1		0.44		
Acetone		1.7		3.6		
1,1-Dichloroethene	3.0	2.9	6.9	6.4	0.062	0.063
Chloroform				0.33		
1,2-Dichloroethane	1.3	1.3		0.34		
1,1-Dichloroethane	17	17	16	16		
1,1,1-Trichloroethane			150	150	0.18	0.19
Trichloroethene	180	190	230	220	0.33	0.39
Benzene				0.23		
Tetrachloroethene				1.4	0.097	0.077
Chlorobenzene			3.0	3.6		
Cis-1,2-Dichloroethene	250	25	47	40	0.14	0.11
Trans-1,2-Dichloroethene	9.7	9.3		1.5		

8. INTERNAL STANDARDS

Fluorobenzene, Chlorobenzene-d5 and 1,4-Dichlorobenzene-d4 were used as internal standards. With the exception of sample 04CA40-30, the internal standards' retention times and area counts for the samples, MB and LCS samples were within the QC limits; therefore, the results are acceptable. In sample 04CA40-30, the area counts for all of the internal standards were low. In this sample, positive results should be qualified as estimated "J" and non-detects should be qualified as estimated "UJ".

9. COMPOUND IDENTIFICATION

After reviewing the mass spectra and chromatograms it appears that all VOA compounds were properly identified.

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

The results for the TCLs were properly quantitated. The reporting limits met the SAS reporting limit; therefore, the results are acceptable.

All samples were waters and some required dilutions. All VOAs target CRQLs were properly reported. All target compound quantitations were properly reported.

11. SYSTEM PERFORMANCE

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

GC/MS baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

It appears that EPA sample 05CA40-19 was mis-identified by the laboratory as sample 05CA19.

SAS contract misidentifies 1,1-Dichloroethene as 1,2-Dichloroethene.

Condition 6 of the SAS contract requires that analytical results be submitted within 21 days of receipt of samples. The Laboratory Case Narrative was dated 07/27/2005 which was within the 21-day turnaround time.

The lab received the samples between 07/12/2005 and 07/15/05 according to the Laboratory's Case Narrative. The samples were analyzed for the analytes listed in the SAS between 07/20/2005 and 07/26/2005. The VOA analyses were performed within the technical holding time of 14 days after sample collection; therefore, the results are acceptable.

The samples were analyzed according to SW-846, Method 8260B complying with the SAS contract.

The Tuning Performance Summary, Internal Standard Summary, Volatile Method Blank Summary were reported on standard CLP Form complying with Condition 9 of the SAS contract. The remaining forms were reported according to SW-846, Method 8260B protocol.

All original sample tags, airbill, Chain-of-Custody SAS packing lists, etc. should have been submitted directly to Ch2mHill as indicated in Condition 10 of the SAS contract. Photocopies of the sample tags and airbill were included with this data package.

No copy of the laboratory's most recent MDL study was found with the data package.

All samples not listed in the following pages contained no analytes of interest.

05CA40-02	Trichloroethene @ 30 µg/L Chlorobenzene @ 3.3 µg/L Cis-1,2-Dichloroethene @ 2.5 µg/L Trans-1,2-Dichloroethene @ 0.30 µg/L
05CA40-04	1,1,1-Trichloroethane @ 0.39 µg/L

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

05CA40-10	Vinyl Chloride @ 3.8 µg/L Chloroethane @ 2.2 µg/L 1,1-Dichloroethene @ 3.0 µg/L 1,2-Dichloroethane @ 1.3 µg/L 1,1-Dichloroethane @ 17 µg/L Trichloroethene @ 180 µg/L Cis-1,2-Dichloroethene @ 250 µg/L Trans-1,2-Dichloroethene @ 9.7 µg/L
05CA40-11	Vinyl Chloride @ 3.6 µg/L Chloroethane @ 2.1 µg/L Acetone @ 1.7 µg/L 1,1-Dichloroethene @ 2.9 µg/L 1,2-Dichloroethane @ 1.3 µg/L 1,1-Dichloroethane @ 17 µg/L Trichloroethene @ 190 µg/L Cis-1,2-Dichloroethene @ 250 µg/L Trans-1,2-Dichloroethene @ 9.3 µg/L
05CA40-12	Acetone @ 3.4 µg/L
05CA40-14	Cis-1,2-Dichloroethene @ 0.18 µg/L
05CA40-15	1,2-Dichloroethane @ 0.071 µg/L Trichloroethene @ 0.76 µg/L Trans-1,2-Dichloroethene @ 0.60 µg/L Cis-1,2-Dichloroethene @ 12 µg/L
05CA40-16	Trichloroethene @ 0.041 µg/L
05CA40-20	Vinyl Chloride @ 2.3 µg/L 1,1-Dichloroethene @ 0.52 µg/L 1,1-Dichloroethane @ 6.5 µg/L 1,1,1-Trichloroethane @ 0.45 µg/L Chlorobenzene @ 0.58 µg/L Trans-1,2-Dichloroethene @ 1.6 µg/L Trichloroethene @ 76 µg/L Cis-1,2-Dichloroethene @ 69 µg/L
05CA40-22	Chloromethane @ 0.24 µg/L Vinyl Chloride @ 0.28 µg/L Cis-1,2-Dichloroethene @ 0.26 µg/L

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)
SDG Number: 48108-VOC
Laboratory: CTL

05CA40-24	1,1-Dichloroethene @ 85 µg/L 1,1-Dichloroethane @ 89 µg/L 1,1,1-Trichloroethane @ 450 µg/L Bromodichloromethane @ 34 µg/L Trichloroethene @ 2000 µg/L Cis-1,2-Dichloroethene @ 280 µg/L
05CA40-26	1,1-Dichloroethene @ 6.9 µg/L 1,1-Dichloroethane @ 16 µg/L 1,1,1-Trichloroethane @ 150 µg/L Trichloroethene @ 230 µg/L Chlorobenzene @ 3.0 µg/L Cis-1,2-Dichloroethene @ 47 µg/L
05CA40-28	Vinyl Chloride @ 0.54 µg/L Chloroethane @ 0.44 µg/L Acetone @ 3.6 µg/L 1,1-Dichloroethene @ 6.4 µg/L Chloroform @ 0.33 µg/L 1,2-Dichloroethane @ 0.34 µg/L Benzene @ 0.23 µg/L Tetrachloroethene @ 1.4 µg/L Chlorobenzene @ 3.6 µg/L Trans-1,2-Dichloroethene @ 1.5 µg/L 1,1-Dichloroethane @ 16 µg/L Cis-1,2-Dichloroethene @ 40 µg/L 1,1,1-Trichloroethane @ 150 µg/L Trichloroethene @ 220 µg/L
05CA40-30	1,1-Dichloroethene @ 0.062 µg/L 1,1,1-Trichloroethane @ 0.18 µg/L Trichloroethene @ 0.33 µg/L Tetrachloroethene @ 0.097 µg/L Cis-1,2-Dichloroethene @ 0.14 µg/L
05CA40-31	1,1-Dichloroethene @ 0.063 µg/L 1,1,1-Trichloroethane @ 0.19 µg/L Trichloroethene @ 0.39 µg/L Tetrachloroethene @ 0.077 µg/L Cis-1,2-Dichloroethene @ 0.11 µg/L

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

05CA40-32	Vinyl Chloride @ 0.059 µg/L Carbon Disulfide @ 0.12 µg/L 1,1-Dichloroethane @ 0.095 µg/L Trichloroethene @ 0.090 µg/L Cis-1,2-Dichloroethene @ 0.18 µg/L
05CA40-33	Vinyl Chloride @ 1.1 µg/L 1,1-Dichloroethene @ 15 µg/L Trichloroethene @ 130 µg/L Cis-1,2-Dichloroethene @ 29 µg/L Trans-1,2-Dichloroethene @ 1.0 µg/L
05CA40-34	Vinyl Chloride @ 58 µg/L Bromodichloromethane @ 1.1 µg/L Trichloroethene @ 0.75 µg/L Trans-1,2-Dichloroethene @ 6.2 µg/L Cis-1,2-Dichloroethene @ 330 µg/L
05CA40-37	Methylene Chloride @ 0.32 µg/L
05CA40-38	Methylene Chloride @ 0.32 µg/L
05CA40-39	Acetone @ 1.7 µg/L
05CA40-44	Vinyl Chloride @ 2.4 µg/L 1,1-Dichloroethene @ 1.1 µg/L 1,1-Dichloroethane @ 34 µg/L 1,1,1-Trichloroethane @ 12 µg/L Trichloroethene @ 3.8 µg/L Cis-1,2-Dichloroethene @ 7.1 µg/L Trans-1,2-Dichloroethene @ 1.6 µg/L
05CA40-46	1,1-Dichloroethene @ 5.0 µg/L 1,1-Dichloroethane @ 25 µg/L Chloroform @ 1.7 µg/L 1,1,1-Trichloroethane @ 74 µg/L Trichloroethene @ 100 µg/L Cis-1,2-Dichloroethene @ 17 µg/L Trans-1,2-Dichloroethene @ 16 µg/L
05CA40-48	1,1-Dichloroethane @ 0.039 µg/L 1,2-Dichloroethane @ 0.13 µg/L

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

05CA40-49	Carbon Disulfide @ 0.21 µg/L M & P-Xylene @ 1.3 µg/L Isopropylbenzene @ 0.19 µg/L O-Xylene @ 1.6 µg/L
05CA40-50	Carbon Disulfide @ 0.13 µg/L Chloroform @ 0.18 µg/L Cis-1,2-Dichloroethene @ 0.97 µg/L Trans-1,2-Dichloroethene @ 0.075 µg/L
05CA40-51	Carbon Disulfide @ 0.11 µg/L Trichloroethene @ 0.11 µg/L Cis-1,2-Dichloroethene @ 1.4 µg/L Trans-1,2-Dichloroethene @ 0.12 µg/L
05CA40-52	Vinyl Chloride @ 0.042 µg/L Cis-1,2-Dichloroethene @ 2.3 µg/L Trans-1,2-Dichloroethene @ 0.19 µg/L
05CA40-53	Vinyl Chloride @ 0.050 µg/L Trichloroethene @ 0.064 µg/L Cis-1,2-Dichloroethene @ 4.4 µg/L Trans-1,2-Dichloroethene @ 0.36 µg/L
05CA40-55	1,1-Dichloroethane @ 0.047 µg/L 1,2-Dichloroethane @ 0.16 µg/L
05CA40-56	Chloromethane @ 0.064 µg/L Trichloroethene @ 0.42 µg/L Cis-1,2-Dichloroethene @ 0.58 µg/L
05CA40-57	Trichloroethene @ 0.17 µg/L Cis-1,2-Dichloroethene @ 1.3 µg/L Trans-1,2-Dichloroethene @ 0.078 µg/L
05CA40-58	Cis-1,2-Dichloroethene @ 0.41 µg/L Trans-1,2-Dichloroethene @ 0.043 µg/L

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

Case Number: 05CA40 SDG Number: 48108-VOC
Site Name: Oconomowoc Electroplating (WI) Laboratory: CTL

Calibration Outliers
Volatile Target Analytes

Instrument: GC/MS1		Column: SPB-624								
		Initial Calibration			Cont. Calibration			Cont. Calibration		
TCL Analytes Date/Time:		15-Jul-2005 07:44			19-Jul-2005 07:47			19-Jul-2005 15:06		
	#	RRF	%RSD	Q	RF	%D	Q	RF	%D	Q
Chloromethane	0.05	0.853			0.680	20.1	J/UJ	0.702		
Bromomethane	0.05	0.368			0.185	49.7	J/UJ	0.179	51.4	J/UJ
Acetone	0.05	0.025		J/R	0.025		J/R	0.028		J/R
Methylene Chloride	0.05	1.075			0.482	55.2	J/UJ	0.513	52.3	J/UJ
2-Butanone	0.05	0.027		J/R	0.030		J/R	0.031		J/R
Carbon Tetrachloride	0.05	0.589			0.624			0.589		
4-Methyl-2-Pentanone	0.05	0.073			0.070			0.074		
2-Hexanone	0.05	0.069			0.075			0.074		
Bromoform	0.05	0.133			0.138			0.135		
Surrogate: 1,2-Dichloroethane-d_4		0.035			0.056	60.0		0.057	62.9	
Surrogate: 4-Bromofluorobenzene		1.080			2.090	45.5		2.147	49.5	
Surrogate: Dibromofluoromethane		0.336			0.503	49.7		0.527	56.8	
Surrogate: Toluene-d_8		1.019			1.596	56.6		1.650	61.9	
AFFECTED SAMPLES:					**MB1 (Lab Id.328887)**			**05CA40-02**		
					LCS1 (Lab Id. 328859)			**05CA40-04**		
%RSD ≤ CCC 30%,all other Compounds 15%					**05CA40-06**			**05CA40-07**		
					05CA40-18			**05CA40-08**		
%D ± 20%					**05CA19**					
					05CA40-01					
					05CA40-14					

– Minimum Relative Response Factor.
Q – These flags should be applied to the analytes on the sample data sheets.
J/UJ – All positive results are estimated "J" and non-detected results are estimated "UJ".
J/R – All positive results are estimated "J" and non-detected results are unusable "R".

Reviewed by: John Walton/Alion Science and Technology Corp.
Date: September 30, 2005

Case Number: 05CA40 SDG Number: 48108-VOC
Site Name: Oconomowoc Electroplating (WI) Laboratory: CTL

Calibration Outliers
Volatile Target Analytes

Instrument: GC/MS1		Column: SPB-624								
		Cont. Calibration			Cont. Calibration			Cont. Calibration		
TCL Analytes Date/Time:		20-Jul-2005 07:54			20-Jul-2005 14:40			21-Jul-2005 07:58		
	#	RF	%D	Q	RF	%D	Q	RF	%D	Q
Chloromethane	0.05	0.625	26.6	J/UJ	0.866			0.763		
Bromomethane	0.05	0.203	44.8	J/UJ	0.303			0.266	27.7	J/UJ
Acetone	0.05	0.024		J/R	0.025		J/R	0.026		J/R
Methylene Chloride	0.05	0.494	54.0	J/UJ	0.616	42.7	J/UJ	0.599	44.3	J/UJ
2-Butanone	0.05	0.030		J/R	0.032		J/R	0.030		J/R
Carbon Tetrachloride	0.05	0.639			0.619			0.673		
4-Methyl-2-Pentanone	0.05	0.065			0.080			0.064		
2-Hexanone	0.05	0.065			0.074			0.064		
Bromoform	0.05	0.131			0.149			0.122		
Surrogate: 1,2-Dichloroethane-d_4		0.059	68.6		0.051	45.7		0.049	40.0	
Surrogate: 4-Bromofluorobenzene		2.271	58.1		2.302	60.3		2.093	45.8	
Surrogate: Dibromofluoromethane		0.495	47.3		0.525	56.3		0.517	53.9	
Surrogate: Toluene-d_8		1.545	51.6		1.626	59.6		1.581	55.2	
AFFECTED SAMPLES:		**05CA40-10**			**05CA40-12**			**LCS2 (Lab Id. 329534)**		
		05CA40-11			**05CA40-01**			**MB2 (Lab Id. 329642)**		
%RSD ≤ CCC 30%,all other Compounds 15%		**05CA40-12**			**05CA40-14**			**05CA40-37**		
		05CA40-13			**05CA40-15**			**05CA40-38**		
%D ± 20%		**05CA40-15**			**05CA40-10**			**05CA40-22**		
		05CA40-16			**05CA40-11**			**05CA40-30**		
								05CA40-31		

– Minimum Relative Response Factor.
Q – These flags should be applied to the analytes on the sample data sheets.
J/UJ – All positive results are estimated "J" and non-detected results are estimated "UJ".
J/R – All positive results are estimated "J" and non-detected results are unusable "R".

Reviewed by: John Walton/Alion Science and Technology Corp.
Date: September 30, 2005

Case Number: 05CA40
Site Name: Oconomowoc Electroplating (WI)

SDG Number: 48108-VOC
Laboratory: CTL

Calibration Outliers
Volatile Target Analytes

Instrument: GC/MS1		Column: SPB-624								
		Cont. Calibration			Cont. Calibration			Cont. Calibration		
TCL Analytes Date/Time:		22-Jul-2005 08:06			22-Jul-2005 15:59			23-Jul-2005 15:52		
	#	RF	%D	Q	RF	%D	Q	RF	%D	Q
Chloromethane	0.05	0.876			0.768			0.866		
Bromomethane	0.05	0.361			0.350			0.355		
Acetone	0.05	0.021		J/R	0.026		J/R	0.034	36.0	J/R
Methylene Chloride	0.05	0.588	45.3	J/UJ	0.498	53.7	J/UJ	0.538	50.0	J/UJ
2-Butanone	0.05	0.029		J/R	0.029		J/R	0.039	44.4	J/R
Carbon Tetrachloride	0.05	0.621			0.642			0.695		
4-Methyl-2-Pentanone	0.05	0.082			0.069			0.090	23.3	J/UJ
2-Hexanone	0.05	0.066			0.067			0.089	29.0	J/UJ
Bromoform	0.05	0.179	34.6	J/UJ	0.139			0.138		
Surrogate: 1,2-Dichloroethane-d_4		0.056	60.0		0.060	71.4		0.057	62.9	
Surrogate: 4-Bromofluorobenzene		2.155	50.1		2.120	47.6		2.236	55.7	
Surrogate: Dibromofluoromethane		0.526	56.5		0.536	59.5		0.552	64.3	
Surrogate: Toluene-d_8		1.560	53.1		1.611	58.1		1.609	57.9	
AFFECTED SAMPLES:		**05CA40-28**			**05CA40-30**			**LCS3 (Lab Id. 330150)**		
		05CA40-20			**05CA40-20**			**MB3 (Lab Id. 330151)**		
%RSD ≤ CCC 30%,all other Compounds 15%		**05CA40-24**			**05CA40-32**			**05CA40-39**		
		05CA40-32			**05CA40-33**			**05CA40-32**		
%D ± 20%		**05CA40-26**			**05CA40-35**			**05CA40-20**		
		05CA40-33			**05CA40-28**			**05CA40-28**		
		05CA40-35			**05CA40-28**			**05CA40-44**		
					05CA40-32 MS			**05CA40-46**		
					05CA40-32 MSD			**05CA40-40**		
					LCSD2 (Lab Id. 330139)			**05CA40-42**		
								05CA40-43		
								05CA40-48		

– Minimum Relative Response Factor.
Q – These flags should be applied to the analytes on the sample data sheets.
J/UJ – All positive results are estimated "J" and non-detected results are estimated "UJ".
J/R – All positive results are estimated "J" and non-detected results are unusable "R".

Reviewed by: John Walton/Alion Science and Technology Corp.
Date: September 30, 2005

Case Number: 05CA40 SDG Number: 48108-VOC
Site Name: Oconomowoc Electroplating (WI) Laboratory: CTL

Calibration Outliers
Volatile Target Analytes

Instrument: GC/MS1		Column: SPB-624								
		Cont. Calibration			Cont. Calibration			Cont. Calibration		
TCL Analytes Date/Time:		25-Jul-2005 08:08			26-Jul-2005 07:52					
	#	RF	%D	Q	RF	%D	Q	RF	%D	Q
Chloromethane	0.05	0.684			0.819					
Bromomethane	0.05	0.278	24.5	J/UJ	0.330					
Acetone	0.05	0.030		J/R	0.032	-28.0	J/R			
Methylene Chloride	0.05	0.596	44.6	J/UJ	0.576	46.4	J/UJ			
2-Butanone	0.05	0.032		J/R	0.034	25.9	J/R			
Carbon Tetrachloride	0.05	0.608			0.718	21.9	J/UJ			
4-Methyl-2-Pentanone	0.05	0.069			0.073					
2-Hexanone	0.05	0.072			0.070					
Bromoform	0.05	0.138			0.136					
Surrogate: 1,2-Dichloroethane-d_4		0.052	48.6		0.057	62.9				
Surrogate: 4-Bromofluorobenzene		2.284	59.1		2.291	59.5				
Surrogate: Dibromofluoromethane		0.534	58.9		0.544	61.9				
Surrogate: Toluene-d_8		1.619	58.9		1.620	59.0				
AFFECTED SAMPLES:		**05CA40-49**			**05CA40-54**					
		05CA40-50			**05CA40-55**					
%RSD ≤ CCC 30%,all other Compounds 15%		**05CA40-51**			**05CA40-56**					
		05CA40-52			**05CA40-57**					
%D ± 20%		**05CA40-53**			**05CA40-58**					
					LCSD3 (Lab Id. 330651)					

– Minimum Relative Response Factor.
Q – These flags should be applied to the analytes on the sample data sheets.
J/UJ – All positive results are estimated "J" and non-detected results are estimated "UJ".
J/R – All positive results are estimated "J" and non-detected results are unusable "R".

Reviewed by: John Walton/Alion Science and Technology Corp.
Date: September 30, 2005

Data Qualifier Sheet

For the purpose of defining the flagging nomenclature utilized in this document, the following code letters and associated definitions are provided:

VALUE – if the result is a value greater than or equal to the Contract Required Quantitation Limit (CRQL).

U	Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having an associated QC problem.
N	Indicates presumptive evidence of a compound. This flag is only used for a tentatively identified compound (TIC), where the identification is based on a mass spectral library search.
R	Indicates the data are unusable. (The compound may or may not be present.)
P	Indicates a pesticide/Aroclor target analyte when there is greater than 25% difference for the detect concentrations between the two GC columns. The lower of the two results is reported.
C	Indicates pesticide results that have been confirmed by GC/MS.
B	Indicates the analyte is detected in the associated method blank as well as the sample.
E	Indicates compounds whose concentrations exceeded the calibration range of the instrument.
D	Indicates an identified compound in an analysis has been diluted. This flag alert the data user to any difference between the concentrations rported in the two analyses.
A	Indicates TICs that are suspected to be aldol condensation products.
G	Indicates the TCLP Matrix Spike Recovery was greater than the upper limit of the analytical method.
L	Indicates the TCLP Matrix Spike Recovery was less than the lower limit of the analytical method.
T	Indicates the analyte is found in the associated TCLP extraction blank as well as in the sample.

X, Y, Z are reserved for laboratory defined flags.

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-001S		MW-004D	MW-005D	MW-012B	MW-012S		MW-012D		MW-013S	MW-013D		MW-014D		MW-015B
				Oct 04	Jul 05	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05
Field Parameters																		
Dissolved Oxygen (DO)	mg/L			1.82	28.8%	0.92	10.9%	10.2%	0.34	6.5%	0.18	7.6%	3.19	0.31	7.1%	0.45	1.24	9.7%
Oxidation Reduction Potential (ORP)	millivolts			73.5	214.6	-55.7	28.6	29.8	14.6	68.7	-81.6	-71.7	241.4	-85.7	-69.2	43.4	15.1	-43.9
pH	pH units			6.93	6.51	7.81	6.51	7.77	7.26	7.15	7.33	7.08	6.42	7.16	7.12	7.28	7.02	6.86
Specific Conductivity	mmhos/cm			0.956	0.668	0.955	2.364	1.116	1.522	1.180	1.587	1.522	0.972	2.081	1.394	0.947	0.883	0.898
Temperature	deg c			16.34	15.88	11.97	13.53	17.40	12.84	13.76	11.05	13.52	12.39	12.35	11.99	13.20	11.99	14.96
Depth to water	feet			8.56	8.24	9.78	5.05	5.69	5.47	5.69	4.39	4.80	7.02	6.12	6.38	5.88	5.64	9.34
Natural Attenuation Parameters																		
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	370	350				391	370	392	400		475	390	347	350	
Chloride (as Cl)	mg/L	125	250	65.9	24				**207**	**140**	**224**	**230**		**271**	**180**	82.9	45	
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U				0.5 U	0.5 U	0.5 U	0.5 U		2.5 U	0.5 U	0.5 U	0.5 U	
Ethene	µg/L	N/A	N/A	0.5 U	0.5 U				0.82 J	0.5 U	1.4 J	0.5 U		2.5 U	0.5 U	0.5 U	0.5 U	
Iron, total	µg/L	150	300	**281** J	**468**				**499**	**300**	**2060**	**1210**		**2180**	**983**	7 U	25.6 J	
Iron, dissolved	µg/L	150	300	14 U	25 U				19.4 J	25 U	**1010**	**993**		**2180**	**820**	14 U	25 U	
Manganese, total	µg/L	25	50		15.2					**114**		**31.5**			**48.3**		**81.6**	
Manganese, dissolved	µg/L	25	50	14.6	1.2 U				**123**	**109**	**42.5**	**29.7**		**65.5**	**45.1**	**67**	**69.2**	
Methane	µg/L	N/A	N/A	2.3 J	0.5 U				130	32	31	43		66	17	14	4.3	
Nitrogen, nitrate (as N)	mg/L	2	10	0.4 J	1				0.06 U	0.06 J	0.06 U	0.04 U		0.06 U	0.28	0.97 J	1.6	
Sulfate (as SO4)	mg/L	125	250	47.2	24				60	**220**	85.2	93		**225**	93	32.4	40	
Sulfide	mg/L	N/A	N/A	1 UJ	1 U				1 UJ	1 U	1 UJ	1 U		1 UJ	1 U	1 UJ	1 U	
Total Organic Carbon	mg/L	N/A	N/A	1.6 J	1.1 J				4.7	3.3	4.6	4.1		4.9	2.2 J	2.7 J	1.4 J	
VOCs																		
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	**66**	**74** J	25	12 J	0.18 J	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	**0.36** U	0.018 U	**0.09** U	0.018 UJ	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	**1.8** U	0.09 U	0.45 U	0.09 UJ	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.031 U	17	0.031 U	43	25	46	34	0.062 J	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	**3**	0.06 U	**7.1**	**5**	**3.9**	**1.1**	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U	0.08 U	0.4 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026** U	**0.026** R	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.52** U	**0.026** U	**0.13** U	**0.026** UJ	**0.026** U	**0.026** U	**0.026** U	**0.026** R	**0.026** U
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.46 U	0.023 U	0.12 U	0.023 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.04 U	**1.3**	0.04 U	0.04 U	**0.8** U	0.27	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	**1.2** U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,3-Dichlorobenzene	µg/L	125	1250	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	0.4 R	0.4 R	0.4 R	0.4 R	0.4 UJ	8 R	0.4 UJ	2 R	0.4 R	0.4 UJ	0.4 R	0.4 UJ	0.4 R	0.4 R
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	10 UJ	0.5 U	2.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ	0.6 U	12 UJ	0.6 U	3 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Acetone	µg/L	200	1000	1.5 UJ	1.5 R	1.5 R	1.5 R	1.5 R	1.5 UJ	30 R	1.5 UJ	7.5 R	1.5 R	1.5 UJ	1.5 R	1.5 UJ	1.5 R	1.5 R
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.085 UB	**1** U	0.069 UB	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.8** U	0.04 U	**0.2** U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	**1.4** U	0.07 U	0.35 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 U	**1.2** U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ
Carbon disulfide	µg/L	200	1000	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	2 U	0.1 U	0.5 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-001S		MW-004D	MW-005D	MW-012B	MW-012S		MW-012D		MW-013S	MW-013D		MW-014D		MW-015B
				Oct 04	Jul 05	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05
VOCs Continued																		
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**1** U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	2.2	0.06 U	0.6 J	1.2 U	0.16 J	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.1 UB	**1.7**	0.07 U	0.35 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.24	0.05 U	0.05 UJ	0.05 UJ
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.06 U	**250**	0.06 U	**29**	**17**	**13**	**7.1**	0.14 J	0.21 J	0.26	0.06 U	0.06 U	0.06 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.32 U	0.016 U	**0.08** U	0.016 UJ	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	1.8 U	0.09 U	0.45 U	0.09 UJ	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Dichlorodifluoromethane	µg/L	200	1000	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U	0.06 U	0.3 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.6 U	0.03 U	0.15 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
m,p-Xylene (sum of isomers)	µg/L	1000	10000	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	2.4 U	0.12 U	0.6 U	0.12 UJ	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Methyl tert-butyl ether	µg/L	12	60	0.15 J	0.05 U	0.05 U	0.22	0.05 U	0.05 U	1 U	0.05 U	0.25 U	0.05 UJ	0.05 U	0.28	0.05 U	0.05 U	0.05 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	**2.2** UJ	0.11 UJ	**0.55** UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U	0.04 U	0.2 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.051 J	**1** U	0.05 U	0.25 U	0.097 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	200	1000	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U	0.08 U	0.4 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.04 U	9.7	0.04 U	16 J	16	3.2	1.6	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	**0.3** U	0.015 U	**0.075** U	0.015 UJ	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Trichloroethene	µg/L	0.5	5	0.07 J	0.03 U	0.03 U	**180**	0.03 U	**120**	**100**	**10**	**3.8**	0.33 J	0.03 U	0.03 U	0.03 U	0.041 J	0.03 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	**3.8**	0.018 U	**0.38**	**0.36** U	**3**	**2.4** J	0.018 UJ	**0.23**	**0.028**	0.018 U	0.018 U	0.018 U

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-015S		MW-015D		MW-016S		MW-101B	MW-102D	MW-103S		MW-103D		MW-105B	MW-105S		MW-105D	
				Oct 04	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05
Field Parameters																				
Dissolved Oxygen (DO)	mg/L			8.47	93.9%	0.43	0.79	3.33	5.6%	0.58	8.1%	0.38	0.96	0.35	6.5%	0.86	0.19	11.9%	6.09	1.04
Oxidation Reduction Potential (ORP)	millivolts			72.0	28.1	60.5	258.2	-157.8	75.1	-35.7	23.6	197.7	205.3	24.8	98.2	-51.8	-32.8	-50.1	-56.3	-15.3
pH	pH units			7.46	7.24	7.12	6.27	7.03	6.69	7.02	6.88	6.95	6.44	7.12	7.04	6.45	7.31	7.02	7.34	5.86
Specific Conductivity	mmhos/cm			0.480	0.621	1.832	1.447	3.293	3.459	1.167	1.470	1.249	1.462	1.565	1.373	1.105	1.620	1.714	1.299	1.411
Temperature	deg c			15.83	14.97	14.20	13.95	12.87	15.14	13.23	13.79	16.17	14.39	14.35	13.41	12.90	12.98	12.71	12.10	11.08
Depth to water	feet			10.43	10.21	11.31	11.62	4.17	4.93	7.14	9.83	7.60	7.56	7.73	7.67	5.08	5.16	5.55	5.01	5.51
Natural Attenuation Parameters																				
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	229	300	422	370	930	840			445	450	452	410		367	370	362	400
Chloride (as Cl)	mg/L	125	250	9.86 J	32	**291**	**200**	**155**	**170**			**218**	**160**	**200**	**170**		**281**	**290**	**159**	**200**
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	1.8 J	1.3 J			0.5 U	0.5 U	0.6 J	0.5 U		1.4 J	0.5 U	0.62 J	0.5 U
Ethene	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	12	4.1			0.5 U	0.5 U	0.96 J	0.5 U		0.61 J	0.5 U	0.8 J	0.5 U
Iron, total	µg/L	150	300	**224** J	59.7 J	7.2 J	25 UJ	**6450**	**8260**			**154**	69.9 J	29.6	25 U		**384**	**930**	**845** J	**1090**
Iron, dissolved	µg/L	150	300	14 U	25 U	14 U	25 U	**5830**	**7420**			139	43.6 J	14 U	25 U		**338**	**557**	**863** J	**984**
Manganese, total	µg/L	25	50		8.2		**276**		**78.1**				**395**		**284**			**241**		**69.5**
Manganese, dissolved	µg/L	25	50	9.6	1.2 U	**314**	**250**	**81.5**	**71.2**			**402**	**375**	**283**	**272**		**227**	**229**	**67.5**	**66.4**
Methane	µg/L	N/A	N/A	1 J	0.5 U	4.6 J	1.4 J	680	530			7.5 J	62	72	73		110	42	1900	170
Nitrogen, nitrate (as N)	mg/L	2	10	**4.65** J	0.8	0.16 J	0.18	0.06 U	0.052 J			0.19 J	0.28	0.06 UJ	0.04 U		0.06 UJ	0.04 U	0.06 UJ	0.05 J
Sulfate (as SO4)	mg/L	125	250	13.1 J	15	43.8	43	**941** J	**1000**			**128**	74	60	47		77.5	68	75.9	58
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 UJ	1 U	1 UJ	1 U			1 UJ	1 U	1 UJ	1 U		1 UJ	1.3 J	1 UJ	1 J
Total Organic Carbon	mg/L	N/A	N/A	1.5 J	2 J	3.3	2.5 J	5	3.9			6.6	6.1	5.3	3.7		3.5	2.6 J	4.1	3.7
VOCs																				
1,1,1-Trichloroethane	µg/L	40	200	1.1	0.39	0.07 U	0.35 U	0.07 U	1.8 U	0.07 U	0.07 UJ	**140**	**150**	**480**	**450** J	0.07 UJ	0.64 J	0.45	0.5 J	1.4 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	**0.09** U	0.018 U	**0.45** U	0.018 U	0.018 UJ	0.018 U	**0.9** U	0.018 U	**9** U	0.018 UJ	0.018 U	0.018 U	0.018 U	**0.36** U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.45 U	0.09 U	**2.3** U	0.09 U	0.09 UJ	0.09 U	**4.5** U	**0.7**	**45** U	0.09 U	0.09 U	0.09 U	0.09 U	**1.8** U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.13 J	0.16 U	0.067 J	0.78 U	0.031 U	0.031 UJ	7.6	16 J	**120**	**89** J	0.095 J	4.8	6.5	16	15 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.3	0.3 U	0.12 J	**1.5** U	0.06 U	0.06 UJ	**3.5**	**6.9** J	**80**	**85** J	0.06 U	**0.94**	0.52	**2.6**	**2.4** U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.4 U	0.08 U	2 U	0.08 U	0.08 U	0.08 U	4 UJ	0.08 U	40 UJ	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	1.5 U	0.06 U	0.06 U	0.06 U	3 UJ	0.06 U	**30** UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026** U	**0.026** U	**0.026** U	**0.13** U	**0.026** U	**0.65** U	**0.026** U	**0.026** U	**0.026** U	**1.3** R	**0.026** U	**13** R	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.52** U
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.12 U	0.023 U	**0.58** U	0.023 U	0.023 U	0.023 U	**1.2** U	0.023 U	**12** U	0.023 UJ	0.023 U	0.023 U	0.023 U	0.46 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 U	0.04 U	2 U	0.04 U	20 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.16 J	0.2 U	**0.54**	**1** U	0.04 U	0.071 J	0.26	**2** U	**0.75**	**20** U	0.04 UJ	0.04 U	0.04 U	0.17 J	**0.8** U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	**1.5** U	0.06 U	0.06 UJ	0.06 U	**3** U	0.06 U	**30** U	0.06 UJ	0.06 U	0.06 U	0.06 U	**1.2** U
1,3-Dichlorobenzene	µg/L	125	1250	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 U	0.04 U	2 U	0.04 U	20 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 U	0.05 U	2.5 U	0.05 U	**25** U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	0.4 R	0.4 UJ	2 R	0.4 UJ	10 R	0.4 R	0.4 R	0.4 UJ	20 R	0.4 UJ	200 R	0.4 R	0.4 UJ	0.4 R	0.4 UJ	8 R
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	2.5 U	0.5 U	13 U	0.5 U	0.5 UJ	0.5 U	25 U	0.5 U	250 U	0.5 UJ	0.5 U	0.5 U	0.5 U	10 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 U	3 U	0.6 U	15 U	0.6 U	0.6 UJ	0.6 U	30 U	0.6 U	300 U	0.6 UJ	0.6 U	0.6 U	0.6 U	12 U
Acetone	µg/L	200	1000	1.5 UJ	1.5 R	1.5 UJ	7.5 R	1.5 UJ	38 R	1.5 R	1.5 R	1.5 UJ	75 R	1.5 UJ	**750** R	1.5 R	1.5 UJ	1.5 R	1.5 UJ	30 R
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.11 UB	0.25 U	0.05 U	**1.3** U	0.05 U	0.05 U	0.096 UB	**2.5** U	0.18 UB	**25** U	0.05 U	0.056 UB	0.05 U	0.05 U	**1** U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 U	0.05 U	2.5 U	0.05 U	25 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	**0.2** U	0.04 U	**1.1**	0.04 U	0.04 UJ	0.04 U	**2** U	0.04 U	**34** J	0.04 U	0.04 U	0.04 U	0.04 U	**0.8** U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.35 U	0.07 U	**1.8** UJ	0.07 U	0.07 U	0.07 U	**3.5** UJ	0.07 U	**35** UJ	0.07 UJ	0.07 U	0.07 UJ	0.07 U	**1.4** UJ
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.06 U	0.3 UJ	0.06 U	**1.5** U	0.06 UJ	0.06 UJ	0.06 U	**3** UJ	0.06 U	**30** UJ	0.06 UJ	0.06 U	0.06 U	0.06 U	**1.2** U
Carbon disulfide	µg/L	200	1000	0.1 U	0.1 U	0.1 U	0.5 U	0.1 U	2.5 U	0.13 UB	0.1 U	0.1 U	5 U	0.1 U	50 U	0.12 J	0.1 U	0.1 U	0.1 U	2 U

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-015S		MW-015D		MW-016S		MW-101B	MW-102D	MW-103S		MW-103D		MW-105B	MW-105S		MW-105D	
				Oct 04	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05	Jul 05	Oct 04	Jul 05	Oct 04	Jul 05
VOCs Continued																				
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	**1.3** U	0.05 U	0.05 UJ	0.05 U	**2.5** U	0.05 U	**25** U	0.05 UJ	0.05 U	0.05 U	0.05 U	**1** U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	4.1	3.3	0.05 U	1.3 U	0.05 U	0.05 UJ	3.5	3 J	0.073 J	25 U	0.05 U	0.6	0.58	0.05 U	1 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	1.5 U	0.06 U	0.06 UJ	0.37 J	3 U	0.98 J	30 U	0.06 UJ	0.06 U	0.06 U	0.06 U	1.2 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.35 U	0.07 U	**1.8** U	0.07 U	0.07 UJ	0.24 UB	**3.5** U	**1.2** UB	**35** U	0.07 U	0.07 U	0.07 U	0.07 U	**1.4** U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	**1.3** U	0.05 U	0.05 UJ	0.05 U	**2.5** U	0.05 U	**25** U	0.05 U	0.05 U	0.05 U	0.05 U	**1** U
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	6	2.5	**190**	**330**	0.18	**12** J	**21**	**47** J	**360**	**280** J	0.18 J	**58**	**69**	**56**	**29**
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	**0.08** U	0.016 U	**0.4** U	0.016 U	0.016 UJ	0.016 U	**0.8** U	0.016 U	**8** U	0.016 U	0.016 U	0.016 U	0.016 U	**0.32** U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.45 U	0.09 U	2.3 U	0.09 U	0.09 UJ	0.09 U	4.5 U	0.09 U	**45** U	0.09 U	0.09 U	0.09 U	0.09 U	1.8 U
Dichlorodifluoromethane	µg/L	200	1000	0.06 U	0.06 U	0.06 U	0.3 U	0.06 U	1.5 U	0.06 U	0.06 U	0.06 U	3 UJ	0.06 U	30 UJ	0.06 U	0.06 U	0.06 U	0.06 U	1.2 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	1.3 U	0.05 U	0.05 UJ	0.05 U	2.5 U	0.05 U	25 U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.15 U	0.03 U	0.75 U	0.03 U	0.03 U	0.03 U	1.5 U	0.03 U	15 U	0.03 U	0.03 U	0.03 U	0.03 U	0.6 U
m,p-Xylene (sum of isomers)	µg/L	1000	10000	0.12 U	0.12 U	0.12 U	0.6 U	0.12 U	3 U	0.12 U	0.12 U	0.12 U	6 U	0.12 U	60 U	0.12 U	0.12 U	0.12 U	0.12 U	2.4 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.69 J	0.25 U	0.05 U	1.3 U	0.29	0.45 J	0.05 U	2.5 U	0.05 U	**25** U	0.05 U	0.17 J	0.33	0.05 U	1 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.11 UJ	**0.55** UJ	0.11 UJ	**2.8** UJ	0.11 UJ	0.11 UJ	0.11 UJ	**5.5** UJ	0.11 UJ	**55** UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	**2.2** UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 U	0.04 U	2 U	0.04 U	20 U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.2 U	0.04 U	1 U	0.04 U	0.04 UJ	0.04 U	2 U	0.04 U	**20** U	0.04 U	0.04 U	0.04 U	0.04 U	0.8 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	**1.3** U	0.05 U	0.05 UJ	**1.4**	**2.5** U	0.05 U	**25** U	0.05 U	0.05 U	0.05 U	0.05 U	1 U
Toluene	µg/L	200	1000	0.08 U	0.08 U	0.08 U	0.4 U	0.08 U	2 U	0.08 U	0.08 UJ	0.08 U	4 U	0.08 U	40 U	0.08 U	0.08 U	0.08 U	0.08 U	1.6 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.6 J	0.3	5	6.2	0.04 U	0.6 J	0.35 J	2 U	5.5	**20** U	0.04 U	0.71 J	1.6	2.6	1
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	**0.075** U	0.015 U	**0.38** U	0.015 U	0.015 UJ	0.015 U	**0.75** U	0.015 U	**7.5** U	0.015 U	0.015 U	0.015 U	0.015 U	**0.3** UJ
Trichloroethene	µg/L	0.5	5	0.15 J	0.03 U	**41**	**30**	0.03 U	**0.75** J	0.03 U	**0.76** J	**200**	**230**	**2200**	**2000**	0.09 J	**63**	**76**	**240**	**130**
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	**0.074**	**0.09** U	**85**	**58**	0.018 U	0.018 U	**0.4**	**0.9** U	**2.9**	**9** U	**0.059**	**2.3**	**2.3**	**1.5**	**1.1**

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-106S Jul 05	MW-106D Jul 05	PW-01 Jul 05	PW-02 Jul 05	PW-03 Jul 05	PW-04 Jul 05	PW-05 Jul 05	PW-07 Jul 05	PW-08 Jul 05	PW-09 Jul 05	PW-10 Jul 05	PW-11 Jul 05
Field Parameters															
Dissolved Oxygen (DO)	mg/L			10.1%	0.97	4.5	2.94	5.51	9.2	4.69	2.79	3.41	6.27	6.22	3.29
Oxidation Reduction Potential (ORP)	millivolts			23.1	-66.7	-80.8	-77.2	-101.8	-82.7	-62.1	-90	-70.9	-82.6	-32.6	-74.4
pH	pH units			6.79	7.09	6.8	6.77	7.02	7.28	7.16	6.92	6.73	6.97	6.76	6.62
Specific Conductivity	mmhos/cm			0.960	1.231	0.674	0.64	0.985	1.033	0.962	1.237	1.243	1.101	1.069	0.989
Temperature	deg c			11.81	10.94	14.36	15.66	12.89	13.75	12.98	14.09	13.79	14.33	15.61	13.63
Depth to water	feet			5.80	5.40										
Natural Attenuation Parameters															
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A												
Chloride (as Cl)	mg/L	125	250												
Ethane	µg/L	N/A	N/A												
Ethene	µg/L	N/A	N/A												
Iron, total	µg/L	150	300												
Iron, dissolved	µg/L	150	300												
Manganese, total	µg/L	25	50												
Manganese, dissolved	µg/L	25	50												
Methane	µg/L	N/A	N/A												
Nitrogen, nitrate (as N)	mg/L	2	10												
Sulfate (as SO4)	mg/L	125	250												
Sulfide	mg/L	N/A	N/A												
Total Organic Carbon	mg/L	N/A	N/A												
VOCs															
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.047	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U	**0.026** U
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.16 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,3-Dichlorobenzene	µg/L	125	1250	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R	0.4 R
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Acetone	µg/L	200	1000	1.5 R	3.4 J	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R	1.5 R
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Bromomethane	µg/L	1	10	0.06 UJ	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.06 U
Carbon disulfide	µg/L	200	1000	0.1 U	0.1 U	0.1 U	0.21 U	0.1 U	0.13	0.11	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U

TABLE 1
Field and Analytical Results—Groundwater Sampling
October 2004 and July 2005
Oconomowoc Electroplating

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-106S Jul 05	MW-106D Jul 05	PW-01 Jul 05	PW-02 Jul 05	PW-03 Jul 05	PW-04 Jul 05	PW-05 Jul 05	PW-07 Jul 05	PW-08 Jul 05	PW-09 Jul 05	PW-10 Jul 05	PW-11 Jul 05
VOCs Continued															
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.18	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 UJ	0.05 U	0.05 U	0.064 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.06 U	0.06 U	0.58	0.97	1.4	2.3	1.3	4.4	0.06 U	0.41
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Dichlorodifluoromethane	µg/L	200	1000	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.19	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
m,p-Xylene (sum of isomers)	µg/L	1000	10000	0.12 U	0.12 U	0.12 U	1.3	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.05 U	0.05 U	0.64	0.6	1	0.57	0.6	0.74	0.13 J	0.74
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	1.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	200	1000	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.075	0.12	0.19	0.078	0.36	0.04 U	0.043
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Trichloroethene	µg/L	0.5	5	0.03 U	0.03 U	0.03 U	0.03 U	0.42	0.03 U	0.11	0.03 U	0.17	0.064	0.03 U	0.03 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	**0.042** J	0.018 U	**0.05** J	0.018 U	0.018 U

J indicates that the value was between the method detection limit and the limit of quantitation and, therefore, is estimated.
U indicates that the constituent was not detected above the method detection limit.
UJ indicates that the constituent was not detected above the estimated method detection limit.
R indicates that the initial calibration report associated with this SDG contained relative response factors (RRFs) lower than 0.05 for acetone, 2-Butanone and 1,2-dibromo-3-chloropropane.
Non-detected concentrations were qualified and flagged "R" as rejected.
UB indicates that the constiuent is considered to be below the detection limit listed due to blank contamination.
Bolded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Preventative Action Limit (PAL).
Shaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

NOTES

1. BASE MAP DEVELOPED FROM INFORMATION PROVIDED BY RMT, INC. ON 10/26/04.
2. BASE MAP DEVELOPED FROM AERIAL PHOTOGRAPHS DATED 3/26/1999 PREPARED BY AEROMETRICS, INC., SHEBOYGAN, WISCONSIN.
3. VERTICAL DATUM (ELEVATION) IS REFERENCED TO USGS MEAN SEA LEVEL DATUM, 1929 ADJUSTMENT. TOPOGRAPHIC CONTOUR INTERVAL: 2 FEET.
4. THE HORIZONTAL DATUM IS BASED ON THE WISCONSIN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM (NAD) 1927– WISCONSIN SOUTH.
5. MONITORING WELL LOCATIONS AND ELEVATIONS ARE BASED ON A SURVEYS PERFORMED BY SPATIAL DATA SURVEYS ON DECEMBER 2001, JANUARY 2002, JUNE 2002 AND APRIL 2003.
6. SITE BENCHMARKS ESTABLISHED BASED ON SURVEY FROM BENCHMARK MONUMENT LOCATED ON THE SOUTHWEST CORNER OF THE INTERSECTION OF MAPLETON ROAD AND MILL ROAD. NE 1/4 OF NE 1/4 OF SECTION 8, TOWNSHIP 8 NORTH, RANGE 17 EAST.
7. THE PRIVATE OR SUPPLY WELLS SHOWN ON THIS MAP REPRESENT A PORTION OF THE PRIVATE WELLS SERVING THE RESIDENTS OR BUSINESSES IN THE TOWN OF ASHIPPUN, AND REPRESENT A PORTION OF THESE WELLS THAT LIKELY EXIST WITHIN THE CONFINED AREA OF THIS MAP.

PW-05 PW-11 PW-04 PW-03 MW-14D PW-02 MW-4D MW-4S MW-102S MW-102D PW-09 MW-101B MW-101S EW-1 PW-07 MW-15D MW-15S PW-06 MW-15B PW-10 MW-3D MW-3S FENCE MW-1D MW-1S PW-08 EW-2 MW-2D PW-01 MW-106S MW-106D EW-4 EW-5 MW-9S MW-103D MW-103S MW-13D MW-13S MW-12S MW-12B MW-12D OEP TREATMENT PLANT APPROXIMATE SITE BOUNDARY MW-5 MW-104S MW-5D MW-104D EW-3 MW-105S MW-105D MW-105B MW-16S MW-107 S/D (LOCATION APPROXIMATE)

FORMER OEP FACILITY

FORMER LAGOONS

TOWN OF ASHIPPUN DEPT.

ATHLETIC FIELD

UNION PACIFIC

MILL STREET

ELM STREET

DAVY CREEK

CREEK FLOW DIRECTION

LEGEND

- EXISTING 2' TOPOGRAPHIC CONTOUR
- x 815.1 EXISTING SPOT ELEVATION
- EXISTING DEPRESSION
- EXISTING TREE LINE
- EXISTING WETLAND AREA
- EXISTING EDGE OF WATER
- ● MW-16S WATER TABLE WELL
- ◉ MW-1D PIEZOMETER
- ◉ MW-2D BEDROCK WELL
- ◈ EW-5 EXTRACTION WELL
- RESIDENTIAL WELL
- ■ PROPOSED SENTINEL WELL (ACTUAL LOCATION DEPENDANT ON ACCESSIBILITY)

0 100 200 300

Scale In Feet

FIGURE 1
MONITORING LOCATIONS
OCONOMOWOC ELECTROPLATING COMPANY
OCONOMOWOC WISCONSIN

CH2MHILL

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