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CH2MHILL

July 20, 2009

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Received

JUL 21 2009

REMEDIATION &
REDEVELOPMENT

Mr. William Ryan
Work Assignment Manager (SR-6J)
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Subject: Final Annual Groundwater Report
Oconomowoc Electroplating Company, Inc. Site, Ashippun, Wisconsin
WA No. 003-LRLR-05M8, Contract No. EP-S5-06-01

Dear Mr. Ryan:

Enclosed please find for your review one CD containing the finalized Annual Groundwater Report for the Oconomowoc Electroplating Company, Inc. Site. Also enclosed are two hardcopy versions of this report, as per your request. This report presents results through January 2009. Please contact me if you have any questions or concerns at 414-847-0437.

Sincerely,

CH2M HILL

Matt Boekenhauer

Matt Boekenhauer
Site Manager

Enclosures

c: Pat Vogtman, PO/USEPA, Region 5 (w/o enclosure)
Parveen Vij, CO/USEPA, Region 5 (w/o enclosure)
Gary Edelstein/WDNR, Madison
Ike Johnson, PM/CH2M HILL, Milwaukee
Dan Plomb, DPM/CH2M HILL, Milwaukee
Jewelle Keiser, QAM/CH2M HILL, Milwaukee
Jeff Danko, RTL/CH2M HILL, Milwaukee (w/o enclosure)
Cindi Cruciani/CH2M HILL, Milwaukee (w/o enclosure)
Jon Tortomasi/CH2M HILL, Milwaukee (w/o enclosure)
Cherie Wilson, AA/CH2M HILL, Milwaukee

REGION 5 RAC2

REMEDIAL ACTION CONTRACT FOR

Remedial, Enforcement Oversight, and
Non-Time Critical Removal Activities at Sites of Release
or Threatened Release of Hazardous Substances in Region 5

Received
JUL 21 2009
REMEDIATION &
REDEVELOPMENT

ANNUAL GROUNDWATER REPORT

Oconomowoc Electroplating Company, Inc. Site
Oconomowoc, Wisconsin
WA No. 003-LRLR-05M8/Contract No. EP-S5-06-01

July 2009

PREPARED FOR

U.S. Environmental Protection Agency

PREPARED BY

CH2M HILL
Ecology and Environment, Inc.
Environmental Design International, Inc.
Teska Associates, Inc.

FOR OFFICIAL USE ONLY

ANNUAL GROUNDWATER REPORT

OCONOMOWOC ELECTROPLATING COMPANY, INCORPORATED

Oconomowoc, Wisconsin

WA No. 003-LRLR-05M8 / Contract No. EP-S5-06-01

July 2009

Executive Summary

The Oconomowoc Electroplating Company, Inc. (OECI) Site (the Site) is currently undergoing groundwater monitoring in accordance with the Quality Assurance Project Plan (QAPP) (CH2M HILL, 2004), QAPP Changes Letter (CH2M HILL, 2007), and Field Sampling Plan (CH2M HILL, 2006a). Long-term groundwater monitoring began in October 2004. Prior to that, a groundwater extraction system operated at the Site for 8 years, substantially lowering the concentrations of metals and chlorinated volatile organic compounds (CVOCs) in groundwater. In the summer of 2002, metal concentrations had decreased to levels that allowed for cessation of groundwater treatment operations per the Wisconsin Department of Natural Resources (WDNR) and United States Environmental Protection Agency (USEPA), Region 5. The extraction system ceased operation in July 2004.

Quarterly groundwater and surface water monitoring should continue and natural attenuation (NA) should continue as a remediation strategy for the Site because evidence supports that NA is occurring. Based on evaluation of groundwater monitoring data from recent sampling events, the volatile organic compound (VOC) extent is not migrating beyond its previous extent in the shallow and deep unconsolidated units. Evidence for NA continues to be strongest at shallow well locations downgradient of former OECI facility operations, where degradation products are at their highest concentration. However, it appears that conditions favoring NA within the hydrogeologic units may be declining as evidenced by the decreased concentrations of dissolved iron, ethane/ethene, and benzene, toluene, ethylbenzene, xylene (BTEX) compounds available in groundwater for reductive dechlorination.

Chlorinated compounds, including trichloroethene (TCE) and vinyl chloride (VC), continue to be detected in groundwater collected from downgradient bedrock wells and private wells. Although concentrations of VOCs in private wells are low (all below the WDNR NR 140 Enforcement Standard [ES] and many below the NR 140 Preventive Action Limit [PAL]), detections have persisted since CH2M HILL began sampling the private wells in July 2005. Overall, in private wells with detections of CVOCs, the parent compounds are either absent or relatively stable, with degradation products increasing. CH2M HILL recommends that USEPA continue to update the owners of the private bedrock wells quarterly with the most recent validated results for the private bedrock well water analysis.

In July 2008, an evaluation of in situ treatment of groundwater was completed that considered options to enhance NA processes at the site (CH2M HILL, 2008). Based on the results of this evaluation, plans are being prepared to enhance bioremediation and thereby increase the rate of contaminant reduction already occurring through natural processes. Plans include a one-time injection of an emulsified oil substrate in the summer of 2009 to biostimulate existing microorganisms.

Methyl tertiary butyl ether (MTBE) is present in the groundwater in downgradient shallow and deep unconsolidated unit wells, but has not been detected in onsite wells. MTBE is also present in the groundwater in private bedrock wells and bedrock monitoring wells west of the Site. Because of the lack of MTBE in onsite shallow unconsolidated unit monitoring wells, this constituent does not appear to be related to the Site. A more detailed investigation of Production Enterprises, Incorporated located upgradient from the site on

Highway 67 as a potential off-site source of VOCs in private bedrock wells, including MTBE, should be performed.

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Abbreviations and Acronyms

1,1,1-TCA	1,1,1-trichloroethane
1,1-DCA	1,1-dichloroethane
1,1-DCE	1,1-dichloroethene
1,2-DCE	1,2-dichloroethene
BRRTS	Bureau of Remediation and Redevelopment Tracking System
BTEX	benzene, toluene, ethylbenzene, and xylene
CA	chloroethane
cis-1,2-DCE	cis-1,2-dichloroethene
COC	contaminants of concern
CVOC	chlorinated volatile organic compound
DO	dissolved oxygen
EDD	electronic data deliverable
EISB	enhanced in situ bioremediation
ES	Enforcement Standard
FOP	Field Operating Procedure
FSP	Field Sampling Plan
J	joule
µg/L	micrograms per liter
mg/L	milligrams per liter
MNA	monitoring natural attenuation
MTBE	methyl tertiary butyl ether
mV	millivolt
NA	natural attenuation
OECI	Oconomowoc Electroplating Company, Inc.
ORP	oxidation reduction potential
OSWER	Office of Solid Waste and Emergency Response
PAL	Preventative Action Limit
PCE	tetrachloroethene
PDF	portable document format
QAPP	Quality Assurance Project Plan
TCE	trichloroethene
TOC	total organic carbon
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound
WDNR	Wisconsin Department of Natural Resources

Introduction

The Oconomowoc Electroplating Company, Inc. (OECI) Site is currently undergoing groundwater monitoring in accordance with the Quality Assurance Project Plan (QAPP) (CH2M HILL, 2004), QAPP Changes Letter (CH2M HILL, 2007), and Field Sampling Plan (CH2M HILL, 2006a). This report has been prepared to provide an annual overview of quarterly groundwater sampling results over the most recent sampling period (covering quarterly sampling in April 2008, July 2008, October 2008, and January 2009), present the results of the January 2009 quarterly groundwater sampling event, and provide an annual evaluation of natural attenuation (NA) being monitored at the site.

Site Background

The 10-acre site (the Site) comprises the former 4-acre OECI facility (the facility) (bounded by Elm, Oak, and Eva Streets, and the Town of Ashippun Municipal garage) located at 2573 Oak Street in Ashippun, Wisconsin, and 6 acres of a wet, low-lying area located adjacent to the southwest portion of the former site (Figures 1 and 2). This low-lying area is referred to in historical and recent project plans as a wetland area. Davy Creek flows through this wetland area south of the Site.

Various onsite metal cleaning and electroplating processes were performed at OECI since operations began in 1957. Operation materials included chlorinated solvents, cyanide, chromium, cadmium, copper, nickel, tin, and zinc. Degreasing operations were performed at the Site using unknown compounds (Ebasco, 1990). OECI ceased operation in 1990 due to financial hardship. Buildings at the Site were demolished in May 1992. Initial source reduction activities previously performed at the Site included the removal of the former lagoon sediment and sludge, contaminated soil, and contaminated sediment in the wetlands around Davy Creek.

A groundwater extraction system (initiated circa 1994) operated at the Site for approximately 8 years, substantially lowering the concentration of metals and chlorinated volatile organic compounds (CVOCs) in groundwater. In the summer of 2002, metal concentrations had decreased to levels that allowed for cessation of groundwater treatment operations per the Wisconsin Department of Natural Resources (WDNR) and United States Environmental Protection Agency (USEPA) Region 5. The extraction system ceased all operations in July 2004.

Groundwater samples were collected in October 2004 from a subset of existing Site monitoring wells. The data supported that NA of CVOCs was occurring at downgradient edges of contamination. October 2004 concentrations (post-system shutdown) were similar to those measured in the previous sampling round (April 2003) when the system was operating, indicating overall stability in the CVOC distribution. Quarterly groundwater data collected in 2005 through 2008 by CH2M HILL further indicated that NA of CVOCs was occurring at downgradient portions of the contaminated zone (CH2M HILL, 2007). Groundwater collected from several private wells was found to contain vinyl chloride (VC) above the Wisconsin Administrative Code NR 140 Preventive Action Limit (PAL) since CH2M HILL began sampling the private wells in July 2005. The VC detected in the groundwater collected from these private wells was present at concentrations just above the detection limits. However, the detection limit for VC in samples collected since 2005 is lower than historical VC detection limits; therefore, it is possible that the compound was present in groundwater at these locations prior to 2005 private well sampling.

Geologic and Hydrogeologic Settings

The geologic and hydrogeologic settings summarized below are discussed in terms of regional conditions and those conditions encountered during site-specific investigations, and as documented in previous reports (RMT, 2004).

Geology

The regional geology beneath the Site is comprised of unconsolidated Quaternary- and/or Holocene-aged deposits, which, in turn, are underlain by a succession of bedrock units. The rock units are described herein using an "oldest to youngest" (and deepest to most shallow) sequence.

The deepest rock unit, Precambrian crystalline basement rock, is overlain in succession by Cambrian sandstone, then Ordovician deposits. The Cambrian and Ordovician units are all sedimentary in origin and regionally dip to the east and southeast. A preglacial and glacial erosional surface unconformity separates the Ordovician bedrock surface from the overlying unconsolidated deposits.

The unconsolidated deposits beneath the Site range in thickness from 28 feet directly beneath the former OECI facility to 55 feet at the southwestern edge of the Site (RMT, 2004). Silt and clay fill is sporadically present in the upper 4 to 10 feet of unconsolidated material at several locations at and near the former Site. The unconsolidated glacial material consists of gray-brown and yellow-brown sand, silty sand, and clay. The silt content in the glacial material varies from trace amounts to greater than 50 percent. Discontinuous lenses of silt and clay were observed to be present within the sands in several borings across the Site. Compacted clay up to 8 feet thick is present directly above the top of bedrock in some locations (RMT, 2004).

Hydrogeology

Hydrogeologic Units

Hydrogeologic features are conceptually depicted in Figure 3. Two bedrock aquifers (units capable of yielding water to supply wells) are present beneath the Site at depth: the Ordovician Galena-Platteville dolomite and St. Peter Sandstone. The Maquoketa shale (also Ordovician in age), which sits above these bedrock aquifers and is the uppermost bedrock unit encountered at the Site, is considered to be an aquitard unit on a regional basis. However, it does contain some dolomite interlayers and fractures that are capable of yielding sufficient quantities of water for residential use.

Groundwater is present in the unconsolidated silty sand and clay that sits above the Maquoketa shale at the Site, although it is not considered to be part of a regional sand and gravel aquifer because of its higher silt content. The water table in this unconfined water-bearing unit roughly parallels the ground surface topography (the groundwater is assumed to be under atmospheric pressure [Devaul et al., 1983]).

Groundwater monitoring wells are installed at the Site in the shallow and deep portions of the unconsolidated deposits and in the upper bedrock. Nested wells are installed in the unconsolidated deposits, with the shallow wells monitoring the upper "water table" portion and the deep wells monitoring the lower portion (Figure 3). Groundwater elevations obtained in January 2009 measured for all monitoring wells are included in Table 1.

Interpreted Groundwater Flow Directions

Table 1 contains a summary of the depth to groundwater measurements and groundwater elevations for the January 2009 event. Groundwater elevation maps were generated for shallow and deep unconsolidated units and for the bedrock unit based on this event. The general apparent groundwater flow directions depicted on the contour maps for each unit are consistent with previous interpretations of groundwater flow. Flow directions in the unconsolidated unit (Figures 4 and 5) indicate flow at the water table appears to be mostly toward the southwest, with southern components. The flow direction in the shallow and deep unconsolidated units is toward the location of Davy Creek south and southwest of the Site. Surface water levels at staff gage locations SG-2 and SG-3 along Davy Creek were not collected due to icy conditions and their present condition (posts supporting staff gages appear to sit at less than 90 degrees from horizontal and appeared to have heaved in the ice). Staff gage SG-1 appears to have been washed away and is no longer present. While historical data collected from these staff gages assisted in site characterization, future information from these staff gage locations is not anticipated to enhance the characterization; therefore, staff gages SG-1, SG-2, and SG-3 will not be replaced or repaired unless site characteristics change.

Groundwater elevations measured in the bedrock aquifer indicate a local groundwater high near the center and the eastern portion of the Site, represented by a high groundwater elevation at wells MW-1D, MW-2D, and MW-4D. The apparent groundwater flow pattern indicated by the potentiometric surface shows a dominant flow to the west with a somewhat radial flow pattern toward the southwest and northwest. Residential water use to the west of the site appears to be influencing the local flow regime in this aquifer unit indicated by the strong horizontal gradient to the west, possibly due to the number of actively pumping bedrock private wells located in this area.

Vertical Gradients

Based on the January 2009 data, vertical gradients between the shallow and deep unconsolidated units indicate the potential for upward flow, except for the MW-15 nest, where the flow appears to be downward (Table 2). Upward gradients are present for well nests that are situated along Davy Creek (MW-12, MW-105, MW-106, and MW-107), indicating the potential for the shallow groundwater to be discharging to Davy Creek. Vertical gradients between the unconsolidated unit and the bedrock unit indicate the potential for downward flow except for nests MW-101 and MW-105, where the flow appears to be slightly upward (Table 2). This indicates that the unconsolidated unit and bedrock have the capacity to exchange water.

Potential Receptors

Potential human and ecological receptors for the Site's groundwater include Davy Creek and its associated wetland area and local private water supply wells. Davy Creek and its associated wetland area appear to be connected to local shallow groundwater from the unconsolidated unit.

Private water supply wells closest to the Site are located to the west and northwest of the Site (Figure 1). All private wells are screened in the Maquoketa shale or upper portions of the Galena-Platteville dolomite, and an investigation has identified the presence of Site contaminants of concern (COCs) such as CVOCs and methyl tert butyl ether (MTBE). MTBE is from an unknown source not related to this site as discussed below.

Sampling Activities

The NA process is being monitored and evaluated at the Site as a stand-alone remedy for compliance with state and federal drinking water standards. Sample collection and analysis provides remaining onsite and downgradient groundwater CVOC concentrations, as well as background groundwater conditions. The current monitoring program is summarized for each monitoring well, private well, and surface water monitoring point in Table 3.

Available sample locations for the project include private water supply wells, former extraction wells, groundwater monitoring wells, drive point piezometers, and surface water (wetland and Davy Creek). The sample locations are shown on Figures 1 and 2. Sample locations for compliance and NA monitoring are indicated in Table 3 and separately discussed, below. (Note: Some of the locations were sampled for both types of monitoring.)

Table 3 provides a complete listing of the monitoring network and the corresponding unit each well is screened across. Wells are designated as either "S" or "D" in the unconsolidated unit, respectively, with a few exceptions. Monitoring wells are designated as "B" in the shallow bedrock unit, except for MW-1D, MW-2D, MW-3D, and MW-4D. These older monitoring wells were installed in 1988 and are screened to sample groundwater in the bedrock aquifer, even though they are designated with the suffix "D."

Compliance Monitoring of VOCs

The compliance sampling locations include site monitoring wells, private water supply wells, and surface water for assessment of groundwater quality related to state and federal drinking water and surface water standards, respectively. During 2008-09, compliance sample locations included 11 private water supply wells (within 250 feet of the site, and including the onsite potable well), 26 groundwater monitoring wells in the upgradient, crossgradient, and downgradient portions of the contaminated zone, and 3 staff gauge locations for the collection of VOCs in surface water samples (Table 3 and Figure 1). The 26 wells selected for compliance monitoring are screened in the three hydrogeologic units as follows: 7 bedrock wells, 9 deep unit wells, and 10 shallow unit wells.

Natural Attenuation Monitoring

Background

Many organic compounds can be attenuated naturally to nonregulated end products. Monitoring and documentation of these processes is known as monitored natural attenuation (MNA). In anaerobic (chemically reducing) environments, the main degradation mechanism for effective CVOC attenuation is reductive dechlorination, which involves the sequential replacement of chlorine atoms on the alkene molecule by hydrogen atoms. For trichloroethene (TCE), a Site constituent, the sequential dechlorination proceeds to 1,2-dichloroethene (DCE), (preferentially to the cis-isomer) then to VC, and finally to ethene. For 1,1,1-trichloroethane (1,1,1-TCA), also a Site constituent, the degradation products include 1,1- DCE, VC, and ethene; or 1,1-dichloroethane (1,1-DCA), chloroethane, and ethanol—with carbon dioxide as the final product in both pathways.

The Office of Solid Waste and Emergency Response (OSWER) Directive 9200.4-17 (1999) identifies three lines of evidence that can be used to demonstrate the occurrence of the NA of CVOC compounds, consisting of the following:

- Documented loss of primary contaminants at the field scale
- Documented presence and distribution of geochemical and biochemical indicators of NA
- Direct microbiological evidence

For this project, NA is being evaluated using the first two lines of evidence.

Natural Attenuation Analytes and Wells

At a number of sampling points, inorganic parameters to evaluate NA processes were analyzed in addition to the VOC data collected during compliance sampling. The NA parameters were collected from groundwater in monitoring wells at 5 upgradient locations, 4 near-source locations, and 13 downgradient locations (Table 3 and Figure 1 or 2). Of the 22 current NA well sampling points, 8 are screened in the shallow unconsolidated unit, 7 are screened in the deep unconsolidated unit, and 7 are screened in the bedrock unit. In addition, NA parameters were collected from surface water at the three staff gage locations. The locations of the sampling points monitor NA processes throughout the contaminated zones within each of the three hydrogeologic units.

Sampling and Analysis

Sampling and analysis was completed in accordance with the *Field Sampling Plan* (FSP) and the *Field Operating Procedures* (FOPs) therein. Water levels were measured and recorded during the first day of the sampling event for accessible groundwater monitoring wells. Measured depths to groundwater and resultant groundwater elevations are included in Table 1. Groundwater elevations recorded during the January 2009 sampling event are shown on Table 1. The measured water levels and well depths (described in FOP No. 2—*Groundwater Level Measurements* [CH2M HILL, 2006a]) were used to calculate a purge volume and to assess the thickness of solids deposited at the bottom of the well screen. Wells were purged and sampled as described in FOP No. 1,—*Low-Flow Groundwater Sampling Procedures* wherever well conditions allowed (CH2M HILL, 2006a). 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* (CH2M HILL, 2006a). Procedures for field filtering groundwater samples were followed per FOP No. 5—*Field Filtering Samples* (CH2M HILL, 2006a). Non-dedicated sampling equipment was decontaminated between locations per FOP No. 6—*Field Sampling Equipment Decontamination* (CH2M HILL, 2006a). Samples were collected immediately following the stabilization of groundwater field parameters. The samples were processed, packaged, and shipped on the day of collection. Monitoring wells MW-16S, MW-107S, and MW-107D could not be sampled during the January 2009 sampling event due to the presence of ice within and around the inner well casing. Monitoring well MW-15B could not be sampled during the January 2009 sampling event due to drawdown and an extremely low recharge rate.

Private well locations were sampled as part of January 2009 compliance monitoring in accordance with FOP No. 10—*Private Residential Well Groundwater Sampling Procedures* (CH2M HILL, 2006a) except as described herein. Due to variable access points for sampling, and the various treatment trains of the private wells, field parameters cannot be used as an indication of proper purging prior to sampling. Private well taps were opened for 10 to 15 minutes prior to sampling. Each sample was collected from a tap before water softeners or other aesthetic water conditioning occurred. Private wells PW-02 and PW-04 could not be sampled during the January 2009 event because access could not be obtained from the property owners. The onsite potable well (DW-01) could not be sampled during the January 2009 event, because the plumbing within the site building appeared to be frozen.

Collection of three surface water samples for regulatory compliance and NA parameters was planned for locations coincident with three staff gages (Figure 1). Surface water sampling was performed in accordance with FOP No. 9—*Surface Water Sampling Procedures* (CH2M HILL, 2006a). Only one surface water sample was collected during the January 2009 sampling event, from the Davy Creek downstream location, SG-3. Surface water samples were not collected from locations SG-1 and SG-2 due to thick ice present in these areas.

Groundwater monitoring analytical results for regulatory compliance and NA monitoring wells are summarized by hydrogeologic unit in Tables 4 (shallow unconsolidated), 5 (deep unconsolidated), and 6 (bedrock) including a side-by-side comparison of data collected since October 2004 (includes data from October 2004, July 2005, October 2005, January 2006, March 2006, January 2007, April 2007, June 2007, September 2007, January 2008, April 2008, July 2008, October 2008, and January 2009).

Private well analytical results for regulatory compliance VOC sampling are summarized in Table 7, including a side-by-side comparison of data collected since July 2005 (includes data from July 2005, March 2006, January 2007, April 2007, June 2007, September 2007, January 2008, April 2008, July 2008, October 2008, and January 2009).

Surface water analytical results for regulatory compliance VOC and NA samples collected are summarized in Table 8, including side-by-side comparison of data collected since January 2006 (includes data from January 2006, March 2006, January 2007, April 2007, September 2007, January 2008, April 2008, July 2008, October 2008, and January 2009).

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 forms. The USEPA copies of the chain-of-custody forms were used to enter sample information into the sample tracking spreadsheet. Upon receipt of the samples, the laboratory transmitted an electronic sample receipt, which was then compared to the chain-of-custody forms 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), one hard-copy data package, and a portable document format (PDF) file of the data package. Prior to 2007, CH2M HILL validated the NA data after receipt and a completeness check. The hard copy data package was sent to USEPA for validation of the compliance sample data. Beginning in January 2007, all laboratory data was sent to USEPA for validation. After the data validation was completed, the validation summaries were reviewed by the CH2M HILL project chemist, and the qualifiers were entered into the EQuIS database.

Data Validation

Before 2007, USEPA performed data validation on the compliance sample data and CH2M HILL performed the data validation on the NA data. Beginning in January 2007, all sample analytical data was validated by USEPA. 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). Compliance and NA data were deemed valid for use, with the exceptions noted in Data Validation Memorandums produced and submitted for each sampling event. Data Validation Memorandums for each of the four previous quarterly sampling events (including January 2009) are provided with this report as Appendix A. Previous memorandums have been provided to WDNR and USEPA in previous quarterly and annual reports, and are also on file in the project archives.

Data Evaluation

Groundwater data were evaluated by reviewing their overall distribution within the individual hydrostratigraphic units and by reviewing contaminant concentration trends through time. A discussion of those CVOCs that have concentrations exceeding the State of Wisconsin NR 140 values (Preventive Action Limit—PAL or Enforcement Standard—ES) is included in the overall evaluation (Appendix B). In addition, an analysis of the parameter values specific to NA was reviewed and is discussed below.

VOC Distribution

The groundwater analytical data for sampling events performed since October 2004 is included in Tables 4, 5, and 6 for monitoring wells, Table 7 for private wells, and Table 8 for surface water. A description of the current distribution of VOCs based on January 2009 data is presented below.

Shallow Unconsolidated Unit Monitoring Wells (Figures 7 and 8)

In general, the distribution of tetrachloroethene (PCE), TCE, and 1,1,1-TCA parent products within the shallow unconsolidated unit during January 2009 extends from the source area of the Site toward the wetland area, consistent with the groundwater flow direction in the shallow unconsolidated unit (Figures 4 and 7) and consistent with historical observations. PCE is detected at estimated concentrations (between the limit of detection and the limit of quantitation) in groundwater collected from MW-13S and MW-103S (0.065 and 2.4 micrograms per liter [μg/L], respectively).

TCE was detected at the highest concentrations in the shallow unconsolidated unit from groundwater samples collected at points immediately beneath and directly downgradient of the former OECI facility (MW-103S, MW-12S, and MW-105S), exceeding the ES at each of these locations. There were no detections of parent compounds in upgradient wells MW-1S or MW-4S, cross-gradient well MW-15S, or in downgradient sentinel well MW-106S.

The distribution of 1,1,1-TCA is similar to the TCE distribution in the shallow unconsolidated unit. The 1,1,1-TCA was detected in groundwater collected from MW-103S (directly beneath the former facility site), MW-12S, and MW-13S (south-southwest and downgradient of the site), and each detection is below the ES. The degradation product for 1,1,1-TCA (Table 4)—1,1-DCA—was detected at least once during 2008–2009 in groundwater collected from the shallow wells screened beneath and downgradient of the facility: MW-12S, MW-13S, MW-103S, MW-105S—indicating that natural degradation of 1,1,1-TCA is occurring in the shallow unconsolidated unit.

Degradation products VC and cis-1,2-dichloroethene (cis-1,2-DCE) were detected as indicated in Figure 8 immediately beneath and directly downgradient of the facility in the shallow unconsolidated unit, consistent with where parent compounds are detected and consistent with previous sampling results (CH2M HILL, 2009). Groundwater collected at downgradient well MW-16S (during October 2008) shows the highest concentrations of cis-1,2-DCE and VC (1,400 and 130 μg/L, respectively) of the monitoring points at the site. There were no detections of cis-1,2-DCE or VC in the groundwater collected from upgradient wells MW-1S and MW-4S, cross-gradient well MW-15S,or in downgradient sentinel well MW-106S.

MTBE was detected at concentrations below the NR 140 PAL (12 μg/L) in the groundwater at one shallow well in 2008–2009: MW-13S downgradient of the former OECI facility (0.3 μg/L in October 2008). MTBE has historically been detected at low concentrations in several shallow wells upgradient and downgradient and in several private wells west of the site. This suggests that this constituent is not site related. Historical information from previous reports also does not indicate that MTBE was used or stored at this Site, nor was it detected in any sampling performed prior to October 2004.

Historically, VOCs have not been detected and confirmed in the groundwater collected at well MW-107S, situated across Davy Creek. CVOCs have not been detected and confirmed in groundwater collected at sentinel wells MW-106S and MW-107S since monitoring began at these locations. Conversely, VOCs have been detected and confirmed in groundwater collected from well MW-16S (located within the wetland itself). These general results strengthen the evidence that the wetland and Davy Creek act as a discharge boundary for shallow groundwater. However, both of these monitoring wells (MW-16S and MW-107S) could not be sampled during the January 2009 sampling event due to the presence of ice in the well casing.

Between January 2008 and January 2009, CVOCs exceeding the ES and PAL in the shallow unconsolidated unit groundwater remained generally stable in concentration, with the exception of downgradient well MW-105S and MW-16S, where CVOC degradation product concentrations (cis-1,2-DCE) appear to be increasing over time (Appendix B).

Deep Unconsolidated Unit Monitoring Wells (Figures 9 and 10)

In general, the distribution of PCE, TCE, and 1,1,1-TCA parent products within the deep unconsolidated unit during January 2009 extends from the source area of the Site and downgradient towards the wetland area, consistent with the groundwater flow direction in the deep unconsolidated unit (Figures 5 and 9) and consistent with historical observations. PCE was not detected in the deep unconsolidated unit in January 2009.

Based on January 2009 groundwater results, TCE concentrations are highest in the deep unconsolidated unit in groundwater collected at MW-103D (740 µg/L), immediately beneath the former facility area. TCE concentrations are nearly five times less at a nearby well, MW-5D (150 µg/L) located to the southeast and slightly downgradient. TCE was also detected in groundwater collected at the cross-gradient monitoring wells in the deep unconsolidated unit to the west of the site (MW-102D and MW-15D) and downgradient of the site (MW-12D and MW-105D). The TCE concentrations decrease significantly with distance from the source area, showing groundwater concentration reduction of at least an order of magnitude at downgradient wells MW-12D and MW-105D, and cross-gradient wells MW-102D and MW-15D (Figure 9).

During the most recent reporting period, the compound 1,1,1-TCA was only detected in the same two deep unconsolidated unit wells as reported in 2008 (CH2M HILL, 2009): MW-103D (130 µg/L) and MW-12D (2.8 µg/L). The degradation product for 1,1,1-TCA (1,1-DCA)was detected in groundwater collected from four monitoring wells (MW-5D, MW-12D, MW-103D, and MW-105D). CA was detected in deep unconsolidated unit groundwater collected at MW-12D (0.35 µg/L). The presence of the degradation products of 1,1,1-TCA indicate that natural degradation is occurring for this compound in the deep unconsolidated unit.

Degradation products VC and cis-1,2-DCE were detected in wells onsite, downgradient, and cross-gradient of the facility, in a similar pattern as TCE (Figure 10). The highest concentration in the deep unconsolidated unit of cis-1,2-DCE occurred in MW-5D (100 µg/L) immediately beneath the former facility. The highest concentration of VC occurred in MW-105D (0.86 µg/L), directly downgradient of the site. Groundwater from cross-gradient wells MW-102D and MW-15D also contained cis-1,2-DCE. It is uncertain at this time whether the CVOCs appearing in the deep unconsolidated unit, cross-gradient from the source area are attributable to historical site activities. Comparison of the concentrations of these breakdown products to TCE (parent compound) concentrations in these wells provides further evidence of active biodegradation.

MTBE was detected at concentrations below the NR 140 PAL in two of the deep unconsolidated unit wells. The deep unit wells where MTBE was detected are situated around the southwest perimeter of the OECI Site (MW-13D and MW-102D). Similar to the conditions described in the shallow unconsolidated unit, it is believed that the presence of MTBE in the groundwater from the deep unconsolidated wells is not likely to be site related.

Overall, the number of wells that exceeded the PAL or ES in the deep unit was the same as that reported in 2007-2008 (CH2M HILL, 2009). No VOC detections have been confirmed (concentrations detected more than once) in groundwater collected from sentinel wells MW-106D and MW-107D since monitoring began at these locations.

Bedrock Wells—Monitoring and Private (Figures 11 and 12)

Unlike the shallow and deep unconsolidated units, the groundwater flow patterns in the bedrock unit are not generally towards Davy Creek to the south and southwest. Flow patterns in the bedrock unit show that groundwater moves from the site to the west towards the residential area where a number of actively pumping private wells are located (Figure 6). The distribution of PCE, TCE, and 1,1,1-TCA parent products in the bedrock unit is not as widespread in the downgradient areas from the site as in the unconsolidated units.

PCE was detected only in groundwater collected from bedrock well MW-12B during the January 2009 sampling event (Figure 11). PCE has not been historically detected in the bedrock unit. TCE was detected above the PAL (0.5 μg/L) in groundwater collected at monitoring well MW-101B (1.6 μg/L) and at private well PW-03 (0.59 μg/L) during January 2009. In addition, TCE was detected in groundwater collected from private wells PW-05 (0.13 μg/L), PW-08 (0.088 μg/L), and PW-09 (0.052 μg/L) below the PAL. The private and monitoring wells are located in apparent downgradient locations from the site due to the radial flow pattern in the bedrock unit.

The compound 1,1,1-TCA was not detected in groundwater collected from a bedrock unit monitoring or private well (Figure 11). The daughter compound--1,1-DCA—was also not detected in the bedrock unit during the 2008/January 2009 sampling period. 1,1-DCA was more widely detected in the bedrock unit wells during previous years (CH2M HILL, 2009).

During the last reporting period (April 2008 to January 2009), four private wells had VC exceedances of the PAL: PW-04, PW-07, PW-08, and PW-09. VC was also detected at nearby monitoring well MW-1D on the northeast corner of the former facility (0.084 μg/L), exceeding the PAL. However, site COCs were not detected in upgradient private wells PW-01 and PW-02 during the reporting period. It is uncertain at this time whether the CVOCs appearing in groundwater collected from MW-1D, upgradient from the source area, are attributable to historical site activities.

The distribution of parent compounds (PCE and TCE) and degradation compounds (cis-1,2-DCE; VC) present in the groundwater beneath and downgradient of the facility support the first line of evidence that NA is occurring in the bedrock unit.

MTBE was detected in groundwater at concentrations below the NR 140 PAL at several of the bedrock monitoring and private wells to the west of the Site. As previously stated, it is believed that the presence of MTBE in the bedrock wells is not likely to be site related.

Overall, degradation products have continued to be detected during the reporting period in groundwater collected from the bedrock unit at concentrations that exceed the PAL.

Surface Water

Historical VOC detections in surface water samples collected to date are shown on Table 9. Surface water was sampled in 2009 at three staff gage locations (only one location, SG-3, during the January 2009 event due to ice cover) indicated on Figure 1 and reported on Table 8. VOCs have historically not been detected at the location of sample SW-01 (SG-1) with the exception of two unconfirmed detections of acetone. During the most recent reporting period, VOCs were detected at all three surface water sample locations. No site COCs have been detected in water collected at upstream location SG-1. The low-level detections of acetone are not considered to be site related (common laboratory contaminant). Confirmed detections of site-related constituents 1,1,1-TCA, cis-1,2-DCE, trans-1,2-DCE, and TCE were found at sample locations SG-2 and SG-3 during the most recent reporting period. In addition, confirmed detections of 1,1-dichloroethane, 1,1-dichloroethene, and VC were found in water collected at location SG-2.

Surface water sample location SG-2 is in close contact with groundwater in the shallow unconsolidated unit. As a result, the constituents detected in water collected from SG-2 could potentially be site related. The concentrations of these compounds detected at SG-3 may be site related, but this is not certain due to the following reasons:

- These volatile compounds would not be expected to persist in a flowing surface water body and be detected 800 to 1,000 feet downgradient from the site.
- This suite of VOCs is not detected in sentinel wells MW-106S and MW-106D downgradient of the site, and upgradient from Davy Creek.

Contaminant Concentration Trends

Concentration trend plots have been compiled to summarize PCE, TCE, cis-1,2-DCE, and VC trends between October 2004 and January 2009 for individual wells in the sampling program. Trend plots are included in Appendix B. The purpose of this section is to summarize trends for the parent CVOCs in the source area (PCE and TCE) and for the primary degradation products of these materials through the reductive dehalogenation process (cis-1,2-DCE and VC). Trends are summarized for upgradient wells, onsite/downgradient wells, and sentinel wells for each flow unit (shallow, deep, bedrock). (Sentinel wells are defined as those wells downgradient or cross-gradient from the Site that are located beyond the margin of groundwater detections and act as the first indicator that contamination is actively migrating beyond the present location.)

Refer to Figures 1 and 2 for well locations, and to Figures 7 through 12 for the January 2009 CVOC concentrations of these constituents at each well location.

Shallow Unconsolidated Wells

Wells that are apparently upgradient of the Site in the shallow unconsolidated unit have shown variable CVOC concentrations. MW-4S groundwater has not exhibited detections of PCE, TCE, or degradation products since 2004. MW-1S, at the northeast corner of the Site, has shown an overall trending increase in TCE concentrations (concentrations range between 0.03 than 0.25 μg/L) in groundwater since October 2004. The groundwater concentrations of cis-1,2-DCE at MW-1S are more variable, and no obvious trend is evident.

However, no detections of TCE or cis-1,2-DCE were observed in groundwater collected at MW-1S during the October 2008 or January 2009 sampling events. These detections may be attributable to another source upgradient of the Site. No PCE or VC has been detected in groundwater collected at MW-1S.

Parent compounds TCE and PCE are present in groundwater beneath the location of the former facility ("onsite" well MW-103S) and continue to produce degradation products: concentrations of cis-1,2-DCE, PCE, TCE, and VC have been relatively stable through time. Groundwater from MW-12S downgradient of the former facility has stable concentrations of parent TCE and degradation products. Groundwater collected from MW-105S, located immediately downgradient but farther to the east of MW-12, shows increasing concentrations of TCE and cis-1,2-DCE, but stable concentrations of VC. Further downgradient, groundwater (MW-16S) contains only degradation products (no parent compounds) with concentrations of cis-1,2-DCE increasing and relatively stable concentrations of VC.

PCE, TCE, cis-1,2-DCE, and VC have not been detected in groundwater from the shallow unconsolidated sentinel wells MW-106S and MW-107S since the installation of these monitoring locations.

Deep Unconsolidated Wells

Groundwater from upgradient well MW-14D has low TCE concentrations (0.04 to 0.07 μg/L) detected through March of 2006 that may be attributable to another source upgradient of the Site. Monitoring well MW-14D was destroyed in 2007 due to local road construction activities. A replacement well is tentatively planned for installation in summer 2009.

Groundwater sampled from wells situated directly beneath (MW-103D) or downgradient (MW-5D and MW-12D) of the former facility showed decreasing or stable TCE concentrations since 2004. Degradation products in these wells are decreasing in each of these locations. To the west, at cross-gradient well MW-15D, groundwater has overall decreasing TCE concentrations and stable cis-1,2-DCE concentrations. MW-102D, located farther to the west and also cross-gradient, shows lower, relatively stable groundwater concentrations of TCE (less than 4 μg/L) and variable concentrations of cis-1,2-DCE. The detections of these compounds in groundwater cross-gradient to the site may indicate another source for the compounds.Groundwater in sentinel well MW-106D has not shown detections of CVOCs since the installation of these monitoring locations with the exception of an unconfirmed detection of TCE (0.039 μg/L) in MW-106D in January 2006 and an unconfirmed detection of cis-1,2-DCE in MW-107D in April 2007 (0.12 μg/L). Groundwater collected from both sentinel wells in the deep unconsolidated unit had no detections of CVOCs during the reporting period.

Bedrock Wells

Historically, no CVOCs had been detected in upgradient bedrock monitoring well MW-1D until VC was detected beginning in April 2007 and confirmed in two subsequent sampling events. VC has since been detected in groundwater collected from MW-1D throughout the reporting period, and this well exhibits a stable trend for low concentrations of VC (ranging from 0.06 to 0.2 μg/L). Parent compounds have not been detected in upgradient well MW-4D (on the northwest portion of the property) and this well exhibits a stable trend for low concentrations of VC (ranging from 0.035 to 0.16 µg/L). The historical data and upgradient location of these wells indicate that these detections may not be site related. Currently, there are no bedrock wells located further upgradient to the north or east to confirm an offsite source.

Onsite well MW-3D is a bedrock monitoring well situated directly downgradient from the former facility. Groundwater sampling results from MW-3D had low concentrations of TCE (0.091 µg/L) in June 2007, but parent compounds were not detected during the last two reporting periods. Recent results (October 2008 and January 2009) show detections of VC in groundwater collected from MW-3D. However, cis-1,2-DCE was also detected in groundwater collected during the last nine sampling events at relatively stable concentrations (ranging from 0.084 to 0.28 µg/L).

Groundwater collected from downgradient monitoring well MW-101B screened in bedrock just west of the site has shown an overall increasing trend in both parent compound TCE (0.046 to 1.9 µg/L) and daughter compound cis-1,2-DCE (0.18 to 2.2 µg/L). There have been no detections of PCE and one unconfirmed detection of VC (January 2006, 0.036 µg/L).

Results for groundwater collected at monitoring well MW-12B (downgradient to the south-southwest of the former facility) show two unconfirmed detections of PCE in September 2007 and January 2009. Groundwater collected from MW-105B also downgradient and to the south-southeast of the former facility has relatively stable concentrations of cis-1,2-DCE and VC.

Private Wells

Although CVOCs are detected in private wells, the concentrations are relatively low compared to source area and downgradient monitoring well concentrations. In addition, many detected concentrations are at or near the laboratory limit of detection. VOCs were not detected in groundwater at PW-01, PW-02, and PW-10 during the sampling period. The remaining private wells have relatively low concentrations of VOCs detected (no PCE) with overall trends through seven sampling rounds as follows:

- PW-04 and PW-05 are situated to the northwest of the site. VOC trends in these two wells are very similar. TCE concentrations are stable in these wells (approximately 0.1 µg/L) Groundwater concentrations of cis-1,2-DCE increase to approximately 3 µg/L during January 2006 and decrease thereafter with low concentrations of VC.
- PW-03 is also northwest of the Site and shows increasing concentrations of cis-1,2-DCE and TCE to values of 0.54 to 0.91 µg/L and 0.36 to 0.65 µg/L, respectively, in January 2009, but no detections of VC.
- TCE has not been detected in PW-11, the private well farthest to the northwest, but this well shows an increasing trend of cis-1,2-DCE (approximate range between 0.41 and 1.1 µg/L) and a stable trend of VC (approximately 0.025 µg/L). The trend at PW-07 is similar to PW-11 except there is a stable trend of TCE preset (approximately 0.05 µg/L).
- PW-08 and PW-09 show a stable concentration of TCE and VC (approximately 0.1 µg/L and 0.05 µg/L, respectively) with an increasing trend of cis-1,2-DCE concentrations.

In private wells with detections of CVOCs, the parent compounds are either absent or stable, with degradation products increasing. Although an overall increase in concentrations of degradation products is observed at a number of private wells, these increases are minor when compared to increases observed at other areas of the site. All private well detections of CVOCs (parent or daughter) are below the ES.

VOC Distribution and Trend Summary

In general, the highest concentrations of parent compounds (PCE and/or TCE) are detected onsite within the source area or immediately downgradient of the site. Degradation compounds (cis-1,2-DCE and VC) are observed onsite or near site, but concentrations of these compounds increase at downgradient locations, and parent compounds are found at low concentrations or are not detected. The first line of evidence of NA of CVOCs is supported by the documented loss of primary contaminants through the observation of degradation products (USEPA, 1999). Upgradient wells with recent groundwater detections of CVOCs (MW-1S, MW-1D, and MW-4S) may not be impacted by former site activities, but an alternate source for the detections has not been formally determined.

At the private wells with groundwater detections of CVOCs, the parent compounds are either absent or stable at low concentrations, with degradation products increasing. MTBE that is detected in private wells west of the site is believed to be from a source alternate to this site; therefore, the source of VOCs in bedrock private wells west of the Site may also be attributable to an alternate source. All private well detections of MTBE are below the PAL.

In 2007, an area survey and a brief search were performed to identify alternate potential source sites upgradient of the Site (to the north of Highway 67/Oak Street). The State of Wisconsin Bureau of Remediation and Redevelopment Tracking System (BRRTS) database was searched, and one potential alternate site for these compounds was identified: Production Enterprises, Incorporated on Highway 67, approximately a quarter mile upgradient from the Site. The BRRTS database lists this site as the source of a chlorinated solvent release, with a high potential risk of groundwater contamination.

Natural Attenuation Analysis

The purpose of this section is to discuss the distribution of geochemical and biochemical indicators of NA. To organize this evaluation, a screening tool was used as described in the *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* (Wiedemeier, et. al., 1998). A scoring system is described in the protocol and used for this Site as summarized for each of the recommended parameters in Table 10. Points towards the total score are assigned based on the average of the quarterly geochemical and biochemical parameter values for each hydrogeologic unit, over the 2008/January 2009 sampling period. Table 10 shows the NA scores from the 2007/January 2008 and the 2008/January 2009 sampling periods.

Using the methods presented by Wiedemeier et al. (1998), data were compared to the preferred concentrations of NA indicator parameters for an overall screening of Site conditions. Wells were divided into groups based on the hydrogeologic unit in which it is screened (shallow unconsolidated, deep unconsolidated, and bedrock). This scoring exercise shows that adequate evidence for anaerobic biodegradation is present in each of the three units (Table 10). The shallow and deep unconsolidated unit wells scored slightly higher than the bedrock wells.

The scores generated the two most recent reporting periods shown on the table are the same with the exception of a slight increase in score for the bedrock unit in 2008/January 2009. However, 2007/January 2008 and 2008/January 2009 scores are down in comparison to the 2006-2007 period (as stated in the previous annual report). Specifically, the reduction in capacity to naturally attenuate CVOCs is due to the overall decrease in the average dissolved iron concentrations in groundwater across the site (Tables 4, 5, and 6). BTEX compounds that were found at low concentrations in 2006 have been absent during both of the two previous sampling periods. The overall reduction in NA capacity is also reflected by the decreased concentrations of ethane and ethene in groundwater because these compounds are the end product of TCE degradation. The decrease in the concentration of these specific indicators at the wells across the site resulted in the decreased scores for the hydrogeologic units assessed in the most recent sampling period.

Dissolved oxygen (DO), pH, and oxidation reduction potential (ORP) were measured during well purging to assess the redox conditions in the groundwater. DO results are highly variable from measurement to measurement as a result of the sensitivity of this measurement to atmospheric exposure (Tables 4 through 6), and measurements collected indicate that DO concentrations in groundwater were too high to score points for the hydrogeologic units.

Results of the two most recent reporting periods field measurements of ORP indicate that most wells are within the range where reductive dechlorination is possible (+50 millivolts and lower) (Wiedemeier et al., 1998) (Table 4-6). Favorable ORP values are present in the shallow unconsolidated unit downgradient and cross-gradient of the site. Favorable ORP values are prevalent in the deep unconsolidated unit at most locations (except MW-15D, MW-102D, and MW-103D). There are similar values in the bedrock wells for ORP, indicating the necessary reductive pathway for NA is possible.

According to Wiedemeier et al. (1998), dissolved iron concentrations greater than 1,000 µg/L indicate that reductive dechlorination may be possible (Table 10) because it allows decay to proceed in the absence of oxygen (anaerobically). Only wells MW-5D, MW-16S, MW-102D, MW-105S, and MW-105D again met these criteria during this reporting period. MW-16S showed the highest dissolved iron concentration in September 2007 (8,800 µg/L), which is consistent with other evidence suggesting reductive dechlorination is actively occurring at this location. These higher values in the shallow and deep unconsolidated units are typically immediately beneath the site or directly downgradient of the site. Bedrock groundwater dissolved iron concentrations greater than 1,000 µg/L were recorded in wells MW-1D and MW-3D. However, when scoring groups of downgradient wells, dissolved iron groundwater concentrations were too low to award points for the hydrogeologic unit as a whole.

Methane is produced by the metabolism of a wide range of organic substrates by methanogenic bacteria. This group of bacteria is known to play a role in CVOC attenuation. Methane is present in the highest concentrations (above 40 µg/L) at MW-15S, MW-105S, MW-5D, MW-103D, MW-105D, MW-1D, MW-3D, MW-4D, MW-12B, MW-15B, MW-101B, and MW-105B, indicating that methanogenic conditions exist at portions of the site (Table 4-

6). However, methane concentrations were only above the 500 µg/L level that is optimal for reductive dechlorination in groundwater collected at bedrock wells MW-15B, MW-105B, and MW-1D (Wiedemeier et al., 1998). These conditions are not optimal for reductive dechlorination, but are favorable for oxidation of VC (Wiedemeier et al., 1998).

Ethane was detected in groundwater collected at shallow unconsolidated wells MW-16S and MW-105S, and deep unconsolidated well MW-5D. All three wells are located downgradient of the site. The presence of ethane and ethene suggests reductive dechlorination is progressing in some areas downgradient of the site, especially in MW-16S and MW-105S. However, points for ethane and ethene were not able to be assigned for any hydrogeologic unit as a whole.

During each step of the reductive dechlorination process, chloride is released as a by-product. Therefore, areas of high chloride concentration relative to the background concentration can indicate areas where dechlorination is occurring. Chloride concentrations are generally higher than background in the area of highest CVOC detections (Table 4-6). In groundwater collected from the shallow unconsolidated unit, chloride concentrations are highest in MW-12S, MW-16S, and MW-105S downgradient of the site. In the deep unconsolidated unit, chloride groundwater concentrations are highest in cross-gradient wells MW-5D, MW-103D, and MW-105D. In the bedrock unit, all downgradient wells show higher chloride concentrations than the upgradient background concentrations at MW-1D. Elevated chloride concentrations (above background) and distribution suggest that some degree of reductive dehalogenation is occurring.

A pH value between 5 and 9 in groundwater provides the optimal range for reductive dechlorination (Wiedemeier et al., 1998). Values were measured in this range for each site well in each of the three hydrogeologic units.

Overall, despite the aforementioned decreases in ethane, ethene, dissolved iron, and BTEX across the site, there are a number indicators present that support the second line of evidence of natural attenuation of CVOCs (documented presence and distribution of geochemical and biochemical indicators of NA) (OSWER, 1999). This is particularly true at several downgradient wells at the site (MW-5D, MW-105S, MW-105D, and MW-16S).

Natural Attenuation Enhancement

An overall reduction in NA capacity within the site hydrogeologic units was observed between the 2006/January 2007 and 2008/January 2009 sampling periods. Therefore, a means of enhancing natural remediation through the supplementation of electron donor material for microbes (enhanced in situ bioremediation [EISB]) was evaluated (CH2M HILL 2008) to help continue reductive dechlorination of site contaminants. Based on the results of this evaluation, plans are being prepared to enhance the bioremediation and thereby increase the rate of contaminant reduction already occurring through natural processes. Plans include a one-time injection of an emulsified oil substrate in the summer of 2009 to biostimulate existing microorganisms.

Biochlor Modeling Cleanup Times

In 2007, cleanup times and travel distances were evaluated for TCE, cis-1,2-DCE, and VC from the source area of the Site using USEPA's analytical two-dimensional solute transport model, BIOCHLOR (CH2M HILL, 2009). Model results generally predicted the January 2007 concentrations best when a Type 2 model (sequential first-order decay in one zone) was used. The model generally predicted the relative concentrations and trends except for the area of contamination situated beneath the wetland area (near MW-16S). Attempts to vary the input parameters within the established measured site values or literature values were unsuccessful in predicting the concentrations beneath the wetland area monitoring location. Because the use of a continuous source in the model obtained the best fit with the groundwater monitoring data, the model predicted a plume expansion in the future, and cleanup times could not be predicted using this tool.

Therefore, the use of BIOCHLOR in estimating CVOC concentrations and resultant cleanup times is recommended only as an "order of magnitude" guide for Site decisions due to the complex hydraulic nature (strong vertical gradients, short aquifer residence time, etc.) of the site (requiring more than two-dimensional modeling to describe) and unknowns regarding the dimensions and timing of the release.

Conclusions

Based on the information obtained during the 2008-2009 reporting period and previous investigations, the following conclusions can be made:

1. Chlorinated compounds, including TCE and VC, continue to be detected in groundwater from downgradient bedrock wells and private wells. Although concentrations of VOCs in private wells are low (all below the ES and many below the PAL), detections have persisted since CH2M HILL began sampling the private wells in July 2005. Concentrations and flow patterns in the shallow and deep unconsolidated units indicate there may be other sources of CVOCs upgradient of the Site.
2. The CVOC extent does not appear to be migrating in the shallow and deep unconsolidated units. Trends at the private wells with detections of CVOCs appear to show that parent compounds are generally absent or stable at low concentrations, with degradation products increasing.
3. Chlorinated compounds were found at two surface water sampling locations. Surface water at location SG-2 is in close enough contact with shallow unconsolidated groundwater (directly above it) that these compounds could be detected, and are potentially site related. Surface water location SG-3 is located nearly 1,000 feet downstream, and the compounds detected there may not be site related because they would not come from upstream and persist in open water due to their volatility. In addition, upgradient sentinel wells between location SG-3 and the site do not exhibit detections of VOCs.
4. The first and second lines of evidence, as outlined in OSWER Directive 9200.4-17P (OSWER, 1999), are present to support that NA is ongoing at this Site. The first line of evidence is a documented loss of primary contaminants at the field scale—TCE

concentrations are steady overall and degradation products such as cis-1,2-DCE and VC are present in all three hydrogeologic units. The second line of evidence is the documented presence and distribution of geochemical and biochemical indicators of NA including conventional parameters such as chloride, dissolved iron, methane, and field parameters such as ORP, DO, and pH.

5. Screening for evidence of anaerobic biodegradation processes based on the method of Wiedemeier et al. (1998) was performed for this Site and screening results indicate that adequate evidence for NA by anaerobic biodegradation is present within all three hydrogeologic units that comprise the impacted groundwater flow system (shallow unconsolidated, deep unconsolidated, and bedrock units). However, biodegradation capacities of these hydrogeologic units appear to have been reduced on a site-wide basis when compared to historical data.
6. MTBE is detected in downgradient shallow and deep unconsolidated unit wells, but not in onsite wells. MTBE is also detected in private bedrock wells and bedrock monitoring wells downgradient and west of the Site. There are several businesses north of the Site that may have handled this compound as a component of gasoline. Because MTBE is not detected in onsite shallow unconsolidated unit monitoring wells, this constituent does not appear to be related to the Site.

Recommendations

Plans should proceed to supplement the NA processes already occurring at the site through a one-time injection of emulsified oil substrate—scheduled to take place in summer 2009.

USEPA should continue to update the owners of the private bedrock wells quarterly with the most recent validated results for the private bedrock well water analysis.

A more detailed investigation of Production Enterprises, Incorporated located upgradient from the site on Highway 67 as a potential off-site source of VOCs in private bedrock wells, including MTBE, should be performed.

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Tables

TABLE 1

Groundwater Elevations - January 2009

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OECI Site

Well ID	Top of Casing (TOC) Elevation (ft amsl)	Groundwater Depth January 2009 (measured from TOC)	Groundwater Elevation January 2009	Hydrogeologic Unit Screened
MW-1S	853.42	5.43	847.99	Shallow Unconsolidated
MW-3S	853.39	6.43	846.96	Shallow Unconsolidated
MW-4S	854.58	6.81	847.77	Shallow Unconsolidated
MW-5	849.07	2.92	846.15	Shallow Unconsolidated
MW-9S	851.57	4.62	846.95	Shallow Unconsolidated
MW-12S	849.17	3.6	845.57	Shallow Unconsolidated
MW-13S	850.91	4.90	846.01	Shallow Unconsolidated
MW-15S	854.68	8.23	846.45	Shallow Unconsolidated
MW-16S[1]	847.90	Well inaccessible	--	Shallow Unconsolidated
MW-101S	851.24	3.97	847.27	Shallow Unconsolidated
MW-102S	853.65	7.30	846.35	Shallow Unconsolidated
MW-103S	851.84	5.34	846.50	Shallow Unconsolidated
MW-104S	850.56	4.15	846.41	Shallow Unconsolidated
MW-105S	849.01	3.22	845.79	Shallow Unconsolidated
MW-106S	848.92	3.55	845.37	Shallow Unconsolidated
MW-107S[1]	848.66	Well inaccessible	--	Shallow Unconsolidated
MW-5D	848.80	2.42	846.38	Deep Unconsolidated
MW-12D[2]	848.31	2.24	846.07	Deep Unconsolidated
MW-13D	850.02	3.86	846.16	Deep Unconsolidated
MW-14D	850.58	Well destroyed	--	Deep Unconsolidated
MW-15D	855.30	8.87	846.43	Deep Unconsolidated
MW-102D	853.70	7.33	846.37	Deep Unconsolidated
MW-103D	851.97	5.39	846.58	Deep Unconsolidated
MW-104D	850.57	4.1	846.47	Deep Unconsolidated
MW-105D	848.90	2.69	846.21	Deep Unconsolidated
MW-106D	849.01	2.74	846.27	Deep Unconsolidated
MW-107D[1]	848.64	Well inaccessible	--	Deep Unconsolidated
MW-1D	853.14	5.61	847.53	Bedrock
MW-2D	852.36	4.52	847.84	Bedrock
MW-3D	853.51	6.89	846.62	Bedrock
MW-4D	854.63	7.58	847.05	Bedrock
MW-12B	849.40	3.16	846.24	Bedrock
MW-15B	854.35	20.58	833.77	Bedrock
MW-101B	851.08	4.36	846.72	Bedrock
MW-105B	848.90	2.67	846.23	Bedrock

ft amsl = feet above mean sea level

TOC = top of casing

[1] Well inaccessible due to ice surrounding and within well casing.

[2] Groundwater elevation collected on 1/8/09, all other water levels collected on 1/5/2009.

TABLE 2
Vertical Gradient Summary - January 2009
Annual Groundwater Report - July 2009
OECI Site

Well Nest	Screen Midpoint Shallow	Screen Midpoint Deep	Screen Midpoint Bedrock	GW Elev. Shallow - Jan 2009	GW Elev. Deep - Jan 2009	Unconsolidated (Shallow to Deep) Vertical Gradient (ft/ft)	GW Elev. Unconsolidated - Jan 2009[1]	GW Elev. Bedrock - Jan 2009	Unconsolidated to Bedrock Vertical Gradient (ft/ft)
1	842.62		806.04				847.99	847.53	0.013
3	844.59		810.51				846.96	846.62	0.010
4	844.78		809.73				847.77	847.05	0.021
5	841.07	825.30		846.15	846.38	-0.015			
12	841.17	827.81	810.90	845.57	--	--	845.57	846.24	-0.022
13	842.91	823.52		846.10	846.16	-0.003			
15	843.18	818.30	799.35	846.45	846.43	0.001	846.43	833.77	0.668
101	843.24		804.58				847.27	846.72	-0.001
102	842.65	807.20		846.35	846.37	-0.001			
103	842.84	830.47		846.50	846.58	-0.006			
104	840.56	825.07		846.41	846.47	-0.004			
105	841.01	824.40	807.40	845.79	846.21	-0.025	846.21	846.23	-0.001
106	838.92	797.51		845.37	846.27	-0.022			
107	835.62	818.24		--	--	--			

Note: Negative values for vertical gradients indicate upward movement. Positive values indicate downward movement.
NA = Not Available
All elevations in feet above mean sea level
[1] Deep unconsolidated groundwater elevation used where available when calculating unconsolidated to bedrock vertical gradient.

TABLE 3
Monitoring Program Summary
Annual Groundwater Report - July 2009
OECI Site

Well Name/Location	Monitoring Unit	Water Level Measurement Collected	Compliance Sampling (VOC)	Natural Attenuation Sampling (Conv. & Diss gases)
Water Supply Wells				
PW-01	GW-Upper bedrock		X	
PW-02	GW-Upper bedrock		X	
PW-03	GW-Upper bedrock		X	
PW-04	GW-Upper bedrock		X	
PW-05	GW-Upper bedrock		X	
PW-06[a]	GW-Upper bedrock			
PW-07	GW-Upper bedrock		X	
PW-08	GW-Upper bedrock		X	
PW-09	GW-Upper bedrock		X	
PW-10	GW-Upper bedrock		X	
PW-11	GW-Upper bedrock		X	
Site Bldg. Well (DW-01)	GW-Bedrock		X	
SUBTOTAL			11	
Monitoring Wells				
MW-1S	GW-Shallow unconsolidated	X	X	X
MW-1D	GW-Upper bedrock	X	X	X
MW-2D	GW-Upper bedrock	X		
MW-3S	GW-Shallow unconsolidated	X		
MW-3D	GW-Upper bedrock	X	X	X
MW-4S	GW-Shallow unconsolidated	X	X	X
MW-4D	GW-Upper bedrock	X	X	X
MW-5D	GW-Deep unconsolidated	X	X	X
MW-9S	GW-Shallow unconsolidated	X		
MW-12S	GW-Shallow unconsolidated	X	X	X
MW-12D	GW-Deep unconsolidated	X	X	X
MW-12B	GW-Upper bedrock	X	X	X
MW-13S	GW-Shallow unconsolidated	X	X	X
MW-13D	GW-Deep unconsolidated	X	X	X
MW-14D[b]	GW-Deep unconsolidated			
MW-15S	GW-Shallow unconsolidated	X	X	X
MW-15D	GW-Deep unconsolidated	X	X	X
MW-15B[c]	GW-Upper bedrock	X	X	X
MW-16S[d]	GW-Shallow unconsolidated	X	X	X
MW-101S	GW-Shallow unconsolidated	X		
MW-101B	GW-Upper bedrock	X	X	X
MW-102S	GW-Shallow unconsolidated	X		
MW-102D	GW-Deep unconsolidated	X	X	X
MW-103S	GW-Shallow unconsolidated	X	X	X
MW-103D	GW-Deep unconsolidated	X	X	X
MW-104S	GW-Shallow unconsolidated	X		
MW-104D	GW-Deep unconsolidated	X		
MW-105S	GW-Shallow unconsolidated	X	X	X
MW-105D	GW-Deep unconsolidated	X	X	X
MW-105B	GW-Upper bedrock	X	X	X
MW-106S	GW-Shallow unconsolidated	X	X	
MW-106D	GW-Deep unconsolidated	X	X	
MW-107S[d]	GW-Shallow unconsolidated	X	X	
MW-107D[d]	GW-Deep unconsolidated	X	X	
SUBTOTAL		33	26	22
Staff Gauges				
SG-01	SW	X	X	X
SG-02	SW	X	X	X
SG-03	SW	X	X	X
SUBTOTAL		3	3	3
TOTAL		36	40	25

(1) Compliance sampling includes the analysis of VOCs. Water levels are taken at all accessible monitoring wells, drive point piezometers, and staff gauges.

(2) Natural Attenuation sampling includes the analysis of VOCs and natural attenuation parameters (nitrate, diss. Managnese, total and diss. Iron, sulfate, sulfide, methane, ethene, ethane, chloride, alkalinity and soluble organic carbon) and the measurement of field parameters (temperature, pH, specific conductivity, dissolved oxygen, and oxidation reduction potential). Water levels are taken at all accessible monitoring wells, drive point piezometers, and staff gauges. Quarterly sampling is performed to evaluate seasonal trends in natural attenuation parameters for a 2-year period.

(3) Surface water monitoring is performed for the same analysis and frequency as NA groundwater sampling. In addition, Orthophosphate and ammonia is performed on surface water samples.

[a] Private well PW-06 has been disconnected and cannot be sampled as the property is vacant.

[b] Monitoring well MW-14D has been destroyed due to local road construction. It is scheduled for replacement in Summer 2009.

[c] Monitoring well MW-15B was not sampled in January 2009 due to poor recharge rate and low hydraulic head.

[d] Monitoring wells MW-16S, MW-107S, and MW-107D were not sampled in January 2009 due to ice inside the well.

GW-Groundwater

SW-Surface water

TABLE 4

Field and Analytical Results - Shallow Unconsolidated Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

				MW-1S													
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA05-01, 02 Oct 04	05CA40-08, 09 Jul 05	06CA01-26, 27 Oct 05	06CD09-26, 27 Jan 06	06CD16-08, 09 Mar 06	07CE18-14,15 Jan 07	07CE25-13, 14 April 07	07CE37-11, 14 June 07	07CE47-15, 16 Sept 07	08CE08-12 Jan 08	08CE12-50, 51 April 08	08CE15-31 July 08	09CE01-22 Oct 08	09CE07-47 Jan 09
Field Parameters																	
Dissolved Oxygen (DO)	mg/L			1.82	28.8%	0.53	2.53	0.54	1.77	0.80	0.41	0.58	0.4	0.43	0.3	1.97	1.05
Oxidation Reduction Potential (ORP)	millivolts			73.5	214.6	135.1	179.4	121.6	-302.9	23.6	196.8	148.2	37.3	-30.6	1.5	159.3	24.3
pH	pH units			6.93	6.51	6.64	7.04	6.78	7.03	6.93	6.43	6.79	6.79	7.03	6.92	6.82	6.98
Specific Conductivity	mmhos/cm			0.956	0.668	0.857	1.369	1.372	1.219	0.981	1.273	0.955	0.916	0.906	897	0.8	1.154
Temperature	deg c			16.34	15.88	17.78	9.54	7.24	7.95	7.73	15.91	17.65	9.29	9.4	16.74	16.42	7.15
Depth to water	feet			8.56	8.24	9.66	7.93	5.60	5.62	5.83	6.74	5.74		4.72	4.91	6.79	5.43
Natural Attenuation Parameters																	
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	370	350	360	340	360	380	390	380	390	340	400	380	320	320
Chloride (as Cl)	mg/L	125	250	65.9	24	98	**230**	**160**	**150**	70	**140**	60	93	57	51	60	**180**
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 R	0.4 U
Ethene	µg/L	N/A	N/A	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	0.5 U	0.5 U	0.5 U	0.5 R	0.5 U
Iron, total	µg/L	150	300	**281 J**	**468**	**377**	**253**	39 U	**207**	**330 J**	**220 J**	**260 J**	62 J	**550**	**250**	72	**614**
Iron, dissolved	µg/L	150	300	14 U	25 U	25 U	25 U	10 U	10 U	142 J	10 UJ	10 U	15 UJ	**430**	120 J	5 U	36.6
Manganese, total	µg/L	25	50		15.2	11.9	14.2	**68.2**	**72.6**	**135**	**85**	**170 J**	**76 J**	**120**	**100**	**330**	**36 J**
Manganese, dissolved	µg/L	25	50	14.6	1.2 U	2 J	5.1	**66**	**49**	**122**	**71**	**150**	**77**	**110 J+**	**97**	**320 J**	4 U
Methane	µg/L	N/A	N/A	2.3 J	0.5 U	1.4 J	1.1 J	0.5 U	2.2 J	4.2	11	5.6 J	0.84 U	1.7 J	10	4 U	1.6 J
Nitrogen, nitrate (as N)	mg/L	2	10	0.4 J	1	0.18	0.4	0.06 U	0.11 J	0.33	0.23 J	0.11 U	0.39 J	0.26	0.05 U	0.28	0.11 J
Sulfate (as SO4)	mg/L	125	250	47.2	24	35	54	38	64	55	**140**	56	31	65	61	42	52
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 U	1 U	1 J	1 U	1 UJ	1 U	1 U	1.2 J+	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	1.6 J	1.1 J	2.2 J	0.91 J	2.8	0.7 U	1.3 J	0.5 UJ	0.51 J+	1.1 J	1.5 J	1.5 J	2.3 J	1.7 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	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.063 J	0.05 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	0.019 U	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 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	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.38	0.24
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.1 U	0.1 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 R**	**0.026 UJ**	**0.026 U**	**0.026 R**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 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
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	0.4 R	0.4 UJ	0.4 U	0.4 R	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.8 U	0.8 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 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 U	0.4 U	0.4 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U
Acetone	µg/L	200	1,000	1.5 UJ	1.5 R	1.5 UJ	1.5 U	1.5 R	1.3 UJ	1.3 U	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 UJ
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 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	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 UJ	0.07 U	0.07 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.023 U	0.055 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 UJ	0.22 UB	0.05 U	0.17 U	0.28 U	0.1 U	0.05 U	0.18 U	0.18 U	0.05 U	0.05 U	0.25 U	**1.4 J**
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.06 U	0.06 U	0.15 J	0.26	0.32	0.084 J	0.11 J	0.064 J	0.24	0.14 J	0.05 U	0.05 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	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 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	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.15 J	0.05 U	0.14 J	0.17	0.3	0.19	0.17	0.08 U	0.08 J	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	**1.8 J**	0.11 U	**1 J**	0.15 UJ	0.15 R	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 R
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	0.05 U	0.05 U
Toluene	µg/L	200	1,000	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.06 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	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.5	5	0.07 J	0.03 U	0.031 J	0.03 U	0.063 J	0.18 J	0.16 J	0.11 J	0.13 J	0.05 J	0.23	0.24	0.05 U	0.05 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	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U

				MW-4S								
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	07CE18-10, 11 Jan 07	07CE25-17, 18 April 07	07CE37-12, 15 June 07	07CE47-17, 18 Sept 07	08CE08-02 Jan 08	08CE12-58, 59 April 08	08CE15-04 July 08	09CE01-20 Oct 08	09CE07-46 Jan 09
Field Parameters												
Dissolved Oxygen (DO)	mg/L			0.68	1.00	1.57	1.04	-1.26	0.45	0.43	--	1.35
Oxidation Reduction Potential (ORP)	millivolts			49.4	79.5	184.0	16.7	18.4	-15.3	57.4	86.3	115.1
pH	pH units			6.90	6.09	6.40	6.66	6.71	6.64	6.76	6.72	6.73
Specific Conductivity	mmhos/cm			1.447	1.406	1.503	1.497	1.331	1.111	1205	1.344	1.469
Temperature	deg c			7.85	7.38	15.75	17.92	9.51	8.02	15.63	15.17	7.55
Depth to water	feet			6.81	5.55	8.12	7.01		5.30	6.09	8.74	6.81
Natural Attenuation Parameters												
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	730	660	670	770	560	600	620	580	580
Chloride (as Cl)	mg/L	125	250	35	31	67	34	67	24	28	71	57
Ethane	µg/L	N/A	N/A	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	N/A	N/A	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
Iron, total	µg/L	150	300	**325**	**285 J**	**180 J**	**650**	**740 J**	**780**	**380**	72	**814**
Iron, dissolved	µg/L	150	300	94.2	112 J	100 J	**450**	**450**	**490**	**250 J**	51	46.8
Manganese, total	µg/L	25	50	**163**	**166**	**160**	**290 J**	**100 J**	**160**	**160**	**120**	**88.2**
Manganese, dissolved	µg/L	25	50	**140**	**142**	**140**	**260**	**100**	**150**	**140**	**120 J**	11.8 J
Methane	µg/L	N/A	N/A	1.1 U	1.2 U	2.5	1.4 U	0.38 U	5.4	16	1.6 U	3.3 J
Nitrogen, nitrate (as N)	mg/L	2	10	0.19 J	1.6	0.11 U	0.11 U	**3.3**	0.27	0.15 J	0.35	**10**
Sulfate (as SO4)	mg/L	125	250	**160**	120	98	100	79	62	48	57	71
Sulfide	mg/L	N/A	N/A	1 U	1 UJ	1 U	1 U	1.4 J+	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	9.5	8.9 J	7.1 J	9.7 J	7.4 J	8.1 J	8.2 J	6.4 J	7.7 J
VOCs												
1,1,1-Trichloroethane	µg/L	40	200	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	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
1,1-Dichloroethene	µg/L	0.7	7	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.1 U	0.1 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	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	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
1,3-Dichlorobenzene	µg/L	125	1,250	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
2-Hexanone	µg/L	N/A	N/A	0.8 U	0.8 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.4 U	0.4 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.3 UJ	1.3 U	1.5 U	1.5 UJ	1.5 UJ	1.5 U	2.3 J	1.5 U	1.9 U
Benzene	µg/L	0.5	5	0.04 U	0.04 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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.39 U
Carbon tetrachloride	µg/L	0.5	5	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.05 U	0.05 U	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	**0.3 U**	0.05 U	0.05 U	0.22 U	0.12 U	0.05 U	0.072 U	0.14 U	0.22 U
cis-1,2-Dichloroethene	µg/L	7	70	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.5	5	0.15 UJ	0.15 R	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ
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
Toluene	µg/L	200	1,000	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	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
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	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
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U

				MW-12S													
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA05-07, 08 Oct 04	05CA40-46, 47 Jul 05	06CA01-07, 08 Oct 05	06CD09-36, 37 Jan 06	06CD16-10, 11 Mar 06	07CE18- 67, 68 Jan 07	07CE25-89-95 April 07	07CE37-72, 73 June 07	07CE47-49 Sept 07	08CE08-62, 63 Jan 08	08CE12-39, 40 April 08	08CE15-39 July 08	09CE01-44 Oct 08	09CE07-33 Jan 09
Field Parameters																	
Dissolved Oxygen (DO)	mg/L			0.34	6.5%	1.32	0.47	0.59	0.87	2.32	1.70	4.51	0.36	0.33	0.62	--	0.31
Oxidation Reduction Potential (ORP)	millivolts			14.6	68.7	324	204.9	48.8	7.7	19.8	58.0	6.2	25.6	63.8	85	65.3	-32
pH	pH units			7.26	7.15	4.62	7.19	7.25	7.29	7.61	6.48	7.15	7.16	7.22	6.71	7.16	7.14
Specific Conductivity	mmhos/cm			1.522	1.180	1.297	1.367	1.251	1.410	1.333	1.375	1.448	1.326	1.336	1359	1.387	1.374
Temperature	deg c			12.84	13.76	15.15	6.77	6.63	6.81	6.53	11.80	13.37	8.13	8.61	12.1	12.44	7.01
Depth to water	feet			5.47	5.69	6.43	4.63	4.07	4.07	3.29	4.65	3.96		3.10	3.41	4.33	3.6
Natural Attenuation Parameters																	
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	391	370	400	380	390	420	450	440 J	400	410	420	410	410	370
Chloride (as Cl)	mg/L	125	250	**207**	**140**	**180**	**210**	**150**	**190**	**180**	**190**	**210**	**220**	**190**	**190**	**170**	**190**
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 UJ	1.6 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.8 U
Ethene	µg/L	N/A	N/A	0.82 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U
Iron, total	µg/L	150	300	**499**	**300**	**264**	**626**	**396 J**	**375**	60.5 J+	**250 J**	**1,400**	**310 J**	**230 J**	**220**	13 J	**631**
Iron, dissolved	µg/L	150	300	19.4 J	25 U	25 U	25 U	10 U	36.9	15.3 J	27 J	39 J	43 J	20 J+	5 UJ	110	37.9
Manganese, total	µg/L	25	50		**114**	**121**	**128**	**116**	**119**	**103**	**140**	**140**	**121 J**	**120**	**110**	**120**	**137**
Manganese, dissolved	µg/L	25	50	**123**	**109**	**115**	**115**	**108**	**113**	**113**	**130**	**110 J**	**111**	**110**	**100**	**120**	**105**
Methane	µg/L	N/A	N/A	130	32	1.4 J	2	57	11	9.8	40	12	23 J	18	18	22	14 J
Nitrogen, nitrate (as N)	mg/L	2	10	0.06 U	0.06 J	0.048 J	1.6	0.06 U	0.06 U	0.06 U	0.11 U	0.31 J	0.28 J	0.41	0.61	0.18	0.12 J
Sulfate (as SO4)	mg/L	125	250	60	**220**	62	**180**	47	56	56	47 J	53	58	54	53	49 J	51
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 U	1 J	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	4.7	3.3	3.5	3.3	2.8	3.4	3.9 J	2 J	2.8 J+	3.5 J	3.9 J	3.6 J	3.5 J	3 J
VOCs																	
1,1,1-Trichloroethane	µg/L	40	200	**66**	**74 J**	**57 J**	19	**73**	**120**	**86**	**77**	**95**	**100**	**90**	**84**	**100**	**95**
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	**0.36 U**	**0.36 U**	**0.36 U**	**0.36 U**	**0.36 U**	**0.36 U**	**0.38 U**	**0.38 UJ**	**0.38 U**	**0.38 U**	**0.38 UJ**	**0.38 U**	**0.38 U**
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	**1.8 U**	**1.8 U**	**1.8 U**	**1.8 U**	**0.8 U**	**0.8 U**	**1.2 U**	**1.2 U**	**1.2 U**	**1.2 U**	**1.2 U**	**1.2 U**	**1.2 U**
1,1-Dichloroethane	µg/L	85	850	43	25	31 J	22	19	61	54	45	55	67	58	52	49	53
1,1-Dichloroethene	µg/L	0.7	7	**7.1**	**5 J**	**6.4 J**	**3.4 J**	**4.8**	**15**	**15**	**12**	**14**	**22 J**	**17**	**19**	**19**	**18**
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	4.1 J
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	1.2 U	1.2 U	1.2 U	1.2 U	2 U	2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	2.3 J
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	0.026 U	**0.52 U**	**0.52 UJ**	**0.52 U**	**0.52 U**	**0.8 U**	**0.8 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.46 U	0.46 U	0.46 U	0.46 U	**0.6 U**	**0.6 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	**0.8 U**	**0.8 U**	**0.8 U**	**0.8 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**	**0.6 U**
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	**1.2 U**	**1.2 U**	**1.2 U**	**1.2 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.8 U	0.8 U	0.8 U	0.8 U	1 U	1 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U	0.54 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	1 U	1 U	1 U	1 U	1.2 U	1.2 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	8 R	8 UJ	8 R	8 U	10 U	10 U	12 U	12 U	12 U	12 U	12 U	12 UJ	12 U
2-Hexanone	µg/L	N/A	N/A	0.5 U	10 UJ	10 U	10 R	10 U	16 U	16 UJ	32 U	32 U	32 U	32 U	32 U	32 UJ	32 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	12 UJ	12 U	12 R	12 U	8 U	8 UJ	16 UJ	16 U	16 U	16 U	16 U	16 UJ	16 U
Acetone	µg/L	200	1,000	1.5 UJ	30 R	30 UJ	30 R	30 U	26 UJ	26 UJ	30 UJ	30 U	30 U	30 U	30 UJ	30 UJ	30 J
Benzene	µg/L	0.5	5	0.085 UB	**1 U**	**1 U**	**1 U**	**1 U**	**0.8 U**	**0.8 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
Bromochloromethane	µg/L	N/A	N/A	0.05 U	1 U	1 U	1 U	1 U	1 U	1 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	**0.8 U**	**1.6 J**	**0.8 U**	**0.8 U**	**1.3 J**	**0.8 U**	**0.87 J**	**0.6 U**	**0.6 U**	**2 J**	**1 J**	**1.2 J**	**0.6 U**
Bromoform	µg/L	0.44	4.4	0.07 U	**1.4 U**	**1.4 U**	**1.4 UJ**	**1.4 U**	**0.8 U**	**0.8 U**	**0.8 UJ**	**0.8 UJ**	**0.8 U**	**0.8 U**	**0.8 U**	**0.8 U**	**0.8 U**
Bromomethane	µg/L	1	10	0.06 U	**1.2 U**	**1.2 U**	**1.2 UJ**	**1.2 U**	**1.2 UJ**	**1.2 U**	**1.4 U**	**1.4 U**	**1.4 U**	**1.4 U**	**1.4 U**	**1.4 U**	**1.4 U**
Carbon disulfide	µg/L	200	1,000	0.1 U	2 U	2 U	2 UJ	2 U	2 U	2 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 UJ	1.8 U	8
Carbon tetrachloride	µg/L	0.5	5	0.05 U	**1 U**	**1 U**	**1 UJ**	**1 U**	**0.8 U**	**0.8 U**	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	1 U	1 U	1 U	1 U	1.2 U	1.2 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Chloroethane	µg/L	80	400	0.6 J	1.2 U	1.2 U	1.2 UJ	1.2 U	1 U	1 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	µg/L	0.6	6	0.1 UB	**1.7 J**	**1.4 U**	**1.4 U**	**1.4 U**	**0.8 U**	**0.8 U**	0.44 U	0.44 U	0.44 U	0.44 U	**1 U**	**1.3 U**	**0.73 U**
Chloromethane	µg/L	0.3	3	0.05 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1.7 U**	**1 U**
cis-1,2-Dichloroethene	µg/L	7	70	**29**	**17 J**	**64 J**	**80**	**24**	**33**	**34**	**32 J**	**29**	**35**	**34**	**29**	**40**	**30**
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	**0.32 U**	**0.32 U**	**0.32 U**	**0.32 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**
Dibromochloromethane	µg/L	6	60	0.09 U	1.8 U	1.8 U	1.8 U	1.8 U	0.58 U	0.58 U	0.52 U	0.52 U	0.52 U	0.52 U	0.95 J	1.2 J	0.52 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	1.2 U	1.2 U	1.2 U	1.2 U	1 U	1 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Ethylbenzene	µg/L	140	700	0.05 U	1 U	1 U	1 U	1 U	1 U	1 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.6 U	0.6 U	0.6 U	0.6 U	1 U	1 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	2.4 U	2.4 U	2.4 U	2.4 U	1.8 U	1.8 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	1 U	1 U	1 U	1 U	1 U	1 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	**2.2 UJ**	**70 J**	**2.2 R**	**2.2 UJ**	**3 R**	**3 R**	**3.6 UJ**	**3.6 UJ**	**3.6 U**	**3.6 UJ**	**3.9 J**	**28 J**	**3.6 UJ**
o-Xylene	µg/L	N/A	N/A	0.04 U	0.8 U	0.8 U	0.8 U	0.8 U	1 U	1 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U	0.46 U
Styrene	µg/L	10	100	0.04 U	0.8 U	0.8 U	0.8 U	0.8 U	1 U	1 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
Tetrachloroethene	µg/L	0.5	5	0.051 J	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
Toluene	µg/L	200	1,000	0.08 U	1.6 U	1.6 U	1.6 U	1.6 U	1 U	1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
trans-1,2-Dichloroethene	µg/L	20	100	16 J	16 J	**20 J**	7.4	16	**21**	18	**21**	17	17	19	**20**	**26**	17
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	**0.3 U**	**0.3 U**	**0.3 U**	**0.3 U**	**0.38 U**	**0.38 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**	**0.34 U**
Trichloroethene	µg/L	0.5	5	**120**	**100**	**100 J**	**19**	**100**	**130**	**110**	**98**	**110**	**130**	**120**	**110**	**110**	**120**
Vinyl chloride	µg/L	0.02	0.2	**0.38**	**0.36 U**	**4.4 J**	**8.8**	**0.84 J**	**1.1 J**	**1.3**	**0.96**	**1.1**	**1.4**	**1.2**	**0.88**	**1.8**	**1.2**

				MW-13S										
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA40-30 Jul 05	06CD09-61 Jan 06	07CE18- 51, 52 Jan 07	07CE25-99, 07CE26-01-03 April 07	07CE37-54-57 June 07	07CE47-45 Sept 07	08CE08-55, 56 Jan 08	08CE12-35, 36 April 08	08CE15-51 July 08	09CE01-35 Oct 08	09CE07-17 Jan 09
Field Parameters														
Dissolved Oxygen (DO)	mg/L			3.19	1.84	NR	1.27	1.64	4.95	1.5	2.79	1.11	0.07	5.68
Oxidation Reduction Potential (ORP)	millivolts			241.4	83.5	-283.4	115.6	-24.4	145.2	173.6	37.7	167	106.2	222.9
pH	pH units			6.42	7.06	7.27	5.95	7.07	7.10	7.10	7.18	6.91	7.06	7.14
Specific Conductivity	mmhos/cm			0.972	1.139	0.877	0.891	1.066	0.737	0.924	0.956	1196	1.668	0.839
Temperature	deg c			12.39	8.30	6.17	5.82	11.73	15.37	7.90	6.81	13.11	13.92	6.9
Depth to water	feet			7.02	6.39	4.95	4.21	6.01	5.20		4.02	4.44	5.9	4.9
Natural Attenuation Parameters														
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A			310	330	340 J	320	330	310	340	390	280
Chloride (as Cl)	mg/L	125	250			68	82	110	36	110	110	**180**	**260**	89
Ethane	µg/L	N/A	N/A			0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	N/A	N/A			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
Iron, total	µg/L	150	300			73.4 J	82.4 J	**570 J**	57 J	45 J	**207 J**	42	59	45.8 J-
Iron, dissolved	µg/L	150	300			10 U	10 R	10 UJ	10 UJ	15 UJ	11 J+	5 U	5 U	8
Manganese, total	µg/L	25	50			2.3	6.2 J	**31**	0.88 J+	4.4 J	**36**	4 R	**35**	4 U
Manganese, dissolved	µg/L	25	50			0.4 U	4.7 J	11	0.4 UJ	1.6 J	**34**	1.2 J	**31**	4 U
Methane	µg/L	N/A	N/A			0.35 U	0.57 U	0.25 U	1.4 U	0.25 U	20	0.35 J	49 U	0.25 U
Nitrogen, nitrate (as N)	mg/L	2	10			**9.7**	**3.6**	**2.4**	**8.4**	**2.5**	**2.9**	1.7	0.16 J	**2.3**
Sulfate (as SO4)	mg/L	125	250			35	40	50	23	45	38	47 J	69	22
Sulfide	mg/L	N/A	N/A			1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A			2.6	1.4 J	0.5 UJ	1.9 J+	2 J	1.8 J	1.9 J	1.9 J	1.6 J
VOCs														
1,1,1-Trichloroethane	µg/L	40	200	0.18 J	0.77	0.092 J	0.43 U	0.45	0.1 J	0.29	0.37	0.27 J	0.52 J	0.19 J
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 UJ	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 UJ	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.062 J	0.47	0.06 U	0.11 J	0.14 J	0.06 U	0.06 U	0.077 J	0.06 U	0.2	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 UJ	0.11 J	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.076 J	0.05 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 UJ	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 UJ	0.06 U	0.1 U	0.1 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 UJ**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 UJ	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 UJ	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 UJ	0.22	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.12 J	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 UJ	0.06 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
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 UJ	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 UJ	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 R	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	0.5 UJ	0.5 U	0.8 U	0.8 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 UJ	0.6 U	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 R	1.5 R	1.3 UJ	1.3 UJ	1.5 U	1.5 U	1.5 UJ	1.5 U	1.6 J	1.5 U	1.5 U
Benzene	µg/L	0.5	5	0.05 UJ	0.05 U	0.04 U	0.04 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 UJ	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 UJ	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 UJ	0.07 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 UJ	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ
Carbon tetrachloride	µg/L	0.5	5	0.05 UJ	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 UJ	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 UJ	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 UJ	0.07 U	0.04 U	0.04 U	0.022 U	0.58 U	0.24 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 UJ	0.05 U	**0.4 U**	0.05 U	0.05 U	0.15 U	0.05 U	0.17 U	0.054 U	**0.65 U**	0.27
cis-1,2-Dichloroethene	µg/L	7	70	0.14 J	3.4	0.03 U	0.49	0.45 UJ	0.05 U	0.17 J	0.28	0.067 J	2.5	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 UJ	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 UJ	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 UJ	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 UJ	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 UJ	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 UJ	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.05 UJ	0.16 J	0.05 U	0.05 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.3	0.08 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.15 R	0.15 R	0.18 U	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.04 UJ	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 UJ	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.097 J	0.055 J	0.074 J	0.057 J	0.067 J	0.073 J	0.066 J	0.05 U	0.072 J	0.05 U	0.065 J
Toluene	µg/L	200	1,000	0.08 UJ	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 UJ	0.25	0.06 U	0.06 U	0.078 J	0.06 U	0.06 U	0.06 U	0.06 U	0.27	0.06 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 UJ	0.015 U	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.5	5	0.33 J	**2.8**	0.11 J	**1.4**	**1.6**	0.077 J	0.32	**1.4**	0.32	**3.6**	0.17 J
Vinyl chloride	µg/L	0.02	0.2	0.018 UJ	**0.047 J**	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	**0.042 J**	0.013 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).

TABLE 4

Field and Analytical Results - Shallow Unconsolidated Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

				MW-15S													
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA05-15, 16 Oct 04	05CA40-04, 05 Jul 05	06CA01-11, 12 Oct 05	06CD09-08, 09 Jan 06	06CD16-14, 15 Mar 06	07CE18-23, 24 Jan 07	07CE25-59, 60 April 07	07CE37-41, 42 June 07	07CE47-07, 08 Sept 07	08CE08-07 Jan 08	08CE12-14, 15 April 08	08CE15-42 July 08	09CE01-16 Oct 08	09CE07-21 Jan 09
Field Parameters																	
Dissolved Oxygen (DO)	mg/L			8.47	93.9%	5.33	5.82	14.51	4.66	7.16	8.97	8.32	3.06	9.9	8.78	6.19	9.6
Oxidation Reduction Potential (ORP)	millivolts			72.0	28.1	105.8	126.2	152.7	-240.5	82.5	83.1	180.7	25.5	91.3	174.4	93.9	62.5
pH	pH units			7.46	7.24	7.02	7.16	7.23	7.41	7.53	7.12	6.85	7.3	7.36	7.16	7.24	7.4
Specific Conductivity	mmhos/cm			0.480	0.621	0.831	0.708	0.667	0.652	0.592	0.624	0.556	0.721	0.542	465	0.554	0.53
Temperature	deg c			15.83	14.97	16.7	10.98	9.01	8.83	7.06	14.61	18.3	11.86	8.83	14.97	15.16	9.53
Depth to water	feet			10.43	10.21	11.73	10.41	8.44	8.09	7.04	9.09	8.26		6.4	7.29	9.63	8.23
Natural Attenuation Parameters																	
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	229	300	330	300	360	270	250	290	290	310	200	240	390	230
Chloride (as Cl)	mg/L	125	250	9.86 J	32	90	66	**220**	33	46	25	12	47	8.5	7.7	13	20
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	N/A	N/A	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	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Iron, total	µg/L	150	300	**224 J**	59.7 J	95.3	30.6 J	39 U	91.3 J	39 UJ	39 U	45 J	13 J	41 J	110	600	16.7 J
Iron, dissolved	µg/L	150	300	14 U	25 U	25 U	25 U	10 U	10 U	10 UJ	10 UJ	10 U	15 UJ	5.9 J+		530	8
Manganese, total	µg/L	25	50		8.2	**29.2**	16.7	**216**	20.7	3.2 J	6.3 J	7 J	1.6 UJ	6.8 J+	6.7 R	650	4 U
Manganese, dissolved	µg/L	25	50	9.6	1.2 U	7.7	5.5	**197**	0.4 U	0.64 J+	1.3 J	0.4 U	0.6 UJ	1.2 UJ		640	4 U
Methane	µg/L	N/A	N/A	1 J	0.5 U	0.84 J	0.5 U	1.5 U	1.2 U	0.25 U	0.25 U	0.68 U	0.25 U	0.25 U	0.66 J	870	0.25 U
Nitrogen, nitrate (as N)	mg/L	2	10	**4.65 J**	0.8	0.92	1.1	0.45	1.2	1.2	1.5	1.5	0.88 J	1.7	1.7	0.05 U	**2.4**
Sulfate (as SO4)	mg/L	125	250	13.1 J	15	22	46	51	28	15	17	17	18	12	10	38	9.6
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1.4 J+	1 U	1.4 J	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	1.5 J	2 J	1.9 J	1 J	1.3 J	1.4 J	1.7 J	0.5 UJ	1 J+	1.8 J	1.7 J	1.9 J	1.1 J	1.3 J
VOCs																	
1,1,1-Trichloroethane	µg/L	40	200	1.1	0.39 J	1.5	1.3	0.07 U	0.12 J	0.072 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.019 U	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 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	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.031 U	0.031 U	0.1	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
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	0.06 U	0.16 J	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.1 U	0.1 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**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.04 U	0.04 U	0.058 J	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 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
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	0.4 R	0.4 U	0.4 R	0.4 U	0.5 U	0.5 U	0.6 U	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 R	0.5 U	0.8 U	0.8 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 U	0.6 R	0.6 U	0.4 U	0.4 U	0.8 UJ	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 UJ	1.5 R	1.5 U	1.5 R	1.5 U	1.3 UJ	1.3 U	1.5 UJ	1.5 UJ	1.5 UJ	1.7 J	3.2 J	1.5 UJ	1.5 U
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.058 J	0.04 U	0.04 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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 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	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 J
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.09 UJ
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.05 U	3.3	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 U	**0.32**	0.05 UJ	0.082 U	**0.35 U**	0.05 U	0.05 U	**0.33 U**	0.05 U	0.05 U	0.086 U	**0.69 U**	0.05 U
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.06 U	0.06 U	4.3	0.03 U	0.03 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 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	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.05 U	0.05 U	0.25	0.05 U	0.05 U	0.08 UJ	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	**2.1**	0.11 R	0.29 UJ	0.15 UJ	0.15 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.085 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.074 J	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	200	1,000	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 U	0.04 U	0.04 U	0.33	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
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	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.5	5	0.15 J	0.03 U	0.03 U	**0.61**	**25**	0.051 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
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	**0.023 J**	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U

				MW-16S											
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA05-17, 18 Oct 04	04CA40-35, 36 Jul 05	06CA01-28, 29 Oct 05	06CD09-50, 51 Jan 06	06CD16-44, 45 Mar 06	07CE18-85, 86 Jan 07	07CE26-04, 05 April 07	07CE37-50, 51 June 07	07CE47-74, 75 Sept 07	08CE12-87, 88 April 08	08CE15-58 July 08	09CE01-53 Oct 08
Field Parameters															
Dissolved Oxygen (DO)	mg/L			3.33	NR	0.17	0.34	2.53	NR	5.23	0.93	0.45	0.35	1.14	0.29
Oxidation Reduction Potential (ORP)	millivolts			-157.8	75.1	-58.3	-118.7	-70.4	-348.1	-46.5	-149.0	-116.2	-234.0	147.3	-49.8
pH	pH units			7.03	6.69	6.23	6.87	6.57	6.77	6.58	6.51	6.65	6.66	6.53	6.76
Specific Conductivity	mmhos/cm			3.293	3.459	3.623	3.154	4.229	4.647	3.722	4.383	4.305	3.928	4078	4.104
Temperature	deg c			12.87	15.14	14.02	8.22	9.07	7.15	6.55	11.38	12.88	8.21	15.66	12.1
Depth to water	feet			4.17	4.93	5.25	3.30	2.90	2.79	2.12	3.51	2.85	2.30	2.49	2.91
Natural Attenuation Parameters															
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	930	840	930	910	890	920	830	900	350	850	830	880
Chloride (as Cl)	mg/L	125	250	**155**	**170**	**220**	**220**	**260**	**290**	**270**	**270**	**290**	**270**	**300**	**280**
Ethane	µg/L	N/A	N/A	1.8 J	1.3 J	0.56 J	0.5 U	1.5 U	3.5 J	0.4 U	0.4 UJ	1.4 J	0.4 U	0.4 U	0.85 J
Ethene	µg/L	N/A	N/A	12	4.1	4.3	6.1	4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.76 J	3.1 J
Iron, total	µg/L	150	300	**6,450**	**8,260**	**6,590**	**4,790**	**8,350**	**9,710**	**8,300 J**	**9,500**	**9,400**	**9,200**	**7,300**	**6,600**
Iron, dissolved	µg/L	150	300	**5,830**	**7,420**	**6,130**	**4,470**	**7,990**	**8,700**	**8,320 J**	**7,700**	**9,200**	**8,800**	**7,200**	**6,100**
Manganese, total	µg/L	25	50		**78.1**	**85**	**85.5**	**85.5**	**91.5**	**74.2**	**110**	**89**	**95**	**110**	**74**
Manganese, dissolved	µg/L	25	50	**81.5**	**71.2**	**79.2**	**81.4**	**80.4**	**84.6**	**77.4**	**79**	**82**	**91**	**92**	**70**
Methane	µg/L	N/A	N/A	680	530	180	440	200	49	38	20	6 J	24	25	16
Nitrogen, nitrate (as N)	mg/L	2	10	0.06 U	0.052 J	0.08 J	0.12 J	0.06 U	0.11 J	0.06 U	0.21 J	0.11 U	0.05 U	0.05 U	0.05 U
Sulfate (as SO4)	mg/L	125	250	**941 J**	**1,000**	**1,300**	**1,400**	**1,400**	**1,500**	**1,400**	**1,500**	**1,600**	**1,400**	**1,500 J**	**1,400**
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 U	1 U	1	1 U	1 UJ	1 U	1 U	3.2	1.5 J	1 U
Total Organic Carbon	mg/L	N/A	N/A	5	3.9	3.7	3.8	2.8	3.4	4 J	2.3 J	3.8 J+	4.6 J	4.4 J	3.5 J
VOCs															
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	1.8 U	3.5 U	7 U	7 U	8 U	8 U	10 U	10 U	0.05 U	13 U	13 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	**0.45 U**	**0.9 U**	**1.8 U**	**1.8 U**	**3.6 U**	**3.6 U**	**3.8 U**	**3.8 U**	0.019 U	**4.8 UJ**	**4.8 U**
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	**2.3 U**	**4.5 U**	**9 U**	**9 U**	**8 U**	**8 U**	**12 U**	**12 U**	0.06 U	**15 U**	**15 U**
1,1-Dichloroethane	µg/L	85	850	0.067 J	0.78 U	1.6 U	3.1 U	3.1 U	12 U	12 U	12 U	12 U	0.14 J	15 U	15 U
1,1-Dichloroethene	µg/L	0.7	7	0.12 J	**1.5 U**	**3 U**	**6 U**	**6 U**	**8 U**	**8 U**	**10 U**	**10 U**	**1.3**	**13 U**	**13 U**
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	2 U	4 U	8 U	8 U	16 U	16 U	14 U	14 U	0.07 U	18 U	18 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	1.5 U	3 U	6 U	6 U	**20 U**	**20 U**	12 U	12 U	0.06 U	**15 U**	**15 U**
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026 U**	**0.65 U**	**1.3 UJ**	**2.6 U**	**2.6 U**	**8 U**	**8 U**	**10 U**	**10 U**	**0.05 U**	**13 U**	**13 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	**0.58 U**	**1.2 U**	**2.3 U**	**2.3 U**	**6 U**	**6 U**	**10 U**	**10 U**	0.05 U	**13 U**	**13 U**
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	1 U	2 U	4 U	4 U	8 U	8 U	10 U	10 U	0.05 U	13 U	13 U
1,2-Dichloroethane	µg/L	0.5	5	**0.54**	**1 U**	**2 U**	**4 U**	**4 U**	**6 U**	**6 U**	**6 U**	**6 U**	**2.6**	**7.5 U**	**7.5 U**
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	**1.5 U**	**3 U**	**6 U**	**6 U**	**10 U**	**10 U**	**10 U**	**10 U**	0.05 U	**13 U**	**13 U**
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	1 U	2 U	4 U	4 U	10 U	10 U	5.4 U	5.4 U	0.027 U	6.8 U	6.8 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	1.3 U	2.5 U	5 U	5 U	12 U	12 U	8 U	8 U	0.04 U	10 U	10 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	10 R	20 UJ	40 R	40 U	100 U	100 U	120 U	120 U	0.6 U	150 U	150 U
2-Hexanone	µg/L	N/A	N/A	0.5 U	13 U	25 U	50 U	50 U	160 U	160 UJ	320 U	320 U	1.6 U	400 UJ	400 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	15 U	30 U	60 U	60 U	80 U	80 UJ	160 UJ	160 U	0.8 U	200 UJ	200 U
Acetone	µg/L	200	1,000	1.5 UJ	38 R	75 UJ	190 J	150 U	**260 UJ**	**260 UJ**	**300 UJ**	**300 U**	1.6 J	**380 UJ**	**380 U**
Benzene	µg/L	0.5	5	0.05 U	**1.3 U**	**3.2 J**	**5 U**	**5 U**	**8 U**	**8 U**	**10 U**	**10 U**	0.05 U	**13 U**	**13 U**
Bromochloromethane	µg/L	N/A	N/A	0.05 U	1.3 U	2.5 U	5 U	5 U	10 U	10 U	5.6 U	5.6 U	0.028 U	7 U	7 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	**1.1 J**	**2.1 J**	**4 U**	**4.9 J**	**12 J**	**8 U**	**12 J**	**12 J**	0.03 U	**12 J**	**15 J**
Bromoform	µg/L	0.44	4.4	0.07 U	**1.8 UJ**	**3.5 U**	**7 U**	**7 U**	**8 U**	**8 U**	**8 UJ**	**8 U**	0.04 U	**10 U**	**10 U**
Bromomethane	µg/L	1	10	0.06 U	**1.5 U**	**3 U**	**6 U**	**6 U**	**12 UJ**	**12 U**	**14 U**	**14 U**	0.07 U	**18 U**	**18 UJ**
Carbon disulfide	µg/L	200	1,000	0.1 U	2.5 U	5 U	10 U	10 U	20 U	20 U	18 U	18 U	0.09 U	23 UJ	23 U
Carbon tetrachloride	µg/L	0.5	5	0.05 U	**1.3 U**	**2.5 U**	**5 U**	**5 U**	**8 U**	**8 U**	**4.4 U**	**4.4 U**	0.022 U	**5.5 U**	**5.5 U**
Chlorobenzene	µg/L	N/A	N/A	0.05 U	1.3 U	2.5 U	5 U	5 U	12 U	12 U	8 U	8 U	0.04 U	10 U	10 U
Chloroethane	µg/L	80	400	0.06 U	1.5 U	3 U	6 U	6 U	10 U	10 U	14 U	14 U	0.07 U	18 U	18 U
Chloroform	µg/L	0.6	6	0.07 U	**1.8 U**	**3.5 U**	**7 U**	**7 U**	**8 U**	**8 U**	**16 U**	**4.4 U**	0.022 U	**13 J**	**13 U**
Chloromethane	µg/L	0.3	3	0.05 U	**1.3 U**	**2.5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**10 U**	**10 U**	0.24	**13 U**	**13 U**
cis-1,2-Dichloroethene	µg/L	7	70	**190**	**330**	**790**	**570**	**820**	**1,300**	**1,200**	**1,300 J**	**1,300**	**1,500**	**1,100**	**1,400 J**
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	**0.4 U**	**0.8 U**	**1.6 U**	**1.6 U**	**3.4 U**	**3.4 U**	**3.4 U**	**3.4 U**	0.017 U	**4.3 U**	**4.3 U**
Dibromochloromethane	µg/L	6	60	0.09 U	2.3 U	4.5 U	**9 U**	**9 U**	5.8 U	5.8 U	5.2 U	5.2 U	0.026 U	**13 J**	**6.5 U**
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	1.5 U	3 U	6 U	6 U	10 U	10 U	6 U	17 J	0.03 U	7.5 U	7.5 U
Ethylbenzene	µg/L	140	700	0.05 U	1.3 U	2.5 U	5 U	5 U	10 U	10 U	4.8 U	4.8 U	0.024 U	6 U	6 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.75 U	1.5 U	3 U	3 U	10 U	10 U	8 U	8 U	0.04 U	10 U	10 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	3 U	6 U	12 U	12 U	18 U	18 U	16 U	16 U	0.08 U	20 U	20 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	1.3 U	2.5 U	5 U	5 U	10 U	10 U	16 UJ	16 UJ	0.08 U	**20 U**	**20 U**
Methylene chloride	µg/L	0.5	5	0.11 UJ	**2.8 UJ**	**130 J**	**200 J**	**21 UJ**	**30 UJ**	**30 R**	**36 J**	**410 UJ**	0.18 UJ	**190 J**	**330 UJ**
o-Xylene	µg/L	N/A	N/A	0.04 U	1 U	2 U	4 U	4 U	10 U	10 U	4.6 U	4.6 U	0.023 U	5.8 U	5.8 U
Styrene	µg/L	10	100	0.04 U	1 U	2 U	4 U	4 U	10 U	**10 U**	4.4 U	4.4 U	0.022 U	5.5 U	5.5 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	**1.3 U**	**2.5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**10 U**	**10 U**	0.05 U	**13 U**	**13 U**
Toluene	µg/L	200	1,000	0.08 U	2 U	4 U	8 U	8 U	10 U	10 U	12 U	12 U	0.06 U	15 U	15 U
trans-1,2-Dichloroethene	µg/L	20	100	5	6.2 J	7.9	6.8 J	14	**28 J**	**20 J**	**27 J**	**32 J**	**40**	**38 J**	**29 J**
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	**0.38 U**	**0.75 U**	**1.5 U**	**1.5 U**	**3.8 U**	**3.8 U**	**3.4 U**	**3.4 U**	0.017 U	**4.3 UJ**	**4.3 U**
Trichloroethene	µg/L	0.5	5	0.03 U	**0.75 J**	**1.5 U**	**3 U**	**3 U**	**10 U**	**10 U**	**10 U**	**10 U**	0.05 U	**13 U**	**13 U**
Vinyl chloride	µg/L	0.02	0.2	**85**	**58**	**170**	**260**	**83**	**35**	**30**	**48**	**33**	**38**	**34**	**130**

				MW-103S													
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA05-21, 22 Oct 04	05CA40-26, 27 Jul 05	06CA01-03, 04 Oct 05	06CD09-03, 04 Jan 06	06CD16-03, 04 Mar 06	07CE18-03, 04 Jan 07	07CE25-03, 04 April 07	07CE37-03, 04 June 07	07CE47-03, 04 Sept 07	08CE08-05 Jan 08	08CE12-04, 05 April 08	08CE15-07 July 08	09CE01-01 Oct 08	09CE07-01 Jan 09
Field Parameters																	
Dissolved Oxygen (DO)	mg/L			0.38	0.96	0.77	1.61	0.75	0.97	1.34	0.42	0.70	-1.70	0.5	0.38	0.66	0.35
Oxidation Reduction Potential (ORP)	millivolts			197.7	205.3	173	241.5	97.1	180.5	820.0	197.0	125.7	35.4	89.7	149.9	127.5	354.1
pH	pH units			6.95	6.44	6.63	7.08	7.05	7.55	6.72	6.11	6.77	6.81	6.97	6.79	6.64	6.74
Specific Conductivity	mmhos/cm			1.249	1.462	1.381	2.807	1.341	1.378	1.378	1.888	1.504	1.59	1.416	1510	1.885	1.369
Temperature	deg c			16.17	14.39	18.14	8.31	6.73	7.72	6.73	14.78	17.32	9.54	7.68	13.74	15.03	7.28
Depth to water	feet			7.60	7.56	8.68	6.74	5.52	5.34	4.42	6.43	5.54		4.45	4.81	6.37	5.34
Natural Attenuation Parameters																	
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	445	450	450	460	460	510	500	490	500	500	460	470	500	490
Chloride (as Cl)	mg/L	125	250	**218**	**160**	**190**	**150**	**140**	**140**	120	**210**	1.1 J+	**180**	**140**	**180**	**240**	**140**
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	2 U
Ethene	µg/L	N/A	N/A	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	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U
Iron, total	µg/L	150	300	**154**	69.9 J	39.8 J	**226**	89.3 J	39 U	58.5 J	39 UJ	39 UJ	29 J	44 J	13 J	30 J	49.5 J-
Iron, dissolved	µg/L	150	300	139	43.6 J	30.4 J	123	42.7 J	10 U	31.4 J	12 J	16 J	20 J+	27 J+	5 UJ	17 J	9.3 J
Manganese, total	µg/L	25	50		**395**	**351**	**267**	**270**	**319**	**332**	**440**	**440 J**	**460 J**	**400**	**410**	**490**	**485**
Manganese, dissolved	µg/L	25	50	**402**	**375**	**354**	**247**	**263**	**324**	**360**	**420**	**440**	**440**	**420**	**420**	**490**	**430**
Methane	µg/L	N/A	N/A	7.5 J	62	24	24	47 J	4.5 J	29	76	23	24 J	34	32	31	36
Nitrogen, nitrate (as N)	mg/L	2	10	0.19 J	0.28	0.05 J	**2.2**	**4.3**	0.66	0.75	0.11 U	0.48 J+	0.38 J	0.35	0.36	0.05 U	0.49
Sulfate (as SO4)	mg/L	125	250	**128**	74	72	89	93	93	88	88	85	120	94	91	110	100
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 J+	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	6.6	6.1	5.8	5.2	18	6.7	7 J	3.8 J	6.4 J+	9.6 J	8.8 J	11	10	12
VOCs																	
1,1,1-Trichloroethane	µg/L	40	200	**140**	**150**	**200**	**110**	**110**	**180**	**98**	**180**	**120**	**87 B**	**87**	**92**	**120**	**44**
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	**0.9 U**	**0.9 U**	**0.36 U**	**0.36 U**	**0.36 U**	**0.36 U**	**0.38 U**	0.019 U	**0.95 U**	**0.095 U**	**0.95 UJ**	**0.95 U**	**0.38 U**
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	**4.5 U**	**4.5 U**	**1.8 U**	**1.8 U**	**0.8 U**	**0.8 U**	**1.2 U**	0.06 U	**3 U**	0.3 U	**3 U**	**3 U**	**1.2 U**
1,1-Dichloroethane	µg/L	85	850	7.6	16 J	22	17	12	7.8	5.2	8.5	7.2 J	9.4 J	7.5	9.3 J	10	8.3
1,1-Dichloroethene	µg/L	0.7	7	**3.5**	**6.9 J**	**10**	**7.2 J**	**4.2**	**4.8**	**2 J**	**4.3**	**2.6**	**2.5 U**	**2**	**2.5 U**	**3.7 J**	**1.8 J**
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	4 UJ	4 U	1.6 U	1.6 U	1.6 U	1.6 U	1.4 U	0.07 U	3.5 U	0.35 U	3.5 U	3.5 U	1.4 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	3 UJ	3 U	1.2 UJ	1.2 UJ	2 U	2 U	1.2 U	0.06 U	3 U	0.3 U	3 U	3 U	1.2 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026 U**	**1.3 R**	**1.3 UJ**	**0.52 U**	**0.52 R**	**0.8 U**	**0.8 U**	**1 U**	**0.05 U**	**2.5 U**	**0.25 U**	**2.5 U**	**2.5 U**	**1 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	**1.2 U**	**1.2 U**	0.46 U	0.46 U	**0.6 U**	**0.6 U**	**1 U**	0.05 U	**2.5 U**	0.25 U	**2.5 U**	**2.5 U**	**1 U**
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	2 U	2 U	0.8 U	0.8 U	0.8 U	0.8 U	1 U	0.05 U	2.5 U	0.25 U	2.5 U	2.5 U	1 U
1,2-Dichloroethane	µg/L	0.5	5	0.26	**2 U**	**2 U**	**0.8 U**	**0.8 U**	**3.1**	**0.6 U**	**0.6 U**	0.11	**1.5 U**	0.15 U	**1.5 U**	**1.5 U**	**0.6 U**
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	**3 U**	**3 U**	**1.2 U**	**1.2 U**	**1 U**	**1 U**	**1 U**	0.05 U	**2.5 U**	0.25 U	**2.5 U**	**2.5 U**	**1 U**
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	2 U	2 U	0.8 U	0.8 U	1 U	1 U	0.54 U	0.027 U	1.4 U	0.14 U	1.4 U	1.4 U	0.54 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	2.5 U	2.5 U	1 U	1 U	1.2 U	1.2 U	0.8 U	0.04 U	2 U	0.2 U	2 U	2 U	0.8 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	20 R	20 UJ	8 U	8 R	10 U	10 U	12 U	0.6 UJ	30 U	3 U	30 U	30 U	12 UJ
2-Hexanone	µg/L	N/A	N/A	0.5 U	25 U	25 J	10 U	10 U	16 U	16 U	32 U	1.6 U	80 U	8 U	80 U	80 U	32 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	30 U	30 U	12 U	12 U	8 U	8 U	16 U	0.8 UJ	40 U	4 U	40 U	40 U	16 U
Acetone	µg/L	200	1,000	1.5 UJ	75 R	75 UJ	61 J	30 R	26 UJ	26 UJ	30 U	1.5 UJ	75 UJ	7.5 U	75 UJ	75 UJ	30 U
Benzene	µg/L	0.5	5	0.096 UB	**2.5 U**	**2.5 U**	**1.1 J**	**1 U**	**1.4 J**	**0.8 U**	**1 U**	**0.61**	**2.5 U**	**1.6**	**2.5 U**	**2.5 U**	**1.2 J**
Bromochloromethane	µg/L	N/A	N/A	0.05 U	2.5 U	2.5 U	1 U	1 U	1 U	1 U	0.56 U	0.028 U	1.4 U	0.14 U	1.4 U	1.4 U	0.56 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	**2 U**	**2.5 J**	**0.8 U**	**0.8 U**	**1.2 J**	**0.8 U**	**0.6 U**	0.03 U	**2.2 J**	**0.35 J**	**2.5 J**	**2.7 J**	**0.6 U**
Bromoform	µg/L	0.44	4.4	0.07 U	**3.5 UJ**	**3.5 U**	**1.4 UJ**	**1.4 U**	**0.8 U**	**0.8 U**	**0.8 UJ**	0.04 UJ	**2 U**	0.2 U	**2 U**	**2 U**	**0.8 U**
Bromomethane	µg/L	1	10	0.06 U	**3 UJ**	**3 U**	**1.2 UJ**	**1.2 U**	**1.2 U**	**1.2 U**	**1.4 U**	0.07 U	**3.5 U**	0.35 U	**3.5 U**	**3.5 U**	**1.4 J**
Carbon disulfide	µg/L	200	1,000	0.1 U	5 U	5 U	2 UJ	2 U	2 U	2 U	1.8 U	0.09 U	4.5 UJ	0.45 U	4.5 UJ	4.5 U	1.8 UJ
Carbon tetrachloride	µg/L	0.5	5	0.05 U	**2.5 U**	**2.5 U**	**1 U**	**1 U**	**0.8 U**	**0.8 U**	0.44 U	0.022 U	**1.1 U**	0.11 U	**1.1 U**	**1.1 U**	0.44 U
Chlorobenzene	µg/L	N/A	N/A	3.5	3 J	5.7 J	2.3 J	2.8 J	3.4 J	2.4 J	3.9	4.4	3.7 J	2.8	3.2 J	3.7 J	2.6 J
Chloroethane	µg/L	80	400	0.37 J	3 U	3 U	1.2 U	1.2 U	1 U	1 U	1.4 U	0.29	3.5 U	0.35 U	3.5 U	3.5 U	1.4 U
Chloroform	µg/L	0.6	6	0.24 UB	**3.5 U**	**3.5 U**	**1.4 U**	**1.4 U**	**0.8 U**	**0.8 U**	0.44 U	0.099 U	**1.1 U**	0.11 U	**3 J**	**2.4 U**	0.57 U
Chloromethane	µg/L	0.3	3	0.05 U	**2.5 U**	**2.5 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 UJ**	0.19 U	**2.5 U**	0.25 U	**2.5 U**	**2.5 U**	**1 U**
cis-1,2-Dichloroethene	µg/L	7	70	**21**	**47 J**	**59**	**58**	**42**	**30**	**21**	**25**	**23**	**33**	**19**	**22**	**31**	**25**
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	**0.8 U**	**0.8 U**	**0.32 U**	**0.32 U**	**0.34 U**	**0.34 U**	**0.34 U**	0.017 U	**0.85 U**	**0.085 U**	**0.85 U**	**0.85 U**	**0.34 U**
Dibromochloromethane	µg/L	6	60	0.09 U	4.5 U	4.5 U	1.8 U	1.8 U	0.58 U	0.58 U	0.52 U	0.026 U	1.3 U	0.13 U	2.8 J	2.7 J	0.52 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	3 UJ	3 U	1.2 U	1.2 U	1 U	1 U	0.6 U	0.03 U	1.5 U	0.15 U	1.5 U	1.5 U	0.6 U
Ethylbenzene	µg/L	140	700	0.05 U	2.5 U	2.5 U	1 U	1 U	1 U	1 U	0.48 U	0.024 U	1.2 U	0.12 U	1.2 U	1.2 U	0.48 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	1.5 U	1.5 U	0.6 U	0.6 U	1 U	1 U	0.8 U	0.04 U	2 U	0.2 U	2 U	2 U	0.8 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	6 U	6 U	2.4 U	2.4 U	1.8 U	1.8 U	1.6 U	0.08 U	4 U	0.4 U	4 U	4 U	1.6 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	2.5 U	2.5 U	1 U	1 U	1 U	1 U	1.6 U	0.08 U	4 U	0.4 U	4 U	4 U	1.6 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	**5.5 UJ**	**120 J**	**2.2 UJ**	**19 J**	**3 UJ**	**3 R**	**3.6 UJ**	0.18 UJ	**19 UJ**	**0.9 UJ**	**9 UJ**	**9 UJ**	**3.6 UJ**
o-Xylene	µg/L	N/A	N/A	0.04 U	2 U	2 U	0.8 U	0.8 U	1 U	1 U	0.46 U	0.023 U	1.2 U	0.12 U	1.2 U	1.2 U	0.46 U
Styrene	µg/L	10	100	0.04 U	2 U	2 U	0.8 U	0.8 U	1 U	1 U	0.44 U	0.022 U	1.1 U	0.11 U	1.6 B	1.1 U	0.44 U
Tetrachloroethene	µg/L	0.5	5	**1.4**	**2.5 U**	**2.5 U**	**1.7 J**	**1.4 J**	**2.5 J**	**1.7 J**	**1.8 J**	**2.6**	**2.7 J**	**2.2**	**2.5 U**	**2.8 J**	**2.4 J**
Toluene	µg/L	200	1,000	0.08 U	4 U	4 U	1.6 U	1.6 U	1 U	1 U	1.2 U	0.06 U	3 U	0.3 U	3 U	3 U	1.2 U
trans-1,2-Dichloroethene	µg/L	20	100	0.35 J	2 U	2 U	1.3 J	1.2 J	1.4 J	1.2 U	1.2 J	1.1 J	3 U	0.82 J	3 U	3 U	1.2 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	**0.75 U**	**0.75 U**	**0.3 U**	**0.3 U**	**0.38 U**	**0.38 U**	**0.34 U**	0.017 U	**0.85 U**	**0.085 U**	**0.85 U**	**0.85 U**	**0.34 U**
Trichloroethene	µg/L	0.5	5	**200**	**230**	**340**	**130**	**140**	**230**	**120**	**300**	**210**	**150**	**180**	**210**	**270**	**110**
Vinyl chloride	µg/L	0.02	0.2	**0.4**	**0.9 U**	**1.2 J**	**0.36 U**	**0.62 J**	**0.56 J**	**0.49 J**	**0.26 U**	**0.43**	**0.65 U**	**0.31**	**0.65 U**	**0.65 U**	**0.26 J**

J indicates that the value was between the method detection limit andJ 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 dU indicates that the constituent was not detected above the method detection limit.
UJ indicates that the constituent was not detected above the estimatUJ indicates that the constituent was not detected above the estimated method detection limit.
R indicates that the initial calibration report associated with this SDG 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 rejectNon-detected concentrations were qualified and flagged "R" as rejected.
UB indicates that the constiuent is considered to be below the detect 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 ABolded 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 AShaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

TABLE 4

Field and Analytical Results - Shallow Unconsolidated Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

				MW-105S														MW-106S											MW-107S								
Constituent	**Units**	**WAC NR 140 PAL**	**WAC NR 140 ES**	05CA05-25, 26 Oct 04	05CA40-20, 21 Jul 05	06CA01-19, 20 Oct 05	06CD09-21, 22 Jan 06	06CD16-18, 19 Mar 06	07CE18-63, 64 Jan 07	07CE25-40-43 April 07	07CE37-61, 62 June 07	07CE47-56 Sept 07	08CE08-46, 47 Jan 08	08CE12-23, 24 April 08	08CE15-09 July 08	09CE01-07 Oct 08	09CE07-06 Jan 09	05CA40-07 Jul 05	06CD09-23 Jan 06	07CE18-75 Jan 07	07CE25-79 April 07	07CE37-84 June 07	07CE47-53 Sept 07	08CE08-27 Jan 08	08CE12-72 April 08	08CE15-46 July 08	09CE01-46 Oct 08	09CE07-19 Jan 09	06CD16-34, 35 Mar 06	07CE18-79 Jan 07	07CE26-10 April 07	07CE37-84 June 07	07CE47-61 Sept 07	08CE08-67 Jan 08	08CE12-85 April 08	08CE15-52 July 08	09CE01-55 Oct 08
Field Parameters																																					
Dissolved Oxygen (DO)	mg/L			0.19	NR	5.27	0.70	0.48	NR	1.1	0.19	0.36	0.37	1.82	0.22	0.45	0.72	NR	1.54	NR	1.27	0.21	2.55	0.35	0.49	0.15	1.37	0.61	0.97	NR	1.27	0.24	0.64	0.83	0.47	0.21	0.44
Oxidation Reduction Potential (ORP)	millivolts			-32.8	-50.1	70.2	-11.8	-4.0	-294.3	-39.3	-13.1	-66.4	54.8	-79.0	65.4	-25.4	-44.2	23.1	87.0	-352.9	-69.8	-59.1	-84.4	-88.0	-96.7	95.5	-57.9	-84.1	-88.6	-329.1	-67.4	-61.4	-104.9	-42.4	-100.6	114.4	-6.2
pH	pH units			7.31	7.02	6.21	7.31	7.09	7.07	6.94	6.86	7.00	7.02	7.08	6.86	6.85	6.97	6.79	7.59	7.25	7.34	6.58	7.21	7.26	7.21	7.06	7.15	7.15	7.36	7.43	6.24	7.15	7.42	7.24	7.3	7.21	7.39
Specific Conductivity	mmhos/cm			1.620	1.714	1.414	1.368	1.433	1.730	1.626	1.700	1.694	1.433	1.525	1532	1.601	1.532	0.960	1.444	0.985	0.886	0.924	0.922	0.876	0.886	927	0.934	0.942	0.828	0.842	0.725	0.747	0.823	0.752	0.761	798	0.81
Temperature	deg c			12.98	12.71	14.86	8.11	8.67	8.05	5.9	10.88	13.06	8.99	7.89	12.08	12.63	8.69	11.81	7.04	8.47	7.24	11.64	12.37	8.26	9.98	11.4	11.78	8.08	6.20	5.72	4.81	10.73	12.21	5.55	7.91	13.31	11.23
Depth to water	feet			5.16	5.55	6.18	4.20	3.54	3.39	2.77	4.46	3.59		2.76	3.03	3.86	3.22	5.80	4.51	3.69	2.83	4.90	3.92		2.66	3.19	4.49	3.55	3.10	3.02	2.26	4.67	3.49		2.36	2.69	3.32
Natural Attenuation Parameters																																					
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	367	370	390	310	330	440	430	450 J	470	430	410	430	350	410	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	340	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only
Chloride (as Cl)	mg/L	125	250	**281**	**290**	**250**	**150**	**190**	**290**	**250**	**260**	**270**	**270**	**240**	**230**	92	**240**												40								
Ethane	µg/L	N/A	N/A	1.4 J	0.5 U	0.5 U	0.5 U	0.5 U	1.3 J	1.3 J	1.3 J	1.2 J	0.51 J	0.75 J	1.3 J	0.92 J	8 R												0.5 U								
Ethene	µg/L	N/A	N/A	0.61 J	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	0.5 U	0.6 J	0.5 U	10 UJ												0.5 U								
Iron, total	µg/L	150	300	**384**	**930**	**540**	**366**	**714 J**	**2,850**	**7,260**	**2,300**	**1,300**	**3,600 J**	**4,500**	**1,700**	**1,600**	**2,980**												**875 J**								
Iron, dissolved	µg/L	150	300	**338**	**557**	**287**	**213**	**435 J**	**1,000**	**1,100**	**1,200 J**	**1,300 J**	**990**	**1,500**	**1,400 J**	**1,200**	**1,300**												**668 J**								
Manganese, total	µg/L	25	50		**241**	**198**	**202**	**243**	**220**	**194**	**230**	**200**	**180 J**	**180**	**160**	**170**	**212**												**78**								
Manganese, dissolved	µg/L	25	50	**227**	**229**	**197**	**190**	**226**	**209**	**194**	**190**	**180 J**	**190**	**180**	**160**	**170**	**184**												**71.5**								
Methane	µg/L	N/A	N/A	110	42	0.59 J	7.3	89	280 J	260	230 J	170 J	120	120 J	170	190	230 J												1.5 U								
Nitrogen, nitrate (as N)	mg/L	2	10	0.06 UJ	0.04 U	0.048 J	0.04 U	0.06 U	0.06 U	0.06 U	0.11 U	0.11 U	0.11 U	0.05 U	0.05 U	0.12 J	0.05 U												0.06 U								
Sulfate (as SO4)	mg/L	125	250	77.5	68	66	61	100	62	53	50	52	55	61	61	50	64												83								
Sulfide	mg/L	N/A	N/A	1 UJ	1.3 J	1 J	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U												1 U								
Total Organic Carbon	mg/L	N/A	N/A	3.5	2.6 J	4.1	2.9	2.5	2.4	3.5 J	1.1 J	2.2 J+	3.1 J	3.9 J	4 J	3.7 J	3.8 J												0.7 U								
VOCs																																					
1,1,1-Trichloroethane	µg/L	40	200	0.64 J	0.45 J	1.1 J	1.8 U	2.2 J	3.3 J	2.2 J	5 U	5 U	5 UJ	5 U	10 U	10 U	25 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	**0.18 U**	**0.45 U**	**0.45 U**	**0.45 U**	**0.45 U**	**1.9 U**	**1.9 UJ**	**1.9 U**	**1.9 U**	**3.8 UJ**	**3.8 U**	**9.5 U**	0.018 U	0.018 U	0.018 U	0.018 UJ	0.019 UJ	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.018 U	0.018 U	0.018 UJ	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.019 UJ	0.019 UJ
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	**0.9 U**	**2.3 U**	**2.3 U**	**1 U**	**1 U**	**6 U**	**6 U**	**6 U**	**6 U**	**12 U**	**12 U**	**30 U**	0.09 U	0.09 U	0.04 U	0.04 UJ	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.09 U	0.04 U	0.04 UJ	0.06 U	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ
1,1-Dichloroethane	µg/L	85	850	4.8	6.5	14	11	7.9	55	65	63	**89**	**94**	**200**	**170**	**180**	**190**	0.031 U	0.031 U	0.06 U	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.031 U	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ
1,1-Dichloroethene	µg/L	0.7	7	**0.94**	0.52	**2**	**2.4 J**	**1.5 U**	**10**	**15**	**23**	**22**	**23**	**31**	**42**	**33 J**	**38 J**	0.06 U	0.06 U	0.04 U	0.04 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.06 U	0.04 U	0.04 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.8 U	2 U	2 U	2 U	2 U	7 U	7 U	7 U	7 U	14 U	14 U	35 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 UJ	0.07 UJ	0.07 U	0.07 U	0.07 UJ
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.6 U	1.5 U	1.5 U	2.5 U	2.5 U	6 U	6 U	6 U	6 U	12 U	12 U	30 U	0.06 U	0.06 U	0.1 U	0.1 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.1 U	0.1 U	0.06 U	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026 U**	**0.026 U**	**0.26 UJ**	**0.65 U**	**0.65 U**	**1 U**	**1 U**	**5 U**	**5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**25 U**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 UJ**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 UJ**	**0.05 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 UJ**	**0.05 UJ**	**0.05 U**	**0.05 U**	**0.05 UJ**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.23 U	**0.58 U**	**0.58 U**	**0.75 U**	**0.75 U**	**5 U**	**5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**25 U**	0.023 U	0.023 U	0.03 U	0.03 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.4 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U	5 U	10 U	10 U	25 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.4 U	**1 U**	**1 U**	**0.75 U**	**0.75 U**	**3 U**	**3 U**	**3 U**	**3 U**	**6 U**	**6 U**	**15 U**	0.04 U	0.04 U	0.03 U	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 UJ
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	**0.6 U**	**1.5 U**	**1.5 U**	**1.3 U**	**1.3 U**	**5 U**	**5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**25 U**	0.06 U	0.06 U	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.06 U	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.4 U	1 U	1 U	1.3 U	1.3 U	2.7 U	2.7 U	2.7 U	2.7 U	5.4 U	5.4 U	14 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 UJ	0.027 U	0.027 U	0.027 U	0.027 U	0.027 UJ	0.027 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 UJ	0.027 UJ	0.027 U	0.027 U	0.027 UJ
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.5 U	1.3 U	1.3 U	1.5 U	1.5 U	4 U	4 U	4 U	4 U	8 U	8 U	**20 U**	0.05 U	0.05 U	0.06 U	0.06 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 UJ
2-Butanone	µg/L	N/A	N/A	0.4 UJ	0.4 R	4 UJ	10 R	10 U	13 U	13 U	60 U	60 U	60 U	60 U	120 U	120 U	300 UJ	0.4 R	0.4 R	0.5 U	0.5 UJ	0.6 UJ	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 UJ	0.6 U	0.4 U	0.5 U	0.5 UJ	0.6 U	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	5 U	13 R	13 U	20 U	20 U	160 U	160 U	160 U	160 U	320 U	320 U	800 U	0.5 U	0.5 R	0.8 U	0.8 UJ	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 U	0.5 U	0.8 U	0.8 UJ	1.6 U	1.6 UJ	1.6 UJ	1.6 U	1.6 U	1.6 UJ
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	6 U	15 R	15 U	10 U	10 U	80 U	80 U	80 U	80 U	160 U	160 U	400 U	0.6 U	0.6 R	0.4 U	0.4 UJ	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U	0.6 U	0.4 U	0.4 UJ	0.8 U	0.8 UJ	0.8 UJ	0.8 U	0.8 U	0.8 UJ
Acetone	µg/L	200	1,000	1.5 UJ	1.5 R	15 UJ	38 R	38 U	33 UJ	33 U	**220 J**	150 U	150 UJ	150 U	**300 UJ**	**300 UJ**	**750 U**	1.5 R	1.5 R	1.3 UJ	1.3 UJ	1.5 UJ	1.5 U	1.5 UJ	2.1 J	1.5 UJ	1.5 UJ	1.5 U	1.5 U	1.3 UJ	1.3 UJ	1.5 U	1.5 UJ	1.5 UJ	1.7 J	1.5 UJ	4.2 J
Benzene	µg/L	0.5	5	0.056 UB	0.05 U	**0.5 U**	**1.3 U**	**1.3 U**	**1 U**	**1 U**	**5 U**	**5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**25 U**	0.05 U	0.05 U	0.04 U	0.04 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.04 U	0.04 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.5 U	1.3 U	1.3 U	1.3 U	1.3 U	2.8 U	2.8 U	2.8 U	2.8 U	5.6 U	5.6 U	14 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 UJ	0.028 U	0.028 U	0.028 U	0.028 U	0.028 UJ	0.028 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 UJ	0.028 UJ	0.028 U	0.028 U	0.028 UJ
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	**0.4 U**	**1 U**	**1 U**	**1.5 J**	**1 U**	**3 U**	**4.4 J**	**3 U**	**4.2 J**	**12 J**	**6 U**	**30 J**	0.04 U	0.04 U	0.04 U	0.04 UJ	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.04 U	0.04 U	0.04 UJ	0.03 U	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 UJ
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 UJ	**0.7 U**	**1.8 UJ**	**1.8 U**	**1 U**	**1 U**	**4 UJ**	**4 UJ**	**4 U**	**4 U**	**8 U**	**8 U**	**20 U**	0.07 U	0.07 UJ	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.07 U	0.04 U	0.04 UJ	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 UJ
Bromomethane	µg/L	1	10	0.06 U	0.06 U	0.6 U	**1.5 UJ**	**1.5 U**	**1.5 UJ**	**1.5 UJ**	**7 U**	**7 U**	**7 U**	**7 U**	**14 U**	**14 U**	**35 J**	0.06 UJ	0.06 UJ	0.06 UJ	0.06 UJ	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.06 U	0.06 UJ	0.06 UJ	0.07 U	0.07 UJ	0.07 UJ	0.07 U	0.07 U	0.07 UJ
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 U	1 U	2.5 UJ	2.5 U	2.5 U	2.5 U	9 U	9 UJ	9 U	9 U	18 UJ	18 U	45 UJ	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 UJ	0.09 UJ	0.1 U	0.1 U	0.1 UJ	0.09 U	0.09 UJ	0.09 UJ	0.09 U	0.09 U	0.09 UJ
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	**0.5 U**	**1.3 UJ**	**1.3 U**	**1 U**	**1 U**	**2.2 U**	**2.2 U**	**2.2 U**	**2.2 U**	**4.4 U**	**4.4 U**	**11 U**	0.05 U	0.05 U	0.04 U	0.04 UJ	0.022 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.05 U	0.04 U	0.04 UJ	0.022 U	0.022 UJ	0.022 UJ	0.022 U	0.022 U	0.022 UJ
Chlorobenzene	µg/L	N/A	N/A	0.6	0.58	0.98 J	1.3 U	1.3 U	1.5 U	1.5 U	4 U	4 U	4 U	4 U	8 U	8 U	20 U	0.05 U	0.05 U	0.06 U	0.06 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.05 U	0.06 U	0.06 UJ	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 UJ
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.6 U	1.5 UJ	1.5 U	1.3 U	1.3 U	7 U	7 U	7 U	7 U	14 U	14 U	35 U	0.06 U	0.06 U	0.05 U	0.05 UJ	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.06 U	0.05 U	0.05 UJ	0.07 U	0.07 UJ	0.07 UJ	0.07 U	0.07 U	0.07 UJ
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	**0.7 U**	**1.8 U**	**1.8 U**	**1 U**	**1 U**	**2.2 U**	**2.2 U**	**2.2 U**	**2.2 U**	**13 J**	**4.4 U**	**20 J**	0.07 U	0.07 U	0.04 U	0.04 UJ	0.022 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.07 U	0.04 U	0.04 UJ	0.022 U	0.022 UJ	0.022 UJ	0.022 U	0.022 U	0.022 UJ
Chloromethane	µg/L	0.3	3	0.05 U	0.05 U	**0.5 U**	**1.3 U**	**1.3 U**	**1.3 U**	**1.3 U**	**5 U**	**5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**25 U**	0.05 U	0.05 UJ	**0.42 U**	0.05 UJ	0.05 UJ	**0.41 U**	0.079 U	0.05 U	0.16 U	**0.49 U**	**0.37**	0.05 U	**0.37 U**	0.05 UJ	0.26	**0.63 UJ**	0.05 UJ	0.17 U	0.15 U	**0.49 U**
cis-1,2-Dichloroethene	µg/L	7	70	**58**	**69**	**160**	**130**	**90**	**280**	**310**	**180 J**	**350**	**480**	**830**	**870**	**680**	**610**	0.06 U	0.06 U	0.03 U	0.03 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.06 U	0.03 U	0.03 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	**0.16 U**	**0.4 U**	**0.4 U**	**0.43 U**	**0.43 U**	**1.7 U**	**1.7 U**	**1.7 U**	**1.7 U**	**3.4 U**	**3.4 U**	**8.5 U**	0.016 U	0.016 U	0.017 U	0.017 UJ	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.016 U	0.017 U	0.017 UJ	0.017 U	0.017 UJ	0.017 UJ	0.017 U	0.017 U	0.017 UJ
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.9 U	2.3 U	2.3 U	0.73 U	0.73 U	2.6 UJ	2.6 U	2.6 U	2.6 U	**12 J**	5.2 U	**37 J**	0.09 U	0.09 U	0.029 U	0.029 UJ	0.026 UJ	0.026 U	0.026 U	0.026 U	0.026 U	0.026 UJ	0.026 U	0.09 U	0.029 U	0.029 UJ	0.026 U	0.026 UJ	0.026 UJ	0.026 U	0.026 U	0.026 UJ
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 U	0.6 U	1.5 U	1.5 U	1.3 U	1.3 U	3 U	3 U	3 U	3 U	6 U	6 U	15 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 UJ
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.5 U	1.3 U	1.3 U	1.3 U	1.3 U	2.4 U	2.4 U	2.4 U	2.4 U	4.8 U	4.8 U	12 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.024 UJ	0.024 U	0.024 U	0.024 U	0.024 U	0.024 UJ	0.024 U	0.05 U	0.05 U	0.05 UJ	0.024 U	0.024 UJ	0.024 UJ	0.024 U	0.024 U	0.024 UJ
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.3 U	0.75 U	0.75 U	1.3 U	1.3 U	4 U	4 U	4 U	4 U	8 U	8 U	20 U	0.03 U	0.03 U	0.05 U	0.05 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.03 U	0.05 U	0.05 UJ	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 UJ
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	1.2 U	3 U	3 U	2.3 U	2.3 U	8 U	8 U	8 U	8 U	16 U	16 U	40 U	0.12 U	0.12 U	0.09 U	0.09 UJ	0.08 R	0.08 U	0.08 U	0.08 U	0.08 U	0.08 UJ	0.08 U	0.12 U	0.09 U	0.09 UJ	0.08 U	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 UJ
Methyl tert-butyl ether	µg/L	12	60	0.17 J	0.33 J	0.5 U	1.3 U	1.3 U	1.3 U	1.3 U	8 U	8 UJ	8 U	8 U	**16 U**	**16 U**	**40 U**	0.05 U	0.05 U	0.05 U	0.05 UJ	0.08 UJ	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 UJ	0.08 U	0.05 U	0.05 U	0.05 UJ	0.08 U	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 UJ
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	**31 J**	**2.8 R**	**2.8 UJ**	**3.8 UJ**	**21 J**	**280 UJ**	**18 UJ**	**18 UJ**	**18 UJ**	**46 J**	**36 UJ**	**90 UJ**	0.11 UJ	0.11 R	0.15 UJ	0.15 R	0.18 UJ	**0.53 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.11 U	0.15 UJ	0.15 R	0.18 U	**0.69 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.32 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.4 U	1 U	1 U	1.3 U	1.3 U	2.3 U	2.3 U	2.3 U	2.3 U	4.6 U	4.6 U	12 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.023 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 UJ	0.023 U	0.04 U	0.05 U	0.05 UJ	0.023 U	0.023 UJ	0.023 UJ	0.023 U	0.023 U	0.023 UJ
Styrene	µg/L	10	100	0.04 U	0.04 U	0.4 U	1 U	1 U	1.3 U	1.3 U	2.2 U	2.2 U	2.2 U	2.2 U	4.4 U	4.4 U	**11 U**	0.04 U	0.04 U	0.05 U	0.05 UJ	0.022 R	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.04 U	0.05 U	0.05 UJ	0.022 U	0.022 UJ	0.022 UJ	0.022 U	0.022 U	0.022 UJ
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	**0.5 U**	**1.3 U**	**1.3 U**	**1.3 U**	**1.3 U**	**5 U**	**5 U**	**5 U**	**5 U**	**10 U**	**10 U**	**25 U**	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	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	0.05 U	0.05 U	0.05 UJ
Toluene	µg/L	200	1,000	0.08 U	0.08 U	0.8 U	2 U	2 U	1.3 U	1.3 U	6 U	6 U	6 U	6 U	12 U	12 U	30 U	0.08 U	0.08 U	0.05 U	0.05 UJ	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.08 U	0.05 U	0.05 UJ	0.06 U	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ
trans-1,2-Dichloroethene	µg/L	20	100	0.71 J	1.6	1.8	1 U	1 U	2.8 J	4 J	6.1 J	14 J	16 J	**23**	**43**	**62**	**66 J**	0.04 U	0.04 U	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.04 U	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	**0.15 U**	**0.38 U**	**0.38 U**	**0.48 U**	**0.48 U**	**1.7 U**	**1.7 UJ**	**1.7 U**	**1.7 U**	**3.4 U**	**3.4 U**	**8.5 U**	0.015 U	0.015 U	0.019 U	0.019 UJ	0.017 UJ	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.015 U	0.019 U	0.019 UJ	0.017 U	0.017 UJ	0.017 UJ	0.017 U	0.017 U	0.017 UJ
Trichloroethene	µg/L	0.5	5	**63**	**76**	**41**	**18**	**33**	**290**	**570**	**560**	**690**	**1,300**	**1,300 J**	**1500 J**	**2,300 J**	**2,400 J**	0.03 U	0.03 U	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.03 U	0.05 U	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ
Vinyl chloride	µg/L	0.02	0.2	**2.3**	**2.3**	**3.7**	**3.2**	**3.3**	**11**	**8.8**	**11 J**	**6.6**	**1.3 U**	**12 J**	**9.8**	**11**	**6.5 J**	0.018 U	0.018 U	0.018 U	0.018 UJ	0.013 UJ	0.013 U	0.013 U	0.013 U	0.013 U	0.013 UJ	0.013 U	0.018 U	0.018 U	0.018 UJ	0.013 U	0.013 UJ	0.013 UJ	0.013 U	0.013 U	0.013 UJ

J indicates that the value was between the method detection limit andJ 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 dU indicates that the constituent was not detected above the method detection limit.
UJ indicates that the constituent was not detected above the estimatUJ indicates that the constituent was not detected above the estimated method detection limit.
R indicates that the initial calibration report associated with this SDGR 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 rejectNon-detected concentrations were qualified and flagged "R" as rejected.
UB indicates that the constiuent is considered to be below the detectUB 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 ABolded 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 AShaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

TABLE 5

Field and Analytical Results - Deep Unconsolidated Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-5D										
				05CA40-10 Jul 05	06CD09-49 Jan 06	07CE18-29, 30 Jan 07	07CE25-44, 45 April 07	07CE37-33, 34 June 07	07CE47-40, 41 Sept 07	08CE08-50, 51 Jan 08	08CE12-76, 77 April 08	08CE15-08 July 08	09CE01-05 Oct 08	09CE07-40 Jan 09
Field Parameters														
Dissolved Oxygen (DO)	mg/L			NR	-0.21	0.63	2.31	0.20	0.52	NR	0.4	0.34	0.92	1.23
Oxidation Reduction Potential (ORP)	millivolts			28.6	-25.4	-66.7	-71.0	-58.4	-66.9	-70.8	-91.8	62	-64.6	-67.2
pH	pH units			6.51	7.12	7.26	7.11	6.79	7.11	6.98	7.12	6.79	7.04	7.17
Specific Conductivity	mmhos/cm			2.364	2.208	1.286	1.16	1.281	1.236	1.174	1.028	1093	1.908	1.219
Temperature	deg c			13.53	10.26	7.87	6.73	14.31	15.55	9.55	11.09	14.01	12.24	8.38
Depth to water	feet			5.05	3.90	2.41	1.80	3.82	2.78		1.51	2.02	3.49	2.42
Natural Attenuation Parameters														
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A			400	400	400	410	390	380	390	420	380
Chloride (as Cl)	mg/L	125	250			**180**	**140**	**160**	**140**	**290**	110	100	**310**	**170**
Ethane	µg/L	N/A	N/A			0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.46 J	0.8 U
Ethene	µg/L	N/A	N/A			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1 U
Iron, total	µg/L	150	300			**2,570**	**3,170 J**	**2,300**	**2,100**	**1,800 J**	**2,800**	**2,100**	**2,300**	**1,840**
Iron, dissolved	µg/L	150	300			**1,640**	**1,970**	**1,800**	**1,900**	**1,500**	**1,800**	**1,800 J**	**2,200**	**1,500**
Manganese, total	µg/L	25	50			**70**	**60.1**	**71**	**71 J**	**52 J**	**58**	**46**	**73**	**63.2**
Manganese, dissolved	µg/L	25	50			**62.5**	**61.9**	**61**	**62**	**54**	**59**	**47**	**71**	**57 J**
Methane	µg/L	N/A	N/A			16	38	31	21 J	9.2 J	36 J	34	49	15 J
Nitrogen, nitrate (as N)	mg/L	2	10			0.086 J	0.06 U	0.11 U	0.11 U	0.27 J	0.29	0.05 U	0.088 J	0.088 J
Sulfate (as SO4)	mg/L	125	250			54	50	51	52	50	48	50	55	54
Sulfide	mg/L	N/A	N/A			1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A			1.2 J	1.5 J	0.57 J	0.81 J+	1.7 J	2 J	1.8 J	2.1 J	1.9 J
VOCs														
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	4.7 J	2 U	2 U	1 U	1.3 U	0.05 UJ	2.5 U	2.5 U	2.5 U	2.5 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	**0.9 U**	**0.9 U**	**0.9 U**	**0.38 U**	**0.48 U**	0.019 U	**0.95 U**	**0.95 UJ**	**0.95 U**	**0.95 U**
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	**4.5 U**	**2 U**	**2 U**	**1.2 U**	**1.5 U**	0.06 U	**3 U**	**3 U**	**3 U**	**3 U**
1,1-Dichloroethane	µg/L	85	850	17 J	16	11	12	12	7.7	16	17	12	12	12
1,1-Dichloroethene	µg/L	0.7	7	**3**	**6.9 J**	**2 U**	**2 U**	**2.3 J**	**1.8 J**	**2.3**	**5.2 J**	**2.9 J**	**2.5 U**	**2.5 U**
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	4 U	4 U	4 U	1.4 U	1.8 U	0.07 U	3.5 U	3.5 U	3.5 U	3.5 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	3 U	5 U	5 U	1.2 U	1.5 U	0.06 U	3 U	3 U	3 U	3 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	**0.026 U**	**1.3 U**	**2 U**	**2 U**	**1 U**	**1.3 U**	**0.05 U**	**2.5 U**	**2.5 U**	**2.5 U**	**2.5 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	**1.2 U**	**1.5 U**	**1.5 U**	**1 U**	**1.3 U**	0.05 U	**2.5 U**	**2.5 U**	**2.5 U**	**2.5 U**
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	2 U	2 U	2 U	1 U	1.3 U	0.05 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2-Dichloroethane	µg/L	0.5	5	**1.3**	**2 U**	**1.5 U**	**1.5 U**	**0.6 U**	**0.75 U**	**0.51**	**3.8 J**	**1.5 U**	**1.5 U**	**1.5 U**
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	**3 U**	**2.5 U**	**2.5 U**	**1 U**	**1.3 U**	0.05 U	**2.5 U**	**2.5 U**	**2.5 U**	**2.5 U**
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	2 U	2.5 U	2.5 U	0.54 U	0.68 U	0.027 U	1.4 U	1.4 U	1.4 U	1.4 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	2.5 U	3 U	3 U	0.8 U	1 U	0.04 U	2 U	2 U	2 U	2 U
2-Butanone	µg/L	N/A	N/A	0.4 R	20 R	25 U	25 U	12 U	15 U	0.6 U	30 U	30 U	30 U	30 U
2-Hexanone	µg/L	N/A	N/A	0.5 U	25 U	40 U	40 U	32 U	40 U	1.6 U	80 U	80 U	80 U	80 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	30 U	20 U	20 U	16 UJ	20 U	0.8 U	40 U	40 U	40 U	40 U
Acetone	µg/L	200	1,000	1.5 R	75 R	65 UJ	65 U	30 UJ	38 UJ	1.5 UJ	75 U	75 UJ	75 UJ	75 U
Benzene	µg/L	0.5	5	0.05 U	**2.5 U**	**2 U**	**2 U**	**1 U**	**1.3 U**	0.05 U	**4.1 J**	**2.5 U**	**2.5 U**	**2.5 U**
Bromochloromethane	µg/L	N/A	N/A	0.05 U	2.5 U	2.5 U	2.5 U	0.56 U	0.7 U	0.028 U	1.4 U	1.4 U	1.4 U	1.4 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	**2 U**	**3 J**	**2.2 J**	**0.6 UJ**	**0.75 U**	0.03 U	**2.1 J**	**2.5 J**	**2.7 J**	**2.5 J**
Bromoform	µg/L	0.44	4.4	0.07 U	**3.5 U**	**2 U**	**2 U**	**0.8 UJ**	**1 U**	0.04 U	**2 U**	**2 U**	**2 U**	**2 U**
Bromomethane	µg/L	1	10	0.06 UJ	**3 U**	**3 U**	**3 UJ**	**1.4 U**	**1.8 U**	0.07 U	**6.1 J**	**3.5 U**	**3.5 U**	**3.5 U**
Carbon disulfide	µg/L	200	1,000	0.1 U	5 U	5 U	5 U	1.8 U	2.3 UJ	0.09 U	4.5 UJ	4.5 UJ	4.5 U	4.5 U
Carbon tetrachloride	µg/L	0.5	5	0.05 U	**2.5 U**	**2 U**	**2 U**	0.44 U	**0.55 U**	0.022 U	**2.8 J**	**1.1 U**	**1.1 U**	**1.1 U**
Chlorobenzene	µg/L	N/A	N/A	0.05 U	2.5 U	3 U	3 U	0.8 U	1 U	0.04 U	2.8 J	2 U	2 U	2 U
Chloroethane	µg/L	80	400	2.2 J	3 U	2.5 U	2.5 U	1.4 U	1.8 UJ	0.2 J	8 J	3.5 U	3.5 U	3.5 U
Chloroform	µg/L	0.6	6	0.07 U	**3.5 U**	**2 U**	**2 U**	0.44 U	0.55 U	0.022 U	**1.1 U**	**2.8 J**	**2.6 U**	**2 J**
Chloromethane	µg/L	0.3	3	0.05 UJ	**2.5 U**	**2.5 U**	**2.5 U**	**1 U**	**1.3 UJ**	0.097 U	**6.5 J**	**2.5 U**	**2.5 U**	**2.5 U**
cis-1,2-Dichloroethene	µg/L	7	70	**250**	**310**	**110**	**90**	**120 J**	**83**	**120**	**110**	**94**	**130**	**100**
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	**0.8 U**	**0.85 U**	**0.85 U**	**0.34 U**	**0.43 U**	0.017 U	**2.4 J**	**0.85 U**	**0.85 U**	**0.85 U**
Dibromochloromethane	µg/L	6	60	0.09 U	4.5 U	1.5 U	1.5 U	0.52 U	0.65 U	0.026 U	1.3 U	2.3 J	2.5 J	3.3 J
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	3 U	2.5 U	2.5 U	0.6 U	0.75 U	0.03 U	3.7 J	1.5 U	1.5 U	1.5 U
Ethylbenzene	µg/L	140	700	0.05 U	2.5 U	2.5 U	2.5 U	0.48 U	0.6 U	0.024 U	1.2 U	1.2 U	1.2 U	1.2 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	1.5 U	2.5 U	2.5 U	0.8 U	1 U	0.04 U	2 U	2 U	2 U	2 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	6 U	4.5 U	4.5 U	1.6 U	2 U	0.08 U	4.1 J	4 U	4 U	4 U
Methyl tert-butyl ether	µg/L	12	60	0.22 J	2.5 U	2.5 U	2.5 U	1.6 UJ	2 U	0.08 U	4 U	4 U	4 U	4 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	**14 J**	**7.5 UJ**	**25 J**	3.6 UJ	**26 J**	0.18 UJ	**14 J**	**9 UJ**	**9 UJ**	**9 UJ**
o-Xylene	µg/L	N/A	N/A	0.04 U	2 U	2.5 U	2.5 U	0.46 U	0.58 U	0.023 U	1.2 U	1.2 U	1.2 U	1.2 U
Styrene	µg/L	10	100	0.04 U	2 U	2.5 U	2.5 U	0.44 U	0.55 U	0.022 U	2.4 J	1.2 J	1.1 U	1.1 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	**2.5 U**	**2.5 U**	**2.5 U**	**1 U**	**1.3 U**	0.05 U	**2.5 U**	**2.5 U**	**2.5 U**	**2.5 U**
Toluene	µg/L	200	1,000	0.08 U	4 U	2.5 U	2.5 U	1.2 U	1.5 U	0.06 U	3 U	3 U	3 U	3 U
trans-1,2-Dichloroethene	µg/L	20	100	9.7 J	9.9	6.2 J	6.2 J	8.7	5.3	8.7 J	3 U	9.7 J	9.2 J	7.7 J
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	**0.75 U**	**0.95 U**	**0.95 U**	**0.34 U**	**0.43 U**	0.017 U	**2.4 J**	**0.85 U**	**0.85 U**	**0.85 U**
Trichloroethene	µg/L	0.5	5	**180**	**190**	**170**	**180**	**140**	**110**	**210**	**200**	**170**	**150**	**150**
Vinyl chloride	µg/L	0.02	0.2	**3.8**	**4.6**	**0.9 U**	**1.4 J**	**2.6**	**3**	**1.8**	**7.4**	**1.4 J**	**3.5**	**0.65 J**

Constituent	Units	MW-12D													
		05CA05-05, 06 Oct 04	05CA40-44, 45 Jul 05	06CA01-05, 06 Oct 05	06CD09-30, 31 Jan 06	06CD16-08, 09 Mar 06	07CE18-65, 66 Jan 07	07CE25-62, 63 April 07	07CE37-70, 71 June 07	07CE47-48 Sept 07	08CE08-58, 59 Jan 08	08CE12-37, 38 April 08	08CE15-40 July 08	09CE01-43 Oct 08	09CE07-35 Jan 09
Field Parameters															
Dissolved Oxygen (DO)	mg/L	0.18	NR	3.51	0.77	0.25	NR	3.46	0.12	0.34	0.28	1.38	0.62	--	0.33
Oxidation Reduction Potential (ORP)	millivolts	-81.6	-71.7	-43.5	-54.8	-31.6	-336.2	-62.7	-3.2	-53.6	-40.5	-87.7	55.5	-41.2	-67.9
pH	pH units	7.33	7.08	6.37	7.56	7.05	7.18	7.53	6.78	7.16	6.93	7.16	6.63	7.13	7.1
Specific Conductivity	mmhos/cm	1.587	1.522	1.636	1.712	1.723	1.469	1.324	1.408	1.322	1.229	1.174	1191	1.409	1.409
Temperature	deg c	11.05	13.52	12.28	7.55	8.08	8.02	7.47	10.98	11.51	9.27	10.05	12.39	11.29	8.29
Depth to water	feet	4.39	4.80	5.66	3.65	2.45	2.22	1.31	3.48	2.49		1.17	1.55	3.18	2.24
Natural Attenuation Parameters															
Alkalinity, total (as CaCO3)	mg/L	392	400	450	420	410	400	410	400 J	420	380	380	380	400	370
Chloride (as Cl)	mg/L	**224**	**230**	**280**	**240**	**270**	**200**	**180**	**180**	**160**	**150**	**140**	**140**	**170**	**190**
Ethane	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 UJ	0.4 U	0.46 J	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	1.4 J	0.5 U	1.5	2	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	0.5 U
Iron, total	µg/L	**2,060**	**1,210**	**1,050**	**1,020**	**1,190 J**	**995**	**1,030 J**	**1,100 J**	**950**	**1,000 J**	**940**	**770**	**890**	**960**
Iron, dissolved	µg/L	**1,010**	**993**	**875**	**984**	**1,170 J**	**932**	**926 J**	**1,000 J**	**860 J**	**690**	**780**	**690 J**	**890**	**839**
Manganese, total	µg/L		**31.5**	**28.2**	**30 J**	**34.5**	**34.6**	**28.4**	**37**	**33**	**33 J**	**30**	23 J	**32**	**33.1 J**
Manganese, dissolved	µg/L	**42.5**	**29.7**	**26.7**	**29.5 J**	**35**	**31.6**	**32.3**	**37**	**30 J**	**32**	**31**	21	**31**	**31.8 J**
Methane	µg/L	31	43	87	27	45	6 J	27 J	18	6.1 J	8.6 J	12	13	27	17
Nitrogen, nitrate (as N)	mg/L	0.06 U	0.04 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.26 J	0.11 U	0.11 U	0.26	0.26	0.05 U	0.05 U
Sulfate (as SO4)	mg/L	85.2	93	84	100	97	92	78	79 J	78	75	72	72	78 J	71
Sulfide	mg/L	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	4.6	4.1	5.6	3.9	3.2	2.8	3.4 J	1.7 J	2.6 J+	3 J	3.7 J	3.6 J	3.4 J	3.1 J
VOCs															
1,1,1-Trichloroethane	µg/L	25	12 J	**43**	**40 J**	9.7	3.9	3.3	3.7	2.5 J	3 J	1.9	2.5	3.1 J	2.8 J
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	**0.09 U**	**0.45 U**	**0.45 U**	**0.09 U**	**0.09 U**	**0.09 U**	**0.038 U**	**0.038 UJ**	**0.038 U**	**0.095 U**	0.019 UJ	**0.095 U**	**0.095 U**
1,1,2-Trichloroethane	µg/L	0.09 U	0.45 U	**2.3 U**	**2.3 U**	0.45 U	0.2 U	0.2 U	0.12 U	0.12 UJ	0.12 U	0.3 U	0.06 U	0.3 U	0.3 U
1,1-Dichloroethane	µg/L	46	34	**140**	**130**	35	19	16	17	14 J	21	13	13	19	17
1,1-Dichloroethene	µg/L	**3.9**	**1.1 J**	**18**	**20**	**2**	0.57 J	0.49 J	0.41	0.26 J	0.44	0.25 U	0.33	0.46 J	0.41 J
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.4 U	2 U	2 U	0.4 U	0.4 U	0.4 U	0.14 U	0.14 UJ	0.14 U	0.35 U	0.07 U	0.35 U	0.35 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.3 U	1.5 U	1.5 U	0.3 U	0.5 U	0.5 U	0.12 U	0.12 UJ	0.12 U	0.3 U	0.06 U	0.3 U	0.3 U
1,2-Dibromo-3-chloropropane	µg/L	**0.026 U**	**0.13 U**	**0.65 UJ**	**0.65 U**	**0.13 U**	**0.2 U**	**0.2 U**	**0.1 U**	**0.1 UJ**	**0.1 U**	**0.25 U**	**0.05 U**	**0.25 U**	**0.25 U**
1,2-Dibromoethane	µg/L	0.023 U	0.12 U	**0.58 U**	**0.58 U**	0.12 U	0.15 U	0.15 U	0.1 U	0.1 UJ	0.1 U	0.25 U	0.05 U	0.25 U	0.25 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.2 U	1 U	1 U	0.2 U	0.2 U	0.2 U	0.1 U	0.1 UJ	0.1 U	0.25 U	0.05 U	0.25 U	0.25 U
1,2-Dichloroethane	µg/L	0.27	0.2 U	**1 U**	**1 U**	0.24 J	0.15 U	0.15 U	0.11 J	0.06 UJ	0.12 J	0.15 U	0.089 J	0.15 U	0.15 U
1,2-Dichloropropane	µg/L	0.06 U	0.3 U	**1.5 U**	**1.5 U**	0.3 U	0.25 U	0.25 U	0.1 U	0.1 UJ	0.1 U	0.25 U	0.05 U	0.25 U	0.25 U
1,3-Dichlorobenzene	µg/L	0.04 U	0.2 U	1 U	1 U	0.2 U	0.25 U	0.25 U	0.054 U	0.054 UJ	0.054 U	0.14 U	0.027 U	0.14 U	0.14 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.25 U	1.3 U	1.3 U	0.25 U	0.3 U	0.3 U	0.08 U	0.08 UJ	0.08 U	0.2 U	0.04 U	0.2 U	0.2 U
2-Butanone	µg/L	0.4 UJ	2 R	10 UJ	10 R	2 U	2.5 U	2.5 U	1.2 U	1.2 UJ	1.2 U	3 U	0.6 U	3 UJ	3 U
2-Hexanone	µg/L	0.5 U	2.5 UJ	13 U	13 R	2.5 U	4 U	4 U	3.2 U	3.2 UJ	3.2 U	8 U	1.6 U	8 UJ	8 U
4-Methyl-2-pentanone	µg/L	0.6 U	3 UJ	15 U	15 R	3 U	2 U	2 U	1.6 UJ	1.6 UJ	1.6 U	4 U	0.8 U	4 UJ	4 U
Acetone	µg/L	1.5 UJ	7.5 R	38 UJ	38 R	7.5 U	6.5 UJ	6.5 UJ	3 UJ	3 UJ	3 UJ	7.5 U	1.5 UJ	7.5 UJ	7.5 U
Benzene	µg/L	0.069 UB	0.25 U	**1.3 U**	**1.3 U**	0.25 U	0.2 U	0.2 U	0.14 J	0.1 UJ	0.1 U	0.25 U	0.05 U	**1.3**	0.25 U
Bromochloromethane	µg/L	0.05 U	0.25 U	1.3 U	1.3 U	0.25 U	0.25 U	0.25 U	0.056 U	0.056 UJ	0.056 U	0.14 U	0.028 U	0.14 U	0.14 U
Bromodichloromethane	µg/L	0.04 U	**0.2 U**	**1.7 J**	**1 U**	**0.26 J**	**0.2 U**	**0.2 U**	**0.06 UJ**	**0.06 UJ**	**0.06 U**	**0.3 J**	0.03 U	**0.28 J**	**0.2 J**
Bromoform	µg/L	0.07 U	0.35 U	**1.8 U**	**1.8 UJ**	0.35 U	0.2 U	0.2 U	0.08 UJ	0.08 UJ	0.08 U	0.2 U	0.04 U	0.2 U	0.2 U
Bromomethane	µg/L	0.06 U	0.3 U	**1.5 U**	**1.5 UJ**	0.3 U	0.3 UJ	0.3 U	0.14 U	0.14 UJ	0.14 U	0.35 U	0.07 U	0.35 U	0.35 U
Carbon disulfide	µg/L	0.1 U	0.5 U	2.5 U	2.5 UJ	0.5 U	0.5 U	0.5 U	0.18 U	0.18 UJ	0.18 U	0.45 U	0.09 UJ	0.45 U	0.45 U
Carbon tetrachloride	µg/L	0.05 U	0.25 U	**1.3 U**	**1.3 UJ**	0.25 U	0.2 U	0.2 U	0.044 U	0.044 UJ	0.044 U	0.11 U	0.022 U	0.11 U	0.11 U
Chlorobenzene	µg/L	0.05 U	0.25 U	1.3 U	1.3 U	0.25 U	0.3 U	0.3 U	0.08 U	0.08 UJ	0.08 U	0.2 U	0.04 U	0.2 U	0.2 U
Chloroethane	µg/L	0.16 J	0.3 U	1.5 U	1.5 UJ	0.39 J	0.25 U	0.25 U	0.14 U	0.14 UJ	0.14 U	0.35 U	0.099 J	0.35 U	0.35 J
Chloroform	µg/L	0.07 U	0.35 U	**1.8 U**	**1.8 U**	0.35 U	0.2 U	0.2 U	0.044 U	0.044 UJ	0.15 U	0.11 U	0.022 U	0.27 U	0.17 U
Chloromethane	µg/L	0.05 U	0.25 U	**1.3 U**	**1.3 U**	0.25 U	**0.43 U**	0.25 U	0.19 J	**0.45 UJ**	0.26 U	0.25 U	0.14 U	**0.55 U**	0.25 U
cis-1,2-Dichloroethene	µg/L	**13**	**7.1**	**30**	**31**	**8.5**	6.2	5.7	**7.7 J**	5.1 J	**7.5**	5.8	**7.3**	**7.7**	**7.4**
cis-1,3-Dichloropropene	µg/L	0.016 U	**0.08 U**	**0.4 U**	**0.4 U**	**0.08 U**	**0.085 U**	**0.085 U**	**0.034 U**	**0.034 UJ**	**0.034 U**	**0.085 U**	0.017 U	**0.085 U**	**0.085 U**
Dibromochloromethane	µg/L	0.09 U	0.45 U	2.3 U	2.3 U	0.45 U	0.15 U	0.15 U	0.052 U	0.052 UJ	0.052 U	0.13 U	0.026 U	0.29 J	0.13 U
Dichlorodifluoromethane	µg/L	0.06 U	0.3 U	1.5 U	1.5 U	0.3 U	0.25 U	0.25 U	0.06 U	0.06 UJ	0.06 U	0.15 U	0.03 U	0.15 U	0.15 U
Ethylbenzene	µg/L	0.05 U	0.25 U	1.3 U	1.3 U	0.25 U	0.25 U	0.25 U	0.048 U	0.048 UJ	0.048 U	0.12 U	0.024 U	0.12 U	0.12 U
Isopropylbenzene	µg/L	0.03 U	0.15 U	0.75 U	0.75 U	0.15 U	0.25 U	0.25 U	0.08 U	0.08 UJ	0.08 U	0.2 U	0.04 U	0.2 U	0.2 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.6 U	3 U	3 U	0.6 U	0.45 U	0.45 U	0.16 U	0.16 UJ	0.16 U	0.4 U	0.08 U	0.4 U	0.4 U
Methyl tert-butyl ether	µg/L	0.05 U	0.25 U	1.3 U	1.3 U	0.25 U	0.31 J	0.33 J	0.3 J	0.16 UJ	0.3 J	0.4 U	0.4	0.4 U	0.4 U
Methylene chloride	µg/L	0.11 UJ	**0.55 UJ**	**77 J**	**2.8 R**	**7.1 UJ**	**0.75 R**	**0.75 R**	**2.2**	**2.4 J**	**0.88 UJ**	**0.9 UJ**	0.18 UJ	**9.3 J**	**0.9 UJ**
o-Xylene	µg/L	0.04 U	0.2 U	1 U	1 U	0.2 U	0.25 U	0.25 U	0.046 U	0.046 UJ	0.046 U	0.12 U	0.023 U	0.12 U	0.12 U
Styrene	µg/L	0.04 U	0.2 U	1 U	1 U	0.2 U	0.25 U	0.25 UJ	0.044 U	0.044 UJ	0.044 U	0.11 U	0.022 U	0.11 U	0.11 U
Tetrachloroethene	µg/L	0.05 U	0.25 U	**1.3 U**	**1.3 U**	0.25 U	0.25 U	0.25 U	0.1 U	0.1 UJ	0.1 U	0.25 U	0.05 U	0.25 U	0.25 U
Toluene	µg/L	0.08 U	0.4 U	2 U	2 U	0.4 U	0.25 U	0.25 U	0.12 U	0.12 UJ	0.12 U	0.3 U	0.06 U	0.3 U	0.3 U
trans-1,2-Dichloroethene	µg/L	3.2	1.6 J	10	11	2.2	1.2	1	1.4	0.89 J	1.1	1 J	1.4	1.9	1.1
trans-1,3-Dichloropropene	µg/L	0.015 U	**0.075 U**	**0.38 U**	**0.38 U**	**0.075 U**	**0.095 U**	**0.095 U**	**0.034 U**	**0.034 UJ**	**0.034 U**	**0.085 U**	0.017 U	**0.085 U**	**0.085 U**
Trichloroethene	µg/L	**10**	**3.8**	**27**	**25**	**6.2**	**2.5**	**2.1**	**0.91**	**1.3 J**	**1.7**	**1.3**	**1.3**	**0.86 J**	**1.2**
Vinyl chloride	µg/L	**3**	**2.4 J**	**5.7**	**15**	**1.3**	**0.57**	**0.5**	**1.6**	**0.48 J**	**0.6**	**0.38**	**0.49**	**1.5**	**0.66**

Constituent	Units	MW-13D													
		05CA05-09, 10 Oct 04	05CA40-22, 23 Jul 05	06CA01-32, 33 Oct 05	06CD09-59, 60 Jan 06	06CD16-28, 29 Mar 06	07CE18-55, 56 Jan 07	07CE25-97, 98 April 07	07CE37-52, 53 June 07	07CE47-43, 44 Sept 07	08CE08-53, 54 Jan 08	08CE12-32, 33 April 08	08CE15-50 July 08	09CE01-36 Oct 08	09CE07-16 Jan 09
Field Parameters															
Dissolved Oxygen (DO)	mg/L	0.31	NR	0.36	0.76	0.78	NR	0.40	0.16	2.40	0.42	0.34	0.81	0.07	0.51
Oxidation Reduction Potential (ORP)	millivolts	-85.7	-69.2	-35.7	-18.3	-82.3	-331.1	-56.4	-33.1	-73.7	-51.7	-54.1	71	-32.8	-69.6
pH	pH units	7.16	7.12	6.43	7.08	7.01	7.29	7.03	7.04	7.18	6.94	7.26	6.91	7.19	7.06
Specific Conductivity	mmhos/cm	2.081	1.394	1.856	1.278	1.559	1.110	0.994	1.101	1.069	1.074	0.948	972	1.238	1.211
Temperature	deg c	12.35	11.99	11.86	9.81	8.99	8.10	8.20	10.86	11.87	9.95	10.53	12.08	11.89	9.27
Depth to water	feet	6.12	6.38	7.30	5.43	4.17	4.00	3.03	5.18	4.24		2.89	3.39	4.95	3.86
Natural Attenuation Parameters															
Alkalinity, total (as CaCO3)	mg/L	475	390	480	390	400	330	370	360	380	350	330	330	370	380
Chloride (as Cl)	mg/L	**271**	**180**	**290**	**210**	**220**	**130**	110	120	120	**130**	95	110	**140**	**150**
Ethane	µg/L	2.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	2.5 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	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Iron, total	µg/L	**2,180**	**983**	**2,210**	**1,230 J**	**1,230 J**	**1,230**	**1,260 J**	**2,300**	**1,100**	**1,100 J**	**779**	**990**	**730**	**1,100**
Iron, dissolved	µg/L	**2,180**	**820**	**2,030**	**1,340 J**	**1,070 J**	**652**	**588 J**	**670 J**	**740**	**750**	**710**	**660**	**690**	**816**
Manganese, total	µg/L		**48.3**	**58.8**	**47.7**	**39.8**	**31.6**	**25.9**	**40**	**32 J**	**30.8 J**	**26.1**	**29 R**	**37**	**33.7 J**
Manganese, dissolved	µg/L	**65.5**	**45.1**	**57.1**	**47.7**	**36.2**	**31.1**	**28.4**	**34**	**31**	**30**	**28**	21	**36 J**	**32.1 J**
Methane	µg/L	66	17	34	38	25	6.4 J	12	15	8.5 J	6.9 J	9.2 J	17	18	5.6 J
Nitrogen, nitrate (as N)	mg/L	0.06 U	0.28	0.06 J	0.04 U	0.06 U	0.14 J	0.06 U	0.11 U	0.11 U	0.11 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate (as SO4)	mg/L	**225**	93	**190**	110	120	72	65	67	71	66	61	61 J	76	72
Sulfide	mg/L	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	4.9	2.2 J	4.2	3.4	1.7 J	1.6 J	1.8 J	1.3 J	1.4 J+	2 J	1.9 J	2.2 J	2.5 J	2.3 J
VOCs															
1,1,1-Trichloroethane	µg/L	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	0.031 U	0.031 U	0.031 U	0.031 U	0.031 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
1,1-Dichloroethene	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.1 U	0.1 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	**0.026 U**	**0.026 U**	**0.026 UJ**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 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
1,3-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	0.4 UJ	0.4 R	0.4 UJ	0.4 R	0.4 U	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
2-Hexanone	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.8 U	0.8 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	1.5 UJ	1.5 R	2.2 J	3 J	1.5 U	1.3 UJ	1.3 UJ	1.5 U	1.5 U	1.5 UJ	2.5 J	1.5 UJ	1.5 U	1.5 U
Benzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 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	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Carbon tetrachloride	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.05 U	0.24	**0.48**	0.2	0.078 J	**0.44 U**	0.14 U	0.05 U	**0.74 U**	0.11 J	**1.5**	0.052 U	**2.4 U**	**0.34**
cis-1,2-Dichloroethene	µg/L	0.21 J	0.26	0.38	2.1	0.39	0.68	0.75	0.81 J	0.74	1.1	1.2	1.3	1.1	1.1
cis-1,3-Dichloropropene	µg/L	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.05 U	0.28	0.16 J	0.18	0.26	0.43	0.53	0.45	0.4	0.45	0.55	0.66	0.66	0.44
Methylene chloride	µg/L	0.11 UJ	0.11 UJ	**2.1 J**	0.11 UJ	**0.83 U**	0.15 R	0.15 R	0.18 U	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	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	0.05 U	0.05 U
Toluene	µg/L	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	0.04 U	0.04 U	0.04 U	0.075 J	0.04 U	0.06 U	0.06 U	0.079 J	0.06 U	0.067 J	0.083 J	0.084 J	0.13 J	0.078 J
trans-1,3-Dichloropropene	µg/L	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.066 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl chloride	µg/L	**0.23**	**0.028**	**0.2**	**0.97**	**0.084**	**0.044 J**	**0.043 J**	0.013 U	**0.038 J**	0.013 U	**0.056**	**0.048**	**0.066**	0.013 J

Constituent	Units	MW-14D				
		05CA05-11, 12 Oct 04	05CA40-16, 17 Jul 05	06CA01-09, 10 Oct 05	06CD09-28, 29 Jan 06	06CD16-23, 24 Mar 06
Field Parameters						
Dissolved Oxygen (DO)	mg/L	0.45	1.24	0.59	1.47	0.39
Oxidation Reduction Potential (ORP)	millivolts	43.4	15.1	117.5	165.6	134.4
pH	pH units	7.28	7.02	6.87	7.33	6.94
Specific Conductivity	mmhos/cm	0.947	0.883	1.189	1.212	1.471
Temperature	deg c	13.20	11.99	14.64	9.93	9.91
Depth to water	feet	5.88	5.64	7.42	6.10	3.42
Natural Attenuation Parameters						
Alkalinity, total (as CaCO3)	mg/L	347	350	370	340	340
Chloride (as Cl)	mg/L	82.9	45	**180**	**150**	**240**
Ethane	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethene	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Iron, total	µg/L	7 U	25.6 J	25 U	25 U	39 U
Iron, dissolved	µg/L	14 U	25 U	25 U	25 U	10 U
Manganese, total	µg/L		**81.6**	**105**	**97.5**	**105**
Manganese, dissolved	µg/L	**67**	**69.2**	**88.9**	**87.1**	**88.8**
Methane	µg/L	14	4.3	2.3	2.5	1.5 U
Nitrogen, nitrate (as N)	mg/L	0.97 J	1.6	1.7	**2.8**	**2.1**
Sulfate (as SO4)	mg/L	32.4	40	45	45	47
Sulfide	mg/L	1 UJ	1 U	1 U	1 R	1 U
Total Organic Carbon	mg/L	2.7 J	1.4 J	1.8 J	1.5 J	2.1 J
VOCs						
1,1,1-Trichloroethane	µg/L	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
1,1,2-Trichloroethane	µg/L	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
1,1-Dichloroethane	µg/L	0.031 U	0.031 U	0.031 U	0.031 U	0.031 U
1,1-Dichloroethene	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ
1,2-Dibromo-3-chloropropane	µg/L	**0.026 U**	**0.026 R**	**0.026 UJ**	**0.026 U**	**0.026 R**
1,2-Dibromoethane	µg/L	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloroethane	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichloropropane	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,3-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
2-Butanone	µg/L	0.4 UJ	0.4 R	0.4 UJ	0.4 U	0.4 R
2-Hexanone	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-Methyl-2-pentanone	µg/L	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Acetone	µg/L	1.5 UJ	1.5 R	1.5 J	1.5 U	1.5 R
Benzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromoform	µg/L	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Bromomethane	µg/L	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U
Carbon disulfide	µg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Carbon tetrachloride	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chlorobenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chloroethane	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Chloroform	µg/L	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloromethane	µg/L	0.05 U	0.05 UJ	**0.38 UB**	0.05 UJ	0.05 U
cis-1,2-Dichloroethene	µg/L	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
cis-1,3-Dichloropropene	µg/L	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U
Dibromochloromethane	µg/L	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Dichlorodifluoromethane	µg/L	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Isopropylbenzene	µg/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Methyl tert-butyl ether	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Methylene chloride	µg/L	0.11 UJ	0.11 UJ	**2.1 J**	0.11 UJ	**0.9 J**
o-Xylene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Styrene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Tetrachloroethene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
trans-1,2-Dichloroethene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
trans-1,3-Dichloropropene	µg/L	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U
Trichloroethene	µg/L	0.03 U	0.041 J	0.062 J	0.066 J	0.045 J
Vinyl chloride	µg/L	0.018 U	0.018 U	0.018 U	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).

TABLE 5

Field and Analytical Results - Deep Unconsolidated Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-15D														MW-102D											MW-103D													
				05CA05-13, 14 Oct 04	05CA40-02, 03 Jul 05	06CA01-15, 16 Oct 05	06CD09-17, 18 Jan 06	06CD16-12, 13 Mar 06	07CE18-39, 40 Jan 07	07CE25-57, 58 April 07	07CE37-35, 36 June 07	07CE47-05, 06 Sept 07	08CE08-06 Jan 08	08CE12-12, 13 April 08	08CE15-48 July 08	09CE01-13 Oct 08	09CE07-22 Jan 09	05CA40-15 Jul 05	06CD09-19 Jan 06	07CE18-41, 42 Jan 07	07CE25-64-77 April 07	07CE47-31, 32 Sept 07	07CE37-01, 02 June 07	08CE08-39, 40 Jan 08	08CE12-79, 80 April 08	08CE15-43 July 08	09CE01-31 Oct 08	09CE07-15 Jan 09	05CA05-19, 20 Oct 04	05CA40-24, 25 Jul 05	06CA01-01, 02 Oct 05	06CD09-01, 02 Jan 06	06CD16-01, 02 Mar 06	07CE18-01, 02 Jan 07	07CE25-01, 02 April 07	07CE37-01, 02 June 07	07CE47-01, 02 Sept 07	08CE08-03 Jan 08	08CE12-06, 07 April 08	08CE15-05 July 08	09CE01-04 Oct 08	09CE07-02 Jan 09
Field Parameters																																										
Dissolved Oxygen (DO)	mg/L			0.43	0.79	1.46	0.72	0.60	NR	0.56	0.20	0.52	0.34	6.52	0.52	-0.01	0.48	NR	1.02	NR	2.63	0.54	2.21	1.08	0.28	8	1.9	1.04	0.35	NR	1.59	0.57	0.47	NR	1.32	1.48	0.49	0.38	2.53	0.34	3.89	0.76
Oxidation Reduction Potential (ORP)	millivolts			60.5	258.2	171	22	37.0	-321.6	64.4	23.3	108.1	190.8	64.1	60.7	63.2	125.9	23.6	-59.6	-331.0	330.0	-71.8	-72.1	24.6	-103.0	59.3	-49.9	-74.4	24.8	98.2	221.0	128.4	143.7	-276.2	101.5	128.1	140.9	204.2	-11.9	81	3.2	281.9
pH	pH units			7.12	6.27	6.46	7.37	7.09	7.14	7.04	6.89	6.98	6.93	7.56	6.69	7.03	7.05	6.88	7.40	7.13	7.57	6.98	6.72	7.18	7.00	6.44	7.26	7.18	7.12	7.04	5.95	6.94	6.97	7.20	7.02	6.67	6.56	6.85	6.68	7.07	7.03	7.01
Specific Conductivity	mmhos/cm			1.832	1.447	1.354	2.644	1.433	1.346	1.360	1.322	1.324	1.172	1.025	1343	1.177	1.219	1.470	2.453	1.672	1.453	1.759	1.848	0.903	1.623	1673	1.272	1.112	1.565	1.373	1.100	1.163	1.359	1.225	1.318	1.249	1.308	1.318	1.159	1297	1.345	1.276
Temperature	deg c			14.20	13.95	14.33	10.79	11.59	9.71	9.96	13.27	16.75	11.96	10.98	14.34	13.19	9.78	13.79	10.01	10.31	9.98	13.87	14.46	10.73	11.62	14.16	12.81	10.64	14.35	13.41	16.84	10.41	8.97	7.04	11.03	14.87	15.52	11.28	9.95	12.88	13.78	9.39
Depth to water	feet			11.31	11.62	12.74	10.98	9.20	9.01	7.93	10.35	9.25		7.68	8.24	10.35	8.87	9.83	9.55	7.41	6.33	7.69	8.65		5.96	6.64	8.71	7.33	7.73	7.67	8.80	6.89	5.64	5.46	4.57	6.52	5.62		4.54	481	6.43	5.39
Natural Attenuation Parameters																																										
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	422	370	400	390	260	340	360	370	370	350	310	360	360	330			430	450	460	480	330	450	450	380	340	452	410	440	420	390 J	400	410	410	400	390	370	400	410	390
Chloride (as Cl)	mg/L	125	250	291	200	220	21	40	220	210	210	1.1 R	140	130	200	170	160			240	190	240	250	110	230	240	160	140	200	170	180	180	170	160	150	160	170	170	160	160	170	190
Ethane	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.71 J			0.4 UJ	0.4 U	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.6 J	0.5 U	0.5 U	0.5 U	0.5 UJ	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	N/A	N/A	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	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	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.96 J	0.5 U	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
Iron, total	µg/L	150	300	7.2 J	25 UJ	170 J	73.5 J	39 U	55.7 J	39 UJ	39 UJ	39 J	13 J+	54 J	360	8 U	56.5 J-			1,510	7,430 J	1,900	2,100	670 J	2,200	2,000	1,100	853	29.6	25 U	25 U	28.4 J	39 U	39 U	39 UJ	39 UJ	88 J	13 UJ	17 J	12 J	9.9 J	8
Iron, dissolved	µg/L	150	300	14 U	25 U	25 U	47.5 J	10 U	10 U	10 UJ	10 UJ	10 U	15 UJ	8.1 J+	5 U	5 U	8			1,370	1,280 J	1,800	1,800	780	2,000	2,000	1,100	743	14 U	25 U	25 U	25 U	10 U	10 U	10 R	10 UJ	13 J	15 UJ	12 J+	5 UJ	5 U	8
Manganese, total	µg/L	25	50		276	257	220 J	1.7 U	308	312	330	350 J	200 J	150	300	270	275			50.7	64	48 J	55	25 J	53	44	29	28.4 J		284	254 J	278	261	200	267	270	270 J	200 J	260	250	260	256
Manganese, dissolved	µg/L	25	50	314	250	254	227 J	0.4 U	318	314	310	340	190	120	260	250	242			48.6	45.5	46	49	32	50	35	29	24.1 J	283	272	255 J	258	264	194	284	260	260	200	260	250	260	249
Methane	µg/L	N/A	N/A	4.6 J	1.4 J	1.8 J	22	0.5 U	3.1 J	2.9	2.3	1.6 U	1.8 J	0.78 J	1.1	1.3 U	2.8 J			4.7 J	9.5	4.7 J	6.2	4.9 J	7.1 J	5.4	5.4 U	13	72	73	79	60	48 J	12 J	20	120	36	17	87	60	83	15
Nitrogen, nitrate (as N)	mg/L	2	10	0.16 J	0.18	0.29	0.04 U	2.4	2	1.7	1.7	1.8	0.11 U	2.8	2.3	2.4	1.7			0.12 J	0.06 U	0.11 U	0.11 U	0.11 U	0.29	0.05 U	0.084 J	0.05 U	0.06 UJ	0.04 U	0.05 J	0.04 U	0.06 U	0.12 J	0.06 U	0.11 U	0.11 U	0.11 U	0.3	0.05 U	0.05 U	0.05 U
Sulfate (as SO4)	mg/L	125	250	43.8	43	49	8.6	28	55	46	49	48	67	63	49	47	54			140	110	140	130	64	120	110	76	65	60	47	45	48	45	41	39	36	37	38	37	39	39	39
Sulfide	mg/L	N/A	N/A	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1.4 J+	1 U	1 U	1 U	1 U			1 U	1 UJ	1 U	1 U	1 U	1 U	1.6 J	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 J+	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	3.3	2.5 J	2.4 J	2.1 J	0.88 J	1.5 J	2.1 J	0.5 UJ	1.5 J+	2 J	2.3 J	2.4 J	2.2 J	2.2 J			2.2 J	2.4 J	2 J+	1.3 J	1.3 J	3.1 J	2.6 J	1.5 J	1.6 J	5.3	3.7	4.1	3.2	2.7	2.7	3.1 J	1.5 J	2.6 J+	3.4 J	3.2 J	6.3 J	3.3 J	3.5 J
VOCs																																										
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.35 U	0.35 U	0.35 U	0.48	0.04 U	0.04 U	0.25 U	0.05 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.07 UJ	0.07 U	0.04 U	0.04 UJ	0.25 UJ	0.41 J	0.05 UJ	0.05 U	0.25 U	0.25 U	0.05 U	480	450 J	460	520	320	210	210	120	110	160 B	140	87	96 J	130
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.09 U	0.09 U	0.09 U	0.018 U	0.018 U	0.018 U	0.095 U	0.019 U	0.095 U	0.095 U	0.095 UJ	0.095 U	0.095 U	0.018 UJ	0.018 U	0.018 U	0.018 U	0.095 UJ	0.095 U	0.019 U	0.019 U	0.095 UJ	0.095 UJ	0.019 U	0.018 U	9 U	1.8 U	1.8 U	1.8 U	9 U	1.8 U	1.9 U	0.019 U	1.9 U	1.9 U	0.019 UJ	0.019 U	1.9 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.45 U	0.45 U	0.45 U	0.09 U	0.04 U	0.04 U	0.3 U	0.06 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.09 UJ	0.09 U	0.04 U	0.04 U	0.3 UJ	0.3 U	0.06 U	0.06 U	0.3 U	0.3 U	0.06 U	0.7	45 U	9 U	9 U	9 U	20 U	4 U	6 U	0.14 J	6 U	6 U	0.082 J	0.089 J	6 U
1,1-Dichloroethane	µg/L	85	850	0.13 J	0.16 U	0.16 U	0.16 U	0.031 U	0.067 J	0.063 J	0.3 U	0.06 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.031 UJ	0.031 U	0.06 U	0.06 U	0.3 UJ	0.3 U	0.06 U	0.06 U	0.3 U	0.3 U	0.06 U	120	89 J	76	59	65	30 U	14 J	11 J	7.4 J	12 J	11 J	11 J	9.8 J	11 J
1,1-Dichloroethene	µg/L	0.7	7	0.3	0.3 U	0.3 U	0.3 U	0.06 U	0.11 J	0.13 J	0.25 U	0.076 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.06 UJ	0.12 J	0.094 J	0.085 J	0.25 UJ	0.25 U	0.05 U	0.13 J	0.27 J	0.25 U	0.098 J	80	85 J	73	83 J	70	20 U	15	8.2 J	6.2	14 J	10 J	5	4.9	8 J
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.4 U	0.4 U	0.4 U	0.08 U	0.08 U	0.08 U	0.35 U	0.07 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.08 U	0.08 U	0.08 U	0.08 U	0.35 UJ	0.35 U	0.07 U	0.07 U	0.35 U	0.35 U	0.07 U	0.08 U	40 UJ	8 U	8 U	8 U	40 U	8 U	7 U	0.07 U	7 U	7 U	0.07 U	0.07 U	7 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.3 U	0.3 U	0.3 U	0.06 U	0.1 U	0.1 U	0.3 U	0.06 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.06 U	0.06 U	0.1 U	0.1 U	0.3 UJ	0.3 U	0.06 U	0.06 U	0.3 U	0.3 U	0.06 U	0.06 U	30 UJ	6 U	6 UJ	6 UJ	50 U	10 U	6 U	0.06 U	6 U	6 U	0.06 U	0.06 U	6 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	0.026 U	0.13 U	0.13 UJ	0.13 U	0.026 U	0.04 U	0.04 U	0.25 U	0.05 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.026 U	0.026 U	0.04 U	0.04 U	0.25 UJ	0.25 U	0.05 U	0.05 U	0.25 U	0.25 U	0.05 U	0.026 U	13 R	2.6 UJ	2.6 U	2.6 R	20 U	4 U	5 U	0.05 U	5 U	5 U	0.05 U	0.05 U	5 U
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.12 U	0.12 U	0.12 U	0.023 U	0.03 U	0.03 U	0.25 U	0.05 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.023 U	0.023 U	0.03 U	0.03 U	0.25 UJ	0.25 U	0.05 U	0.05 U	0.25 U	0.25 U	0.05 U	0.023 U	12 U	2.3 U	2.3 U	2.3 U	15 U	3 U	5 U	0.05 U	5 U	5 U	0.05 U	0.05 U	5 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.2 U	0.2 U	0.2 U	0.04 U	0.04 U	0.04 U	0.25 U	0.05 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.04 U	0.04 U	0.04 U	0.04 U	0.25 UJ	0.25 U	0.05 U	0.05 U	0.25 U	0.25 U	0.05 U	0.04 U	20 U	4 U	4 U	4 U	20 U	4 U	5 U	0.05 U	5 U	5 U	0.05 U	0.05 U	5 U
1,2-Dichloroethane	µg/L	0.5	5	0.16 J	0.2 U	0.2 U	0.2 U	0.04 U	0.03 U	0.03 U	0.15 U	0.03 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.071 J	0.14	0.38	0.3	0.34 J	0.36 J	0.18 J	0.45	0.35 J	0.15 U	0.15 J	0.75	20 U	4 U	4 U	4 U	15 U	3 U	3 U	0.03 U	3 U	3 U	0.03 U	0.03 U	3 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.3 U	0.3 U	0.3 U	0.06 U	0.05 U	0.05 U	0.25 U	0.05 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.06 UJ	0.06 U	0.05 U	0.05 U	0.25 UJ	0.25 U	0.05 U	0.05 U	0.25 U	0.25 U	0.05 U	0.06 U	30 U	6 U	6 U	6 U	25 U	5 U	5 U	0.05 U	5 U	5 U	0.05 U	0.05 U	5 U
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.2 U	0.2 U	0.2 U	0.04 U	0.05 U	0.05 U	0.14 U	0.027 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.04 U	0.04 U	0.05 U	0.05 U	0.14 UJ	0.14 U	0.027 U	0.027 U	0.14 U	0.14 U	0.027 U	0.04 U	20 U	4 U	4 U	4 U	25 U	5 U	2.7 U	0.027 U	2.7 U	2.7 U	0.027 U	0.027 U	2.7 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.25 U	0.25 U	0.25 U	0.05 U	0.06 U	0.06 U	0.2 U	0.04 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.05 U	0.05 U	0.06 U	0.06 U	0.2 UJ	0.2 U	0.04 U	0.04 U	0.2 U	0.2 U	0.04 U	0.05 U	25 U	5 U	5 U	5 U	30 U	6 U	4 U	0.04 U	4 U	4 U	0.04 U	0.04 U	4 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	2 R	2 UJ	2 R	0.4 U	0.5 U	0.5 U	3 U	0.6 UJ	3 U	3 U	3 U	3 U	3 UJ	0.4 R	0.4 R	0.5 U	0.5 U	3 UJ	3 U	0.6 U	0.6 U	3 U	3 U	0.6 UJ	0.4 UJ	200 R	40 UJ	40 U	40 R	250 U	50 U	60 U	0.6 UJ	60 U	60 U	0.6 U	0.6 U	60 U
2-Hexanone	µg/L	N/A	N/A	0.5 U	2.5 U	2.5 U	2.5 R	0.5 U	0.8 U	0.8 U	8 U	1.6 U	8 U	8 U	8 U	8 U	8 U	0.5 UJ	0.5 R	0.8 U	0.8 UJ	8 UJ	8 U	1.6 U	1.6 U	8 U	8 U	1.6 U	0.5 U	250 U	50 U	50 U	50 U	400 U	80 U	160 U	1.6 U	160 U	160 U	1.6 U	1.6 U	160 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	3 U	3 U	3 R	0.6 U	0.4 U	0.4 U	4 UJ	0.8 UJ	4 U	4 U	4 U	4 U	4 U	0.6 UJ	0.6 R	0.4 U	0.4 UJ	4 UJ	4 UJ	0.8 U	0.8 U	4 U	4 U	0.8 U	0.6 U	300 U	60 U	60 U	60 U	200 U	40 U	80 U	0.8 UJ	80 U	80 U	0.8 U	0.8 U	80 U
Acetone	µg/L	200	1,000	1.5 UJ	7.5 R	7.5 UJ	7.5 R	1.5 U	1.3 UJ	1.3 U	7.5 UJ	1.5 UJ	7.5 UJ	7.5 U	7.5 UJ	7.5 UJ	7.5 U	1.5 R	2.1 J	1.3 UJ	1.3 UJ	7.5 UJ	7.5 UJ	1.5 UJ	1.5 U	7.5 UJ	7.5 U	1.5 U	1.5 UJ	750 R	150 UJ	150 U	150 R	650 UJ	130 UJ	150 U	1.5 UJ	150 UJ	150 U	1.5 UJ	1.5 UJ	150 U
Benzene	µg/L	0.5	5	0.11 UB	0.25 U	0.25 U	0.25 U	0.05 U	0.04 U	0.04 U	0.25 U	0.12 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.05 U	0.05 U	0.04 U	0.04 U	0.25 UJ	0.25 U	0.05 U	0.05 U	0.25 U	0.26 J	0.05 U	0.18 UB	25 U	5 U	5 U	5 U	20 U	4 U	5 U	0.05 U	5 U	5 U	0.05 U	0.05 U	5 U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.25 U	0.25 U	0.25 U	0.05 U	0.05 U	0.05 U	0.14 U	0.028 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.05 U	0.05 U	0.05 U	0.05 U	0.14 UJ	0.14 U	0.028 U	0.028 U	0.14 U	0.14 U	0.028 U	0.05 U	25 U	5 U	5 U	5 U	25 U	5 U	2.8 U	0.028 U	2.8 U	2.8 U	0.028 U	0.028 U	2.8 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.2 U	0.2 U	0.2 U	0.04 U	0.04 U	0.04 U	0.2 J	0.03 U	0.15 U	0.31 J	0.25 J	0.25 J	0.22 J	0.04 UJ	0.04 U	0.04 U	0.04 U	0.15 UJ	0.34 J	0.03 U	0.03 U	0.23 J	0.24 U	0.03 U	0.04 U	34 J	4.9 J	4 U	4.1 J	31 J	4.5 J	5.8 J	0.03 U	3 U	5.9 J	0.03 U	0.03 U	3 J
Bromoform	µg/L	0.44	4.4	0.07 U	0.35 U	0.35 U	0.35 UJ	0.07 U	0.04 U	0.04 U	0.2 UJ	0.04 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.07 U	0.07 UJ	0.04 U	0.04 U	0.2 UJ	0.2 UJ	0.04 U	0.04 U	0.2 U	0.2 U	0.04 J	0.07 U	35 UJ	7 U	7 UJ	7 U	20 U	4 U	4 UJ	0.04 UJ	4 U	4 U	0.04 U	0.04 U	4 U
Bromomethane	µg/L	1	10	0.06 U	0.3 UJ	0.3 U	0.3 UJ	0.06 U	0.06 UJ	0.06 U	0.35 U	0.07 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.35 UJ	0.35 U	0.07 U	0.07 U	0.35 U	0.35 U	0.07 U	0.06 U	30 UJ	6 U	6 UJ	6 U	30 U	6 U	7 U	0.07 U	7 U	7 U	0.07 U	0.07 U	7 J
Carbon disulfide	µg/L	200	1,000	0.1 U	0.5 U	0.5 U	0.5 UJ	0.1 U	0.1 U	0.1 U	0.45 U	0.09 U	0.45 UJ	0.45 U	0.45 UJ	0.45 U	0.45 UJ	0.1 U	0.1 UJ	0.1 U	0.1 U	0.45 UJ	0.45 UJ	0.09 U	0.09 U	0.45 UJ	0.45 U	0.09 UJ	0.1 U	50 U	10 U	10 UJ	10 U	50 U	10 U	9 U	0.09 U	9 UJ	9 U	0.09 UJ	0.09 U	42 J
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.25 U	0.25 U	0.25 UJ	0.05 U	0.04 U	0.04 U	0.11 U	0.022 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.05 UJ	0.05 UJ	0.04 U	0.04 U	0.11 UJ	0.11 U	0.022 U	0.022 U	0.11 U	0.11 U	0.022 U	0.05 U	25 U	5 U	5 U	5 U	20 U	4 U	2.2 U	0.022 U	2.2 U	2.2 U	0.022 U	0.022 U	2.2 U
Chlorobenzene	µg/L	N/A	N/A	4.1	3.3	4	3.2	0.05 U	3.3	3	2.2	2.1	1.9	1.6	1.6	1.2	1.3	0.05 UJ	0.05 U	0.06 U	0.06 U	0.2 UJ	0.2 U	0.04 U	0.04 U	0.2 U	0.2 U	0.04 U	0.073 J	25 U	5 U	5 U	5 U	30 U	6 U	4 U	0.04 U	4 U	4 U	0.04 U	0.04 U	4 U
Chloroethane	µg/L	80	400	0.06 U	0.3 U	0.3 U	0.3 UJ	0.06 U	0.05 U	0.05 U	0.35 U	0.07 UJ	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.06 UJ	0.06 UJ	0.05 U	0.05 U	0.35 UJ	0.35 U	0.07 U	0.07 U	0.35 U	0.35 U	0.07 U	0.98 J	30 U	6 U	6 U	6 U	25 U	5 U	7 U	0.07 U	7 U	7 U	0.07 U	0.07 U	7 U
Chloroform	µg/L	0.6	6	0.07 U	0.35 U	0.35 U	0.35 U	0.07 U	0.04 U	0.04 U	0.11 U	0.022 U	0.11 U	0.11 U	0.28 U	0.27 U	0.15 U	0.07 UJ	0.07 U	0.04 U	0.04 U	0.11 UJ	0.47 U	0.022 U	0.022 U	0.27 U	0.24 U	0.022 U	1.2 UB	35 U	7 U	7 U	7 U	20 U	4 U	7.1 J	0.022 U	2.2 U	2.2 U	0.022 U	0.022 U	3.8 J
Chloromethane	µg/L	0.3	3	0.05 U	0.25 U	0.5 J	0.25 U	0.05 U	0.36 U	0.05 U	0.25 U	0.3 U	0.25 U	0.25 U	0.25 U	0.82 U	0.28 J	0.05 UJ	0.05 U	0.39 U	0.05 U	0.45 UJ	0.25 U	0.11 U	0.21	0.25 U	1.8 U	0.078 U	0.05 U	25 U	5 U	5 U	5 U	25 U	5 U	5 UJ	0.21 U	5 U	5 U	0.05 U	0.086 U	5 U
cis-1,2-Dichloroethene	µg/L	7	70	6	2.5 J	4.3	4.3	0.06 U	2.8	2.6	1.2 J	1.1	5.4	1.2	3	1.5	4.8	12 J	7.6	26	19	19 J	23 J	10	27	23	16	10	360	280 J	270	220	170	65	64	89	64	95	84	99	97 J	83
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.08 U	0.08 U	0.08 U	0.016 U	0.017 U	0.017 U	0.085 U	0.017 U	0.085 U	0.085 U	0.085 U	0.085 U	0.085 U	0.016 UJ	0.016 U	0.017 U	0.017 U	0.085 UJ	0.085 U	0.017 U	0.017 U	0.085 U	0.085 U	0.017 U	0.016 U	8 U	1.6 U	1.6 U	1.6 U	8.5 U	1.7 U	1.7 U	0.017 U	1.7 U	1.7 U	0.017 U	0.017 U	1.7 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.45 U	0.45 U	0.45 U	0.09 U	0.029 U	0.029 U	0.13 U	0.026 U	0.13 U	0.13 U	0.29 J	0.2 J	0.13 U	0.09 UJ	0.09 U	0.029 U	0.029 U	0.13 UJ	0.13 U	0.026 U	0.026 U	0.27 J	0.23 J	0.026 U	0.09 U	45 U	9 U	9 U	9 U	15 U	2.9 U	2.6 U	0.026 U	2.6 U	2.6 U	0.026 U	0.026 U	2.6 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.3 U	0.3 U	0.3 U	0.06 U	0.05 U	0.05 U	0.15 U	0.03 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.06 U	0.06 U	0.05 U	0.05 U	0.15 UJ	0.15 U	0.03 U	0.03 U	0.15 U	0.15 U	0.03 U	0.06 U	30 UJ	6 U	6 U	6 U	25 U	5 U	3 U	0.03 U	3 U	3 U	0.03 U	0.03 U	3 U
Ethylbenzene	µg/L	140	700	0.05 U	0.25 U	0.25 U	0.25 U	0.05 U	0.05 U	0.05 U	0.12 U	0.024 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.12 UJ	0.12 U	0.024 U	0.024 U	0.12 U	0.12 U	0.024 U	0.05 U	25 U	5 U	5 U	5 U	25 U	5 U	2.4 U	0.024 U	2.4 U	2.4 U	0.024 U	0.024 U	2.4 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.15 U	0.15 U	0.15 U	0.03 U	0.05 U	0.05 U	0.2 U	0.04 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.03 U	0.03 U	0.05 U	0.05 U	0.2 UJ	0.2 U	0.04 U	0.04 U	0.2 U	0.2 U	0.04 U	0.03 U	15 U	3 U	3 U	3 U	25 U	5 U	4 U	0.04 U	4 U	4 U	0.04 U	0.04 U	4 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.6 U	0.6 U	0.6 U	0.12 U	0.09 U	0.09 U	0.4 U	0.08 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.12 U	0.12 U	0.09 U	0.09 U	0.4 UJ	0.4 U	0.08 U	0.08 U	0.4 U	0.4 U	0.08 U	0.12 U	60 U	12 U	12 U	12 U	45 U	9 U	8 U	0.08 U	8 U	8 U	0.08 U	0.08 U	8 U
Methyl tert-butyl ether	µg/L	12	60	0.69 J	0.25 U	0.4 J	0.45 J	0.05 U	0.15	0.11 J	0.4 UJ	0.08 U	0.54 J	0.4 U	0.4 U	0.4 U	0.4 U	0.45 J	0.23	1.1	0.99	0.95 J	1.2 J	0.34	1.3	1.2 J	0.78 J	0.08 J	0.05 U	25 U	5 U	5 U	5 U	25 U	5 U	8 U	0.08 U	8 U	8 U	0.08 U	0.08 U	8 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.55 UJ	15 J	0.55 R	0.46 UJ	0.15 R	0.15 UJ	0.9 UJ	0.18 UJ	0.9 UJ	0.9 UJ	0.9 UJ	1.3 UJ	0.9 UJ	0.11 UJ	0.11 R	0.15 R	0.15 R	1.5 UJ	1.6 J	0.18 UJ	0.18 UJ	0.9 UJ	4.1 UJ	0.18 UJ	0.11 UJ	55 UJ	270 J	11 UJ	11 UJ	75 UJ	15 R	18 UJ	0.18 UJ	18 UJ	18 UJ	0.18 UJ	0.18 UJ	18 U
o-Xylene	µg/L	N/A	N/A	0.04 U	0.2 U	0.2 U	0.2 U	0.04 U	0.05 U	0.05 U	0.12 U	0.023 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.04 U	0.04 U	0.05 U	0.05 U	0.12 UJ	0.12 U	0.023 U	0.023 U	0.12 U	0.12 U	0.023 U	0.04 U	20 U	4 U	4 U	4 U	25 U	5 U	2.3 U	0.023 U	2.3 U	2.3 U	0.023 U	0.023 U	2.3 U
Styrene	µg/L	10	100	0.04 U	0.2 U	0.2 U	0.2 U	0.04 U	0.05 U	0.05 U	0.11 U	0.022 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.04 UJ	0.04 U	0.05 U	0.05 U	0.11 UJ	0.11 UJ	0.022 U	0.022 U	0.11 U	0.11 U	0.022 U	0.04 U	20 U	4 U	4 U	4 U	25 U	5 U	2.2 U	0.022 U	2.2 U	2.2 U	0.022 U	0.022 U	2.2 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.25 U	0.25 U	0.25 U	0.05 U	0.05 U	0.05 U	0.25 U	0.05 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.25 UJ	0.25 U	0.05 U	0.05 U	0.25 U	0.25 U	0.05 U	0.05 U	25 U	5 U	5 U	5 U	25 U	5 U	5 U	0.05 U	5 U	5 U	0.05 U	0.05 U	5 U
Toluene	µg/L	200	1,000	0.08 U	0.4 U	0.4 U	0.4 U	0.08 U	0.05 U	0.05 U	0.3 U	0.06 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.08 UJ	0.08 U	0.05 U	0.05 U	0.3 UJ	0.3 U	0.06 U	0.06 U	0.3 U	0.3 U	0.06 U	0.08 U	40 U	8 U	8 U	8 U	25 U	5 U	6 U	0.06 U	6 U	6 U	0.06 U	0.06 U	6 U
trans-1,2-Dichloroethene	µg/L	20	100	0.6 J	0.3	0.4 J	0.41 J	0.04 U	0.26	0.21	0.3 U	0.082 J	0.35 J	0.3 U	0.41 J	0.3 U	0.3 U	0.6 J	0.51	1.5	1.3	1.1 J	1.4	0.63	1.8	1.3	1.1	0.68	5.5	20 U	4 U	4 U	4 U	30 U	6 U	6 U	0.94 J	6 U	6 U	1.5	2.2	6 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.075 U	0.075 U	0.075 U	0.015 U	0.019 U	0.019 U	0.085 U	0.017 U	0.085 U	0.085 U	0.085 U	0.085 U	0.085 U	0.015 UJ	0.015 U	0.019 U	0.019 U	0.085 UJ	0.085 U	0.017 U	0.017 U	0.085 U	0.085 U	0.017 U	0.015 U	7.5 U	1.5 U	1.5 U	1.5 U	9.5 U	1.9 U	1.7 U	0.017 U	1.7 U	1.7 U	0.017 U	0.017 U	1.7 U
Trichloroethene	µg/L	0.5	5	41	30	40	35	0.17	25 J	30	20	10	23	18	28	13	18	0.76 J	0.63	1	0.96	1.1 J	1.5	0.69	2.2	3.7	1.8	1	2,200	2,000	2,200	1,900	1,700	1,100	1,000	820	750	940	840	770	700	740
Vinyl chloride	µg/L	0.02	0.2	0.074	0.09 U	0.09 U	0.09 U	0.018 U	0.023 J	0.018 U	0.065 U	0.013 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.018 U	0.018 U	0.11	0.1	0.065 UJ	0.14 J	0.013 U	0.14	0.065 U	0.065 U	0.067	2.9	9 U	4.1 J	1.8 U	1.8 U	9 U	1.8 U	1.3 U	0.18	1.3 U	1.3 U	0.18	0.3	1.3 U

J indicates that the value was between the method detection limit andJ 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 dU indicates that the constituent was not detected above the method detection limit.
UJ indicates that the constituent was not detected above the estimatUJ indicates that the constituent was not detected above the estimated method detection limit.
R indicates that the initial calibration report associated with this SDG 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 rejectNon-detected concentrations were qualified and flagged "R" as rejected.
UB indicates that the constiuent is considered to be below the detectUB 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 ABolded 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 AShaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

TABLE 5

Field and Analytical Results - Deep Unconsolidated Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-105D														MW-106D											MW-107D								
				05CA05-23, 24 Oct 04	04CA40-33, 34 Jul 05	06CA01-17, 18 Oct 05	06CD09-12, 13 Jan 06	06CD16-16, 17 Mar 06	07CE18-61, 62 Jan 07	07CE25-46, 47 April 07	07CE37-65, 66 June 07	07CE47-55 Sept 07	08CE08-44, 45 Jan 08	08CE12-25, 26 April 08	08CE15-12 July 08	09CE01-09 Oct 08	09CE07-07 Jan 09	05CA40-12 Jul 05	06CD09-15 Jan 06	07CE18-74 Jan 07	07CE25-78 April 07	07CE37-45 June 07	07CE47-51 Sept 07	08CE08-25 Jan 08	08CE12-71 April 08	08CE15-47 July 08	09CE01-47 Oct 08	09CE07-20 Jan 09	06CD16-32, 33 Mar 06	07CE18-81 Jan 07	07CE26-09 April 07	07CE37-83 June 07	07CE47-64 Sept 07	08CE08-66 Jan 08	08CE12-84 April 08	08CE15-54 July 08	09CE01-54 Oct 08
Field Parameters																																					
Dissolved Oxygen (DO)	mg/L			6.09	1.04	0.48	0.93	0.59	NR	1.68	1.19	1.63	0.47	1.86	0.43	0.19	0.45	0.97	0.49	NR	1.28	1.52	0.41	0.74	0.19	0.16	--	0.57	0.29		NR	2.33	1.67	0.21	0.47	0.77	--
Oxidation Reduction Potential (ORP)	millivolts			-56.3	-15.3	-67.1	-16.0	-92.3	-323.4	-38.8	-76.4	-72.4	-68.3	-102.5	109.7	-65	-85.8	-66.7	48.9	-339.2	-57.4	-47.3	-46.0	-58.1	-85.2	66.8	-40.7	-40.1	-83.8	-63.8	-50.3	-76.6	-83.5	-89.6	-89.2	105.2	4.1
pH	pH units			7.34	5.86	6.69	6.89	7.09	7.09	7.01	6.96	7.09	6.91	7.22	6.65	7.16	7.11	7.09	7.24	7.29	7.17	6.33	7.19	7.2	6.97	7.04	7.17	7.17	7.11	7.21	7.14	7.02	7.18	7.17	7.21	6.91	7.2
Specific Conductivity	mmhos/cm			1.299	1.411	1.472	1.290	1.706	1.407	1.379	1.382	1.319	1.302	1.228	931	1.303	1.227	1.231	0.765	1.227	1.166	1.328	1.248	1.138	1.135	1188	1.28	1.22	1.185	1.304	1.225	1.233	1.295	1.156	1.115	1131	1.192
Temperature	deg c			12.10	11.08	13.93	8.50	9.44	8.50	7.44	11.11	12.37	9.12	9.73	12.38	11.3	8.96	10.94	8.48	8.70	7.70	11.81	11.42	8.88	10.50	11.31	10.71	8.3	7.90	7.78	6.51	10.36	11.12	8.25	9.08	11.76	9.55
Depth to water	feet			5.01	5.51	6.27	4.20	3.08	2.88	1.88	4.13	3.09		1.75	2.25	3.77	2.69	5.40	4.45	2.90	1.88	4.18	3.16		1.74	2.24	3.93	2.74	2.81	2.68	1.70	3.97	2.95		1.56	2.01	3.59
Natural Attenuation Parameters																																					
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	362	400	420	400	400	410	420	420 J	430	400	410	410	420	400	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	370	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only	Sentinel Well - VOCs only
Chloride (as Cl)	mg/L	125	250	**159**	**200**	**250**	**230**	**290**	**200**	**180**	**170**	**160**	**170**	**150**	**140**	**150**	15												**140**								
Ethane	µg/L	N/A	N/A	0.62 J	0.5 U	1.4 J	1.4 J	0.5 U	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	4 U												0.5 U								
Ethene	µg/L	N/A	N/A	0.8 J	0.5 U	1.5	1.1 J	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	5 U												0.5 U								
Iron, total	µg/L	150	300	**845 J**	**1,090**	**1,050**	**1,760**	**1,810 J**	**1,600**	**1,340 J**	**1,400 J**	**1,500**	**12,000 J**	**1,300**	**1,200**	**1,300**	**1,430**												**1,520**								
Iron, dissolved	µg/L	150	300	**863 J**	**984**	**974**	**1,510**	**1,620 J**	**1,360**	**1,450**	**1,400 J**	**1,400 J**	**1,600**	**1,200**	**1,100 J**	**1,300**	**1,290**												**1,160**								
Manganese, total	µg/L	25	50		**69.5**	**81.6 J**	**89.2**	**71**	**67.5**	**58.1**	**64**	**62**	**260 J**	**55**	**42**	**57**	**56.2 J**												24.1								
Manganese, dissolved	µg/L	25	50	**67.5**	**66.4**	**82.2 J**	**82.2**	**65.6**	**61.2**	**64.8**	**60**	**60 J**	**59**	**56**	**42**	**58**	**51.4 J**												18.6								
Methane	µg/L	N/A	N/A	1,900	170	150	270	78	46 J	58	89	18	17 J	32	51	74	98 J												0.5 U								
Nitrogen, nitrate (as N)	mg/L	2	10	0.06 UJ	0.05 J	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.11 U	0.11 U	0.11 U	0.05 U	0.05 U	0.05 U	0.05 U												0.06 U								
Sulfate (as SO4)	mg/L	125	250	75.9	58	74	68	59	65	72	56	55	58	67	69	60	6.8												89								
Sulfide	mg/L	N/A	N/A	1 UJ	1 J	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U												1 U								
Total Organic Carbon	mg/L	N/A	N/A	4.1	3.7	3.5	1.7 J	1.5 J	4.7	4.7 J	2.7 J	3.7 J+	4.2 J	4 J	3.7 J	2.9 J	2.7 J												2.3 J								
VOCs																																					
1,1,1-Trichloroethane	µg/L	40	200	0.5 J	1.4 U	1.4 U	7 U	1.8 U	0.2 U	0.2 U	0.25 U	0.25 U	0.25 UJ	0.05 U	0.25 U	0.5 U	0.5 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	**0.36 U**	**0.36 U**	**1.8 U**	**0.45 U**	**0.09 U**	**0.09 U**	**0.095 U**	**0.095 U**	**0.095 U**	0.019 U	**0.095 UJ**	**0.19 UJ**	**0.19 U**	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	**1.8 U**	**1.8 U**	**9 U**	**2.3 U**	0.2 U	0.2 U	0.3 U	0.3 U	0.3 U	0.06 U	0.3 U	**0.6 U**	**0.6 U**	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	16	15 J	**140**	**180**	12	8.4	6.7	6.2	5.5	6.2	6.9	6.7	6.6	5.2	0.031 U	0.031 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	0.031 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
1,1-Dichloroethene	µg/L	0.7	7	**2.6**	**2.4 J**	**14**	**36**	**2 J**	**1.5**	**1.4**	**1.1**	**1.3**	**1.3**	**1.5**	**1.7**	**1.7 J**	**1.2 J**	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	1.6 U	1.6 U	8 U	2 U	0.4 U	0.4 U	0.35 U	0.35 U	0.35 U	0.07 U	0.35 U	0.7 U	0.7 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	1.2 U	1.2 U	6 U	1.5 U	0.5 U	0.5 U	0.3 U	0.3 U	0.3 U	0.06 U	0.3 U	0.6 U	0.6 U	0.06 U	0.06 U	0.1 U	0.1 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	0.1 U	0.1 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**	**0.52 U**	**0.52 UJ**	**2.6 U**	**0.65 U**	**0.2 U**	**0.2 U**	**0.25 U**	**0.25 U**	**0.25 U**	**0.05 U**	**0.25 U**	**0.5 U**	**0.5 U**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.46 U	0.46 U	**2.3 U**	**0.58 U**	0.15 U	0.15 U	0.25 U	0.25 U	0.25 U	0.05 U	0.25 U	**0.5 U**	**0.5 U**	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.8 U	0.8 U	4 U	1 U	0.2 U	0.2 U	0.25 U	0.25 U	0.25 U	0.05 U	0.25 U	0.5 U	0.5 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.17 J	**0.8 U**	**0.8 U**	**4 U**	**1 U**	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.099 J	0.15 U	0.3 U	0.3 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	**1.2 U**	**1.2 U**	**6 U**	**1.5 U**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.05 U	0.25 U	**0.5 U**	**0.5 U**	0.06 U	0.06 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	0.06 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
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.8 U	0.8 U	4 U	1 U	0.25 U	0.25 U	0.14 U	0.14 U	0.14 U	0.027 U	0.14 U	0.27 U	0.27 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	1 U	1 U	5 U	1.3 U	0.3 U	0.3 U	0.2 U	0.2 U	0.2 U	0.04 U	0.2 U	0.4 U	0.4 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 UJ	8 R	8 UJ	40 R	10 U	2.5 U	2.5 U	3 U	3 U	3 U	0.6 U	3 U	6 U	6 UJ	0.4 R	0.4 R	0.5 U	0.5 U	0.6 U	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 UJ	0.6 U	0.4 U	0.5 U	0.5 U	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U
2-Hexanone	µg/L	N/A	N/A	0.5 U	10 U	10 U	50 R	13 U	4 U	4 U	8 U	8 U	8 U	1.6 U	8 U	16 U	16 U	0.5 U	0.5 R	0.8 U	0.8 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 U	0.5 U	0.8 U	0.8 UJ	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 UJ	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	12 U	12 U	60 R	15 U	2 U	2 U	4 UJ	4 U	4 U	0.8 U	4 U	8 U	8 U	0.6 U	0.6 R	0.4 U	0.4 UJ	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U	0.6 U	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U
Acetone	µg/L	200	1,000	1.5 UJ	30 R	30 UJ	150 R	38 U	6.5 UJ	6.5 U	7.5 UJ	7.5 U	7.5 UJ	1.5 U	7.5 UJ	15 U	15 U	3.4 J	1.5 R	1.3 UJ	1.3 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 U	1.3 UJ	1.3 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	5.9
Benzene	µg/L	0.5	5	0.05 U	**1 U**	**1 U**	**5 U**	**1.3 U**	0.2 U	0.2 U	0.25 U	0.25 U	0.39 J	0.05 U	0.25 U	**0.5 U**	**0.5 U**	0.05 U	0.05 U	0.04 U	0.04 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	0.04 U	0.04 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	1 U	1 U	5 U	1.3 U	0.25 U	0.25 U	0.14 U	0.14 U	0.14 U	0.028 U	0.14 U	0.28 U	0.28 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	**0.8 U**	**1.1 J**	**4 U**	**1.7 J**	**0.2 U**	**0.2 U**	**0.28 J**	**0.15 U**	**0.15 U**	0.03 U	**0.15 U**	**0.59 J**	**0.55 J**	0.04 U	0.04 U	0.04 U	0.04 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	**1.4 UJ**	**1.4 U**	**7 UJ**	**1.8 U**	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.04 U	0.2 U	0.4 U	0.4 U	0.07 U	0.07 UJ	0.04 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.07 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
Bromomethane	µg/L	1	10	0.06 U	**1.2 U**	**1.2 U**	**6 UJ**	**1.5 U**	0.3 UJ	0.3 U	0.35 U	0.35 U	0.35 U	0.07 U	0.35 U	0.7 U	0.7 J	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ
Carbon disulfide	µg/L	200	1,000	0.1 U	2 U	2 U	10 UJ	2.5 U	0.5 U	0.5 U	0.45 U	0.45 U	0.45 U	0.09 U	0.45 UJ	0.9 U	4.2 J	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.09 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.05 U	**1 U**	**1 U**	**5 UJ**	**1.3 U**	0.2 U	0.2 U	0.11 U	0.11 U	0.11 U	0.022 U	0.11 U	0.22 U	0.22 U	0.05 U	0.05 UJ	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	1 U	1 U	5 U	1.3 U	0.3 U	0.3 U	0.2 U	0.2 U	0.2 U	0.04 U	0.2 U	0.4 U	0.4 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	1.2 U	1.7 J	6 UJ	1.5 U	0.25 U	0.25 U	0.35 U	0.35 U	0.35 U	0.07 U	0.35 U	0.7 U	0.7 U	0.06 U	0.06 UJ	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 U	**1.4 U**	**1.4 U**	**7 U**	**1.8 U**	0.2 U	0.2 U	0.37 U	0.11 U	0.11 U	0.022 U	0.12 U	0.56 U	0.39 J	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 U	**1 U**	**1 U**	**5 U**	**1.3 U**	**0.51 U**	0.25 U	**0.35 J**	**0.54 U**	**0.58 U**	0.2	**0.43 J**	**1.2 U**	**0.5 U**	0.05 UJ	0.086 J	**0.3 U**	0.05 U	0.05 U	**0.51 U**	0.05 U	0.05 U	0.11 U	**0.76 U**	0.18 U	0.088 J	**0.55 U**	0.05 U	0.23	**0.75 U**	0.15 J	0.17 U	0.07 U	**0.4 U**
cis-1,2-Dichloroethene	µg/L	7	70	**56**	**29**	**350**	**460**	**38**	**39**	**26**	**35 J**	**34**	**39**	**28**	**31**	**60**	**43**	0.06 U	0.06 U	0.03 U	0.03 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.03 U	0.12	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	**0.32 U**	**0.32 U**	**1.6 U**	**0.4 U**	**0.085 U**	**0.085 U**	**0.085 U**	**0.085 U**	**0.085 U**	0.017 U	**0.085 U**	**0.17 U**	**0.17 U**	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	1.8 U	1.8 U	**9 U**	2.3 U	0.15 U	0.15 U	0.13 U	0.13 U	0.13 U	0.026 U	0.13 U	0.46 J	0.66 J	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	1.2 U	1.2 U	6 U	1.5 U	0.25 U	0.25 U	0.15 U	0.15 U	0.15 U	0.03 U	0.15 U	0.3 U	0.3 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	1 U	1 U	5 U	1.3 U	0.25 U	0.25 U	0.12 U	0.12 U	0.12 U	0.024 U	0.12 U	0.24 U	0.24 U	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.6 U	0.6 U	3 U	0.75 U	0.25 U	0.25 U	0.2 U	0.2 U	0.2 U	0.04 U	0.2 U	0.4 U	0.4 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	2.4 U	2.4 U	12 U	3 U	0.45 U	0.45 U	0.4 U	0.4 U	0.4 U	0.08 U	0.4 U	0.8 U	0.8 U	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	1 U	1 U	5 U	1.3 U	0.25 J	0.25 U	0.4 UJ	0.4 UJ	0.4 U	0.17 J	0.4 U	0.8 U	0.8 U	0.05 U	0.05 U	0.05 U	0.05 U	0.08 U	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.05 U	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	**2.2 UJ**	**52 J**	**11 R**	**22 UJ**	**0.75 UJ**	**0.75 UJ**	**0.9 UJ**	**11 UJ**	**1.5 UJ**	0.18 UJ	**1 UJ**	**10 U**	**1.8 UJ**	0.11 UJ	0.11 R	0.15 UJ	0.15 R	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U	0.18 UJ	0.11 U	0.15 UJ	0.15 R	0.18 U	**0.58 UJ**	0.18 UJ	0.18 UJ	**1.1 J**	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.8 U	0.8 U	4 U	1 U	0.25 U	0.25 U	0.12 U	0.12 U	0.12 U	0.023 U	0.12 U	0.23 U	0.23 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.8 U	0.8 U	4 U	1 U	0.25 U	0.25 U	0.11 U	0.11 U	0.11 U	0.022 U	0.11 U	0.22 U	0.22 U	0.04 U	0.04 U	0.05 R	0.05 R	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	**1 U**	**1 U**	**5 U**	**1.3 U**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.05 U	0.25 U	**0.5 U**	**0.5 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	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	1,000	0.08 U	1.6 U	1.6 U	8 U	2 U	0.25 U	0.25 U	0.3 U	0.3 U	0.3 U	0.06 U	0.3 U	0.6 U	0.6 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	2.6	1	11	15	1.4 J	1.4	0.8 J	1.1	1.6	1 J	1.2	0.83 J	1.2 J	0.77 J	0.04 U	0.04 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	0.04 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
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	**0.3 UJ**	**0.3 U**	**1.5 U**	**0.38 U**	**0.095 U**	**0.095 U**	**0.085 U**	**0.085 U**	**0.085 U**	0.017 U	**0.085 U**	**0.17 U**	**0.17 U**	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 UJ	0.017 U
Trichloroethene	µg/L	0.5	5	**240**	**130**	**470**	**2,100**	**160**	**42**	**33**	**31**	**27**	**28**	**14**	**12**	**8.1**	**17**	0.03 U	0.039 J	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	0.03 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
Vinyl chloride	µg/L	0.02	0.2	**1.5**	**1.1**	**9.2**	**21**	**0.96 J**	**0.7**	**0.65**	**0.74**	**0.63**	**0.72**	**0.58**	**0.47**	**1.5**	**0.86**	0.018 U	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U

J indicates that the value was between the method detection limit andJ 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 dU indicates that the constituent was not detected above the method detection limit.
UJ indicates that the constituent was not detected above the estimateUJ indicates that the constituent was not detected above the estimated method detection limit.
R indicates that the initial calibration report associated with this SDG 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 rejectNon-detected concentrations were qualified and flagged "R" as rejected.
UB indicates that the constiuent is considered to be below the detectUB 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 ABolded 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 AShaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

TABLE 6

Field and Analytical Results - Bedrock Unit Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-1D								
				07CE18-16, 17 Jan 07	07CE25-11, 12 April 07	07CE37-10, 13 June 07	07CE47-13, 14 Sept 07	08CE08-10 Jan 08	08CE12-48, 49 April 08	08CE15-32 July 08	09CE01-23 Oct 08	09CE07-45 Jan 09
Field Parameters												
Dissolved Oxygen (DO)	mg/L			0.65	0.72	0.42	0.82	1.3	0.47	0.36	1.35	5.15
Oxidation Reduction Potential (ORP)	millivolts			-261.1	-107.2	-121.8	-125.9	-121.0	-75.5	143.7	-103.7	-131.1
pH	pH units			7.55	7.28	6.60	7.16	7.27	7.43	7.22	7.35	7.4
Specific Conductivity	mmhos/cm			0.643	0.636	0.688	0.654	0.657	0.575	636	0.642	0.611
Temperature	deg c			6.77	9.93	16.74	16.94	8.48	11.43	18.65	13.98	7.6
Depth to water	feet			5.31	4.51	6.29	5.59		4.15	5.03	7.28	5.61
Natural Attenuation Parameters												
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A	350	350	360	360	340	340	350	360	340
Chloride (as Cl)	mg/L	125	250	9.3	7.9	8.8	6.8	6.8	6.8	6.3	6.8	6.6
Ethane	µg/L	N/A	N/A	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	200 U
Ethene	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	250 U
Iron, total	µg/L	150	300	553	1,500 J	3,200	3,100	3,600 J	2,100	2,500	2,500	7,850
Iron, dissolved	µg/L	150	300	185	523 J	2,600	2,500	2,800	360	2,500 J	2,400	2,800
Manganese, total	µg/L	25	50	12.9	80	76	47 J	41 J	33	24 J	30	31.6 J
Manganese, dissolved	µg/L	25	50	8.1	80.2	70	38	39	33	22	30 J	27.1 J
Methane	µg/L	N/A	N/A	71 J	920	1,000	2,800	1,100	850	990	2,500	24,000 J
Nitrogen, nitrate (as N)	mg/L	2	10	0.34	0.06 U	0.11 U	0.11 U	0.11 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate (as SO4)	mg/L	125	250	0.8 U	0.8 U	0.9 J	1.2 J	1 J	1 J	1 J	1 U	1 U
Sulfide	mg/L	N/A	N/A	1 U	1 UJ	1 U	1 U	1.4 J+	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A	0.7 U	0.92 J	0.5 UJ	0.5 UJ	0.5 UJ	0.61 J	0.59 J	0.5 UJ	0.6 J
VOCs												
1,1,1-Trichloroethane	µg/L	40	200	0.04 U	0.04 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.019 UJ	0.019 UJ	0.019 UJ	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.06 U	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.04 U	0.04 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.061 J	0.05 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.07 UJ	0.07 UJ	0.07 UJ	0.07 U	0.07 U	0.07 UJ	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.1 U	0.1 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U
1,2-Dibromo-3-chloropropane	µg/L	0.02	0.2	0.04 U	0.04 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
1,2-Dibromoethane	µg/L	0.5	5	0.03 U	0.03 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.03 U	0.03 U	0.03 UJ	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 UJ	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
1,3-Dichlorobenzene	µg/L	125	1,250	0.05 U	0.05 U	0.027 UJ	0.027 UJ	0.027 UJ	0.027 U	0.027 U	0.027 UJ	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.06 U	0.06 U	0.04 UJ	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 UJ	0.04 U
2-Butanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.6 UJ	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 UJ	0.6 U
2-Hexanone	µg/L	N/A	N/A	0.8 U	0.8 U	1.6 UJ	1.6 UJ	1.6 UJ	1.6 U	1.6 U	1.6 UJ	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.4 U	0.4 U	0.8 UJ	0.8 UJ	0.8 UJ	0.8 U	0.8 U	0.8 UJ	0.8 U
Acetone	µg/L	200	1,000	1.3 UJ	1.3 U	1.5 UJ	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	2.8 U
Benzene	µg/L	0.5	5	0.04 U	0.04 U	0.062 J	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
Bromochloromethane	µg/L	N/A	N/A	0.05 U	0.05 U	0.028 UJ	0.028 UJ	0.028 UJ	0.028 U	0.028 U	0.028 UJ	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.03 UJ	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 UJ	0.03 U
Bromoform	µg/L	0.44	4.4	0.04 U	0.04 U	0.04 UJ	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 UJ	0.04 U
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.07 UJ	0.07 UJ	0.07 UJ	0.07 U	0.07 U	0.07 UJ	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 U	0.09 UJ	0.09 UJ	0.09 UJ	0.09 U	0.09 U	0.09 UJ	0.39 U
Carbon tetrachloride	µg/L	0.5	5	0.04 U	0.04 U	0.022 UJ	0.022 UJ	0.022 UJ	0.022 U	0.022 U	0.022 UJ	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.06 U	0.06 U	0.04 UJ	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 UJ	0.04 U
Chloroethane	µg/L	80	400	0.05 U	0.05 U	0.07 UJ	0.07 UJ	0.07 UJ	0.07 U	0.07 U	0.07 UJ	0.07 U
Chloroform	µg/L	0.6	6	0.04 U	0.04 U	0.022 UJ	0.022 UJ	0.022 UJ	0.022 U	0.022 U	0.022 UJ	0.022 U
Chloromethane	µg/L	0.3	3	0.05 U	0.15 U	0.05 UJ	0.24 UJ	0.15 UJ	0.05 U	0.05 U	0.48 U	0.12 U
cis-1,2-Dichloroethene	µg/L	7	70	0.03 U	0.03 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.017 U	0.017 U	0.017 UJ	0.017 UJ	0.017 UJ	0.017 U	0.017 U	0.017 UJ	0.017 U
Dibromochloromethane	µg/L	6	60	0.029 U	0.029 U	0.026 UJ	0.026 UJ	0.026 UJ	0.026 U	0.026 U	0.026 UJ	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.05 U	0.05 U	0.03 UJ	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 UJ	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.024 UJ	0.024 UJ	0.065 J	0.024 U	0.039 J	0.052 J	0.056 J
Isopropylbenzene	µg/L	N/A	N/A	0.05 U	0.067 J	0.083 J	0.06 J	0.098 J	0.04 U	0.046 J	0.072 J	0.095 J
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.09 U	0.09 U	0.08 UJ	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 UJ	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.08 UJ	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 UJ	0.08 U
Methylene chloride	µg/L	0.5	5	0.15 UJ	0.15 R	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.05 U	0.05 U	0.023 UJ	0.023 UJ	0.023 UJ	0.023 U	0.023 U	0.023 UJ	0.023 U
Styrene	µg/L	10	100	0.05 U	0.05 U	0.022 UJ	0.022 UJ	0.022 UJ	0.022 U	0.022 U	0.022 UJ	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
Toluene	µg/L	200	1,000	0.05 U	0.05 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.1 J	0.06 UJ	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.06 U	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.019 U	0.019 U	0.017 UJ	0.017 UJ	0.017 UJ	0.017 U	0.017 U	0.017 UJ	0.017 U
Trichloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.06 J	0.11 J	0.013 UJ	0.2 J	0.076	0.098	0.17 J	0.084

Constituent	Units	MW-3D								
		07CE18-27, 28 Jan 07	07CE25-26, 27 April 07	07CE37-27, 28 June 07	07CE47-29, 30 Sept 07	08CE08-14, 15 Jan 08	08CE12-01, 02 April 08	08CE15-33 July 08	09CE01-03 Oct 08	09CE07-09 Jan 09
Field Parameters										
Dissolved Oxygen (DO)	mg/L	1.82	5.21	8.77	0.72	0.84	2.18	0.42	0.71	0.82
Oxidation Reduction Potential (ORP)	millivolts	-105.3	-71.9	125.2	-98.9	-82.0	-53.5	8.3	-22.7	-87.6
pH	pH units	7.47	7.39	7.05	7.23	7.15	7.3	6.51	7.03	7.26
Specific Conductivity	mmhos/cm	1.038	1.022	1.034	1.062	0.983	1.006	820	1.015	1.029
Temperature	deg c	6.50	10.92	16.27	15.02	9.89	10.37	15.33	12.41	8.77
Depth to water	feet	7.05	5.91	8.35	7.34		5.73	6.31	8.41	6.89
Natural Attenuation Parameters										
Alkalinity, total (as CaCO3)	mg/L	350	350	350	370	340	310	340	350	340
Chloride (as Cl)	mg/L	120	110	110	130	130	99	98	100	110
Ethane	µg/L	0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	8 U
Ethene	µg/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	10 U
Iron, total	µg/L	1,240	844 J	1,500 J	1,600	3,600 J	660 J	490	630	2,370
Iron, dissolved	µg/L	914	875 J	1,300 J	1,200	1,100	517 J	280 J	690	2,090
Manganese, total	µg/L	14.8	15	22	53 J	34 J	21	21 J	25	34 J
Manganese, dissolved	µg/L	11.6	12	18	48	22	20.9	19	32	31.1 J
Methane	µg/L	31 J	55	7.9	81	13 J	55	71	110	190 J
Nitrogen, nitrate (as N)	mg/L	0.21	0.38	0.41	0.11 U	0.11 U	0.41	0.05 U	0.12 J	0.1 J
Sulfate (as SO4)	mg/L	41	40	45	52	54	61	55	51	40
Sulfide	mg/L	1 U	1 UJ	1 U	1 U	1.4 J+	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	0.7 U	0.91 J	0.5 UJ	0.84 J+	1.1 J	1.8 J	2	1.8 J	1.7 J
VOCs										
1,1,1-Trichloroethane	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 U
1,1,2-Trichloroethane	µg/L	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	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
1,1-Dichloroethene	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	0.1 U	0.1 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	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dibromoethane	µg/L	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	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
1,3-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	0.8 U	0.8 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	0.4 U	0.4 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	1.3 UJ	1.3 U	1.5 U	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U
Benzene	µg/L	0.04 U	0.04 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	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.04 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 J
Carbon disulfide	µg/L	0.1 U	0.1 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.096 J	0.62 J
Carbon tetrachloride	µg/L	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.33 U	0.05 U	0.05 U	0.54 U	0.18 U	0.05 U	0.05 U	0.72 U	0.079 U
cis-1,2-Dichloroethene	µg/L	0.067 U	0.084 J	0.088 J	0.28	0.24	0.21	0.23	0.23	0.24
cis-1,3-Dichloropropene	µg/L	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.11 J	0.16	0.23 J	0.39	0.28	0.29	0.33	0.29	0.28
Methylene chloride	µg/L	0.15 UJ	0.15 UJ	0.18 UJ	0.57 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.05 U	0.05 U	0.092 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	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
trans-1,3-Dichloropropene	µg/L	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.065 U	0.05 U	0.091 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl chloride	µg/L	0.018 U	0.023 J	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.041 J	0.013 J

Constituent	Units	MW-4D										
		05CA40-13 Jul 05	06CD09-35 Jan 06	07CE18-12,13 Jan 07	07CE25-15,16 April 07	07CE37-29, 30 June 07	07CE47-20, 21 Sept 07	08CE08-01 Jan 08	08CE12-56, 57 April 08	08CE15-03 July 08	09CE01-21 Oct 08	09CE07-48 Jan 09
Field Parameters												
Dissolved Oxygen (DO)	mg/L	0.92	0.51	2.49	1.61	0.43	2.30	3.49	2.99	0.31	0.06	0.81
Oxidation Reduction Potential (ORP)	millivolts	-55.7	-77.9	-109.6	-76.8	78.1	-36.6	15.5	48.4	1.4	-51	-102.8
pH	pH units	7.81	7.02	7.41	7.22	7.04	7.66	7.57	7.68	7.64	7.43	7.17
Specific Conductivity	mmhos/cm	0.955	0.959	1.174	1.09	1.110	1.077	1.113	1.056	1032	1.09	1.157
Temperature	deg c	11.97	9.64	8.74	10.82	14.22	17.73	11.23	9.48	14.79	14.32	8.82
Depth to water	feet	9.78	10.19	7.49	6.15	8.83	7.85		5.89	6.59	9.22	7.58
Natural Attenuation Parameters												
Alkalinity, total (as CaCO3)	mg/L			390	340	350	310	290	310	290	320	360
Chloride (as Cl)	mg/L			140	130	130	150	160	130	130	120	100
Ethane	µg/L			0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	2 U
Ethene	µg/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.5 U
Iron, total	µg/L			5,950	4,850	3,600	39 UJ	37 J	73 J+	15 J	160	12,400
Iron, dissolved	µg/L			1,610	1,120	620 J	10 U	15 UJ	29 J+	5 UJ	94	1,650
Manganese, total	µg/L			208	204	200	110 J	44 J	36	74	140	332
Manganese, dissolved	µg/L			125	70.2	110	100	41	35	73	130	132
Methane	µg/L			22 J	20	21	3.8 J	0.25 U	2.1 J	7.3	18	44 J
Nitrogen, nitrate (as N)	mg/L			0.19 J	1.2	0.56	0.39	2.1	2.8	0.49	0.25	0.05 U
Sulfate (as SO4)	mg/L			50	44	45	60	64	57	55	61	48
Sulfide	mg/L			1 U	1 UJ	1 U	1 U	1.2 J+	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L			0.89 J	1.5 J	0.5 UJ	0.86 J+	1.6 J	1.9 J	17	1.5 J	1.2 J
VOCs												
1,1,1-Trichloroethane	µg/L	0.07 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	0.018 U	0.018 U	0.018 UJ	0.019 U	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.09 U	0.09 U	0.04 U	0.04 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	0.031 U	0.031 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.06 U	0.06 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.06 U	0.1 U	0.1 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	0.026 U	0.026 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dibromoethane	µg/L	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.04 U	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.053 J	0.06 J	0.11 J
1,2-Dichloropropane	µg/L	0.06 U	0.06 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,3-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	0.4 R	0.4 R	0.5 U	0.5 UJ	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	0.5 U	0.5 R	0.8 U	0.8 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	0.6 U	0.6 R	0.4 U	0.4 UJ	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	1.5 R	1.5 R	1.3 UJ	1.3 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 UJ
Benzene	µg/L	0.05 U	0.05 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.04 U	0.04 UJ	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.07 U	0.07 UJ	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	0.06 UJ	0.06 UJ	0.06 U	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.4 U
Carbon tetrachloride	µg/L	0.05 U	0.05 U	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.06 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	0.06 U	0.06 U	0.05 U	0.05 UJ	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.07 U	0.07 U	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.05 UJ	0.05 UJ	1.1 U	0.099 UJ	0.05 U	0.33 UJ	0.13 U	0.05 U	0.12 U	0.3 U	0.2 U
cis-1,2-Dichloroethene	µg/L	0.06 U	0.06 U	0.03 U	0.03 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.053 J	0.079 J
cis-1,3-Dichloropropene	µg/L	0.016 U	0.016 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.09 U	0.09 U	0.029 U	0.029 UJ	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 UJ	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.03 U	0.03 U	0.05 U	0.05 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.12 U	0.09 U	0.09 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.05 U	1.6	2.1	2 J	2	1.6	1.7	2	3.2	3.5	4.1
Methylene chloride	µg/L	0.11 UJ	0.11 R	0.15 UJ	0.15 R	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U	0.18 U
o-Xylene	µg/L	0.04 U	0.04 U	0.05 U	0.05 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	0.04 U	0.04 U	0.05 U	0.05 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	0.08 U	0.08 U	0.05 U	0.05 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	0.04 U	0.04 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,3-Dichloropropene	µg/L	0.015 U	0.015 U	0.019 U	0.019 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.03 U	0.03 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl chloride	µg/L	0.018 U	0.11	0.043 J	0.018 UJ	0.035 J	0.063	0.013 U	0.013 U	0.093	0.16	0.14

Constituent	Units	MW-12B										
		05CA40-43 Jul 05	06CD09-38 Jan 06	07CE18- 77, 78 Jan 07	07CE25-83, 86 April 07	07CE37-68, 69 June 07	07CE47-47 Sept 07	08CE08-64, 65 Jan 08	08CE12-42, 43 April 08	08CE15-35 July 08	09CE01-42 Oct 08	09CE07-34 Jan 09
Field Parameters												
Dissolved Oxygen (DO)	mg/L	NR	0.59	NR	0.79	3.0	4.84	0.59	1.31	0.26	0.91	0.81
Oxidation Reduction Potential (ORP)	millivolts	29.8	25.6	-258.1	-107.9	190.6	-113.1	-22.1	-14.6	144	-85.1	-90
pH	pH units	7.77	7.46	7.74	7.57	7.50	7.30	7.32	8.01	7.55	7.34	7.62
Specific Conductivity	mmhos/cm	1.116	0.933	1.146	1.071	1.034	1.290	0.982	0.982	1057	1.08	0.998
Temperature	deg c	17.40	8.18	8.11	7.88	11.54	12.52	9.01	10.23	13.4	12.32	6.15
Depth to water	feet	5.69	4.73	3.26	2.01	4.41	3.53		2.12	2.6	4.31	3.16
Natural Attenuation Parameters												
Alkalinity, total (as CaCO3)	mg/L			320	350	330 J	340	330	330	340	350	310
Chloride (as Cl)	mg/L			150	150	120	230	130	120	130	120	130
Ethane	µg/L			0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	4 U
Ethene	µg/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Iron, total	µg/L			337	508 J	100 J	1,600 J	150 J	52 J+	470	400	339
Iron, dissolved	µg/L			314	506 J	10 UJ	1,800	150 J	5.9 J+	5 R	300	455
Manganese, total	µg/L			28.2	26.9	23	59	22.4 J	13 J	15 J	23	21.4 J
Manganese, dissolved	µg/L			22.5 B	30.3	20	64 J	23	11	1.2 R	22	20.7 J
Methane	µg/L			18 J	80	50	44	81 J	0.25 U	54	120	120
Nitrogen, nitrate (as N)	mg/L			0.25	0.4	0.26 J	0.11 U	0.11 U	0.47	0.05 U	0.05 U	0.05 U
Sulfate (as SO4)	mg/L			46	35	30 J	38	34	32	39	39 J	33
Sulfide	mg/L			1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L			0.8 J	0.93 J	0.5 UJ	0.82 J+	1.4 J	0.99 J	1.5 J	1.5 J	1.5 J
VOCs												
1,1,1-Trichloroethane	µg/L	0.07 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 U
1,1,2-Trichloroethane	µg/L	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	0.031 U	0.031 U	0.06 U	0.06 U	0.06 J	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.06 U	0.1 U	0.1 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	0.026 U	0.026 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dibromoethane	µg/L	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.06 U	0.06 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
1,3-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	0.4 R	0.4 R	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ	0.6 U
2-Hexanone	µg/L	0.5 UJ	0.5 R	0.8 U	0.8 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 U
4-Methyl-2-pentanone	µg/L	0.6 UJ	0.6 R	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U
Acetone	µg/L	1.5 R	1.5 R	1.3 UJ	1.3 UJ	1.5 U	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U
Benzene	µg/L	0.05 U	0.05 U	0.04 U	0.04 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	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.07 U	0.07 UJ	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	0.06 U	0.06 UJ	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	0.1 U	0.1 UJ	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.11 J	0.43
Carbon tetrachloride	µg/L	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.066 J	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.05 U	0.05 UJ	0.32 U	0.05 U	0.05 U	0.49 U	0.099 U	0.05 U	0.05 U	2.3 U	0.35
cis-1,2-Dichloroethene	µg/L	0.06 U	0.06 U	0.03 U	0.03 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.11 UJ	0.11 R	0.15 UJ	0.15 R	0.18 U	0.33 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U	0.18 UJ
o-Xylene	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	0.04 U	0.04 U	0.05 R	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.05 U	0.091 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.056 J
Toluene	µg/L	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	0.04 U	0.04 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
trans-1,3-Dichloropropene	µg/L	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.03 U	0.03 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
Vinyl chloride	µg/L	0.018 U	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 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).

TABLE 6

Field and Analytical Results - Bedrock Unit Groundwater
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	MW-15B 05CA40-01 Jul 05	MW-15B 06CD09-10 Jan 06	MW-15B 07CE18-21, 22 Jan 07	MW-15B 07CE25-55, 56 April 07	MW-15B 07CE37-43, 44 June 07	MW-15B 07CE47-66 Sept 07	MW-15B 08CE08-30, 31 Jan 08	MW-15B 08CE12-69, 70 April 08	MW-15B 08CE15-57 July 08	MW-15B 09CE01-15 Oct 08
Field Parameters													
Dissolved Oxygen (DO)	mg/L			NR	0.76	1.23	2.59	1.18	1.83	1.32	0.84	0.8	0.44
Oxidation Reduction Potential (ORP)	millivolts			-43.9	-54.2	-306.2	-21.3	-35.4	-85.5	10.6	-98.6	131.5	-50.1
pH	pH units			6.86	6.85	7.05	7.12	6.73	7.26	7.18	6.82	6.74	7.07
Specific Conductivity	mmhos/cm			0.898	0.776	0.929	0.835	0.915	0.856	0.704	0.752	737	0.783
Temperature	deg c			14.96	10.85	8.46	7.75	15.71	18.13	10.21	13.5	15.16	12.85
Depth to water	feet			9.34	12.90	8.37	16.35	17.91	17.75		14.88	15.56	17.81
Natural Attenuation Parameters													
Alkalinity, total (as CaCO3)	mg/L	N/A	N/A			390	380	380	390	370	370	380	270
Chloride (as Cl)	mg/L	125	250			27	27	26	21	19	18	17	13
Ethane	µg/L	N/A	N/A			0.4 UJ	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L	N/A	N/A			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Iron, total	µg/L	150	300			**448**	**251 J**	**990 J**	**560**	**490 J**	**480**	**640**	**8 U**
Iron, dissolved	µg/L	150	300			**427**	**218 J**	21 J	**370 J**	**470**	**190 J**	**500**	**5 U**
Manganese, total	µg/L	25	50			**1,020**	**811**	**920**	**820**	**670 J**	**750**	**720**	**4 U**
Manganese, dissolved	µg/L	25	50			**1,010**	**864**	**780**	**860 J**	**690**	**710**	**680**	**1.2 U**
Methane	µg/L	N/A	N/A			440 J	610	640	650	650	610	360	0.32 U
Nitrogen, nitrate (as N)	mg/L	2	10			0.06 U	0.06 U	0.11 U	0.11 U	0.11 U	0.05 U	0.05 U	1
Sulfate (as SO4)	mg/L	125	250			84	70	67	62	56	52	45 J	9.3
Sulfide	mg/L	N/A	N/A			1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	N/A	N/A			0.79 J	1.3 J	0.5 UJ	0.67 J+	1.5 J	1.8 J	1.9 J	1.4 J
VOCs													
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 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
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.1 U	0.1 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**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 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
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 U	0.5 U	0.5 U	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.8 U	0.8 U	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 UJ	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.4 U	0.4 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U
Acetone	µg/L	200	1,000	1.5 R	1.5 U	1.3 UJ	1.3 U	1.5 UJ	1.5 UJ	1.5 UJ	4 J	1.5 UJ	1.5 UJ
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.04 U	0.04 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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 UJ	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 UJ	0.06 UJ	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 UJ	0.1 U	0.1 U	0.71	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 UJ	0.05 U	**0.43 U**	0.05 U	0.05 U	**0.51 U**	0.12 J	0.05 U	0.11 U	**1.1 U**
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.03 U	0.03 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.051 J	0.05 U	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 R	0.15 UJ	0.15 UJ	0.18 UJ	**1.1 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 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
Toluene	µg/L	200	1,000	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 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
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 UJ	0.017 U
Trichloroethene	µg/L	0.5	5	0.03 U	0.03 U	0.05 U	0.05 U	0.06 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U

Constituent	Units	MW-101B 05CA40-14 Jul 05	MW-101B 06CD09-47 Jan 06	MW-101B 07CE25-24, 25 April 07	MW-101B 07CE37-22, 23 June 07	MW-101B 07CE47-22, 23 Sept 07	MW-101B 08CE08-28, 29 Jan 08	MW-101B 08CE12-74, 75 April 08	MW-101B 08CE15-14 July 08	MW-101B 09CE01-10 Oct 08	MW-101B 09CE07-14 Jan 09
Field Parameters											
Dissolved Oxygen (DO)	mg/L	0.58	0.37	1.13	1.25	1.53	0.62	0.26	0.55	0.39	0.52
Oxidation Reduction Potential (ORP)	millivolts	-35.7	128.2	35.4	37.5	63.6	51.0	-131.8	64.9	-35.2	-55
pH	pH units	7.02	6.97	7.12	6.16	6.98	7.14	7.13	6.87	7.14	7.03
Specific Conductivity	mmhos/cm	1.167	0.925	1.022	1.082	0.238	0.71	0.901	858	1.016	0.943
Temperature	deg c	13.23	11.80	10.32	14.34	14.76	11.00	11.06	19.46	13.4	9.8
Depth to water	feet	7.14	6.61	3.50	5.75	4.60		3.01	3.72	5.98	4.36
Natural Attenuation Parameters											
Alkalinity, total (as CaCO3)	mg/L			360	360	120	300	320	340	440	330
Chloride (as Cl)	mg/L			110	100	9.6	91	89	83	**240**	99
Ethane	µg/L			0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	4 U
Ethene	µg/L			0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Iron, total	µg/L			67 J	65 J	39 UJ	60 J	32 J+	**190**	11 J-	24 J
Iron, dissolved	µg/L			10 UJ	14 J	17 J	42 J+	32 J+	7.8 J	11 J+	8
Manganese, total	µg/L			**96.7**	**88**	**50 J**	**93 J**	**69**	**75**	**75**	**74.7**
Manganese, dissolved	µg/L			**92.3**	**71**	**52**	**94**	**73**	**62**	**80 J**	**65.4**
Methane	µg/L			58	47	16	41	69	64	99	56 J
Nitrogen, nitrate (as N)	mg/L			0.06 U	0.11 U	0.48	0.11 U	0.05 U	0.05 U	0.05 U	0.11 J
Sulfate (as SO4)	mg/L			52	49	7.4 J	42	46	48	58	43
Sulfide	mg/L			1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L			1.2 J	0.5 UJ	3.1 J+	2.1 J	1.6 J	1.8 J	3.9 J	1.5 J
VOCs											
1,1,1-Trichloroethane	µg/L	0.07 U	0.07 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 U
1,1,2-Trichloroethane	µg/L	0.09 U	0.09 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	0.031 U	0.031 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
1,1-Dichloroethene	µg/L	0.06 U	0.06 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.06 U	0.1 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	**0.026 U**	**0.026 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.023 U	0.023 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.06 U	0.06 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
1,3-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	0.4 R	0.4 R	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	0.5 U	0.5 U	0.8 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	0.6 U	0.6 U	0.4 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	1.5 R	1.5 R	1.3 U	1.5 U	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U
Benzene	µg/L	0.05 U	0.05 U	0.04 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	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.04 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.07 U	0.07 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	0.06 UJ	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 J
Carbon disulfide	µg/L	0.13 UB	0.1 U	0.49	0.09 U	0.09 U	0.09 U	0.09 U	0.095 J	0.09 U	0.41 J
Carbon tetrachloride	µg/L	0.05 U	0.05 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	0.06 U	0.06 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.07 U	0.07 U	0.04 U	0.022 U	0.32 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.23 U	0.1 J	0.17 U	0.05 U	**0.48 U**	0.2 U
cis-1,2-Dichloroethene	µg/L	0.18 J	0.15 J	0.5	0.19	0.39	2.2	0.34	0.29	0.38	2.1
cis-1,3-Dichloropropene	µg/L	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.09 U	0.09 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	0.06 U	0.06 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.03 U	0.03 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.12 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.29 J	0.24	0.31	0.24 J	0.08 U	0.3	0.27	0.35	0.32	0.3
Methylene chloride	µg/L	0.11 UJ	0.11 UJ	0.15 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	0.04 U	0.04 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	0.04 U	0.04 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	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	0.08 U	0.08 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.12 J	0.06 U	0.06 UJ	0.06 U	0.14 J
trans-1,3-Dichloropropene	µg/L	0.015 U	0.015 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.03 U	0.046 J	0.4	0.055 J	0.34	**1.9**	0.15 J	0.08 J	0.16 J	**1.6**
Vinyl chloride	µg/L	0.018 U	**0.036 J**	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U

Constituent	Units	MW-105B 05CA40-32 Jul 05	MW-105B 06CD09-14 Jan 06	MW-105B 07CE18-59, 60 Jan 07	MW-105B 07CE25-38, 39 April 07	MW-105B 07CE37-63, 64 June 07	MW-105B 07CE47-54 Sept 07	MW-105B 08CE08-48, 49 Jan 08	MW-105B 08CE12-21, 22 April 08	MW-105B 08CE15-10 July 08	MW-105B 09CE01-08 Oct 08	MW-105B 09CE07-05 Jan 09
Field Parameters												
Dissolved Oxygen (DO)	mg/L	0.86	0.98	0.89	0.67	1.32	2.48	0.76	0.32	0.27	0.68	1
Oxidation Reduction Potential (ORP)	millivolts	-51.8	-52.2	-33.5	-74.7	-110.1	-118.0	-5.8	-88.3	135.3	-147.9	-133.2
pH	pH units	6.45	6.89	7.09	7.22	7.02	7.14	7.16	7.31	7.02	7.11	7.14
Specific Conductivity	mmhos/cm	1.105	0.916	1.151	0.999	1.098	1.066	0.912	0.964	1030	1.05	0.988
Temperature	deg c	12.90	8.17	7.31	5.92	11.74	11.99	8.72	9.26	12.81	11.79	7.66
Depth to water	feet	5.08	4.39	2.78	2.09	3.93	3.03		1.78	2.34	4.07	2.67
Natural Attenuation Parameters												
Alkalinity, total (as CaCO3)	mg/L			360	360	370 J	400	360	340	370	380	360
Chloride (as Cl)	mg/L			**140**	**130**	**130**	**130**	**130**	120	110	110	120
Ethane	µg/L			0.4 UJ	0.4 U	0.46 J	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Ethene	µg/L			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
Iron, total	µg/L			**817**	**362 J**	**750 J**	**880**	**920 J**	**740**	**1,200**	**1,400**	**1,430**
Iron, dissolved	µg/L			**449**	**345 J**	**700 J**	**830 J**	**920**	**710**	**1,200 J**	**1,300**	**1,080**
Manganese, total	µg/L			**1,210**	**1,030**	**1,100**	**1,000**	**830 J**	**900**	**800**	**770**	**781**
Manganese, dissolved	µg/L			**776**	**1,040**	**1,000**	**940 J**	**860**	**880**	**820**	**750**	**692**
Methane	µg/L			440	370	880	810	720	590	310	1,300	2.1
Nitrogen, nitrate (as N)	mg/L			0.12 J	0.3	0.11 U	0.11 U	0.11 U	0.05 U	0.05 U	0.05 U	0.05 U
Sulfate (as SO4)	mg/L			22	17	13	11	9.3 J	8.9	7.2	6.1	5
Sulfide	mg/L			1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L			1.2 J	1.7 J	0.5 UJ	0.97 J+	1.5 J	1.7 J	1.9 J	1.1 J	1.7 J
VOCs												
1,1,1-Trichloroethane	µg/L	0.07 UJ	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 UJ	0.018 U	0.018 U	0.018 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 U
1,1,2-Trichloroethane	µg/L	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	0.095 J	0.077 J	0.063 J	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.06 U	0.1 U	0.1 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	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.023 UJ	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.04 UJ	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.06 UJ	0.06 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
1,3-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	0.4 R	0.4 R	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	0.5 UJ	0.5 R	0.8 U	0.8 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	0.6 UJ	0.6 R	0.4 U	0.4 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	1.5 R	1.5 R	1.3 UJ	1.3 U	1.5 U	1.5 U	1.5 UJ	1.6 J	1.5 UJ	1.5 UJ	1.5 U
Benzene	µg/L	0.05 U	0.05 U	0.04 U	0.04 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	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.07 UJ	0.07 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
Bromomethane	µg/L	0.06 UJ	0.06 UJ	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 J
Carbon disulfide	µg/L	0.12 J	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.41 J
Carbon tetrachloride	µg/L	0.05 UJ	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	0.06 UJ	0.066 J	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.05 U	0.05 UJ	**0.41 U**	0.05 U	0.05 U	**0.31 U**	0.089 J	0.17 U	0.094 U	**0.45 U**	0.1 U
cis-1,2-Dichloroethene	µg/L	0.18 J	0.23	0.2[illegible]	0.066 J	0.1 J	0.15 J	0.17 J	0.073 J	0.073 J	0.071 J	0.085 J
cis-1,3-Dichloropropene	µg/L	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.11 UJ	0.11 R	0.15 UJ	0.15 UJ	0.18 U	**0.68 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	0.04 U	0.04 UJ	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	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	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	0.04 U	0.04 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
trans-1,3-Dichloropropene	µg/L	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.09 J	0.069 J	0.066 J	0.05 U	0.05 U	0.05 U	**0.57**	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl chloride	µg/L	**0.059**	**0.092 J**	**0.043 J**	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	**0.024 J**	**0.034 J**	0.013 J

J indicates that the value was between the method detection limit andJ 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 dU indicates that the constituent was not detected above the method detection limit.

UJ indicates that the constituent was not detected above the estimateUJ indicates that the constituent was not detected above the estimated method detection limit.

R indicates that the initial calibration report associated with this SDG 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 rejectNon-detected concentrations were qualified and flagged "R" as rejected.

UB indicates that the constiuent is considered to be below the detect 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 ABolded 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 AShaded values indicate attainment or exceedance of the Wisconsin Administrative Code (WAC) NR 140 Enforcement Standard (ES).

TABLE 7

Field and Analytical Results - Groundwater Private Well Sampling
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

				PW-01											PW-02									PW-03											
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA40-48 Jul 05	06CD09-41 Jan 06	07CE18-33 Jan 07	07CE25-05 April 07	07CE37-74 June 07	07CE47-57 September 07	08CE08-38 Jan 08	08CE12-10 April 08	08CE15-19 July 08	09CE01-25 Oct 08	09CE07-43 Jan 09	05CA40-49 Jul 05	06CD09-67 Jan 06	07CE18-34 Jan 07	07CE25-06 April 07	07CE37-76 June 07	07CE47-71 September 07	08CE12-73 April 08	08CE15-26 July 08	09CE01-26 Oct 08	05CA40-56 Jul 05	06CD09-62 Jan 06	06CD16-50 Mar 06	07CE18-35 Jan 07	07CE25-50 April 07	07CE37-77 June 07	07CE47-69 September 07	08CE08-37 Jan 08	08CE12-60 April 08	08CE15-25 July 08	09CE01-39 Oct 08	09CE07-27 Jan 09
VOCs																																			
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.07 U	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.07 U	0.07 UJ	0.07 UJ	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 UJ	0.019 UJ	0.018 U	0.018 UJ	0.018 UJ	0.018 U	0.018 UJ	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.09 U	0.09 UJ	0.09 UJ	0.04 U	0.04 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.039	0.041 J	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	0.031 U	0.031 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.031 U	0.031 UJ	0.031 UJ	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 UJ	0.06 UJ	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.1 U	0.1 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	0.1 U	0.1 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 UJ	0.1 U	0.1 U	0.06 U	0.06 U	0.06 UJ	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**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.026 U**	**0.026 UJ**	**0.026 UJ**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 UJ**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.023 U	0.023 UJ	0.023 UJ	0.03 U	0.03 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.13 J	0.21	0.34	0.079 J	0.24	0.24 J	0.27	0.25	0.27	0.22	0.28	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.04 U	0.04 UJ	0.041 J	0.03 U	0.041 J	0.058 J	0.045 J	0.045 J	0.049 J	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 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	0.06 U	0.06 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 UJ	0.06 UJ	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.04 U	0.04 UJ	0.04 UJ	0.05 U	0.05 U	0.027 U	0.027 U	0.027 UJ	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.05 UJ	0.06 U	0.06 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 R	0.5 U	0.5 U	0.6 UJ	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 UJ	0.4 R	0.4 R	0.5 U	0.5 U	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.4 R	0.4 R	0.4 UJ	0.5 U	0.5 UJ	0.6 UJ	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U
2-Hexanone	µg/L	N/A	N/A	0.5 UJ	0.5 R	0.8 U	0.8 U	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	0.5 U	0.5 U	0.8 U	0.8 U	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	0.5 U	0.5 UJ	0.5 UJ	0.8 U	0.8 UJ	1.6 U	1.6 UJ	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 UJ	0.6 R	0.4 U	0.4 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.6 U	0.6 U	0.4 U	0.4 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.6 U	0.6 UJ	0.6 UJ	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 R	1.5 R	1.3 UJ	14 J	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 R	1.5 R	1.3 UJ	1.7 J	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 R	3.8 J	1.5 UJ	1.3 UJ	1.3 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 U
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.04 U	0.04 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	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 UJ	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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.028 U	0.028 U	0.028 UJ	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 UJ	0.03 U	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 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	0.07 U	0.07 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.07 U	0.07 UJ	0.07 UJ	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 U	0.06 U	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 UJ	0.06 U	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.06 UJ	0.06 UJ	0.06 UJ	0.06 UJ	0.07 U	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.09 U	0.21 J	0.1 U	0.1 J	0.13 J	0.09 U	0.09 U	0.12 J	0.09 UJ	0.09 U	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.09 UJ
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.05 UJ	0.05 UJ	0.05 UJ	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 UJ	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.05 UJ	0.06 U	0.06 UJ	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.06 UJ	0.06 UJ	0.05 U	0.05 UJ	0.07 U	0.07 U	0.07 UJ	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.07 U	0.07 UJ	0.07 UJ	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 UJ	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 U	0.07 J	0.12 U	0.05 U	0.19	**0.41 U**	0.05 U	0.05 U	0.05 U	0.16 U	0.05 U	0.05 U	0.05 U	0.22 U	0.05 U	0.19	**0.43 U**	0.05 U	0.05 U	**0.68 U**	0.064 J	0.17 J	0.05 UJ	0.19 U	0.05 UJ	0.24	**0.33 U**	0.13 UJ	0.17 U	0.1 U	**0.55 U**	0.078 U
cis-1,2-Dichloroethene	µg/L	7	70	0.06 U	0.06 U	0.03 U	0.03 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.03 U	0.03 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.58 J	0.54 J	0.57 J	0.62	0.62 J	0.91 J	0.75	0.79 J	0.76	0.72	0.88	0.77
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.016 U	0.016 UJ	0.016 UJ	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.09 U	0.09 UJ	0.09 UJ	0.029 U	0.029 UJ	0.026 U	0.026 U	0.026 UJ	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.06 U	0.06 UJ	0.06 UJ	0.05 U	0.05 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.024 U	0.024 U	0.024 UJ	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.19 J	0.03 U	0.098 J	0.05 U	0.15	0.04 U	0.088 J	0.072 J	0.04 U	0.03 U	0.03 UJ	0.03 UJ	0.05 U	0.05 UJ	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	0.09 U	0.09 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 UJ	0.08 U	1.3 J	0.12 U	0.45 U	0.11 J	0.5	0.08 U	0.14 J	0.15 J	0.08 U	0.12 U	0.12 UJ	0.12 UJ	0.09 U	0.09 UJ	0.08 U	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.05 U	0.05 U	0.05 U	0.05 U	0.08 U	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.05 U	0.05 U	0.08 U	0.08 UJ	0.08 U	0.08 U	0.08 U	0.64	0.48 J	0.52 J	0.57	0.64 J	0.79	0.54 J	0.7 J	0.64	0.77	0.8	0.57
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.15 R	**3.5 J**	0.18 UJ	**1.1 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U	0.11 UJ	0.11 UJ	0.15 R	0.15 R	0.18 UJ	**1.3 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.11 UJ	0.11 UJ	0.41 UJ	0.15 R	0.15 R	0.18 UJ	**0.5 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.05 U	0.05 U	0.023 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 UJ	0.023 U	1.6 J	0.04 U	0.58	0.069 J	0.69	0.054 J	0.21	0.28	0.023 U	0.04 U	0.04 UJ	0.04 UJ	0.05 U	0.05 UJ	0.023 U	0.023 U	0.023 UJ	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.05 U	0.05 U	0.022 R	0.022 U	0.022 U	0.022 U	0.022 U	0.022 R	0.022 U	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.04 U	0.04 UJ	0.04 UJ	0.05 U	0.05 UJ	0.022 U	0.022 U	0.022 R	0.022 U	0.022 U	0.022 U	0.022 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	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 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
Toluene	µg/L	200	1,000	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.08 U	0.08 UJ	0.08 UJ	0.05 U	0.05 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.04 U	0.04 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	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.04 U	0.062 J	0.068 J	0.075 J	0.069 J	0.11 J	0.08 J	0.095 J	0.074 J	0.069 J	0.079 J	0.095 J
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.015 U	0.015 UJ	0.015 UJ	0.019 U	0.019 UJ	0.017 U	0.017 UJ	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.5	5	0.03 U	0.03 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	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.42	0.36 J	0.37 J	**0.5**	0.49 J	**0.65**	**0.53**	**0.58 J**	**0.54**	0.46	**0.65**	**0.59**
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.018 U	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.018 U	0.018 UJ	0.018 UJ	0.018 U	0.018 UJ	0.013 U	0.013 U	0.013 UJ	0.013 U	0.013 U	0.013 U	0.013 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).

TABLE 7

Field and Analytical Results - Groundwater Private Well Sampling
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

				PW-04										PW-05												PW-07										
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA40-50 Jul 05	06CD09-39 Jan 06	06CD16-37 Mar 06	07CE18-36 Jan 07	07CE25-07 April 07	07CE37-16 June 07	07CE47-73 September 07	08CE12-62 April 08	08CE15-17 July 08	09CE01-28 Oct 08	05CA40-51 Jul 05	06CD09-52 Jan 06	06CD16-38 Mar 06	07CE18-76 Jan 07	07CE25-87 April 07	07CE37-78 June 07	07CE47-62 September 07	08CE08-32 Jan 08	08CE12-46 April 08	08CE15-24 July 08	09CE01-38 Oct 08	09CE07-42 Jan 09	05CA40-52 Jul 05	06CD09-68 Jan 06	06CD16-48 Mar 06	07CE18-37 Jan 07	07CE25-08 April 07	07CE37-79 June 07	07CE47-58 September 07	08CE12-67 April 08	08CE15-23 July 08	09CE01-27 Oct 08	09CE07-44 Jan 09
VOCs																																				
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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 UJ	0.019 U	0.019 UJ	0.019 U	0.019 UJ	0.019 UJ	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 UJ	0.019 U	0.019 UJ	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.04 U	0.04 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.09 U	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.09 U	0.09 U	0.09 U	0.04 U	0.04 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.031 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.031 U	0.031 U	0.031 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	0.031 U	0.031 U	0.031 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.1 U	0.1 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	0.1 U	0.1 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	0.1 U	0.1 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**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.026 U**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.026 U**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.05 J	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.04 U	0.083 J	0.04 U	0.03 U	0.03 U	0.066 J	0.043 J	0.03 U	0.03 U	0.03 U	0.057 J	0.03 U	0.04 U	0.04 U	0.04 U	0.054 J	0.03 UJ	0.043 J	0.05 J	0.049 J	0.06 J	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 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	0.06 U	0.06 U	0.06 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 R	0.4 U	0.5 U	0.5 UJ	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.4 R	0.4 R	0.4 U	0.5 U	0.5 U	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ	0.4 R	0.4 R	0.46 U	0.5 U	0.5 UJ	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 U
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 R	0.5 U	0.8 U	0.8 UJ	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	0.5 U	0.5 U	0.5 U	0.8 U	0.8 U	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	0.5 U	0.5 U	0.5 U	0.8 U	0.96 UJ	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 R	0.6 U	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.6 U	0.6 U	0.6 U	0.4 U	0.4 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.6 U	0.6 U	0.6 U	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 R	1.5 R	1.5 U	1.3 UJ	1.3 UJ	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 R	1.5 R	1.5 U	1.3 UJ	1.3 U	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 UJ	1.5 R	1.5 R	1.5 U	1.3 UJ	1.3 UJ	1.5 U	1.5 UJ	1.5 J	1.5 UJ	1.5 U	1.5 U
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 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	0.04 U	0.04 UJ	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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 UJ	0.07 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.07 U	0.07 U	0.07 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	0.07 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 UJ	0.06 UJ	0.06 U	0.06 UJ	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.13 J	0.1 UJ	0.1 U	0.1 U	0.1 UJ	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.11 J	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.4 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.39 UJ
Carbon tetrachloride	µg/L	0.5	5	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.06 U	0.06 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	0.06 UJ	0.06 U	0.05 U	0.05 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.18 J	0.17 J	0.11 J	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 U	0.081 J	0.05 U	0.25 U	0.05 UJ	0.05 UJ	0.26 U	0.17 U	0.062 U	**0.85 U**	0.05 U	0.05 U	0.05 U	0.15 U	0.05 U	0.14 J	0.21 U	0.076 U	0.05 U	0.05 U	**1.4 U**	0.15 U	0.05 U	0.13 J	0.24 U	0.19 U	0.05 UJ	0.27	**0.32 U**	0.17 U	0.059 U	0.27 U	**0.49**
cis-1,2-Dichloroethene	µg/L	7	70	0.97 J	3.2	1.4	1.1	0.93 J	1.3	0.94	0.88	1.1	1.5	1.4	2.5	1.1	0.47	0.43	1.4 J	0.84	0.6	0.78	0.5	1.5	0.93	2.3	1.4	2.5	4.5	3.9 J	2.9 J	3.9	4.9	4.7	2.8	2.5
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.016 U	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.016 U	0.016 U	0.016 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.029 U	0.029 UJ	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.09 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.09 U	0.09 U	0.09 U	0.029 U	0.029 UJ	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.05 U	0.05 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.05 U	0.05 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	0.12 U	0.09 U	0.09 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.12 U	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.12 U	0.12 U	0.12 U	0.09 U	0.09 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.6	0.47	0.55	0.59	0.58 J	0.71	0.54 J	0.5	0.74	1	1	1.1	0.73	0.67	0.66	1	0.63 J	0.63	0.83	0.83	1.3	0.71	0.57	0.57	0.61	0.69	0.85 J	0.73	0.75 J	0.87	0.99	0.81	0.59
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 R	0.11 U	0.15 R	0.15 R	0.18 UJ	**0.62 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.11 UJ	0.11 UJ	0.11 U	0.15 UJ	0.15 UJ	0.18 UJ	**0.54 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U	0.11 UJ	0.11 UJ	0.28 UJ	0.15 R	0.15 R	0.18 UJ	0.48 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	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 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	0.05 U	0.05 U	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 U	0.05 U	0.05 U
Toluene	µg/L	200	1,000	0.08 U	0.08 U	0.08 U	0.05 U	0.05 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	1.6	0.08 U	0.08 U	0.08 U	0.05 U	0.05 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.075 J	0.21	0.12 J	0.09 J	0.07 J	0.12 J	0.11 J	0.099 J	0.1 J	0.18 J	0.12 J	0.21	0.11 J	0.06 U	0.06 U	0.13 J	0.089 J	0.068 J	0.071 J	0.06 UJ	0.22	0.098 J	0.19 J	0.13 J	0.2	0.33	0.29 J	0.2 J	0.35	0.36	0.27 J	0.3	0.23
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.019 U	0.019 UJ	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.015 U	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.015 U	0.015 U	0.015 U	0.019 U	0.019 UJ	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.5	5	0.03 U	0.052 J	0.034 J	0.074 J	0.05 UJ	0.055 J	0.067 J	0.057 J	0.15 J	0.05 U	0.11 J	0.1 J	0.083 J	0.084 J	0.081 J	0.13 J	0.11 J	0.1 J	0.1 J	0.082 J	0.12 J	0.13 J	0.03 U	0.041 J	0.031 J	0.076 J	0.054 J	0.05 U	0.05 U	0.055 J	0.056 J	0.05 U	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	**0.069**	0.018 U	**0.021 J**	0.018 UJ	0.013 U	0.013 U	0.013 U	0.013 U	**0.03 J**	0.018 U	**0.042 J**	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	**0.029 J**	0.013 U	**0.042 J**	**0.056 J**	**0.056 J**	**0.046 J**	**0.05 J**	0.013 U	**0.072**	**0.065**	**0.056**	**0.059**	**0.08**

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).

TABLE 7

Field and Analytical Results - Groundwater Private Well Sampling
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

				PW-08											PW-09												PW-10											
Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	05CA40-57 Jul 05	06CD09-43 Jan 06	06CD16-39 Mar 06	07CE25-51 April 07	07CE37-17 June 07	07CE47-63 September 07	08CE08-33 Jan 08	08CE12-29 April 08	08CE15-21 July 08	09CE01-29 Oct 08	09CE07-29 Jan 09	05CA40-53 Jul 05	06CD09-40 Jan 06	06CD16-36 Mar 06	07CE18-38 Jan 07	07CE25-09 April 07	07CE37-18 June 07	07CE47-72 September 07	08CE08-34 Jan 08	08CE12-61 April 08	08CE15-18 July 08	09CE01-30 Oct 08	09CE01-30 Jan 09	05CA40-54 Jul 05	06CD09-54 Jan 06	06CD16-49 Mar 06	07CE18-87 Jan 07	07CE25-34 April 07	07CE37-19 June 07	07CE47-78 September 07	08CE08-35 Jan 08	08CE12-30 April 08	08CE15-20 July 08	09CE01-37 Oct 08	09CE07-41 Jan 09
VOCs																																						
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.07 U	0.04 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 UJ	0.05 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.02	0.2	0.018 U	0.018 U	0.018 U	0.018 UJ	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 UJ	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.04 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.09 U	0.09 U	0.09 U	0.04 U	0.04 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.09 U	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.031 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.031 U	0.031 U	0.031 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.031 U	0.031 U	0.031 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
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.06 U	0.06 U	0.06 U	0.04 U	0.04 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.057 J	0.05 U	0.06 U	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	N/A	N/A	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.1 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.1 U	0.1 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.1 U	0.1 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**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 UJ**	**0.05 U**	**0.026 U**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 UJ**	**0.05 U**	**0.026 U**	**0.026 U**	**0.026 U**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.04 U	0.03 UJ	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.04 U	0.04 U	0.059 J	0.072 J	0.053 J	0.062 J	0.069 J	0.03 U	0.057 J	0.03 U	0.065 J	0.03 J	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.06 U	0.06 U	0.06 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
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.04 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 UJ	0.027 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 UJ	0.027 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 R	0.4 U	0.5 UJ	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 UJ	0.6 U	0.4 R	0.4 R	0.4 U	0.5 U	0.5 UJ	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 UJ	0.6 U	0.4 R	0.4 R	0.4 U	0.5 U	0.5 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 R	0.5 U	0.8 UJ	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 U	0.5 U	0.5 R	0.5 U	0.8 U	0.8 UJ	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 U	0.5 U	0.5 U	0.5 U	0.8 U	0.8 U	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 R	0.6 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U	0.6 U	0.6 R	0.6 U	0.4 U	0.4 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U	0.6 U	0.6 U	0.6 U	0.4 U	0.4 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Acetone	µg/L	200	1,000	1.5 R	1.5 R	1.5 U	1.3 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 R	1.5 R	1.5 U	1.3 UJ	1.3 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 R	1.5 R	1.5 U	1.3 U	1.3 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 U	1.5 UJ
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.04 UJ	0.05 U	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 U	0.04 U	0.04 UJ	0.05 U	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 U	0.04 U	0.04 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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 UJ	0.028 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 UJ	0.028 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 UJ	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 UJ	0.07 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 UJ	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 U	0.06 UJ	0.06 U	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.06 UJ	0.06 U	0.06 U	0.06 UJ	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 UJ	0.09 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 UJ	0.39 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.05 UJ	0.05 UJ	0.05 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.05 UJ	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.06 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	0.06 UJ	0.06 U	0.05 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.04 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.07 U	0.07 U	0.074 J	0.1 J	0.13 UJ	0.11 U	0.39 U	0.35 U	0.13 U	0.14 U	0.14 U	0.33 U	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 U	0.19	0.24	0.067 UJ	0.05 UJ	**0.45 U**	0.24 U	0.17 U	0.05 U	**1.3 UJ**	**0.32**	0.05 U	**0.56 J**	0.14 J	0.17 U	0.05 UJ	0.05 UJ	0.22 U	0.15 U	0.17 U	0.05 U	**0.87 U**	**0.42**	0.05 U	0.05 U	0.05 U	0.079 J	0.11 U	0.05 UJ	0.28 U	0.07 U	0.05 U	0.05 UJ	**0.97 U**	0.14 U
cis-1,2-Dichloroethene	µg/L	7	70	1.3	0.7	0.83	1.3 J	1.7	1.5	1.7	1.6	2.1	2.2 J	1.9	4.4	2.5	4.1	5.7	5.2 J	5.6	6.2 J	6.2	5.5 J	5.6	5.6 J	6	0.06 U	0.06 U	0.06 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.016 U	0.016 U	0.016 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.016 U	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.029 UJ	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 UJ	0.026 U	0.09 U	0.09 U	0.09 U	0.029 U	0.029 UJ	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 UJ	0.026 U	0.09 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 U	0.06 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 UJ	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 UJ	0.024 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 UJ	0.024 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.05 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.03 U	0.03 U	0.03 U	0.05 U	0.05 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.03 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	0.12 U	0.09 UJ	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 UJ	0.08 U	0.12 U	0.12 U	0.12 U	0.09 U	0.09 UJ	0.08 U	0.08 UJ	0.08 U	0.08 UJ	0.08 U	0.08 UJ	0.08 U	0.12 U	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.6	0.25	0.43	0.71 J	0.67	0.67 J	0.75	0.75	0.89	0.84 J	0.52	0.74	0.55	0.64	0.77	0.86 J	0.83	0.9 J	0.7	0.93	1	0.98 J	0.71	0.13 J	0.087 J	0.14 J	0.23	0.21	0.24 J	0.26	0.28	0.3	0.34	0.35	0.27
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 R	0.11 U	0.15 UJ	0.18 UJ	**0.78 UJ**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.11 UJ	0.11 UJ	0.11 U	0.15 R	0.15 R	0.18 UJ	**0.78 R**	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.11 UJ	0.11 UJ	0.2 UJ	0.15 UJ	0.15 R	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.05 UJ	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 UJ	0.023 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.023 U	0.023 UJ	0.023 U	0.023 UJ	0.023 U	0.023 UJ	0.023 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.05 UJ	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 UJ	0.022 U	0.022 R	0.022 U	0.022 R	0.022 U	0.022 UJ	0.022 U	0.04 U	0.04 U	0.04 U	0.05 UJ	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	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 U	0.05 U	0.05 UJ	0.05 U	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 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	1,000	0.08 U	0.08 U	0.08 U	0.05 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.08 U	0.08 U	0.08 U	0.05 U	0.05 UJ	0.13 U	0.06 U	0.06 U	0.06 U	0.06 U	0.085 J	0.062 J	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.078 J	0.052 J	0.075 J	0.082 J	0.14 J	0.13 J	0.11 J	0.11 J	0.12 J	0.27 J	0.15 J	0.36 J	0.15	0.32	0.36	0.43 J	0.59	0.56	0.4	0.37	0.33	0.65 J	0.44	0.04 U	0.04 U	0.04 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
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.019 UJ	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.015 U	0.015 U	0.015 U	0.019 U	0.019 UJ	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.015 U	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.5	5	0.17 J	0.11 J	0.083 J	0.11 J	0.17	0.13 J	0.1 J	0.11 J	0.17 J	0.13 J	0.088 J	0.064 J	0.051 J	0.047 J	0.11 J	0.1 J	0.089 J	0.12 J	0.072 J	0.083 J	0.13 J	0.065 J	0.052 J	0.03 U	0.03 U	0.03 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
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	**0.032 J**	**0.056 J**	**0.035 J**	0.013 U	0.013 U	0.013 U	**0.048**	**0.07 J**	**0.063**	**0.05 J**	**0.061**	**0.052 J**	**0.04 J**	**0.036 J**	**0.05**	**0.052**	**0.06**	**0.058 J**	**0.043 J**	**0.073 J**	**0.059**	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 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).

TABLE 7

Field and Analytical Results - Groundwater Private Well Sampling
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

Constituent	Units	WAC NR 140 PAL	WAC NR 140 ES	PW-11												DW-01							
				05CA40-58 Jul 05	06CD09-53 Jan 06	06CD16-52 Mar 06	07CE18-69 Jan 07	07CE25-35 April 07	07CE37-20 June 07	07CE47-68 September 07	08CE08-72 Jan 08	08CE12-45 April 08	08CE15-27 July 08	09CE01-45 Oct 08	09CE07-31 Jan 09	07CE18-43 Jan 07	07CE25-68 April 07	07CE37-26 June 07	07CE47-65 September 07	08CE08-52 Jan 08	08CE12-44 April 08	08CE15-30 July 08	09CE01-52 Oct 08
VOCs																							
1,1,1-Trichloroethane	µg/L	40	200	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.019 U	0.018 U	0.018 U	0.019 U	0.019 UJ	0.019 U	0.019 U	0.019 UJ	0.019 U
1,1,2-Trichloroethane	µg/L	0.5	5	0.09 U	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	85	850	0.031 U	0.031 U	0.031 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	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
1,1-Dichloroethene	µg/L	0.7	7	0.06 U	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 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	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	14	70	0.06 U	0.06 U	0.06 U	0.1 U	0.1 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.1 U	0.1 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**	**0.04 U**	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 UJ**	**0.05 U**	0.04 U	**0.04 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**	**0.05 U**
1,2-Dibromoethane	µg/L	0.5	5	0.023 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	60	600	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.5	5	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.052 J	0.03 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.5	5	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.05 U	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 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,3-Dichlorobenzene	µg/L	125	1,250	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 UJ	0.027 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	15	75	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	N/A	N/A	0.4 R	0.4 R	0.4 U	0.5 U	0.5 U	0.6 U	0.6 UJ	0.6 U	0.6 U	0.6 U	0.6 UJ	0.6 U	0.5 UJ	0.5 U	0.6 U	0.6 UJ	0.6 UJ	0.6 U	0.6 U	0.6 UJ
2-Hexanone	µg/L	N/A	N/A	0.5 U	0.5 U	0.5 U	0.8 U	0.8 U	1.6 U	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 U	0.8 U	0.8 UJ	1.6 UJ	1.6 UJ	1.6 U	1.6 U	1.6 U	1.6 UJ
4-Methyl-2-pentanone	µg/L	N/A	N/A	0.6 U	0.6 U	0.6 U	0.4 U	0.4 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U	0.4 U	0.4 UJ	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.8 UJ
Acetone	µg/L	200	1,000	1.5 R	1.5 R	1.5 U	1.3 UJ	1.3 U	1.5 U	1.5 UJ	1.5 U	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.3 UJ	1.3 UJ	1.5 U	1.5 UJ	1.5 UJ	1.5 U	1.5 UJ	1.5 UJ
Benzene	µg/L	0.5	5	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.04 U	0.04 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	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 UJ	0.028 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.06	0.6	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.04 U	0.04 U	0.03 UJ	0.03 UJ	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.44	4.4	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromomethane	µg/L	1	10	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 UJ	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.06 UJ	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	200	1,000	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 UJ	0.09 UJ	0.1 U	0.1 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U
Carbon tetrachloride	µg/L	0.5	5	0.05 UJ	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	N/A	N/A	0.05 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	80	400	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 UJ	0.07 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.6	6	0.07 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chloromethane	µg/L	0.3	3	0.05 U	0.05 U	0.065 U	0.23 U	0.13 U	0.05 UJ	0.26 U	0.15 U	0.05 U	0.081 U	**1.2 U**	0.23	0.33 U	0.05 U	0.05 U	**0.32 U**	0.05 U	0.05 U	0.05 U	**1 U**
cis-1,2-Dichloroethene	µg/L	7	70	0.41 J	0.62	0.56	0.62	0.55	0.6	0.61	1.1	0.62	0.64	1.1 J	0.94	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,3-Dichloropropene	µg/L	0.02	0.2	0.016 U	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	6	60	0.09 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 UJ	0.026 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	200	1,000	0.06 U	0.06 U	0.06 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 UJ	0.03 U	0.05 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	140	700	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 UJ	0.024 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	N/A	N/A	0.03 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 UJ	0.04 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	1,000	10,000	0.12 U	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 UJ	0.08 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	12	60	0.74	0.64	0.68	0.95	0.82	0.81	0.91 J	1.2	0.91	0.97	1.2 J	0.78	0.05 U	0.05 U	0.08 U	0.08 UJ	0.08 UJ	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.5	5	0.11 UJ	0.11 UJ	0.36 UJ	0.15 UJ	0.15 R	0.18 UJ	0.49 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.15 UJ	0.15 R	0.18 UJ	0.48 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U
o-Xylene	µg/L	N/A	N/A	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 UJ	0.023 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	10	100	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 UJ	0.022 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 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 UJ	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	1,000	0.08 U	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
trans-1,2-Dichloroethene	µg/L	20	100	0.043 J	0.063 J	0.062 J	0.066 J	0.06 U	0.074 J	0.075 J	0.12 J	0.071 J	0.06 J	0.13 J	0.1 J	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 UJ	0.06 U
trans-1,3-Dichloropropene	µg/L	0.02	0.2	0.015 U	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 UJ	0.017 U	0.019 U	0.019 U	0.017 U	0.017 UJ	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.5	5	0.03 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	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 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl chloride	µg/L	0.02	0.2	0.018 U	0.018 U	**0.024 J**	**0.023 J**	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	**0.026 J**	**0.039 J**	0.013 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 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).

TABLE 8
Field and Analytical Results - Surface Water Sampling
October 2004 through January 2009
Annual Groundwater Report - July 2009
OECI Site

		SW-01								SW-02					SW-03									
Constituent	Units	06CD09-63, 64 Jan 06	06CD16-41, 42 Mar 06	07CE25-28 April 07	07CE47-34 September 07	08CE08-16, 17 Jan 08	08CE12-17, 18 April 08	08CE15-36 July 08	09CE01-24 Oct 08	07CE26-06 April 07	08CE08-73, 74 Jan 08	08CE12-89, 90 April 08	08CE15-59 July 08	09CE01-57 Oct 08	06CD09-65, 66 Jan 06	06CD16-46, 47 Mar 06	07CE18-44, 45 Jan 07	07CE25-30 April 07	07CE47-38 September 07	08CE08-75, 76 Jan 08	08CE12-65, 66 April 08	08CE15-38 July 08	09CE01-48 Oct 08	09CE07-25 Jan 09
Natural Attenuation Parameters																								
Alkalinity, total (as CaCO3)	mg/L	210	230	200	460	200	220	380	360	230	240	350	400	410	210	220	380	200	470	220	260	360	370	390
Chloride (as Cl)	mg/L	48	38	51	29	29	22	21	50	20	74	190	150	120	53	53	44	28	40	32	31	24	48	51
Ethane	µg/L	0.5 U	0.5 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.42 J	0.97 J	0.5 U	0.5 U	0.4 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	4 U
Ethene	µg/L	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	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	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Iron, total	µg/L	42.6 J	46.7 J	363 J	1,100	250 J	100 J	5,000	730	137 J	320 J	790	6,500	1,200	33.7 J	60.8 J	161	251 J	590	170 J	136 J	9,000	320	337
Iron, dissolved	µg/L	25 U	20.5 J	89.1 J	180 J	86 J+	81 J	320 J	160	100 J	46 J	94 J+	400	390 B	25 U	44 J	99.7	73.4 J	230 J	87 J	58 J	1,200 J	110	247
Manganese, total	µg/L	25.2	1.7 U	7.2 J	990 J	23 J	4 UJ	1,100	150	7.4 J	43.6 J	78	570	390	12.8	1.7 U	49.6	8.4 J	1,000 J	14.3 J	4.2 J+	960	40	1,010
Manganese, dissolved	µg/L	21.3	1.5 U	5.6 J	880	21	4 J+	1,100	140	6.6 J	4.7 J	81	470	390	11	1.5 U	49.3	7.2 J	950	12.4	2.8 J+	900	38	934
Methane	µg/L	0.68 J	0.5 U	6.8	7.3 J	0.58 U	0.69 J	360	21	1.7 U	0.92 U	52	410	4,100	0.5 U	1.5 U	1.5 U	1.4 U	4.8 J	0.52 U	1.4 J	250	7 U	52 J
Nitrogen, ammonia (as N)	mg/L			0.021 U	0.021 U	0.05 J	0.08 U	0.08 U	0.08 U	0.021 U	0.021 U	0.08 U	0.77	0.87				0.021 U	0.021 U	0.021 U	0.08 U	0.08 U	0.08 U	0.08 U
Nitrogen, nitrate (as N)	mg/L	7.2	1.9	0.58	0.11 U	3	1.2	0.05 U	0.14 J	1.5	2.3	0.49	0.05 U	0.05 U	7.4	1.5	1.4	0.51	0.31 J	2.8	0.65	0.05 U	0.095 J	0.096 J
Phosphorus, Total Orthophosphate (as P)	mg/L			14 U	0.24	0.39 J	0.14 U	0.14 U	0.14 U	14 U	0.07 U	0.14 U	0.27 J	0.49				14 U	0.24	0.07 U	1.4 U	0.14 U	0.14 U	0.14 U
Sulfate (as SO4)	mg/L	190	100	18	3.7 J	17	14	1.2 J	21	22	29	59	27 J	17	210	120	46	18	5.6 J	20	16	1.4 J	26 J	43
Sulfide	mg/L	1 U	1 U	1 UJ	1 U	2 J+	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	3.3	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Total Organic Carbon	mg/L	13	15	12	20	13	13	27	16	15	12	7.5 J	15	13	13	14	12	12	18	11	13	28	14	13
VOCs																								
1,1,1-Trichloroethane	µg/L	0.07 U	0.07 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.2 J	13	4.9	0.2	0.07 U	0.07 U	0.089 J	0.25	0.05 U	0.078 J	0.2	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	µg/L	0.018 U	0.018 U	0.018 U	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 UJ	0.018 U	0.019 U	0.019 U	0.19 UJ	0.019 U	0.018 U	0.018 U	0.018 U	0.018 U	0.019 U	0.019 U	0.019 U	0.019 UJ	0.019 U	0.019 U
1,1,2-Trichloroethane	µg/L	0.09 U	0.09 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.04 U	0.06 U	0.06 U	0.6 U	0.06 U	0.09 U	0.09 U	0.04 U	0.04 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethane	µg/L	0.031 U	0.031 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	3.2	4.3	2.6	0.031 U	0.034 J	0.06 U	0.067 J	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
1,1-Dichloroethene	µg/L	0.06 U	0.06 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.05 U	0.71	0.89 J	0.2	0.06 U	0.06 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2,3-Trichlorobenzene	µg/L	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.08 U	0.07 U	0.07 U	0.7 U	0.07 U	0.08 U	0.08 U	0.08 U	0.08 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
1,2,4-Trichlorobenzene	µg/L	0.06 U	0.06 U	0.1 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.1 U	0.06 U	0.06 U	0.6 U	0.06 U	0.06 U	0.06 U	0.1 U	0.1 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	0.026 U	0.026 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U	0.5 U	0.05 U	0.026 U	0.026 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dibromoethane	µg/L	0.023 U	0.023 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.03 U	0.05 U	0.05 U	0.5 U	0.05 U	0.023 U	0.023 U	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U	0.5 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,2-Dichloroethane	µg/L	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.3 U	0.03 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,2-Dichloropropane	µg/L	0.06 U	0.06 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	0.5 U	0.05 U	0.06 U	0.06 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
1,3-Dichlorobenzene	µg/L	0.04 U	0.04 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.05 U	0.027 U	0.027 U	0.27 U	0.027 U	0.04 U	0.04 U	0.05 U	0.05 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
1,4-Dichlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.06 U	0.04 U	0.04 U	0.4 U	0.04 U	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Butanone	µg/L	0.4 R	0.4 U	0.5 U	0.6 UJ	0.6 U	0.6 U	0.86 J	0.6 U	0.5 U	0.6 U	0.6 U	6 U	0.6 U	0.4 R	0.4 U	0.5 U	0.5 U	0.6 UJ	0.6 U	0.6 U	1.2 J	0.6 UJ	0.6 U
2-Hexanone	µg/L	0.5 U	0.5 U	0.8 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	0.8 UJ	1.6 U	1.6 U	16 UJ	1.6 U	0.5 U	0.5 U	0.8 U	0.8 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 UJ	1.6 U
4-Methyl-2-pentanone	µg/L	0.6 U	0.6 U	0.4 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 U	0.4 UJ	0.8 U	0.8 U	8 UJ	0.8 U	0.6 U	0.6 U	0.4 U	0.4 U	0.8 UJ	0.8 U	0.8 U	0.8 U	0.8 UJ	0.8 U
Acetone	µg/L	3.9 J	1.5 U	1.3 U	1.5 UJ	2.2 J	1.5 U	3.7 J	1.5 U	1.3 UJ	1.5 U	2.2 J	15 UJ	11	1.5 R	1.5 U	1.3 UJ	1.9 J	1.5 UJ	1.5 U	1.5 U	4.6 J	1.5 UJ	1.8 U
Benzene	µg/L	0.05 U	0.05 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.04 U	0.05 U	0.06 J	0.5 U	0.05 U	0.05 U	0.05 U	0.04 U	0.04 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Bromochloromethane	µg/L	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.05 U	0.028 U	0.028 U	0.28 U	0.028 U	0.05 U	0.05 U	0.05 U	0.05 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U	0.028 U
Bromodichloromethane	µg/L	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.04 U	0.03 U	0.03 U	0.45 J	0.03 U	0.04 U	0.04 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	µg/L	0.07 U	0.07 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	0.4 U	0.04 U	0.07 U	0.07 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
Bromomethane	µg/L	0.06 U	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.06 U	0.07 U	0.07 U	0.7 U	0.07 UJ	0.06 U	0.06 U	0.06 U	0.06 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Carbon disulfide	µg/L	0.1 U	0.1 U	0.1 U	0.09 U	0.09 UJ	0.09 U	0.09 UJ	0.09 U	0.1 U	0.09 U	0.09 U	0.9 UJ	0.29 J	0.1 U	0.1 U	0.1 U	0.1 U	0.09 U	0.09 U	0.09 U	0.09 UJ	0.09 U	0.39 U
Carbon tetrachloride	µg/L	0.05 U	0.05 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.04 U	0.022 U	0.022 U	0.22 U	0.022 U	0.05 U	0.05 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Chlorobenzene	µg/L	0.05 U	0.05 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.06 U	0.04 U	0.054 J	0.4 U	0.093 J	0.05 U	0.05 U	0.06 U	0.06 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Chloroethane	µg/L	0.06 U	0.06 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.05 U	0.07 U	0.14 J	0.84 J	0.07 U	0.06 U	0.06 U	0.05 U	0.05 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U	0.07 U
Chloroform	µg/L	0.07 U	0.07 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.04 U	0.022 U	0.022 U	0.46 U	0.022 U	0.07 U	0.07 U	0.04 U	0.04 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.024 U
Chloromethane	µg/L	0.05 U	0.05 U	0.11 U	0.17 U	0.094 U	0.05 U	0.054 U	0.67 U	0.05 U	0.1 U	0.05 U	0.5 U	0.32 U	0.05 U	0.053 J	0.05 U	0.05 U	0.23 U	0.05 U	0.17 U	0.07 U	0.65 U	0.051 U
cis-1,2-Dichloroethene	µg/L	0.06 U	0.06 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.03 U	0.17 J	20	19	6.7	0.06 U	0.1 J	0.29	0.3	0.05 U	0.062 J	0.16 J	0.05 U	0.05 U	0.12 J
cis-1,3-Dichloropropene	µg/L	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U	0.017 U	0.016 U	0.016 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Dibromochloromethane	µg/L	0.09 U	0.09 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.029 U	0.026 U	0.026 U	0.47 J	0.026 U	0.09 U	0.09 U	0.029 U	0.029 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Dichlorodifluoromethane	µg/L	0.06 U	0.06 U	0.05 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.05 U	0.03 U	0.03 U	0.3 U	0.03 U	0.06 U	0.06 U	0.074 J	0.05 U	0.07 J	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	µg/L	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.05 U	0.024 U	0.024 U	0.24 U	0.028 J	0.05 U	0.05 U	0.05 U	0.05 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U	0.024 U
Isopropylbenzene	µg/L	0.03 U	0.03 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.05 U	0.04 U	0.04 U	0.4 U	0.04 U	0.03 U	0.03 U	0.05 U	0.05 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
m,p-Xylene (sum of isomers)	µg/L	0.12 U	0.12 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.09 U	0.08 U	0.08 U	0.8 U	0.15 J	0.12 U	0.12 U	0.09 U	0.09 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methyl tert-butyl ether	µg/L	0.05 U	0.05 U	0.05 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.05 U	0.08 U	0.08 U	0.8 U	0.08 U	0.05 U	0.05 U	0.05 U	0.05 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U
Methylene chloride	µg/L	0.11 UJ	1 UJ	0.15 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 UJ	0.18 U	0.15 R	0.18 U	0.18 UJ	9 J	0.64 UJ	0.11 UJ	0.85 U	0.15 UJ	0.15 UJ	0.18 UJ	0.18 U	0.18 UJ	0.18 UJ	0.18 U	0.18 UJ
o-Xylene	µg/L	0.04 U	0.04 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.05 U	0.023 U	0.023 U	0.23 U	0.023 U	0.04 U	0.04 U	0.05 U	0.05 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Styrene	µg/L	0.04 U	0.04 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.05 U	0.022 U	0.022 U	0.22 U	0.022 U	0.04 U	0.04 U	0.05 U	0.05 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U
Tetrachloroethene	µg/L	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	0.5 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	0.08 U	0.08 U	0.05 U	0.06 U	0.06 U	0.06 U	1.3	0.06 U	0.05 U	0.06 U	0.11 J	4.5	3.8	0.08 U	0.08 U	0.05 U	0.05 U	0.06 U	0.06 U	0.06 U	2.6	0.06 U	0.068 J
trans-1,2-Dichloroethene	µg/L	0.04 U	0.04 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	0.39	0.72 J	0.33	0.04 U	0.04 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
trans-1,3-Dichloropropene	µg/L	0.015 U	0.015 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.019 U	0.017 U	0.017 U	0.17 UJ	0.017 U	0.015 U	0.015 U	0.019 U	0.019 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U
Trichloroethene	µg/L	0.03 U	0.03 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.77	55	18	2	0.03 U	0.17	0.51	0.84	0.05 U	0.25	0.6	0.05 U	0.05 U	0.23
Vinyl chloride	µg/L	0.018 U	0.018 U	0.018 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.018 U	0.013 U	1.6	6.1	5.3	0.018 U	0.018 U	0.018 U	0.031 J	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 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.

Non-detected concentrations were qualified and flagged "R" as rejected.

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 9

Detections in Surface Water since January 2006
Annual Groundwater Report - July 2009
OECI Site

		SW-01			SW-02				SW-03							
Constituent	**Units**	**Jan 06**	**Jan 08**	**July 08**	**Jan 08**	**April 08**	**July 08**	**Oct 08**	**Mar 06**	**Jan 07**	**April 07**	**Sept 07**	**Jan 08**	**April 08**	**July 08**	**Jan 09**
1,1,1-Trichloroethane[1]	µg/L				0.2 J	13	4.9	0.2		0.089 J	0.25		0.078 J	0.2		
1,1-Dichloroethane[1]	µg/L					3.2	4.3	2.6	0.034 J		0.067 J					
1,1-Dichloroethene	µg/L					0.71	0.89 J	0.2								
2-Butanone	µg/L			0.86 J											1.2 J	
Acetone	µg/L	3.9 J	2.2 J	3.7 J		2.2 J		11			1.9 J				4.6 J	
Benzene	µg/L					0.06 J										
Bromodichloromethane	µg/L						0.45 J									
Carbon disulfide	µg/L							0.29 J								
Chlorobenzene	µg/L					0.054 J		0.093 J								
Chloroethane	µg/L					0.14 J	0.84 J									
Chloromethane[1]	µg/L								0.053 J							
cis-1,2-Dichloroethene[1]	µg/L				0.17 J	20	19	6.7	0.1 J	0.29	0.3		0.062 J	0.16 J		0.12 J
Dibromochloromethane	µg/L						0.47 J									
Dichlorodifluoromethane	µg/L									0.074 J		0.07 J				
Ethylbenzene	µg/L							0.028 J								
m,p-Xylene (sum of isomers)	µg/L							0.15 J								
Methylene chloride	µg/L						9 J									
Toluene	µg/L			1.3		0.11 J	4.5	3.8							2.6	0.068 J
trans-1,2-Dichloroethene	µg/L					0.39	0.72 J	0.33								
Trichloroethene[1]	µg/L				0.77	55	18	2	0.17	0.51	0.84		0.25	0.6		0.23
Vinyl chloride[1]	µg/L					1.6	6.1	5.3			0.031 J					

[1] Compound detected in Site ground-water

J = value was detected between the method detection limit and the limit of quantitation and is, therefore, estimated

TABLE 10
Screening for Anaerobic Biodegradation Processes and Interpretation of Screening Results
Annual Groundwater Report - July 2009
OECI Site

Analysis	Preferred Concentration Indicating Anaerobic Biodegradation[a]	Interpretation[a]	Value[a]	Hydrogeologic Unit					
				Shallow		Deep		Bedrock	
				2007-08	2008-09	2007-08	2008-09	2007-08	2008-09
Oxygen (mg/L)	< 0.5 mg/L	Tolerated, suppresses the reductive pathway at higher concentrations.	3	0	0	0	0	0	0
Oxygen (mg/L)	> 5 mg/L	Not tolerated, however, VC may be oxidized aerobically.	-3	0	0	0	0	0	0
Nitrate (mg/L)	< 1 mg/L	At higher concentrations, may compete with reductive pathway.	2	2	2	2	2	2	2
Iron II [d]	> 1 mg/L	Reductive pathway possible; VC may be oxidized under Fe (III)-reducing conditions.	3	0	0	0	0	0	0
Sulfate (mg/L)	< 20 mg/L	At higher concentrations, may compete with reductive pathway.	2	0	0	0	0	0	0
Sulfide (mg/L)	> 1 mg/L	Reductive pathway possible.	3	0	0	0	0	0	0
Methane (mg/L)	< 0.5 mg/L	VC oxidizes.	0	0	0	0	0	0	0
Methane (mg/L)	> 0.5 mg/L	Ultimate reductive daughter product, VC accumulates.	3	0	0	0	0	0	0
Oxidation Reduction Potential (mV)	< 50 mV	Reductive pathway possible.	1	1	1	1	1	1	1
Oxidation Reduction Potential (mV)	< -100 mV	Reductive pathway likely.	2	0	0	0	0	0	0
pH	5 < pH < 9	Optimal range for reductive pathway.	0	0	0	0	0	0	0
pH	5 > pH > 9	Outside optimal range for reductive pathway.	-2	0	0	0	0	0	0
TOC (mg/L)	> 20 mg/L	Carbon and energy source; drives dechlorination; can be natural or anthropogenic.	2	0	0	0	0	0	0
Temperature (degrees Celsius)	> 20C	At T .20C, biochemical process is accelerated.	1	0	0	0	0	0	0
Alkalinity (mg/L)	> 2x background	Results from interaction between CO2 and aquifer materials.	1	0	0	0	0	0	0
Chloride (mg/L)	> 2x background	Daughter product of organic chlorine.	2	2	2	2	2	2	2
BTEX (mg/L)	> 0.1 mg/L	Carbon and energy source; drives dechlorination.	2	0	0	0	0	0	0
Trichloroethene (mg/L)	Not applicable	Material released.	0	0	0	0	0	0	0
Dichloroethene (mg/L)	Not applicable	Daughter product of TCE; If cis is > 80% of total DCE it is likely a daughter product, 1,1DCE can be chemical reaction product of TCA.	2	2	2	2	2	2	2
Vinyl chloride (mg/L)	Not applicable	Daughter product of DCE.	2	2	2	2	2	0	2
1,1,1-trichloroethane (mg/L)	Not applicable	Material released.	0	0	0	0	0	0	0
1,1-dichloroethane (mg/L)	Not applicable	Daughter product of TCA under reducing conditions.	2	2	2	2	2	0	0
Chloroethane (mg/L)	Not applicable	Daughter product of DCA or VC under reducing conditions.	2	0	0	0	0	0	0
Ethene/Ethane (mg/L)	> 0.01 mg/L	Daughter product of VC/ethene.	2	0	0	0	0	0	0
Ethene/Ethane (mg/L)	> 0.1 mg/L	Daughter product of VC/ethene.	3	0	0	0	0	0	0
			SCORE:[a,e]	11	11	11	11	7	9

Background levels for alkalinity and chloride for shallow and deep aquifers is average of quarterly values for upgradient wells MW-1S and MW-4S
Background levels for alkalinity and chloride for bedrock aquifer is average of quarterly values for upgradient well MW-1D

[a] See Table 2.3 in Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, EPA/600/R-98/128.

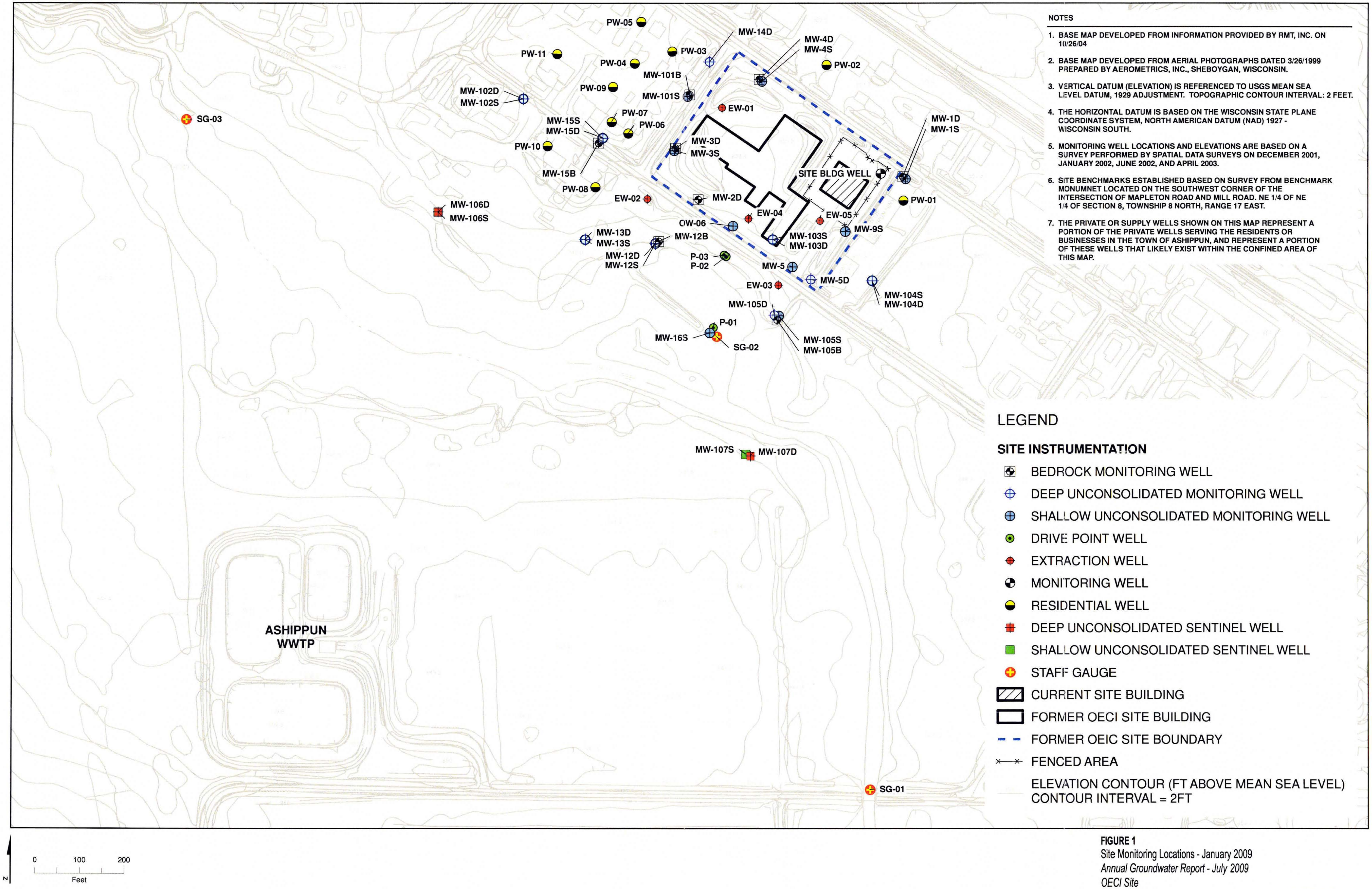
[b] See Tables4 and 5 of this report for study area constituent values.

[c] Points awarded only when 50 percent or more of results for a particular parameter for the wells sampled were at the preferred concentration. The total number of wells did NOT include upgradient wells for a given hydrogeologic unit.

[d] Sampled for dissolved iron. Compared values to background concentrations (>2x background).

[e] Scores of 15 to 20 = Adequate evidence for anaerobic biodegradation of CVOCs.

Figures



NOTES

1. BASE MAP DEVELOPED FROM INFORMATION PROVIDED BY RMT, INC. ON 10/26/04
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LEGEND

SITE INSTRUMENTATION

- ⊞ BEDROCK MONITORING WELL
- ⊕ DEEP UNCONSOLIDATED MONITORING WELL
- ⊕ SHALLOW UNCONSOLIDATED MONITORING WELL
- ◉ DRIVE POINT WELL
- ✚ EXTRACTION WELL
- ◐ MONITORING WELL
- ◓ RESIDENTIAL WELL
- ▦ DEEP UNCONSOLIDATED SENTINEL WELL
- 🟩 SHALLOW UNCONSOLIDATED SENTINEL WELL
- ⊕ STAFF GAUGE
- ▨ CURRENT SITE BUILDING
- ▭ FORMER OECI SITE BUILDING
- - - FORMER OEIC SITE BOUNDARY
- ×—× FENCED AREA
- ELEVATION CONTOUR (FT ABOVE MEAN SEA LEVEL) CONTOUR INTERVAL = 2FT

FIGURE 1
Site Monitoring Locations - January 2009
Annual Groundwater Report - July 2009
OECI Site

CH2MHILL

\\LAKEFRONT\PROJ\GIS\OECI\MAPFILES\GROUNDWATER_ELEVATION_MAPS_JAN_2009\FIGURE01_SITE_MONITORING_LOCATIONS_JAN_2009.MXD MPETERSH 5/12/2009 15:11:07

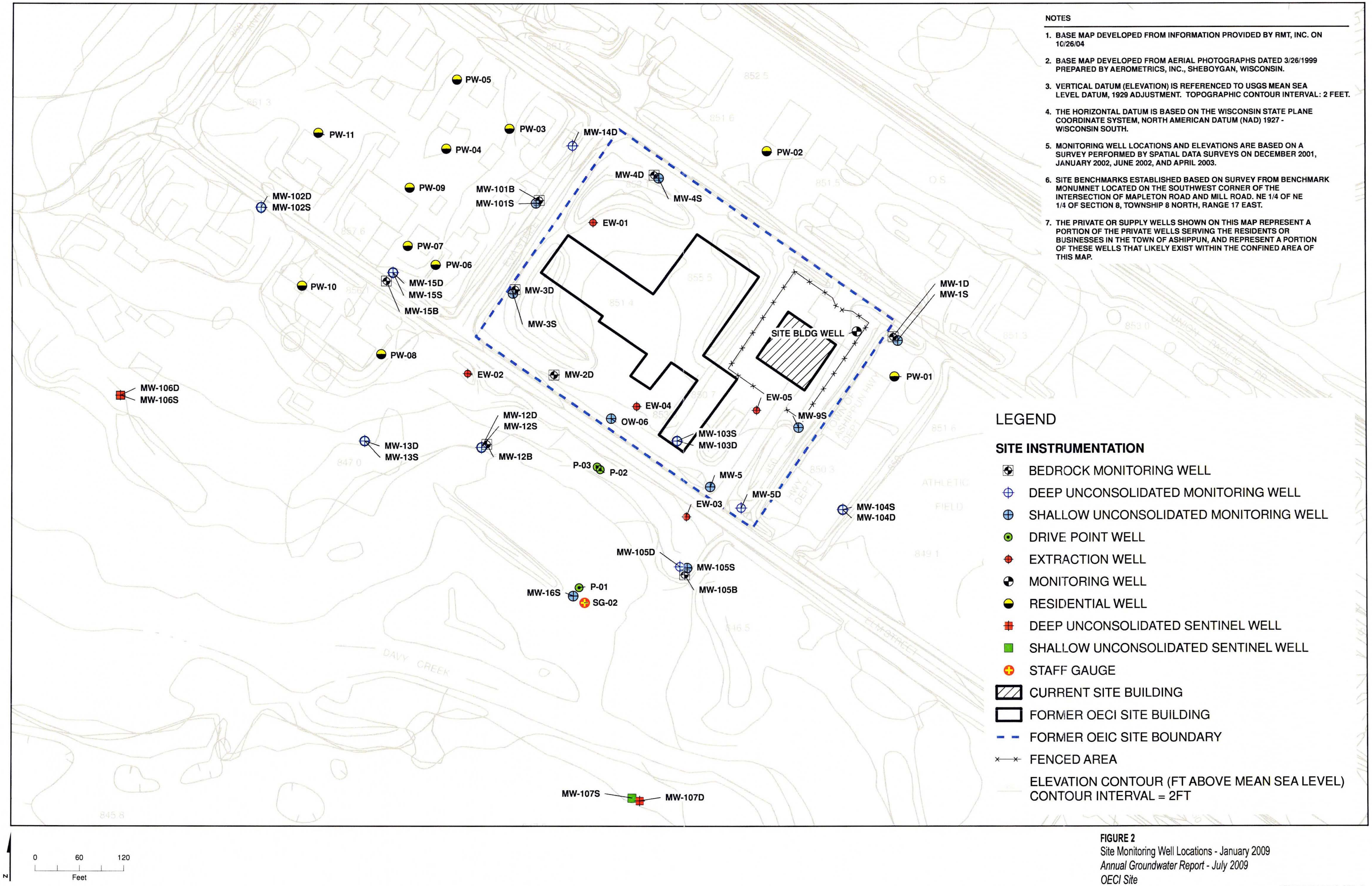

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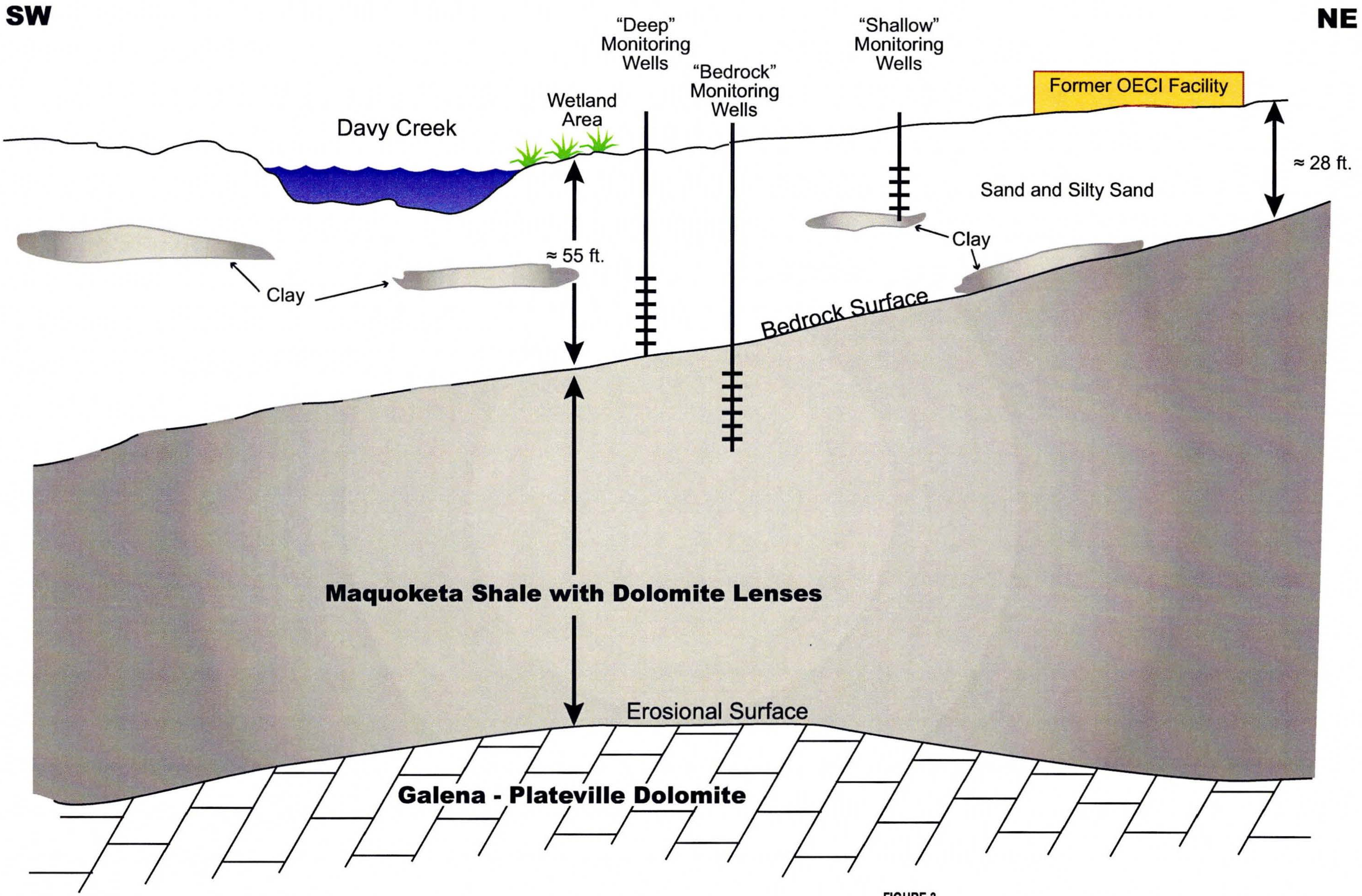
FIGURE 2
Site Monitoring Well Locations - January 2009
Annual Groundwater Report - July 2009
OECI Site

\\LAKEFRONT\PROJ\GIS\OECI\MAPFILES\GROUNDWATER_ELEVATION_MAPS_JAN_2009\FIGURE02_SITE_MONITORING_WELL_LOCATIONS_JAN_2009.MXD MPETERSH 5/12/2009 15:17:05

CH2MHILL

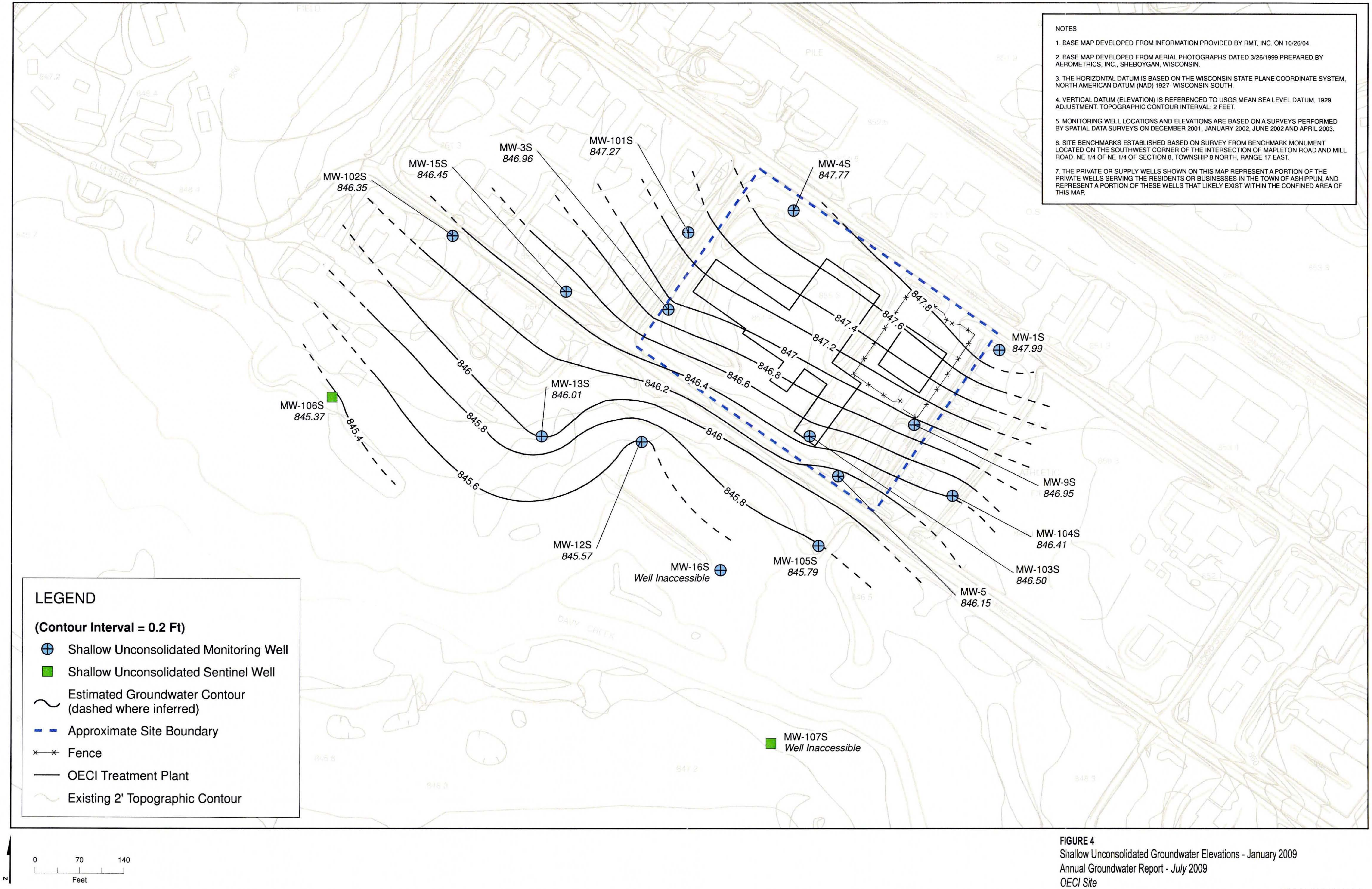
[redacted]



- NOT TO SCALE -

FIGURE 3
Conceptual Depiction of Site Aquifer Units and Well Placement – January 2009
Annual Groundwater Report - July 2009
OECI Site

CH2MHILL



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LEGEND

(Contour Interval = 0.2 Ft)

- ⊕ Shallow Unconsolidated Monitoring Well
- 🟩 Shallow Unconsolidated Sentinel Well
- 〜 Estimated Groundwater Contour (dashed where inferred)
- - - Approximate Site Boundary
- ×—× Fence
- — OECI Treatment Plant
- 〜 Existing 2' Topographic Contour

FIGURE 4
Shallow Unconsolidated Groundwater Elevations - January 2009
Annual Groundwater Report - *July 2009*
OECI Site

CH2MHILL

\\LAKEFRONT\PROJ\GIS\OECI\MAPFILES\GROUNDWATER_ELEVATION_MAPS_JAN_2009\FIGURE04_SHALLOW_UNCONSOLIDATED_AQUIFER_JAN2009_GW_ELEV.MXD MPETERSH 5/12/2009 15:32:15

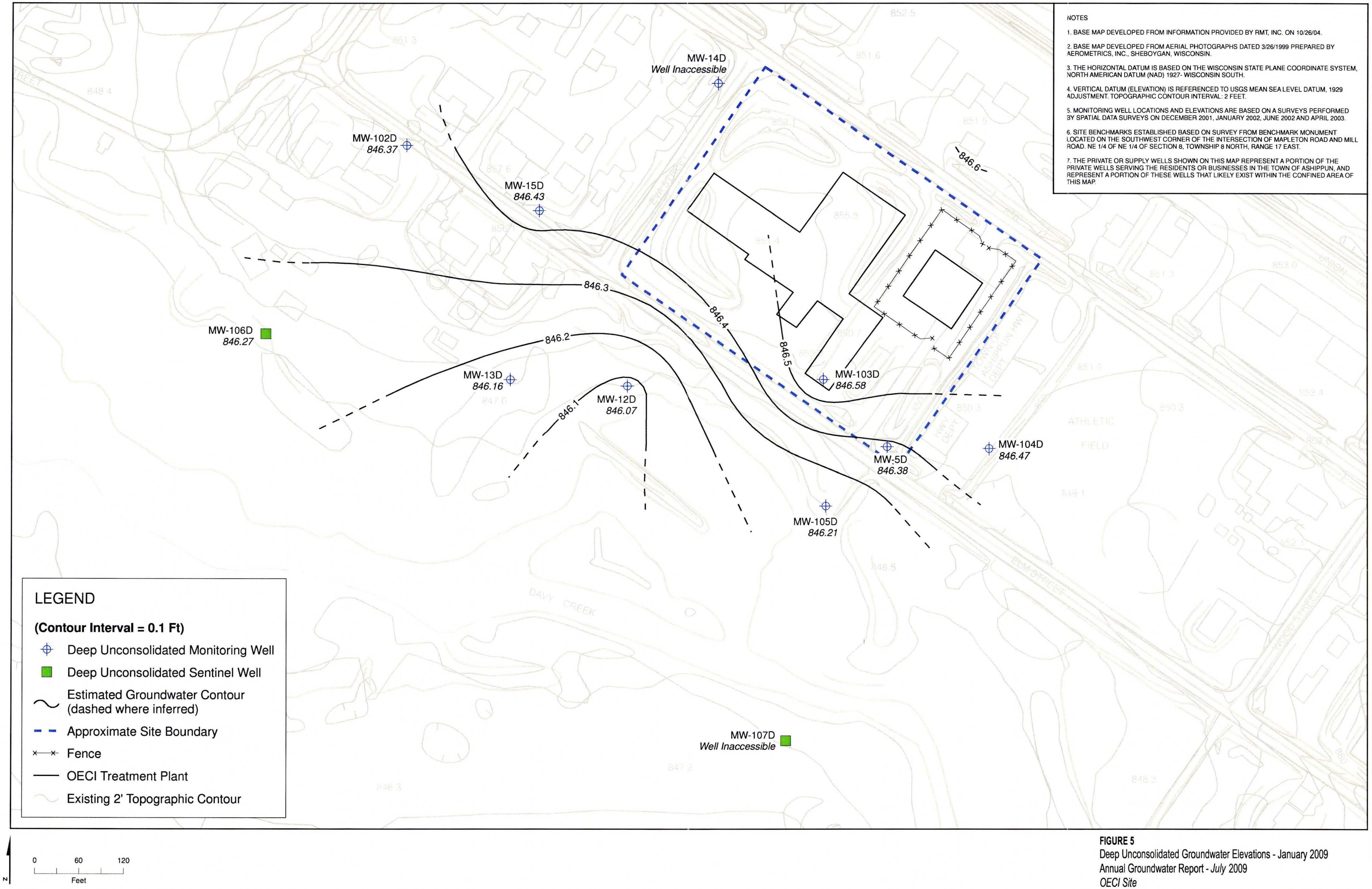

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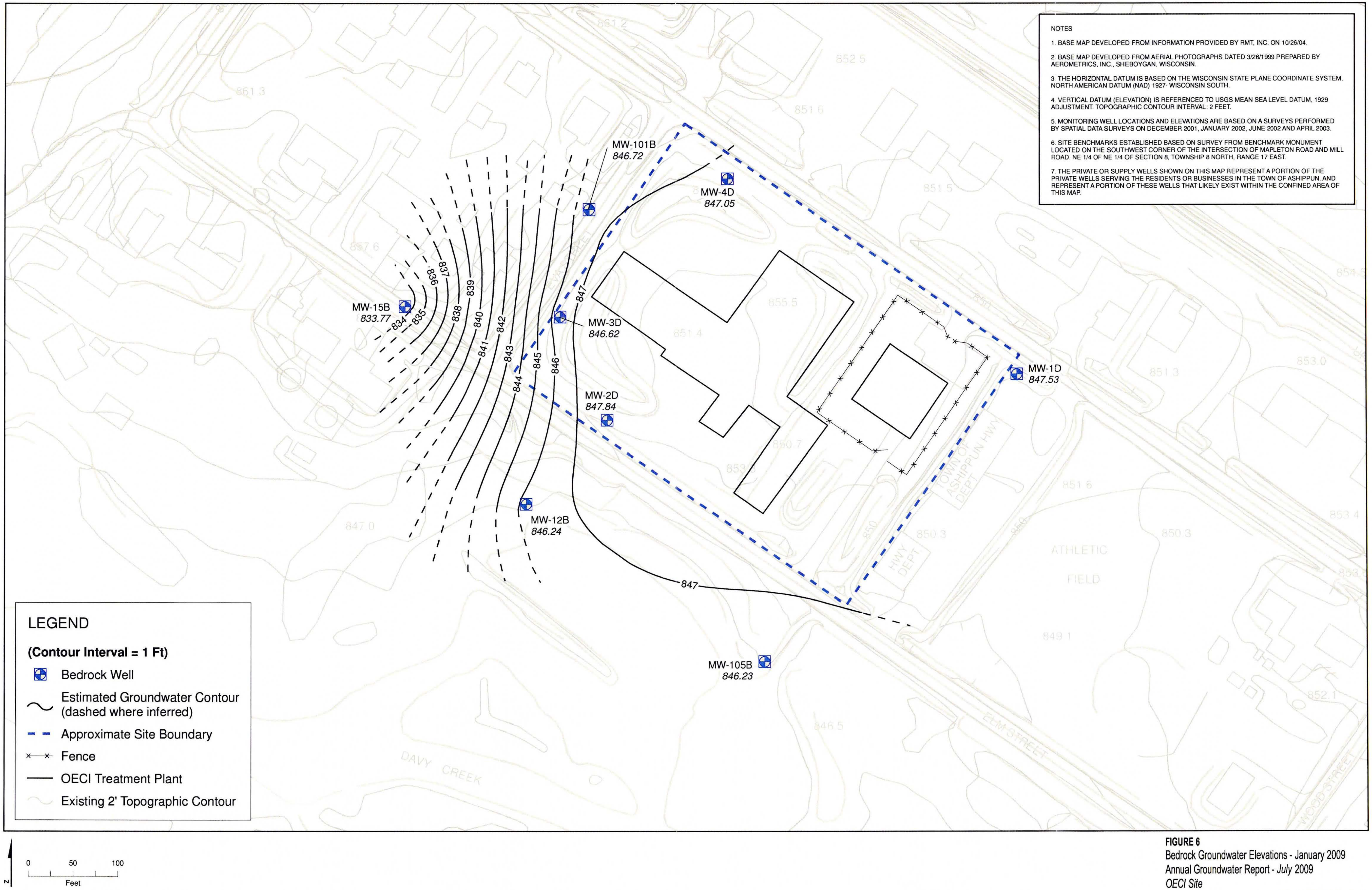
FIGURE 5
Deep Unconsolidated Groundwater Elevations - January 2009
Annual Groundwater Report - *July 2009*
OECI Site

CH2MHILL

\\LAKEFRONT\PROJ\GIS\OECI\MAPFILES\GROUNDWATER_ELEVATION_MAPS_JAN_2009\FIGURE05_DEEP_UNCONSOLIDATED_AQUIFER_JAN2009_GW_ELEV.MXD MPETERSH 5/12/2009 15:52:14



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LEGEND

(Contour Interval = 1 Ft)

⊕	Bedrock Well
∼	Estimated Groundwater Contour (dashed where inferred)
- -	Approximate Site Boundary
×—×	Fence
—	OECI Treatment Plant
∼	Existing 2' Topographic Contour

FIGURE 6

Bedrock Groundwater Elevations - January 2009

Annual Groundwater Report - *July 2009*

OECI Site

CH2MHILL

\\LAKEFRONT\PROJ\GIS\OECI\MAPFILES\GROUNDWATER_ELEVATION_MAPS_JAN_2009\FIGURE06_BEDROCK_CONTOUR_JAN2009_GW_ELEV.MXD MPETERSH 5/12/2009 15:59:02

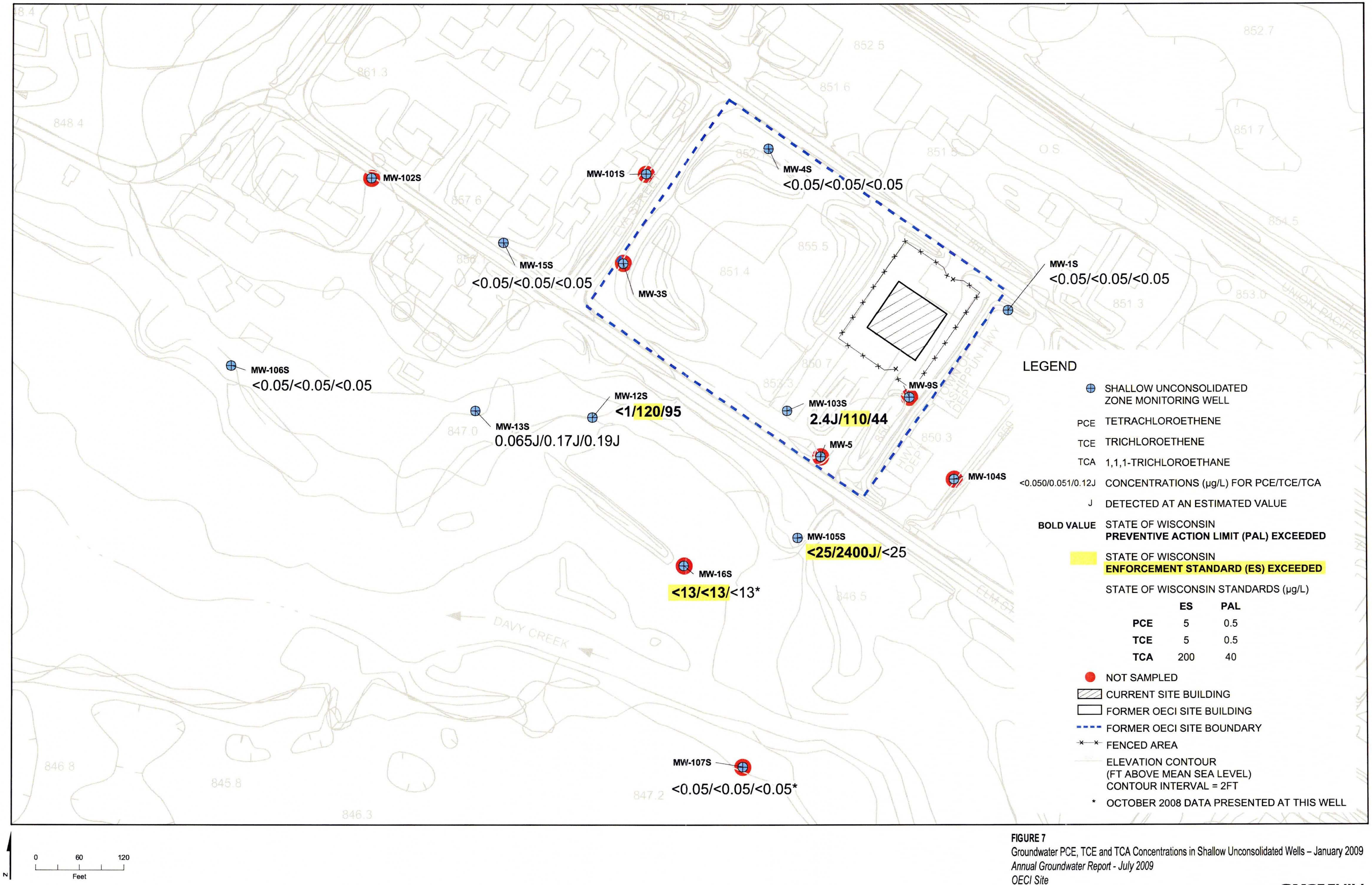


FIGURE 7

Groundwater PCE, TCE and TCA Concentrations in Shallow Unconsolidated Wells – January 2009

Annual Groundwater Report - July 2009

OECI Site

CH2MHILL

ES052007001CVO-OECI_TCE_PCE_TCA_Shallow_AnnualReport-2009_v07

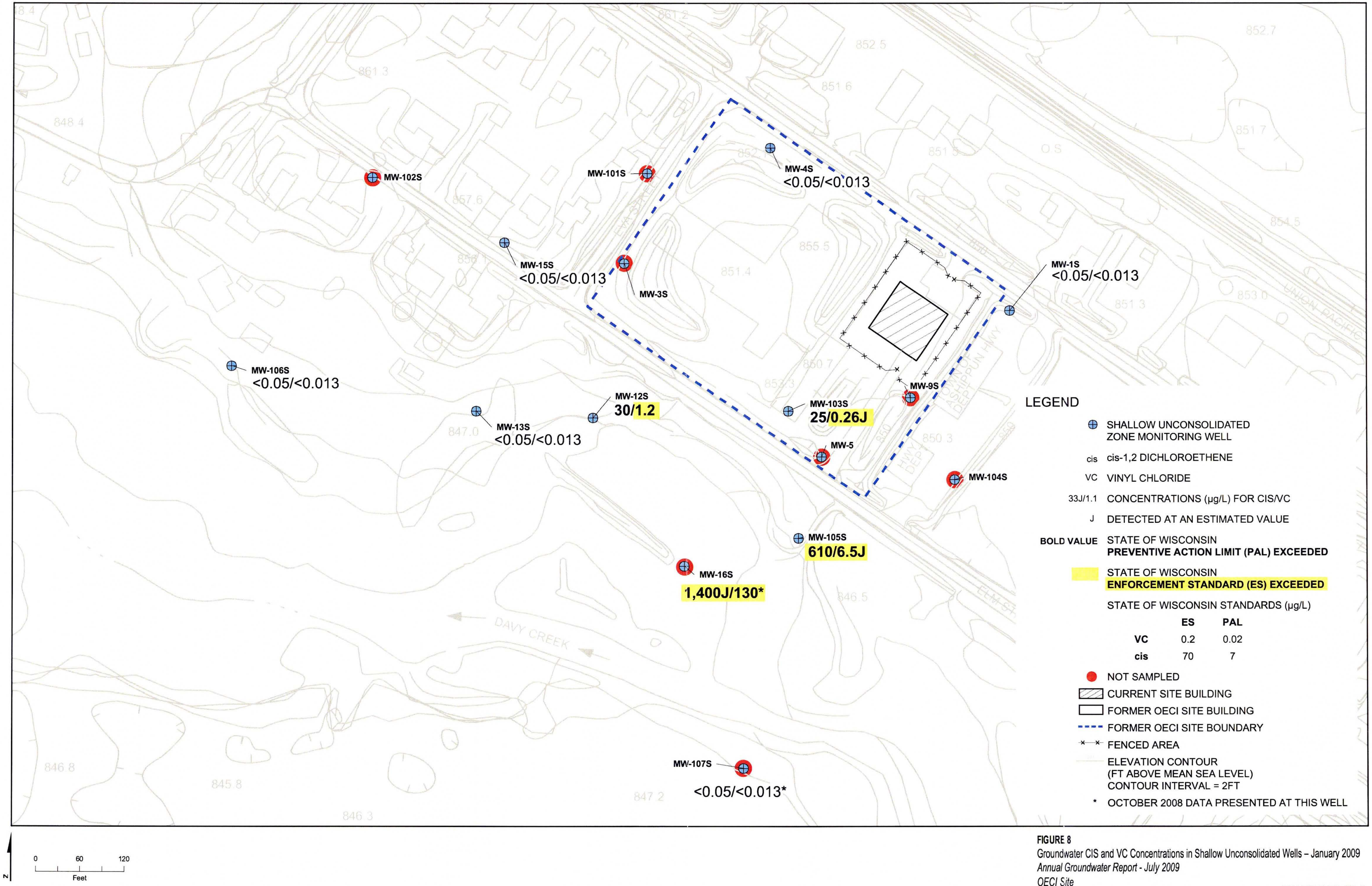


FIGURE 8
Groundwater CIS and VC Concentrations in Shallow Unconsolidated Wells – January 2009
Annual Groundwater Report - July 2009
OECI Site

CH2MHILL

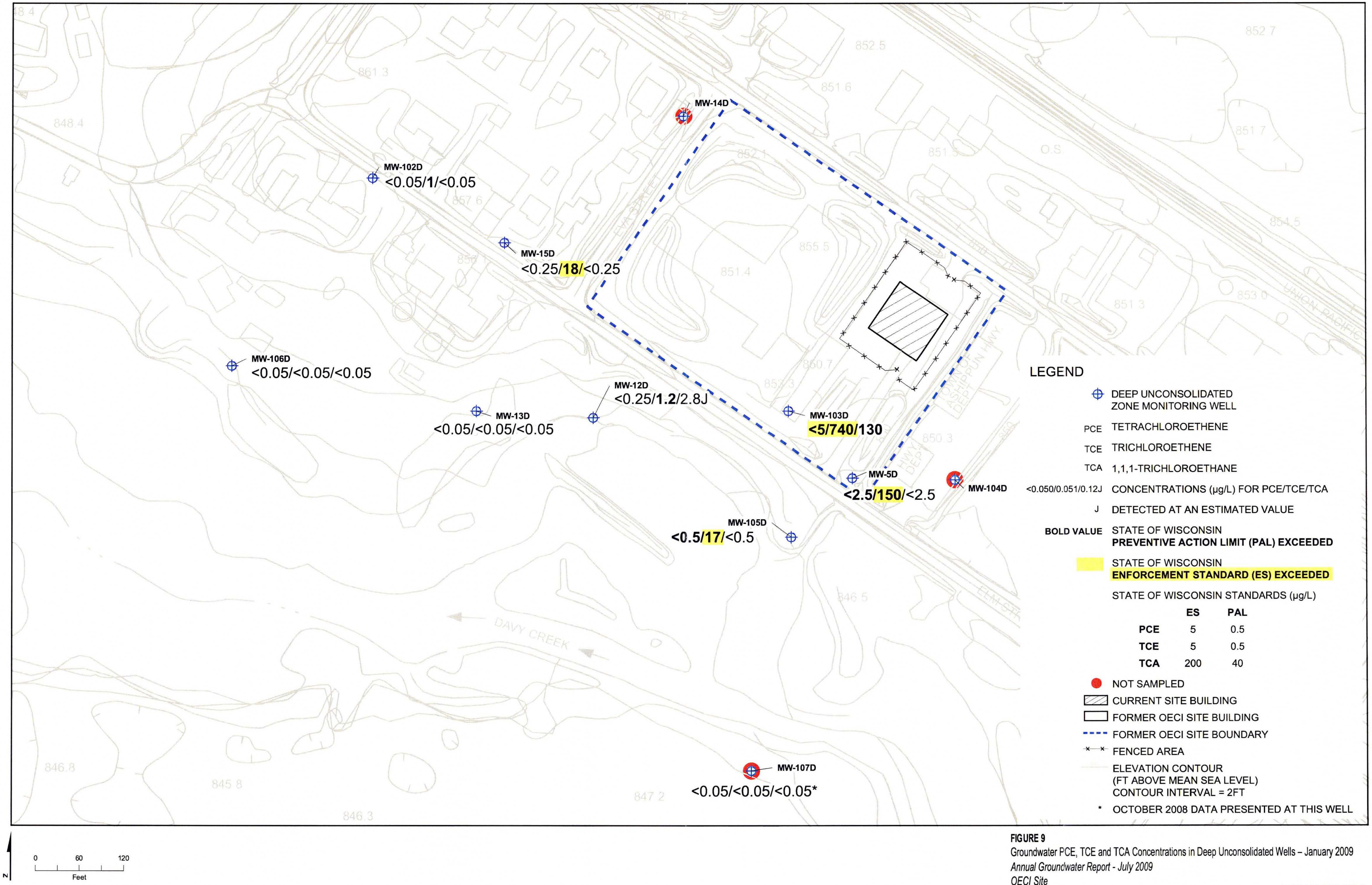


FIGURE 9

Groundwater PCE, TCE and TCA Concentrations in Deep Unconsolidated Wells – January 2009

Annual Groundwater Report - July 2009

OECI Site

CH2MHILL

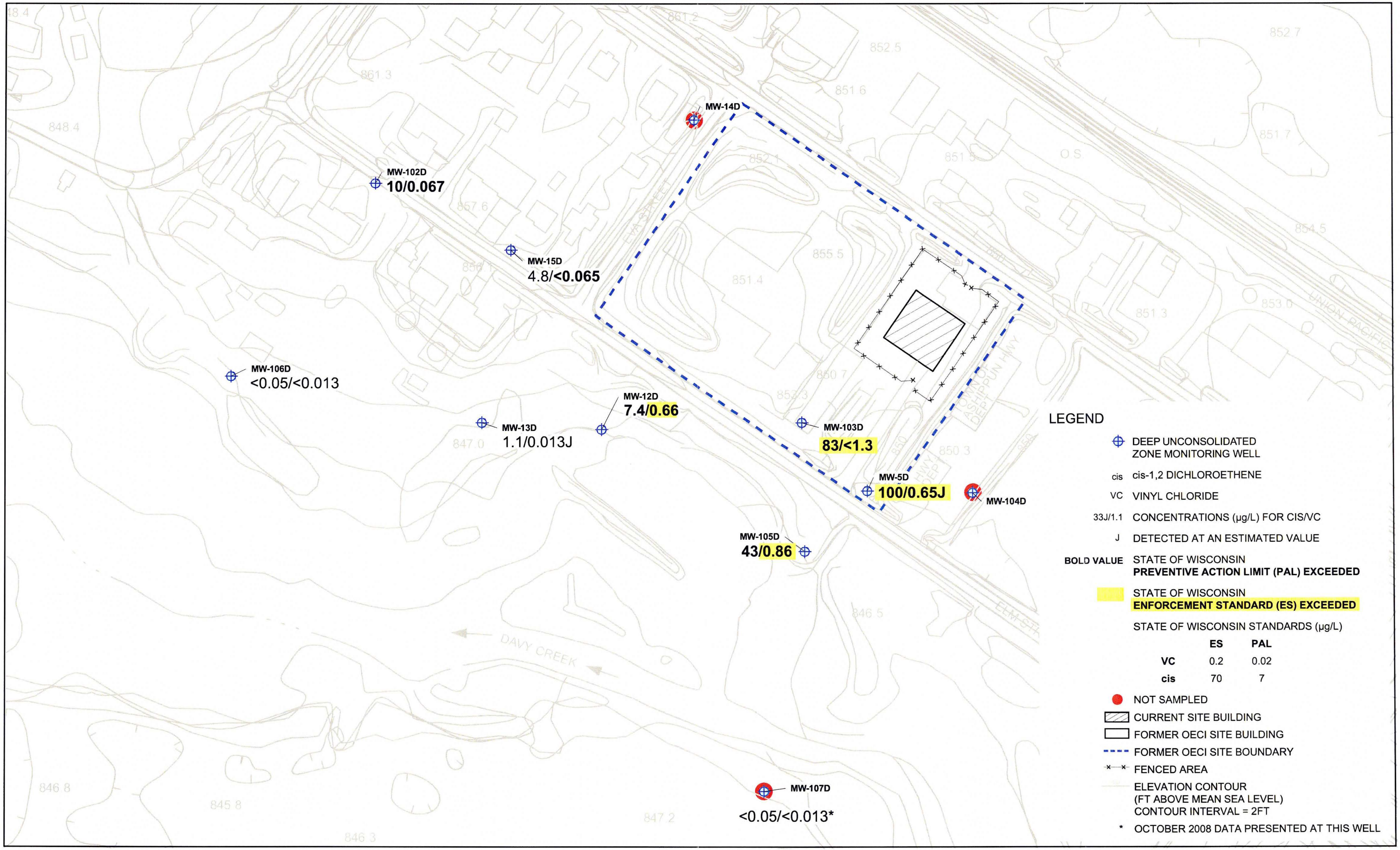


FIGURE 10

Groundwater CIS and VC Concentrations in Deep Unconsolidated Wells – January 2009

Annual Groundwater Report - July 2009

OECI Site

CH2MHILL

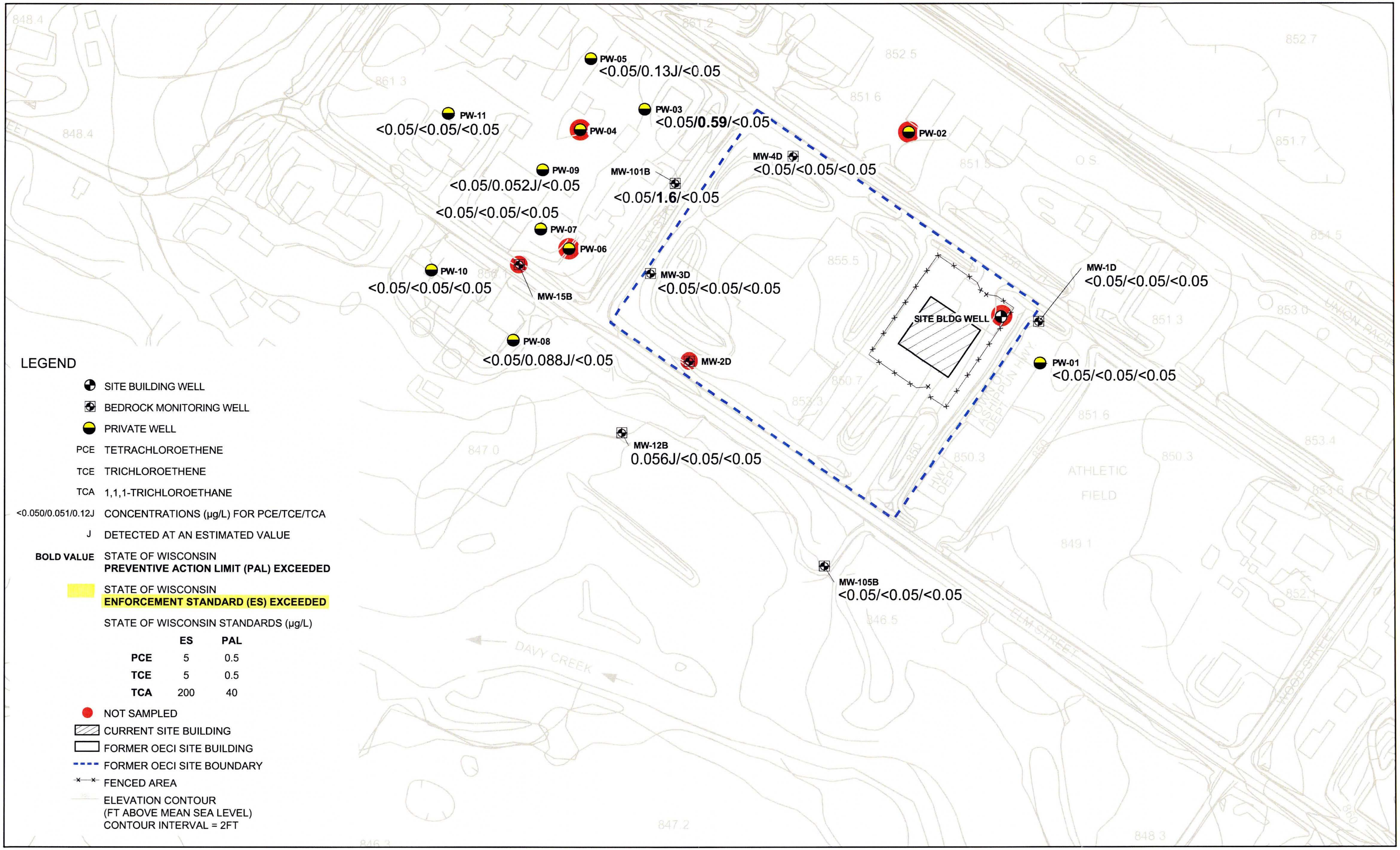


FIGURE 11
Groundwater PCE, TCE and TCA Concentrations in Bedrock Wells – January 2009
Annual Groundwater Report - July 2009
OECI Site

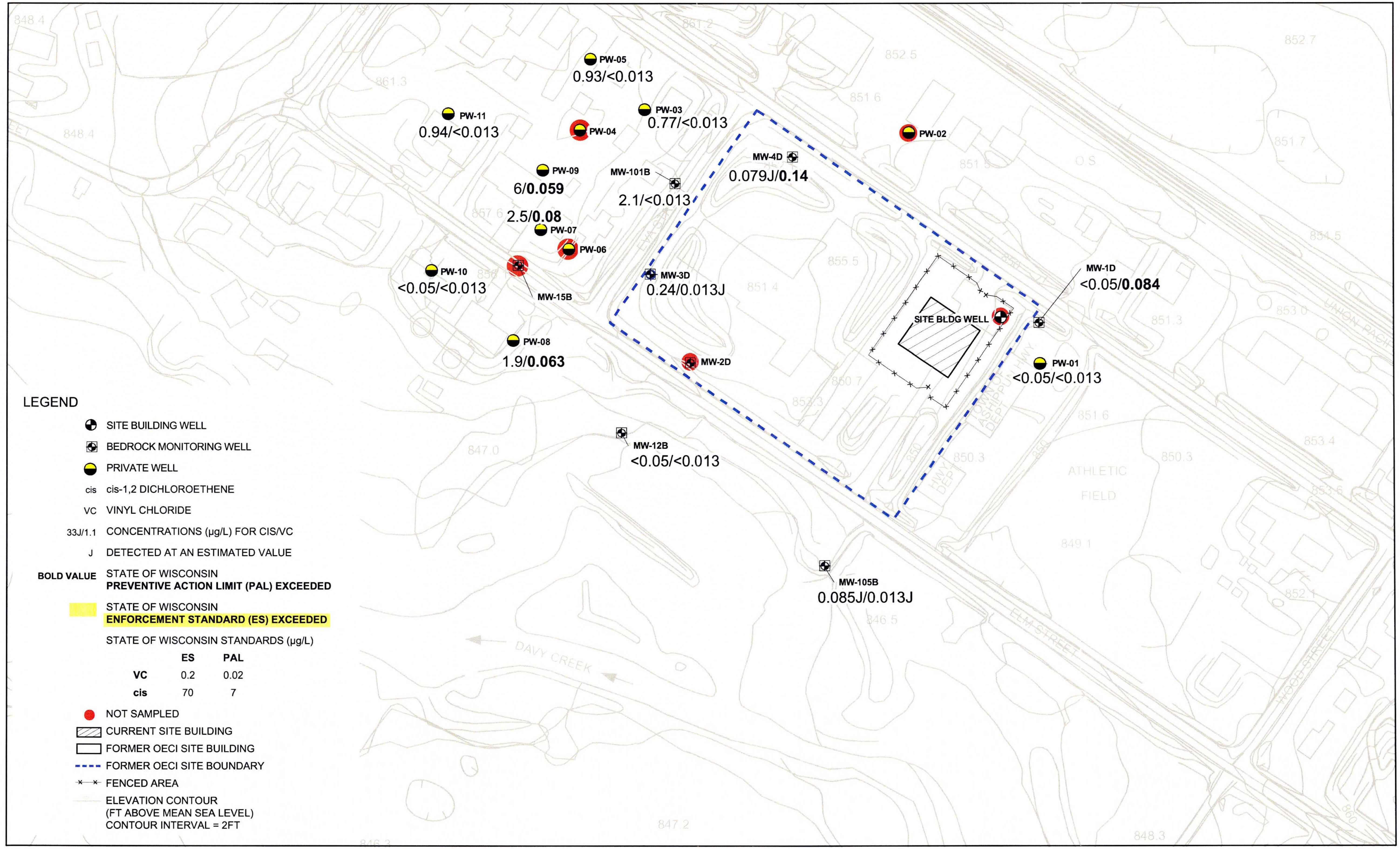


FIGURE 12

Groundwater CIS and VC Concentrations in Bedrock Wells – January 2009

Annual Groundwater Report - July 2009

OECI Site

CH2MHILL

Appendix A

Data Validation Memorandums

Data Usability Evaluation
Oconomowoc Electroplating Company, Inc. Site, Ashippun, Wisconsin
WA No. 003-LRLR-05M8, Contract No. EP-S5-06-01

PREPARED FOR:	U.S. Environmental Protection Agency
PREPARED BY:	Adrienne Unger/CH2M HILL
DATE:	May 15, 2009

This memorandum presents the data usability evaluation of the groundwater samples collected during the field investigation conducted at the Oconomowoc Electroplating Company, Inc. site in Ashippun, Wisconsin, during the week of April 14, 2008. CH2M HILL performed the sampling. CT Laboratories, Inc. of Baraboo, Wisconsin, performed the analyses.

Sixty groundwater and surface water samples were collected, including quality control (QC) samples, and analyzed for one or more of the following U.S. Environmental Protection Agency (USEPA)-approved methods:

- Volatile organic compounds (VOCs) by USEPA SW-846 Method 8260
- Alkalinity by USEPA 310.2
- Ammonia by USEPA 350.1
- Chloride by USEPA SW-846 Method 9056
- Methane, ethane, and ethene by RSK 175
- Nitrate by USEPA SW-846 Method 9056
- Orthophosphate by USEPA SW-846 Method 9056
- Sulfate by USEPA SW-846 Method 9056
- Sulfide by USEPA 376.1
- Total organic carbon by USEPA SW-846 Method 9060
- Total metals by USEPA SW-846 Method 6010B
- Dissolved metals by USEPA SW-846 Method 6010B

As part of the quality assurance (QA) process outlined in the field sampling plan (CH2M HILL 2006), QC samples were collected in the field to complement the assessment of overall data quality and usability. These QC samples collected were field duplicates, aliquots for laboratory matrix spike/matrix spike duplicates (MS/MSDs), a field blank, and an equipment blank. VOC trip blanks also were used as a means of QC; these samples were supplied by the laboratory.

The dataset was reviewed by the USEPA Environmental Service Assistance Team (ESAT) contractor, TechLaw, (Attachment 1) to assess the accuracy and precision of the method and the matrix using criteria established in the National Functional Guidelines (NFG) for data review. Completeness of the dataset was then derived. USEPA validators added data qualifiers when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

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

[U] The sample target was analyzed for but not detected above the level of the associated limit of detection or quantitation.

[J] The associated value is an estimated quantity. This qualifier was appended when the data indicated the presence of a specific target analyte but was below the stated reporting (or quantitation) limit, and/or when QC statistics alluded to an analytical bias.

[UJ] The component was analyzed for but not detected at a level equal to or greater than the level of detection (LOD) or quantification (often the reporting limit [RL]). This flag was used when QC measurements indicated a possible low bias in the analytical data.

[R] Rejected. The data were of insufficient quality to be deemed acceptable as reported or otherwise qualified.

Groundwater Samples

CH2M HILL conducted a review of the validation performed by USEPA for the groundwater samples in sample delivery group (SDG) 66005. Table 1 lists the sample identifications (IDs) and Station Locations that were reviewed (100 percent of all samples collected).

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
08CE12-01	OEP-MW-003D	08CE12-31	OEP-JS-003	08CE12-62	OEP-PW-04
08CE12-02	OEP-MW-003D(F)	08CE12-32	OEP-MW-013D	08CE12-63	OEP-JS-007
08CE12-03	OEP-JS-001	08CE12-33	OEP-MW-013D(F)	08CE12-64	OEP-JS-008
08CE12-04	OEP-MW-103S	08CE12-34	OEP-JS-004	08CE12-65	OEP-SW-03
08CE12-05	OEP-MW-103S(F)	08CE12-35	OEP-MW-013S	08CE12-66	OEP-SW-03(F)
08CE12-06	OEP-MW-103D	08CE12-36	OEP-MW-013S(F)	08CE12-67	OEP-PW-07
08CE12-07	OEP-MW-103D(F)	08CE12-37	OEP-MW-012D	08CE12-68	OEP-JS-009
08CE12-08	OEP-MW-103DFR	08CE12-38	OEP-MW-012D(F)	08CE12-69	OEP-MW-015B
08CE12-09	OEP-MW-103DFR(F)	08CE12-39	OEP-MW-012S	08CE12-70	OEP-MW-015B(F)
08CE12-10	OEP-PW-01	08CE12-40	OEP-MW-012S(F)	08CE12-71	OEP-MW-106D
08CE12-11	OEP-PW-01FR	08CE12-41	OEP-JS-005	08CE12-72	OEP-MW-106S

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
08CE12-12	OEP-MW-015D	08CE12-42	OEP-MW-012B	08CE12-73	OEP-PW-02
08CE12-13	OEP-MW-015D(F)	08CE12-43	OEP-MW-012B(F)	08CE12-74	OEP-MW-101B
08CE12-14	OEP-MW-015S	08CE12-44	OEP-DW-01	08CE12-75	OEP-MW-101B(F)
08CE12-15	OEP-MW-015S(F)	08CE12-45	OEP-PW-11	08CE12-76	OEP-MW-005D
08CE12-16	OEP-JS-002	08CE12-46	OEP-PW-05	08CE12-77	OEP-MW-005D(F)
08CE12-17	OEP-SW-01	08CE12-47	OEP-JS-006	08CE12-78	OEP-JS-010
08CE12-18	OEP-SW-01(F)	08CE12-48	OEP-MW-001D	08CE12-79	OEP-MW-102D
08CE12-19	OEP-SW-01FR	08CE12-49	OEP-MW-001D(F)	08CE12-80	OEP-MW-102D(F)
08CE12-20	OEP-SW-01FR(F)	08CE12-50	OEP-MW-001S	08CE12-81	OEP-MW-101BFR
08CE12-21	OEP-MW-105B	08CE12-51	OEP-MW-001S(F)	08CE12-82	OEP-MW-101BFR(F)
08CE12-22	OEP-MW-105B(F)	08CE12-52	OEP-FB-001	08CE12-83	OEP-JS-011
08CE12-23	OEP-MW-105S	08CE12-54	OEP-EB-001	08CE12-84	OEP-MW-107D
08CE12-24	OEP-MW-105S(F)	08CE12-55	OEP-EB-001(F)	08CE12-85	OEP-MW-107S
08CE12-25	OEP-MW-105D	08CE12-56	OEP-MW-004D	08CE12-86	OEP-MW-107SFR
08CE12-26	OEP-MW-105D(F)	08CE12-57	OEP-MW-004D(F)	08CE12-87	OEP-MW-016S
08CE12-27	OEP-MW-105DFR	08CE12-58	OEP-MW-004S	08CE12-88	OEP-MW-016S(F)
08CE12-28	OEP-MW-105DFR(F)	08CE12-59	OEP-MW-004S(F)	08CE12-89	OEP-SW-02
08CE12-29	OEP-PW-08	08CE12-60	OEP-PW-03	08CE12-90	OEP-SW-02(F)
08CE12-30	OEP-PW-10	08CE12-61	OEP-PW-09	08CE12-91	OEP-JS-014

The USEPA validation case narratives and worksheets indicate which of these sample results were biased due to applicable QC statistics or other NFG requirements. The qualifications are described in Attachment 1. One result was rejected.

- The MS/MSD recovery for styrene was below 20 percent for sample 08CE12-61. The sample result was qualified as unusable "R".

The dataset completeness is 99.9 percent usable and may be used in the project decision-making process with qualification. In addition, approximately 10 percent of the data underwent a comparative review to evaluate the accuracy between the database and the USEPA validation reports. No discrepancies were noted.

Conclusions

The USEPA validation reports were verified to comply with the applicable NFG for data review. This verification confirmed that the validation performed by USEPA was complete for the entire dataset analyzed by CT Laboratories. Qualified data, if not rejected, are considered usuable for the project decision-making process. The project data quality objectives (DQOs) established a completeness goal for the project at 90 percent. The percent completeness for these groundwater data is 99.9 percent (0.1 percent of the data were rejected) and met the established DQOs set forth in the quality assurance project plan (CH2M HILL 2004).

Data summary tables of the results have been provided as a table in the *2008 Second Quarter Groundwater Report – OECI Site*. An electronic file of these data also will be submitted as part of this deliverable.

Reference Cited

CH2M HILL. 2004. *Quality Assurance Project Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin*. WA No. 236-RALR-05M8 Contract No. 68-W6-0025. October.

CH2M HILL. 2006. *Field Sampling Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin*. WA No. 003-LRLR-05MS Contract No. EP-SS-06-01. October.

Attachment 1

Validation Narratives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: May 23, 2008

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 Company (WI)

SAS Project: 08CE12 SDG Number: 66005-VOC

Number and Type of Samples: 60 Waters (60 VOCs/ 31 MEE)

Sample Numbers: 08CE12; -01, -03, -04, -06, -08, -10 thru -12, -14, -16, -17, -19, -21, -23, -25, -27, -29 thru -32, -34, -35, -37, -39, -41, -42, -44 thru -48, -50, -52, -54, -56, -58, -60 thru -65, -67 thru -69, -71 thru -74, -76, -78, -79, -81, -83 thru -87, -89, -91

Laboratory: CT Laboratories Hrs for Review:

Following are our findings:

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

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

Sixty (60) preserved water samples listed in the following table were collected April 14 - 18, 2008. CT Laboratories of Baraboo, Wisconsin received the samples April 15 - 19, 2008. All samples were received intact and properly cooled. Sixty (60) samples were analyzed April 22 – 27, 2008 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Thirty-one (31) samples were analyzed April 22 - 25, 2008 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

EPA ID	CTI Lab ID	Sample location	Date sampled	VOC Analyses	MEE Analyses
08CE12-01	556236	OEP-MW-003D	04/14/08	04/22/08	04/22/08
08CE12-03	556260	OEP-JS-001	04/14/08	04/26/08	
08CE12-04	556261	OEP-MW-103S	04/14/08	04/22/08	04/24/08
08CE12-06	556263	OEP-MW-103D	04/14/08	04/22/08	04/24/08
08CE12-08	556265	OEP-MW-103DFR	04/14/08	04/22/08	04/24/08
08CE12-10	556523	OEP-PW-01	04/14/08	04/23/08	
08CE12-11	556524	OEP-PW-01FR	04/14/08	04/23/08	
08CE12-12	556269	OEP-MW-015D	04/14/08	04/22/08	04/24/08
08CE12-14	556271	OEP-MW-015S	04/14/08	04/23/08	04/23/08
08CE12-16	556273	OEP-JS-002	04/14/08	04/25/08	
08CE12-17	556274	OEP-SW-01	04/14/08	04/23/08	04/24/08
08CE12-19	556267	OEP-SW-01FR	04/14/08	04/22/08	04/22/08
08CE12-21	556502	OEP-MW-105B	04/15/08	04/23/08	04/24/08
08CE12-23	556504	OEP-MW-105S	04/15/08	04/22/08	04/24/08
08CE12-23MS	558276	OEP-MW-105S		04/22/08	04/24/08
08CE12-23MSD	558279	OEP-MW-105S		04/22/08	04/24/08
08CE12-25	556514	OEP-MW-105D	04/15/08	04/23/08	04/24/08
08CE12-27	556516	OEP-MW-105DFR	04/15/08	04/22/08	04/24/08
08CE12-29	556525	OEP-PW-08	04/15/08	04/23/08	
08CE12-30	556526	OEP-PW-10	04/15/08	04/23/08	
08CE12-31	556506	OEP-JS-003	04/15/08	04/25/08	
08CE12-32	556518	OEP-MW-013D	04/15/08	04/23/08	04/24/08
08CE12-34	556520	OEP-JS-004	04/15/08	04/26/08	
08CE12-35	556521	OEP-MW-013S	04/15/08	04/23/08	04/24/08
08CE12-37	556507	OEP-MW-012D	04/15/08	04/22/08	04/24/08
08CE12-39	556509	OEP-MW-012S	04/15/08	04/22/08	04/24/08
08CE12-41	556511	OEP-JS-005	04/15/08	04/25/08	
08CE12-42	556512	OEP-MW-012B	04/15/08	04/23/08	04/24/08
08CE12-44	556527	OEP-DW-01	04/15/08	04/23/08	

08CE12-45	556528	OEP-PW-11	04/15/08	04/23/08	
08CE12-46	556529	OEP-PW-05	04/15/08	04/23/08	
08CE12-47	556530	OEP-JS-006	04/15/08	04/26/08	
08CE12-48	556809	OEP-MW-001D	04/16/08	04/24/08	04/25/08
08CE12-50	556811	OEP-MW-001S	04/16/08	04/24/08	04/25/08
08CE12-52	556799	OEP-FB-001	04/16/08	04/23/08	04/24/08
08CE12-54	556800	OEP-EB-001	04/16/08	04/24/08	04/24/08
08CE12-56	556813	OEP-MW-004D	04/16/08	04/24/08	04/25/08
08CE12-58	556815	OEP-MW-004S	04/16/08	04/24/08	04/25/08
08CE12-60	556793	OEP-PW-03	04/16/08	04/23/08	
08CE12-61	556794	OEP-PW-09	04/16/08	04/23/08	
08CE12-61MS	559352	OEP-PW-09		04/23/08	
08CE12-61MSD	559353	OEP-PW-09		04/23/08	
08CE12-62	556795	OEP-PW-04	04/16/08	04/23/08	
08CE12-63	556817	OEP-JS-007	04/16/08	04/26/08	
08CE12-64	556802	OEP-JS-008	04/16/08	04/26/08	
08CE12-65	556803	OEP-SW-03	04/16/08	04/25/08	04/24/08
08CE12-67	556796	OEP-PW-07	04/16/08	04/23/08	
08CE12-68	556797	OEP-JS-009	04/16/08	04/26/08	
08CE12-69	556805	OEP-MW-015B	04/16/08	04/24/08	04/25/08
08CE12-71	556807	OEP-MW-106D	04/16/08	04/24/08	
08CE12-72	556808	OEP-MW-106S	04/16/08	04/24/08	
08CE12-73	556798	OEP-PW-02	04/16/08	04/23/08	
08CE12-74	557213	OEP-MW-101B	04/17/08	04/24/08	04/25/08
08CE12-76	557223	OEP-MW-005D	04/17/08	04/26/08	04/25/08
08CE12-76MS	560161	OEP-MW-005D		04/26/08	04/25/08
08CE12-76MSD	560162	OEP-MW-005D		04/26/08	04/25/08
08CE12-78	557225	OEP-JS-010	04/17/08	04/26/08	
08CE12-79	557215	OEP-MW-102D	04/17/08	04/27/08	04/25/08
08CE12-81	557217	OEP-MW-101BFR	04/17/08	04/25/08	04/25/08
08CE12-83	557219	OEP-JS-011	04/17/08	04/26/08	
08CE12-84	557220	OEP-MW-107D	04/17/08	04/26/08	
08CE12-85	557221	OEP-MW-107S	04/17/08	04/25/08	
08CE12-86	557222	OEP-MW-107SFR	04/17/08	04/25/08	
08CE12-87	557402	OEP-MW-016S	04/18/08	04/25/08	04/25/08
08CE12-89	557405	OEP-SW-02	04/18/08	04/27/08	04/25/08
08CE12-91	557410	OEP-JS-014	04/18/08	04/26/08	

The laboratory reported the results of 46 volatile analytes. Only the following 36 volatile analytes were requested in the SAS contract and only these analytes will be discussed in the following validation report.

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, total]	M & p-Xylene	o-Xylene
Isopropylbenzene	Methyl tert-butyl ether	

The method blanks for the SW-846 Method 8260B analyses are MB-558232, MB-558272 and MB-559892. In addition to the method blanks there are four (4) VOC Continuing Calibration Blanks (CCBs); CCB1-04/23/08, CCB2-04/24/08, CCB3-04/26/08 and CCB4-04/27/08. The MEE method blanks are MB-560172 and MB-560670 for the Mod RSK 175 analyses. In addition to the method blanks there are two (2) MEE Continuing Calibration Blanks (CCBs); CCB-04/25/08 and CCB-04/24/08.

Samples 08CE12-23, 08CE12-61 and 08CE12-76 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses. Samples 08CE12-23 and 08CE12-76 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The VOC laboratory control samples are LCS-558239, LCS-559343 and LCS-559891. The VOC laboratory control duplicate samples are LCSD-558275, LCSD-559351 and LCSD-561364. The MEE laboratory control samples are LCS-560171, LCS-560175 and LCS-560671. The MEE laboratory control sample duplicate is LCSD-560674.

Twelve (12) samples; 08CE12-03, 08CE12-16, 08CE12-31, 08CE12-34, 08CE12-41, 08CE12-47, 08CE12-63, 08CE12-64, 08CE12-68, 08CE12-78, 08CE12-83 and 08CE12-91 are identified as Trip Blanks. Sample 08CE12-54 is identified as an Equipment Blank. Sample 08CE12-52 is identified as a Field Blank. Sample 08CE12-08 is a field replicate of 08CE12-06. Sample 08CE12-11 is a field replicate of 08CE12-10. Sample 08CE12-19 is a field replicate of 08CE12-17. Sample 08CE12-27 is a field replicate of 08CE12-25. Sample 08CE12-81 is a field replicate of 08CE12-74. Sample 08CE12-86 is a field replicate of 08CE12-85.

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

1. HOLDING TIME

Sixty (60) preserved water samples listed in the following table were collected April 14 - 18, 2008. CT Laboratories of Baraboo, Wisconsin received the samples April 15 - 19, 2008. All samples were received intact and properly cooled. Sixty (60) samples were analyzed April 22 – 27, 2008 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Thirty-one (31) samples were analyzed April 22 - 25, 2008 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

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

VOC: The GC/MS tuning for SW-846 Method 8260B 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.

MEE: All GC/FID calibration complied with the amount and area for the MEE (Methane-Ethane-Ethene) standards. All samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the results are acceptable.

3. CALIBRATION

VOC: A 7-point calibration curve (0.2/2.0, 0.4/4.0, 1.0/10.0, 2.0/20.0, 4.0/40.0, 6.0/60.0 and 8.0/80.0 µg/L) was performed on April 21, 2008. All %RSDs were less than 15%; therefore, the results do not require any qualification for this criterion.

The average RRFs for Acetone and 2-Butanone in the initial and continuing calibrations were less than 0.05 but greater than the minimum RRF of 0.01 currently used in SOW SOM01.1. The average RRFs for all surrogates 1,2-Dichloroethane-d_4, Bromofluorobenzene, Dibromofluoromethane and Toluene-d_8 were mostly less than 0.05 and less than the minimum RRF of 0.05 currently used in SOW SOM01.1. All %Ds were greater than 20%. Sample results are not qualified based on the RRF values or %D of the surrogates alone.

Continuing Calibrations were conducted at the start of every analytical sequence. All analytes are evaluated for %Ds less than 20%. No minimum RRF values were identified in the SAS contract.

The following samples are associated with continuing calibrations where the analyte has %Ds greater than 20%. Detected compounds should be qualified "J".

Methylene chloride
08CE12-23MS, 08CE12-23MSD, 08CE12-61MS, 08CE12-61MSD, 08CE12-76, 08CE12-76MS, 08CE12-76MSD, LCS-558239, LCSD-558275, LCS-559343, LCSD-559351, LCS-559891, LCSD561364

The following samples are associated with continuing calibrations where the analyte has %Ds greater than 20%. Non-detected quantitation limits should be qualified "UJ".

Methylene chloride
08CE12-01, 08CE12-03, 08CE12-04, 08CE12-06, 08CE12-08, 08CE12-10, 08CE12-11, 08CE12-12, 08CE12-14, 08CE12-16, 08CE12-17, 08CE12-19, 08CE12-21, 08CE12-23, 08CE12-25, 08CE12-27, 08CE12-29, 08CE12-30, 08CE12-31, 08CE12-32, 08CE12-34, 08CE12-35, 08CE12-37, 08CE12-39, 08CE12-41, 08CE12-42, 08CE12-44, 08CE12-45, 08CE12-46, 08CE12-47, 08CE12-48, 08CE12-50, 08CE12-52, 08CE12-54, 08CE12-56, 08CE12-58, 08CE12-60, 08CE12-61, 08CE12-62, 08CE12-63, 08CE12-64, 08CE12-65, 08CE12-67, 08CE12-68, 08CE12-69, 08CE12-71, 08CE12-72, 08CE12-73, 08CE12-74, 08CE12-78, 08CE12-79, 08CE12-81, 08CE12-83, 08CE12-84, 08CE12-85, 08CE12-86, 08CE12-87, 08CE12-89, 08CE12-91, MB-558232, MB-558272, MB559892

MEE: A 7-pt Initial Calibration curve (2, 5, 10, 20, 50, 100 and 200 ppmV) was performed on February 8, 2008 and evaluated for a Goodness of Fit (correlation coefficient) ≥ 0.995. All %RSDs were less than 15%; therefore, the results do not require any qualification.

Continuing calibrations were analyzed on April 24, 2008 and April 25, 2008 at the appropriate frequency of 1 CCV after every 10 field samples. All %Ds were less than 20%; therefore, the results do not require any qualification.

4. BLANKS

VOC: The method blanks for the SW-846 Method 8260B analyses are MB-558232, MB-558272 and MB-559892. In addition to the method blanks there are four (4) VOC Continuing Calibration Blanks (CCBs); CCB1-04/23/08, CCB2-04/24/08, CCB3-04/26/08 and CCB4-04/27/08. The samples associated with each blank were determined from the Volatile Organic Instrument Performance Check Forms. Copies of the Form 5As are included with the hardcopy validation package.

Method blanks MB-558232, MB-558272 and MB-559892 contained no target analytes; therefore no qualification is required for the samples associated with these method blanks.

CCB1 (04/23/08) contained Chloroethane at 0.0742 µg/L. CCB2 (04/24/08) contained Chloromethane at 0.0586 µg/L and Acetone at 1.9457 µg/L. CCB3 (04/26/08) contained Chloromethane at 0.0754 µg/L and Acetone at 2.3294 µg/L. CCB4 (04/27/08) contained Methylene chloride at 1.0898 µg/L. The concentrations of Chloromethane were less than the reporting limits of 0.2 µg/L in the following samples. The presence of the analyte should be qualified "U" and elevated to the RL as resulting from continuing calibration blank contamination.

Chloromethane
08CE12-34, 08CE12-47, 08CE12-63, 08CE12-74, 08CE12-91

Sample 08CE12-52 is identified as a Field Blank. The field blank contained Chloromethane at 0.060 µg/L and Chloroform at 0.93 µg/L. The concentrations of the analytes were less than the reporting limits of 0.2 µg/L in the following samples. The presence of the analytes should be qualified "U" and elevated to the RL as resulting from field blank contamination.

Chloromethane
08CE12-21, 08CE12-29, 08CE12-35, 08CE12-60, 08CE12-61, 08CE12-62,
08CE12-65, 08CE12-67, 08CE12-81, 08CE12-84, 08CE12-85, 08CE12-86

Chloroform
08CE12-61

Twelve (12) samples; 08CE12-03, 08CE12-16, 08CE12-31, 08CE12-34, 08CE12-41, 08CE12-47, 08CE12-63, 08CE12-64, 08CE12-68, 08CE12-78, 08CE12-83 and 08CE12-91 are identified as Trip Blanks. The trip blanks contained no target analytes; therefore no qualification is required for this criterion.

MEE: The MEE method blanks are MB-560172 and MB-560670 for the Mod RSK 175 analyses. In addition to the method blanks there are two (2) MEE Continuing Calibration Blanks (CCB); CCB-04/25/08 and CCB-04/24/08. Continuing Calibration Blank – 04/25/08 contained Methane at 0.07 µg/L.

None of the Method Blank had any contaminants; therefore, the results are acceptable. The Volatile Method Blank Summaries for Analytical Method Mod RSK 175 list the samples associated with each method blank.

Sample 08CE12-52 is identified as a Field Blank and it contained no MEE analytes.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

VOC: All SW-846 Method 8260B volatile surrogate compounds (1,2-Dichloroethane-d_4, Bromofluorobenzene, Dibromofluoromethane, Toluene-d_8) were within the QC limits (75-135%) for all VOC samples.

MEE: Surrogate recoveries are not applicable to RSK-175 analyses.

6A. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

VOC: Samples 08CE12-23, 08CE12-61 and 08CE12-76 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses.

The %recoveries for Vinyl chloride were greater than the upper limit of 130% in samples 08CE12-23MS and 08CE12-23MSD. The %recoveries for Trichloroethene were below the lower limit of 60% and greater than or equal to 20% in samples 08CE12-23MS and 08CE12-23MSD. The RPD was greater than 30% for Trichloroethene. The detection of Vinyl chloride and Trichloroethene in the unspiked sample, 08CE23-23, should be qualified “J”.

The %recoveries for Vinyl chloride were greater than the upper of 130% in samples 08CE12-61MS and 08CE12-61MSD. The %recovery for cis-1,2-Dichloroethene was greater than the upper limit of 130% in sample 08CE12-61MS. The %recoveries for Methylene chloride, m & p-Xylene and o-Xylene were less than the lower limit 60% and greater than or equal to 20% in samples 08CE12-61MS and 08CE12-61MSD. The %recoveries of Styrene were less than 20% in samples 08CE12-61MS and 08CE12-61MSD. All RPDs were less than 30%. The detections of Vinyl chloride and cis-1,2-Dichloroethene in the unspiked sample, 08CE12-61, should be qualified “J”. The non-detection of Methylene chloride, m & p-Xylene and o-Xylene in the unspiked sample, 08CE12-61, should be qualified “UJ”. The non-detection of Styrene in the unspiked sample, 08CE12-61, should be qualified “R”.

The %recoveries for Methylene chloride were greater than the upper of 130% in samples 08CE12-76MS and 08CE12-76MSD. The %recovery for Chloromethane was greater than the upper limit of 130% in sample 08CE12-76MS. The %recoveries for Carbon disulfide were less than the lower limit 60% and greater than or equal to 20% in samples 08CE12-76MS and 08CE12-76MSD. All RPDs were less than 30%. The detections of Methylene chloride and Chloromethane in the unspiked sample, 08CE12-76, should be qualified “J”. The non-detection of Carbon disulfide in the unspiked sample, 08CE12-76, should be qualified “UJ”.

MEE: Samples 08CE12-23 and 08CE12-76 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The %recoveries for Methane were greater than the upper of 130% in samples 08CE12-23MS and 08CE12-23MSD. All RPDs were less than 30%. The detection of Methane in the unspiked sample, 08CE12-23, should be qualified "J".

The %recovery for Methane was below 20% in sample 08CE12-76MS. All RPD for Methane was greater than 30%. The detection of Methane in the unspiked sample, 08CE12-76, should be qualified "J".

6B. LABORATORY CONTROL SAMPLES

VOC: The VOC laboratory control samples are LCS-558239, LCS-559343 and LCS-559891. The VOC laboratory control duplicate samples are LCSD-558275, LCSD-559351 and LCSD-561364.

LCS-558239 and LCSD-558275 were analyzed April 22 - 23, 2008. The percent recoveries for all compounds were within the QC limits (60 – 130%). All RPDs were less than 30%. The samples associated with these LCS/LCSD samples, did not require any qualification.

LCS-559343 and LCSD-559351 were analyzed April 24, 2008. The percent recoveries for all compounds were within the QC limits (60 – 130%). The RPD for Methylene chloride was greater than 30%. The detection of Methylene chloride samples 08CE12-61MS and 08CE12-61MSD should be qualified "J". The quantitation limits for the non-detected Methylene chloride in the following associated samples should be qualified "UJ".

Methylene chloride
08CE12-30, 08CE12-44, 08CE12-45, 08CE12-46, 08CE12-48, 08CE12-50,
08CE12-52, 08CE12-54, 08CE12-56, 08CE12-58, 08CE12-60, 08CE12-61,
08CE12-61MS, 08CE12-61MSD, 08CE12-62, 08CE12-65, 08CE12-67,
08CE12-69, 08CE12-71, 08CE12-72, 08CE12-73, 08CE12-74

LCS-559891 and LCSD-561364 were analyzed April 25 - 26, 2008. The percent recoveries for Methylene chloride were greater than 130%. All RPDs were less than 30%. The detection of Methylene chloride in samples 08CE12-76, 08CE12-76MS and 08CE12-76MSD should be qualified "J". The quantitation limits for the non-detected Methylene chloride is ultimately qualified "UJ" because all the calibration criteria were not met.

Methylene chloride
08CE12-03, 08CE12-16, 08CE12-31, 08CE12-34, 08CE12-41, 08CE12-47,
08CE12-63, 08CE12-64, 08CE12-68, 08CE12-76, 08CE12-76MS,
08CE12-76MSD, 08CE12-78, 08CE12-79, 08CE12-81, 08CE12-83,
08CE12-84, 08CE12-85, 08CE12-86, 08CE12-87, 08CE12-89, 08CE12-91

MEE: The MEE laboratory control samples are LCS-560171, LCS-560175 and LCS-560671. The MEE laboratory control sample duplicate is LCSD-560674. All recoveries were within the QC limits of 60 – 130%. The RPDs between LCS-560171 and LCSD-560175 were within the QC limits of 30%. No LCSD samples were analyzed for LCS-560571 and LCS-560674.

7. FIELD BLANK AND FIELD DUPLICATE

VOC: Twelve (12) samples; 08CE12-03, 08CE12-16, 08CE12-31, 08CE12-34, 08CE12-41, 08CE12-47, 08CE12-63, 08CE12-64, 08CE12-68, 08CE12-78, 08CE12-83 and 08CE12-91 are identified as Trip Blanks. The trip blanks contained no target analytes; therefore no qualification is required for this criterion.

Sample 08CE12-54 is identified as an Equipment Blank. The equipment blank contained Chloroform at 0.98 µg/L.

Sample 08CE12-52 is identified as a Field Blank. The field blank contained Chloromethane at 0.060 µg/L and Chloroform at 0.93 µg/L.

Sample 08CE12-08 is a field replicate of 08CE12-06. Sample 08CE12-11 is a field replicate of 08CE12-10. Sample 08CE12-19 is a field replicate of 08CE12-17. Sample 08CE12-27 is a field replicate of 08CE12-25. Sample 08CE12-81 is a field replicate of 08CE12-74. Sample 08CE12-86 is a field replicate of 08CE12-85. Sample results and RPDs for these replicate pairs are summarized in the following table.

Analyte	**08CE12-06**	**08CE12-08**	RPDs
	Df = 1.0	Df = 1.0	
1,1-Dichloroethene	10	7.9	23.5 %
1,1-Dichloroethane	11	11	0.0 %
1,1,1-Trichloroethane	140	130	7.4 %
Bromodichloromethane	5.9	6	1.7 %
Trichloroethene	840	810	3.6 %
Cis-1,2-Dichloroethene	84	82	2.4 %

Analyte	**08CE12-10**	**08CE12-11**	RPDs
	Df = 1.0	Df = 1.0	
Acetone	0.0	1.9	200.0 %
1,2-Dichloroethane	0.25	0.28	11.3 %

Analyte	**08CE12-17**	**08CE12-19**	RPDs
	Df = 1.0	Df = 1.0	
Acetone	0	2	200.0 %

Analyte	**08CE12-25**	**08CE12-27**	RPDs
	Df = 1.0	Df = 1.0	
Chloromethane	0.2	0.0	200.0 %
Vinyl chloride	0.58	0.58	0.0 %
1,1-Dichloroethene	1.5	1.3	14.3 %
1,1-Dichloroethane	6.9	6.0	14.0 %
1,2-Dichloroethane	0.099	0.0	200.0 %
Trichloroethane	14	14	0.0 %
Cis-1,2-Dichloroethene	28	28	0.0 %
Methyl tert-butyl ether	0.17	0.0	200.0 %
Trans-1,2-Dichloroethene	1.2	0.79	41.2 %

Analyte	**08CE12-74**	**08CE12-81**	RPDs
	Df = 1.0	Df = 1.0	
Chloromethane	0.079	0.071	10.7 %
Trichloroethene	0.15	0.15	0.0 %
Cis-1,2-Dichloroethene	0.34	0.34	0.0 %
Methyl tert-butyl ether	0.27	0.29	7.1 %

Analyte	**08CE12-85**	**08CE12-86**	RPDs
	Df = 1.0	Df = 1.0	
Chloromethane	0.067	0.088	27.1 %
Acetone	1.7	0.0	200.0 %

MEE: Sample 08CE12-52 is identified as a Field Blank and it contained no MEE analytes.

Sample 08CE12-08 is a field replicate of 08CE12-06. Sample 08CE12-19 is a field replicate of 08CE12-17. Sample 08CE12-27 is a field replicate of 08CE12-25. Sample 08CE12-81 is a field replicate of 08CE12-74. Sample results and RPDs for these replicate pairs are summarized in the following table.

Analyte	**08CE12-06**	**08CE12-08**	RPDs
	Df = 10.0	Df = 10.0	
Methane	87	93	6.7 %
	08CE12-17	**08CE12-19**	
	Df = 1.0	Df = 1.0	
Methane	0.69	1.4	67.9 %
	08CE12-25	**08CE12-27**	
	Df = 4.0	Df = 4.0	
Methane	32	32	0.0 %

	08CE12-74	**08CE12-81**	
	Df = 5.0	Df = 10.0	
Methane	69	82	17.2 %

8. INTERNAL STANDARDS

The three internal standard's (Fluorobenzene, Chlorobenzene-d_5, 1,4-Dichlorobenzene-d_4) retention times and area counts for the VOC samples were within the QC limits; therefore, the results are acceptable.

9. COMPOUND IDENTIFICATION

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

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

VOC: All samples were waters and dilutions were run. The reporting limits for the VOC compounds were less than or equal to the reporting limits specified in the SAS contract for all analytes; except 1,1,2,2-Tetrachloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene. The requested reporting limit for cis-1,3-Dichloropropene was 0.016 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for trans-1,3-Dichloropropene was 0.015 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for 1,1,2,2-Tetrachloroethane was 0.018 µg/L and the actual reporting limit was 0.019 µg/L. Xylenes (total) was reported as m,p-Xylene and o-Xylene.

The following VOC samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

Chloromethane
08CE12-52

Chloroethane, Benzene, Toluene, Chlorobenzene
08CE12-89

Acetone
08CE12-11, 08CE12-14, 08CE12-21, 08CE12-67, 08CE12-85, 08CE12-87

Carbon disulfide, m & p-Xylene, Isopropylbenzene
08CE12-73

1,1-Dichloroethene
08CE12-35, 08CE12-79

1,1-Dichloroethane
08CE12-87

1,2-Dichloroethane
08CE12-25, 08CE12-60, 08CE12-61, 08CE12-67

1,1,1-Trichloroethane
08CE12-35, 08CE12-65

Trichloroethene
08CE12-29, 08CE12-46, 08CE12-61, 08CE12-62, 08CE12-67, 08CE12-74, 08CE12-81

Cis-1,2-Dichloroethene
08CE12-21, 08CE12-65

Methyl tert-butyl ether
08CE12-25

Trans-1,2-Dichloroethene
08CE12-29, 08CE12-32, 08CE12-45, 08CE12-46, 08CE12-60, 08CE12-62

MEE: The reporting limit for Ethane, Ethene and Methane were less than or equal to 10 µg/L as specified in the SAS contract.

The following MEE samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

Ethane
08CE12-23, 08CE12-23MS, 08CE12-23MSD, 08CE12-76MS, 08CE12-76MSD, LCS560171, LCS-560175, LCS-560671, LCSD-560674

Ethene
08CE12-23MS, 08CE12-23MSD, 08CE12-76MS, 08CE12-76MSD, LCS-560171, LCS-560175, LCS-560671, LCSD-560674

Methane
08CE12-12, 08CE12-17, 08CE12-19, 08CE12-32, 08CE12-50, 08CE12-56, 08CE12-58, 08CE12-65, 08CE12-79, LCS-560171, LCS-560175, LCS-560671, LCSD-560674

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The final shipment of samples arrived at the Laboratory on April 21, 2008. The Laboratory Case Narrative was prepared on May 5, 2008 and forwarded by Ch2mHill on May 16, 2008 which is more than 21 calendar days after sample receipt.

Photocopies of the airbills were included with this package. The original sample tags, packing list and airbills should have been sent to CH2M HILL.

Copies of the most recent MDL studies were not included with this data package but MDL (LOD – Level of Detection) values are present on the Laboratory Form Is.

VOC SAS Table II. QC Requirements lists the frequency of audits for method blanks as 'at least one per group of 10 or fewer samples'. The laboratory provided only 3 analyses identified as method blanks and an additional four analyses identified as Continuing Calibration Blanks. Volatile analyses require the analysis of a QC blank on each day of analysis and the volatile analyses spanned a 6-day time period. Inspections of both SW-846 Method 8000 (Determinative Chromatographic Separations, Sec. 7.7 & 8.2) and Method 8260 (Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, Sec. 8.4) indicate that the terms method blank and continuing calibration blank could describe the same QC sample. As the CCB samples were analyzed daily and followed the Continuing Calibration Verification Standard, the Reviewer regarded them as method blanks for this data package. No Analysis Data Sheets were provided for the CCB samples. Copies of the raw data for these QC samples and the Form 5As (Volatile Organic Instrument Performance Check) are included with the hardcopy validation package.

The methods blanks were also non-compliant with the QC requirements identified in Table II in the following instances;

a) MB-558272 is associated with 11 samples rather than 10 samples.
b) MB-559892 is associated with 12 samples rather than 10 samples.
c) CCB-1 is associated with 13 samples rather than 10 samples.
d) The concentrations of Acetone detected in CCB3 was greater than the SAS detection limit of 2.0 µg/L.

The following VOC samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted compound results were reported for the affected samples:

08CE12-04, 08CE12-06, 08CE12-23, 08CE12-25, 08CE12-79, 08CE12-87, 08CE12-89

The following MEE samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted compound results were reported for the affected samples:

08CE12-01, 08CE12-04, 08CE12-06, 08CE12-08, 08CE12-21, 08CE12-23, 08CE12-25, 08CE12-27, 08CE12-39, 08CE12-48, 08CE12-69, 08CE12-74, 08CE12-76, 08CE12-81, 08CE12-87, 08CE12-89

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.

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: June 10, 2008

SUBJECT: Review of Data
Received for review on May 23, 2008

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 Company (WI)

CASE NUMBER: 08CE12 **SDG NUMBER:** 66005-INO

Number and Type of Samples: 31 water samples

Sample Numbers: 08CE12-01, -04, -06, -08, -12, -14, -17, -19, -21, -23, -25, -27, -32, -35, -37
-37, -39, -42, -48, -50, -52, -54, -56, -58, -65, -69, -74, -76, -79, -81, -87, -89

Laboratory: CT Laboratories **Hrs. for Review:**

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 31 water samples (see TABLE 1). The samples were collected between April 14 and 18, 2008. They were analyzed for alkalinity, total organic carbon (TOC), sulfide, nitrate, sulfate and chloride. All sample results are reported to the MDL. The samples were analyzed using SW846 9056 (anions), 9060 (total organic carbon), EPA 310.2 (alkalinity), and 376.1 (sulfide) analysis procedures.

Evidential Audit: All reporting forms provided are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms or sample tags were provided.

No MDL summaries were provided. It is unknown when MDLs were performed. MDL (LOD) values recorded on the results Form 1 were used for evaluation of the data. MDL and RL values on Form 1s are equal.

Alkalinity: The SAS requires that the lowest calibration point be run at 10.0 mg/L. The lowest point performed was 25 mg/L. All sample results were above 25 mg/L except samples 08CE12-52 and 08CE12-54, which were non-detects. These samples are flagged "UJ". All other alkalinity results are acceptable.

Ammonia: No defects were found. All ammonia results are acceptable

Chloride: No defects were found. All chloride results are acceptable.

Nitrate: No defects were found. All nitrate results are acceptable.

Ortho-phosphate: No defects were found. All ortho-phosphate results are acceptable.

Sulfate: No defects were found. All nitrate results are acceptable

Sulfide: No defects were found. All sulfide results are acceptable.

TOC: The SAS requires a low standard be run to confirm the reporting limit of 1.0 mg/L. This was not performed. The lowest calibration standard was 10 mg/L. All TOC results, except 08CE12-02, -17, -65, and -65 Dup, are below 10 mg/L and are estimated "J" for detects and "UJ" for non-detects.

Other comments: Samples 08CE12-06/-08, 08CE12-17/-19, 08CE12-25/-27 and 08CE12-74/-81 were identified as field duplicate pairs. Duplicates were evaluated according to the same criteria as laboratory duplicates. Samples 08CE12-06/-08 and 08CE12-74/-81 were outside the acceptance criteria for nitrate. All other tests showed good correlation. Sample 08CE12-52 was identified as field blank. Sample 08CE12-54 was identified as equipment blank. The field blank contains TOC above the reporting limit (1.3 mg/L). The equipment blank showed no contamination.

TABLE 1

Lab ID	*EPA sample ID*	*Sample location*	*Cooler Tem.*	*Collection date*	*Collection time*	*Received date*
556236	08CE12-01	OPE-MW-003D	4.8	4/14/2008	12:20	4/15/2008
556261	08CE12-04	OPE-MW-103S	4.8	4/14/2008	15:15	4/15/2008
556263	08CE12-06	OEP-MW-103D	4.8	4/14/2008	15:40	4/15/2008
556265	08CE12-08	OEP-MW-103DFR	4.8	4/14/2008	15:40	4/15/2008
556269	08CE12-12	OEP-MW-015D	4.0	4/14/2008	16:40	4/15/2008
556271	08CE12-14	OEP-MW-015S	4.0	4/14/2008	16:45	4/15/2008
556274	08CE12-17	OEP-SW-01	4.0	4/14/2008	17:15	4/15/2008
556267	08CE12-19	OEP-SW-01FR	4.0	4/14/2008	17:15	4/15/2008
556502	08CE12-21	OEP-MW-105B	4.1	4/15/2008	10:15	4/16/2008
556504	08CE12-23	OEP-MW-105S	4.1	4/15/2008	10:20	4/16/2008
556514	08CE12-25	OEP-MW-105D	5.1	4/15/2008	11:15	4/16/2008
556516	08CE12-27	OEP-MW-105DFR	5.1	4/15/2008	11:15	4/16/2008
556518	08CE12-32	OEP-MW-013D	5.1	4/15/2008	13:35	4/16/2008
556521	08CE12-35	OEP-MW-013S	5.1	4/15/2008	13:50	4/16/2008
556507	08CE12-37	OEP-MW-012D	3.8	4/15/2008	14:40	4/16/2008
556509	08CE12-39	OEP-MW-012S	3.8	4/15/2008	14:50	4/16/2008
556512	08CE12-42	OEP-MW-012B	3.8	4/15/2008	15:30	4/16/2008
556809	08CE12-48	OEP-MW-001D	3.0	4/16/2008	09:55	4/17/2008
556811	08CE12-50	OEP-MW-001S	3.0	4/16/2008	10:40	4/17/2008
556799	08CE12-52	OEP-FB-001	3.4	4/16/2008	10:55	4/17/2008
556800	08CE12-54	OEP-EB-001	3.4	4/16/2008	11:05	4/17/2008
556813	08CE12-56	OEP-MW-004D	3.0	4/16/2008	10:00	4/17/2008
556815	08CE12-58	OEP-MW-004S	3.0	4/16/2008	10:50	4/17/2008
556803	08CE12-65	OEP-SW-03	3.4	4/16/2008	13:20	4/17/2008
556805	08CE12-69	OEP-MW-015B	3.4	4/16/2008	15:00	4/17/2008
556265	08CE12-74	OEP-MW-101B	3.1	4/17/2008	10:00	4/18/2008
557223	08CE12-76	OEP-MW-005D	3.1	4/17/2008	10:20	4/18/2008
557215	08CE12-79	OEP-MW-102D	3.1	4/17/2008	10:00	4/18/2008
557217	08CE12-81	OEP-MW-101BFR	3.1	4/17/2008	10:00	4/18/2008
557402	08CE12-87	OEP-MW-016S	3.2	4/18/2008	11:00	4/19/2008
557405	08CE12-89	OEP-SW-02	3.2	4/18/2008	11:10	4/19/2008

Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 5/5/08

SUBJECT: **Review of Data**
Received for review on 1/31/08

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: 08CE08 **SDG NUMBER:** 64519-MET

Number and Type of Samples: 57 waters (29 total/28 dissolved)

Sample Numbers: 08CE08-01 thru -07, -10 thru -22, -28 thru -31, -39 thru -40, -44 thru -51, -53 thru -56, -58 thru -65, -74 thru -76

Laboratory: CT Laboratories **Hrs. for Review:** ________

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 57 water samples (28 dissolved, 29 total, see attached table) which were collected between January 7 and 11, 2008 and received at the laboratory between January 8 and 12, 2008. They were analyzed for iron and manganese. Total and dissolved samples collected January, 2008 were assigned the same EPA sample IDs by the field personnel. See the attached table for specific identifiers. All sample results are reported to the MDL. The samples were analyzed using SW846 6010B (ICP-AES) analysis procedures.

Evidential Audit: All provided ICP reporting forms are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms, or sample tags were provided. Samples identified as "mdl chk" and "mrl" were present in some of the analytical runs. No CLP forms were provided for them.

The analytical run logs contained more than one calibration per form. Additionally, some of the "runs" reported on separate forms were actually different sections of the same analytical run. Multiple copies of the runs were present in the raw data; much time was required to interpret the data. None of the raw data contained all samples and QC actually analyzed in the run. Of the four aactual runs from which data were reported only the first (calibrated on 1-11) contained the raw data for both "mdl chk" and "mrl" samples. The second run (calibrated on 1-16) contained the "mdl chk" sample. Neither the 1-17 nor 1-18 (start date) runs contained raw data for those samples. No times are included on the Analysis Run Logs for the calibration.

No analytical date was provided on the MDL summary form or the linearity form. MDL and linearity values recorded on the forms provided were used for evaluation of the data.
The values provided for MDLs on the calibration blanks forms (87 for Fe, 3.1 for Mn) were different from the Level of Detection (LOD) listed on the Form 1s (39 total Fe, 10 dissolved Fe, 0.5 total Mn, 0.4 dissolved Mn). Dissolved LOD/RL values are used for evaluation of the blank data. No values or units were filled in for the method blanks for the dissolved analyses.

The Duplicate Forms included (pages 1215-1219 in the case) are for the LCS/LCSD. No sample description is provided on the Form. Duplicate forms are also included for the MS/MSD. The laboratory performed post digestion spikes on serial dilution failures and reported results unqualified. This does not make the data reportable. Samples affected by failed serial dilutions are qualified due to possible matrix interferences.

No times are included on the Analysis Run Logs for the calibration. Four run logs were included with the case; each represents part of the same analytical run.

Analytical QC samples are reported up to three times for the same sample due to the way the laboratory uses its lab sample ID's.

Serial dilution form for 08CE08-05 dissolved not provided (results acceptable). Mn for 08CE05-44 (total) not listed on form, the result failed.

ICP-AES: Section 8(d) of the SAS requires that the RL must be shown to have been met before any samples are analyzed; since the "CRDL" sample was not analyzed at the SAS required RL (the sample contains 300 ug/L Fe and 10 ug/L Mn; the SAS requires 30 ug/L Fe and 6 ug/L Mn), this requirement was not met. All Fe results less than 300 ug/L and Mn results less than 10 ug/L are estimated "J" for detects and "UJ" for non-detects due to the failure of the laboratory to meet the SAS required reporting limit. Method blank form 3 for dissolved samples (lab ID 536252 & 537529) not completed.

For Fe, the SAS required reporting limit for total Fe (30 ug/L) was not met by the laboratory. All non-detect total Fe results (08CE08-03, -06, -20 and -22) are estimated "UJ." Additionally, all Fe results (total and dissolved) greater than the MDL but less than 300 ug/L are estimated for the laboratory failing to meeting the SAS requirement of showing they were able to meet the SAS required reporting limit (see above). Total Fe results for 08CE08-01, -04, -05, -07, -12, -16, -18, -28, -53, -55, -58, -64, -75 and dissolved Fe results for 08CE08-05, -17, -19, -21, -29, -63, -65, -74, -76 are estimated "J" due to the laboratory not demonstrating that they could meet the SAS required reporting limit.

MS/MSD for 08CE08-44 (lab ID 535405/6 is invalid; sample is greater than 4X spike added.

ICSA values cannot be translated to raw data because no lab identifiers are used on the reporting forms and reported values do not agree with order from raw data. Actual values appear to be within acceptance criteria; no results are qualified for this.

For Fe, Fe was detected in one of the ICB's. The result for total sample 08CE08-06 is estimated "J+" due to possible contamination. Also, the results for dissolved samples 08CE08-05, -17, -19, -21, -29 are estimated "J+" due to possible contamination.

For Fe (total) and Mn (total) serial dilution failed. All results are estimated due to possible interferences.

Other comments: Total samples 08CE08-03/-04, -16/-18, -58/-60 and dissolved samples -03/-04, -17/-19, -59/-61 were identified as field duplicates. Duplicates were evaluated according to the same criteria as laboratory duplicates. All showed good correlation.

Samples 08CE08-20 and -21 were identified as equipment blanks. Sample 08CE08-22 was identified as a field blank. No contamination was found in any of the equipment or field blanks.

Lab ID	Sample ID (Total)	Lab ID	Sample ID (Dissolved)	Sample Point	Sample Date	Sample Time
534660	08CE08-01	534661	08CE08-01	OEP-MW-004D	1/7/2008	12:20
534662	08CE08-02	534663	08CE08-02	OEP-MW-004S	1/7/2008	11:33
534664	08CE08-03	534665	08CE08-03	OEP-MW-103D	1/7/2008	15:45
534666	08CE08-04	534667	08CE08-04	OEP-MW-103DFR	1/7/2008	15:45
534646	08CE08-05	534654	08CE08-05	OEP-MW-103S	1/7/2008	15:15
534655	08CE08-06	534656	08CE08-06	OEP-MW-015D	1/7/2008	16:55
534657	08CE08-07	534658	08CE08-07	OEP-MW-015S	1/7/2008	16:35
534920	08CE08-10	534921	08CE08-11	OEP-MW-001D	1/8/2008	10:35
534922	08CE08-12	534923	08CE08-13	OEP-MW-001S	1/8/2008	10:15
534929	08CE08-14	534930	08CE08-15	OEP-MW-003D	1/8/2008	10:20
534924	08CE08-16	534925	08CE08-17	OEP-SW-01	1/8/2008	11:05
534926	08CE08-18	534927	08CE08-19	OEP-SW-01FR	1/8/2008	11:05
534931	08CE08-20	534932	08CE08-21	OEP-EB-001	1/8/2008	12:10
534933	08CE08-22			OEP-FB-001	1/8/2008	12:20
535224	08CE08-28	535225	08CE08-29	OEP-MW-101B	1/9/2008	11:10
535230	08CE08-30	535231	08CE08-31	OEP-MW-015B	1/9/2008	9:50
535233	08CE08-39	535234	08CE08-40	OEP-MW-102D	1/9/2008	12:25
535189	08CE08-44	535194	08CE08-45	OEP-MW-105D	1/9/2008	15:20
535199	08CE08-46	535200	08CE08-47	OEP-MW-105S	1/9/2008	15:15
535205	08CE08-48	535206	08CE08-49	OEP-MW-105B	1/9/2008	16:10
535207	08CE08-50	535208	08CE08-51	OEP-MW-005D	1/9/2008	16:25
535496	08CE08-53	535497	08CE08-54	OEP-MW-013D	1/10/2008	10:00
535498	08CE08-55	535499	08CE08-56	OEP-MW-013S	1/10/2008	10:20
535504	08CE08-58	535505	08CE08-59	OEP-MW-012D	1/10/2008	11:50
535506	08CE08-60	535507	08CE08-61	OEP-MW-012DFR	1/10/2008	11:50
535508	08CE08-62	535509	08CE08-63	OEP-MW-012S	1/10/2008	12:00
535501	08CE08-64	535502	08CE08-65	OEP-MW-012B	1/10/2008	12:35
535604	08CE08-73	535605	08CE08-74	OEP-SW-02	1/11/2008	9:40
535606	08CE08-75	535607	08CE08-76	OEP-SW-03	1/11/2008	10:00

ILM05.4 Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: James Abston
Date: 5/5/2008

Data Usability Evaluation
Oconomowoc Electroplating Company, Inc. Site, Ashippun, Wisconsin
WA No. 003-LRLR-05M8, Contract No. EP-S5-06-01

PREPARED FOR:	U.S. Environmental Protection Agency
PREPARED BY:	Adrienne Unger/CH2M HILL
DATE:	May 15, 2009

This memorandum presents the data usability evaluation of the groundwater samples collected during the field investigation conducted at the Oconomowoc Electroplating Company, Inc., site in Ashippun, Wisconsin, during the week of January 5, 2009. CH2M HILL performed the sampling, and CT Laboratories, Inc. of Baraboo, Wisconsin, performed the analyses.

Forty-eight groundwater and surface water samples were collected, including quality control (QC) samples, and were analyzed for one or more of the following U.S. Environmental Protection Agency (USEPA)-approved methods:

- Volatile organic compounds (VOCs) by USEPA SW-846 Method 8260
- Alkalinity by USEPA 310.2
- Ammonia by USEPA 350.1
- Chloride by USEPA SW-846 Method 9056
- Methane, ethane, and ethene by RSK 175
- Nitrate by USEPA SW-846 Method 9056
- Orthophosphate by USEPA SW-846 Method 9056
- Sulfate by USEPA SW-846 Method 9056
- Sulfide by USEPA 376.1
- Total organic carbon by USEPA SW-846 Method 9060
- Total metals by USEPA SW-846 Method 6010B
- Dissolved metals by USEPA SW-846 Method 6010B

As part of the quality assurance (QA) process outlined in the field sampling plan (CH2M HILL, 2006), QC samples were collected in the field to complement the assessment of overall data quality and usability. The QC samples collected were field duplicates, aliquots for laboratory matrix spike/matrix spike duplicates (MS/MSDs), a field blank, and an equipment blank. VOC trip blanks were also used as a means of QC; these samples were supplied by the laboratory.

The dataset was reviewed by the USEPA Environmental Service Assistance Team (ESAT) contractor, TechLaw, (Attachment 1) to assess the accuracy and precision of the method and the matrix using criteria established in the National Functional Guidelines (NFG) for data review. Completeness of the dataset was then derived. USEPA validators added data qualifiers when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

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

[U] The sample target was analyzed for but not detected above the level of the associated limit of detection or quantitation.

[J] The associated value is an estimated quantity. This qualifier was appended when the data indicated the presence of a specific target analyte but was below the stated reporting (or quantitation) limit, and/or when QC statistics alluded to an analytical bias.

[UJ] The component was analyzed for but not detected at a level equal to or greater than the level of detection (LOD) or quantification (often the reporting limit [RL]). This flag was used when QC measurements indicated a possible low bias in the analytical data.

[R] Rejected. The data were of insufficient quality to be deemed acceptable as reported or otherwise qualified.

Groundwater Samples

CH2M HILL reviewed the validation performed by USEPA for the groundwater samples in sample delivery group (SDG) 70956. Table 1 lists the sample identifications (IDs) and Station Locations that were reviewed (100 percent of all samples collected).

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
09CE07-01	OEP-MW-103S	09CE07-17	OEP-MW-13S	09CE07-33	OEP-MW-12S
09CE07-02	OEP-MW-103D	09CE07-18	OEP-MW-13SFR	09CE07-34	OEP-MW-12B
09CE07-03	OEP-MW-103DFR	09CE07-19	OEP-MW-106S	09CE07-35	OEP-MW-12D
09CE07-04	OEP-JS-01	09CE07-20	OEP-MW-106D	09CE07-36	OEP-JS-07
09CE07-05	OEP-MW-105B	09CE07-21	OEP-MW-15S	09CE07-37	OEP-JS-08
09CE07-06	OEP-MW-105S	09CE07-22	OEP-MW-15D	09CE07-40	OEP-MW-5D
09CE07-07	OEP-MW-105D	09CE07-23	OEP-EB-01	09CE07-41	OEP-PW-10
09CE07-08	OEP-MW-105DFR	09CE07-24	OEP-FB-01	09CE07-42	OEP-PW-05
09CE07-09	OEP-MW-3D	09CE07-25	OEP-SW-03	09CE07-43	OEP-PW-01
09CE07-10	OEP-JS-02	09CE07-26	OEP-SW-03FR	09CE07-44	OEP-PW-07
09CE07-11	OEP-JS-03	09CE07-27	OEP-PW-03	09CE07-45	OEP-MW-01D
09CE07-12	OEP-JS-04	09CE07-28	OEP-PW-03FR	09CE07-46	OEP-MW-04S
09CE07-13	OEP-JS-05	09CE07-29	OEP-PW-08	09CE07-47	OEP-MW-01S

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
09CE07-14	OEP-MW-101B	09CE07-30	OEP-PW-09	09CE07-48	OEP-MW-04D
09CE07-15	OEP-MW-102D	09CE07-31	OEP-PW-11	09CE07-49	OEP-JS-11
09CE07-16	OEP-MW-13D	09CE07-32	OEP-JS-06	09CE07-50	OEP-JS-12

The USEPA validation case narratives and worksheets indicate which of these sample results were biased as a result of applicable QC statistics or other NFG requirements. The qualifications are described in Attachment 1. Three results were rejected.

- The percent recovery for styrene was less than 20% in the matrix spike duplicate for sample 09CE07-47. The non-detected sample result for styrene in the unspiked sample, 09CE07-47, was qualified "R" as unusable.
- The percent recovery for ethane was less than 20% in the matrix spike for sample 09CE07-06. The non-detected sample result for ethane in the unspiked sample, 09CE07-06, was qualified "R" as unusable.

The dataset completeness is 99.9 percent usable and may be used in the project decision-making process with qualification. In addition, approximately 10 percent of the data underwent a comparative review to evaluate the accuracy between the database and the USEPA validation reports. No discrepancies were noted.

Conclusions

The USEPA validation reports were verified to comply with the applicable NFG for data review. This verification confirmed that the validation performed by USEPA was complete for the entire dataset analyzed by CT Laboratories. Qualified data, if not rejected, are considered usable for the project decision-making process. The project data quality objectives (DQOs) established a completeness goal for the project at 90 percent. The percent completeness for these groundwater data is 99.9 percent (0.1 percent of the data were rejected) and met the established DQOs set forth in the quality assurance project plan (CH2M HILL, 2004).

Data summary tables of the results have been provided as a table in the *2009 Annual Groundwater Report – OECI Site*. An electronic file of these data also will be submitted as part of this deliverable.

Reference Cited

CH2M HILL. 2004. *Quality Assurance Project Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin.* WA No. 236-RALR-05M8 Contract No. 68-W6-0025. October.

CH2M HILL. 2006. *Field Sampling Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin.* WA No. 003-LRLR-05MS Contract No. EP-SS-06-01. October.

Attachment 1

Validation Narratives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: February 5, 2009

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 Company (WI)

SAS Project: 09CE07 SDG Number: 70956-ORG

Number and Type of Samples: 48 Waters (48 VOCs/ 27 MEEs)

Sample Numbers: 09CE07-01 thru 07CE07-37, 09CE07-40 thru 07CE07-50

Laboratory: CT Laboratories Hrs for Review:

Following are our findings:

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

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

The forty-eight (48) preserved water samples listed in the following table were collected January 5 - 9, 2009. CT Laboratories of Baraboo, Wisconsin received the samples January 6 - 10, 2009. Only ten (10) samples were received with a cooler temperature within the optimum shipping range of 2 – 6 °C. The samples, sample location, sampling dates, receipt temps and analytical dates are identified in the following table. All forty-eight (48) samples were analyzed January 15 – 17, 2009 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Twenty-seven (27) samples were analyzed January 14th and 15th, 2009 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

EPA ID	CTI Lab ID	Sample location	Date sampled	Receipt Temp, °C	VOC Analyses	MEE Analyses
09CE07-01	639527/28	OEP-MW-103S	01/05/09	4.8	01/15/09	01/14/09
09CE07-02	639529/30	OEP-MW-103D	01/05/09	4.8	01/15/09	01/14/09
09CE07-03	639531/32	OEP-MW-103DFR	01/05/09	4.8	01/15/09	01/14/09
09CE07-04	639533	OEP-JS-01	01/05/09	4.8	01/17/09	----------
09CE07-05	639683/84	OEP-MW-105B	01/06/09	1.7	01/15/09	01/15/09
09CE07-06	639685/86	OEP-MW-105S	01/06/09	1.7	01/15/09	01/15/09
09CE07-07	639690/91	OEP-MW-105D	01/06/09	1.7	01/15/09	01/15/09
09CE07-08	639692/93	OEP-MW-105DFR	01/06/09	1.7	01/15/09	01/15/09
09CE07-09	639694/95	OEP-MW-3D	01/06/09	1.7	01/15/09	01/15/09
09CE07-10	639696	OEP-JS-02	01/06/09	1.7	01/17/09	----------
09CE07-11	639687	OEP-JS-03	01/06/09	1.7	01/17/09	----------
09CE07-12	639992	OEP-JS-04	01/06/09	0.9	01/17/09	----------
09CE07-13	639951	OEP-JS-05	01/06/09	1.4	01/17/09	----------
09CE07-14	639697/98	OEP-MW-101B	01/06/09	1.7	01/15/09	01/15/09
09CE07-15	639688/89	OEP-MW-102D	01/06/09	1.7	01/15/09	01/15/09
09CE07-16	639956/57	OEP-MW-13D	01/07/09	2.0	01/16/09	01/15/09
09CE07-17	639952/53	OEP-MW-13S	01/07/09	1.4	01/15/09	01/15/09
09CE07-18	639954/55	OEP-MW-13SFR	01/07/09	1.4	01/16/09	01/15/09
09CE07-19	639958	OEP-MW-106S	01/07/09	2.0	01/16/09	----------
09CE07-20	639971	OEP-MW-106D	01/07/09	2.0	01/16/09	----------
09CE07-21	639947/48	OEP-MW-15S	01/07/09	1.4	01/15/09	01/15/09
09CE07-22	639949/50	OEP-MW-15D	01/07/09	1.4	01/15/09	01/15/09
09CE07-23	639993/94	OEP-EB-01	01/07/09	0.9	01/16/09	01/15/09
09CE07-24	639995	OEP-FB-01	01/07/09	0.9	01/16/09	01/15/09
09CE07-25	639972/85	OEP-SW-03	01/07/09	2.0	01/16/09	01/15/09
09CE07-26	639986/87	OEP-SW-03FR	01/07/09	2.0	01/16/09	01/15/09
09CE07-27	639997	OEP-PW-03	01/06/09	0.9	01/16/09	----------

09CE07-28	639998	OEP-PW-03FR	01/06/09	0.9	01/16/09	----------
09CE07-29	639999	OEP-PW-08	01/07/09	0.9	01/16/09	----------
09CE07-30	640000	OEP-PW-09	01/07/09	0.9	01/16/09	----------
09CE07-31	640001	OEP-PW-11	01/06/09	0.9	01/16/09	----------
09CE07-32	639990	OEP-JS-06	01/07/09	2.0	01/17/09	----------
09CE07-33	640178/79	OEP-MW-12S	01/08/09	1.9	01/16/09	01/15/09
09CE07-34	640180/81	OEP-MW-12B	01/08/09	1.9	01/16/09	01/15/09
09CE07-35	640182/83	OEP-MW-12D	01/08/09	1.9	01/16/09	01/15/09
09CE07-36	640184	OEP-JS-07	01/08/09	1.9	01/17/09	----------
09CE07-37	640187	OEP-JS-08	01/08/09	1.8	01/17/09	----------
09CE07-40	640185/86	OEP-MW-5D	01/08/09	1.9	01/16/09	01/15/09
09CE07-41	640342	OEP-PW-10	01/08/09	1.8	01/17/09	----------
09CE07-42	640343	OEP-PW-05	01/08/09	1.8	01/17/09	----------
09CE07-43	640344	OEP-PW-01	01/08/09	1.8	01/17/09	----------
09CE07-44	640345	OEP-PW-07	01/08/09	1.8	01/17/09	----------
09CE07-45	640188/89	OEP-MW-01D	01/08/09	1.8	01/16/09	01/15/09
09CE07-46	640190/91	OEP-MW-04S	01/08/09	1.8	01/16/09	01/15/09
09CE07-47	640192/93	OEP-MW-01S	01/08/09	1.8	01/17/09	01/15/09
09CE07-48	610339/40	OEP-MW-04D	01/09/09	1.3	01/17/09	01/15/09
09CE07-49	640341	OEP-JS-11	01/09/09	1.3	01/17/09	----------
09CE07-50	640346	OEP-JS-12	01/09/09	1.8	01/17/09	----------

The laboratory reported the results of 46 volatile analytes. Only the following 36 volatile analytes were requested in the SAS contract and only these analytes will be discussed in the following validation report.

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, total]	M & p-Xylene	o-Xylene
Isopropylbenzene	Methyl tert-butyl ether	

The method blanks for the SW-846 Method 8260B analyses are MB-641894, MB-641994 and MB-642015. In addition to the method blanks there are three (3) VOC Continuing Calibration Blanks (CCBs); CCB-55139, CCB1-52230 and CCB2-52230. The MEE method blanks are MB-641765 and MB-641769 for the Mod RSK 175 analyses.

Samples 09CE07-06, 09CE07-46 and 09CE07-47 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses. Samples 09CE07-06 and 09CE07-46 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The VOC laboratory control samples are LCS-641893, LCS-641993 and LCS-642014. The VOC laboratory control duplicate samples are LCSD-641987, LCSD-642018 and LCSD-642536. The MEE laboratory control samples are LCS-641764 and LCS-641768. There were no MEE laboratory control sample duplicates analyzed.

Ten (10) samples; 09CE07-04, 09CE07-10, 09CE07-11, 09CE07-12, 09CE07-13, 09CE07-32, 09CE07-36, 09CE07-37, 09CE07-49 and 09CE07-50 are identified as Trip Blanks. Sample 09CE07-23 is identified as an Equipment Blank. Sample 09CE07-24 is identified as a Field Blank. Sample 09CE07-03 is a field replicate of 09CE07-02. Sample 09CE07-08 is a field replicate of 09CE07-07. Sample 09CE07-18 is a field replicate of 09CE07-17. Sample 09CE07-26 is a field replicate of 09CE07-25. Sample 09CE07-28 is a field replicate of 09CE07-27.

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

1. HOLDING TIME

The forty-eight (48) preserved water samples listed in the following table were collected January 5 - 9, 2009. CT Laboratories of Baraboo, Wisconsin received the samples January 6 - 10, 2009. Only ten (10) samples were received with a cooler temperature within the optimum shipping range of 2 – 6 °C. The samples, sample location, sampling dates, receipt temps and analytical dates are identified in the following table. All forty-eight (48) samples were analyzed January 15 – 17, 2009 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Twenty-seven (27) samples were analyzed January 14th and 15th , 2009 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

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

VOC: The GC/MS tuning for SW-846 Method 8260B 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.

MEE: All GC/FID calibration complied with the amount and area for the MEE (Methane-Ethane-Ethene) standards. All samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the results are acceptable.

3. CALIBRATION

VOC: A 7-point calibration curve (0.2/2.0, 0.4/4.0, 1.0/10.0, 2.0/20.0, 4.0/40.0, 6.0/60.0 and 8.0/80.0 µg/L) was performed on January 15, 2009. The minimum RRFs for the five SPCC analytes (1,1-Dichloroethane, 1,1,2,2-Tetrachloroethane, Bromoform, Chlorobenzene and Chloromethane) were all met. The %RSD for the six CCC analytes (1,1-Dichloroethene, 1,2-Dichloropropane, Chloroform, Ethylbenzene, Toluene and Vinyl chloride) were less than 30%. All other analytes were evaluated for a %RSD less than 15%.

Continuing Calibrations were conducted at the start of every analytical sequence. All analytes are evaluated for %Ds less than 20%. One or more surrogates (Dibromofluoromethane, 1,2-Dichloroethane-d4, Toluene-d8 and Bromofluorobenzene) had a %D greater than 20% for all associated samples. Detected and non-detected analytes are not qualified based only on the surrogate calibration criteria alone.

The following samples are associated with a continuing calibration where one or more target analytes has a %D greater than 20%. Detected compounds are qualified "J".

2-Butanone
LCS-641893

Carbon disulfide
09CE07-02, 09CE07-03, 09CE07-05, 09CE07-07, 09CE07-09, 09CE07-14, 09CE07-47MS, 09CE07-47MSD, LCS-641893, LCS-642014, LCSD-642018, MB-641894, MB-642015

Methylene chloride
09CE07-06MS, 09CE07-06MSD, 09CE07-46MS, 09CE07-46MSD, LCS-641893, LCS-641993, LCSD-641987, LCSD-642536

The following samples are associated with a continuing calibration where one or more analytes has a %D greater than 20%. Non-detected quantitation limits are qualified "UJ".

2-Butanone
09CE07-01, 09CE07-03, 09CE07-04, 09CE07-05, 09CE07-06, 09CE07-07, 09CE07-08, 09CE07-09, 09CE07-10, 09CE07-11, 09CE07-12, 09CE07-13, 09CE07-14, 09CE07-15, 09CE07-17, 09CE07-21, 09CE07-22, 09CE07-32, 09CE07-36, 09CE07-37, 09CE07-41, 09CE07-42, 09CE07-43, 09CE07-47, 09CE07-48, CCB1-52230, MB-641894

Acetone
09CE07-04, 09CE07-10, 09CE07-11, 09CE07-12, 09CE07-13, 09CE07-32, 09CE07-36, 09CE07-37, 09CE07-41, 09CE07-42, 09CE07-43, 09CE07-47, 09CE07-48, CCB1-52230

Carbon disulfide
09CE07-01, 09CE07-06, 09CE07-08, 09CE07-15, 09CE07-17, 09CE07-19, 09CE07-21, 09CE07-22, 09CE07-27, 09CE07-28, 09CE07-29, 09CE07-30, 09CE07-31, 09CE07-44, 09CE07-49, 09CE07-50

Methylene chloride
09CE07-01, 09CE07-03, 09CE07-05, 09CE07-06, 09CE07-07, 09CE07-08, 09CE07-09, 09CE07-14, 09CE07-15, 09CE07-16, 09CE07-17, 09CE07-18, 09CE07-19, 09CE07-20, 09CE07-21, 09CE07-22, 09CE07-23, 09CE07-24, 09CE07-25, 09CE07-26, 09CE07-27, 09CE07-28, 09CE07-29, 09CE07-30, 09CE07-31, 09CE07-33, 09CE07-34, 09CE07-35, 09CE07-40, 09CE07-45, 09CE07-46, CCB-55139, CCB2-52230, MB-641894, MB-641994

MEE: A 7-pt Initial Calibration curve (2, 5, 10, 20, 50, 100 and 200 ppmV) was performed on February 8, 2008 and evaluated for a Goodness of Fit (correlation coefficient) ≥ 0.995. All %RSDs were less than 15%; therefore, the results do not require any qualification.

Continuing calibrations were analyzed on January 14th and 15th , 2009 at the appropriate frequency of 1 CCV after every 10 field samples. All %Ds were less than 20%; therefore, the results do not require any qualification.

4. BLANKS

VOC: The method blanks for the SW-846 Method 8260B analyses are MB-641894, MB-641994 and MB-642015. Method blank MB-641894 contains Carbon disulfide at 0.390 µg/L. Method blank MB-641994 contains Bromomethane at 0.072 µg/L. Method blank MB-642015 contains Bromomethane at 0.088 µg/L and Carbon disulfide at 0.394 µg/L. The following samples reported the analytes at concentrations below the SAS reporting limits. The presence of the analytes were qualified "U" as resulting from method blank contamination and the reported concentrations were elevated to the SAS reporting limits. The volatile method blank summaries (FORM 4A) list the samples associated with each blank.

Bromomethane
09CE07-10, 09CE07-12, 09CE07-13, 09CE07-16, 09CE07-18, 09CE07-19, 09CE07-20, 09CE07-23, 09CE07-24, 09CE07-25, 09CE07-26, 09CE07-27, 09CE07-28, 09CE07-29, 09CE07-30, 09CE07-32, 09CE07-33, 09CE07-34, 09CE07-37, 09CE07-41, 09CE07-44, 09CE07-45, 09CE07-46, 09CE07-47, 09CE07-48, 08CE07-50

Carbon disulfide
09CE07-06, 09CE07-15, 09CE07-42, 09CE07-44, 09CE07-48

The quantitation limits for Carbon disulfide are qualified "UJ" in samples 09CE07-06, 09CE07-15 and 09CE07-44 because all the calibration criteria was not met.

In addition to the method blanks there are three (3) VOC Continuing Calibration Blanks (CCBs); CCB-55139, CCB1-52230 and CCB2-52230. CCB-55139 contained Bromomethane at 0.16 µg/L. CCB1-52230 contained Bromomethane at 0.086 µg/L. CCB2-52230 contained Bromomethane at 0.11 µg/L and Carbon disulfide at 0.39 µg/L.

Sample 09CE07-24 is identified as a Field Blank. The field blank contained Acetone at 1.6 µg/L, Bromodichloromethane at 0.050 µg/L, Chloroform at 1.9 µg/L and Chloromethane at 0.12 µg/L. The concentrations of Acetone, Bromodichloromethane and Chloromethane were less than the SAS reporting limits. The concentration of Chloroform at 1.9 μg/L is above the SAS reporting limit of 0.2 μg/L.

The following samples reported Acetone, a common contaminant, less than 4X the SAS reporting limit. The presence of Acetone was qualified "U" as resulting from field blank contamination. The sample result is reported with the qualification flag.

Acetone
09CE07-10, 09CE07-11, 09CE07-12, 07CE07-13, 09CE07-16, 09CE07-20, 09CE07-28, 09CE07-32, 09CE07-45, 09CE07-48

The quantitation limits for Acetone are qualified "UJ" in some samples because all the calibration criteria was not met.

The following samples reported Acetone, a common contaminant, below the SAS reporting limit. The presence of Acetone was qualified "U" as resulting from field blank contamination and elevated to the SAS reporting limit.

Acetone
09CE07-05, 09CE07-09, 09CE07-21, 09CE07-23, 09CE07-25, 09CE07-26, 09CE07-27, 09CE07-36, 09CE07-43, 09CE07-44, 09CE07-46

The quantitation limits for Acetone are qualified "UJ" in samples 09CE07-36 and 09CE07-43 because all the calibration criteria was not met.

The following samples reported Chloromethane below the SAS reporting limit. The presence of Chloromethane was qualified "U" as resulting from field blank contamination and elevated to the SAS reporting limit.

Chloromethane
09CE07-05, 09CE07-09, 09CE07-14, 09CE07-15, 09CE07-20, 09CE07-21, 09CE07-23, 09CE07-25, 09CE07-26, 09CE07-27, 09CE07-28, 09CE07-41, 09CE07-42, 09CE07-43, 09CE07-45, 09CE07-48

The following samples reported Chloroform above the SAS RL (0.2 μg/L) and below the field blank concentration (1.9 μg/L). The presence of Chloroform was qualified "U" as resulting from field blank contamination and elevated to the field blank concentration.

Chloroform
09CE07-01, 09CE07-22, 09CE07-23, 09CE07-25, 09CE07-26, 09CE07-30, 09CE07-33, 09CE07-35, 09CE07-47

Sample 09CE07-23 is identified as an Equipment Blank. The equipment blank contained Bromodichloromethane at 0.062 µg/L and Carbon disulfide at 0.39 µg/L. The following samples reported Carbon disulfide below the SAS reporting limit. The presence of Carbon disulfide was qualified "U" as resulting from equipment blank contamination and elevated to the SAS reporting limit.

Carbon disulfide
09CE07-25, 09CE07-26, 09CE07-28, 09CE07-30, 09CE07-45, 09CE07-46

Ten (10) samples; 09CE07-04, 09CE07-10, 09CE07-11, 09CE07-12, 09CE07-13, 09CE07-32, 09CE07-36, 09CE07-37, 09CE07-49 and 09CE07-50 are identified as Trip Blanks. Four (4) trip blanks; 09CE07-04, 09CE07-32, 09CE07-36 and 09CE07-49, contained no reportable target analytes; therefore no qualification was required for the samples associated with these trip blanks. Sample 09CE07-10 contained Chloromethane at 0.25 µg/L. Sample 09CE07-11 contained Methylene chloride at 0.70 µg/L. Sample 09CE07-12 contained Methylene chloride at 0.49 µg/L. Sample 09CE07-13 contained Methylene chloride at 0.80 µg/L. Sample 09CE07-37 contained Chloromethane at 0.26 µg/L and Methylene chloride at 0.52 µg/L. Sample 09CE07-50 contained Chloromethane at 0.31 µg/L and Methylene chloride at 0.61 µg/L.

The following samples reported Chloromethane below the trip blank concentration. The presence of Chloromethane was qualified "U" as resulting from trip blank contamination and elevated to the trip blank concentration.

Chloromethane
09CE07-46

MEE: The MEE method blanks are MB-641765 and MB-641769 for the Mod RSK 175 analyses.

Neither of the method blanks had any contaminants; therefore, the results are acceptable. The Volatile Method Blank Summaries for Analytical Method Mod RSK 175 list the samples associated with each method blank.

Sample 09CE07-23 is identified as an Equipment Blank and it contained no MEE analytes. Sample 09CE07-24 is identified as a Field Blank and it contained no MEE analytes.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

VOC: All SW-846 Method 8260B volatile surrogate compounds (1,2-Dichloroethane-d_4, Bromofluorobenzene, Dibromofluoromethane) were within the QC limits (75-135%) for all VOC samples. The percent recoveries for Toluene-d_8 were less than 75% but greater than 20% in samples; 09CE07-09, 09CE07-19, 09CE07-27, 09CE07-28, 09CE07-29,

09CE07-30, 09CE07-31, 09CE07-42, 09CE07-44, 09CE07-45 and 09CE07-48. Sample results are not qualified as only 1 of the 4 surrogates was outside the QC criteria.

MEE: Surrogate recoveries are not applicable to RSK-175 analyses.

6A. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

VOC: Samples 09CE07-06, 09CE07-46 and 09CE07-47 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses. The MS/MSD recoveries generated by the Reviewer did not match the recoveries submitted by the laboratory. Results were qualified based on the results calculated from the submitted data.

The %recovery for Vinyl chloride was greater than the upper limit of 130% in sample 09CE07-06MS. The %recoveries for Trichloroethene were less than 20% in samples 09CE07-06MS and 09CE07-06MSD. The RPD for Trichloroethene was greater than 30%. The detection of Trichloroethene and Vinyl chloride in the unspiked sample, 09CE07-06, is qualified “J”.

The %recovery for 1,1-Dichloroethene was greater than the upper limit of 130% in sample 09CE07-46MS. The %recoveries for Bromomethane and Vinyl chloride were greater than the upper limit of 130% in samples 09CE07-46MS and 09CE07-46MSD. The %recoveries for Styrene were below the lower limit of 60% and greater than 20% in samples 09CE07-46MS and 09CE07-46MSD. All RPDs were less than 30%. The quantitation limits for 1,1-Dichloroethene, Bromomethane and Vinyl chloride in the unspiked sample, 09CE07-46, are not qualified. The quantitation limit for Styrene in the unspiked sample, 09CE07-46, is qualified “UJ”.

The %recoveries for Styrene were less than the lower limit of 60% in sample 09CE07-47MS and less than 20% in sample 09CE07-47MSD. The %recoveries for Chloromethane were less than the lower limit of 60% in samples 09CE07-47MS and 09CE07-47MSD. The %recovery for Chloroethane was greater than the upper limit of 130% in sample 09CE07-47MS. The %recoveries for 1,1-Dichloroethene and Bromomethane were greater than the upper limit of 130% in sample 09CE07-47MSD. All RPDs were less than 30%. The quantitation limit for 1,1-Dichloroethene, Bromomethane and Chloroethane in the unspiked sample, 09CE07-47, are not qualified. The detection of Chloromethane in the unspiked sample, 09CE07-47, is qualified “J”. The quantitation limit for Styrene in the unspiked sample, 09CE07-47, is qualified “R”.

MEE: Samples 09CE07-06 and 09CE07-46 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses. The MS/MSD recoveries generated by the Reviewer did not match the recoveries submitted by the laboratory. Results were qualified based on the results calculated from the submitted data.

The %recovery for Ethane was less than 20% in sample 09CE07-06MS. The %recoveries for Methane were greater than the upper limit of 130% in samples 09CE07-06MS and 09CE07-06MSD. The RPDs for all 3 gases were greater than 30%. The quantitation limit for Ethane in the unspiked sample, 09CE07-06, is qualified "R". The quantitation limit for Ethene in the unspiked sample, 09CE07-06, is qualified "UJ". The detection of Methane in the unspiked sample, 09CE07-06, is qualified "J".

All %recoveries were between 60% and 130% for all analytes in samples 09CE07-46MS and 09CE07-46MSD. The RPD for Methane was greater than 30%. The detection of Methane in the unspiked sample, 09CE07-46, is qualified "J".

6B. LABORATORY CONTROL SAMPLES

VOC: The VOC laboratory control samples are LCS-641893, LCS-641993 and LCS-642014. The VOC laboratory control duplicate samples are LCSD-641987, LCSD-642018 and LCSD-642536.

LCS-641893 and LCSD-641987 were analyzed January 15 - 16, 2009 and all %recoveries and RPDs were within the acceptance criteria.

LCS-642014 and LCSD-642018 were analyzed January 17 - 18, 2009 and all %recoveries and RPDs were within the acceptance criteria.

LCS-641993 and LCSD-642536 were analyzed January 16 - 17, 2009. The percent recovery for Methylene chloride was greater than 130% for LCS-641993. All RPDs were less than 30%. The detection of Methylene chloride in the associated samples are qualified "J".

Methylene chloride
09CE07-11, 09CE07-12, 09CE07-13, 09CE07-37, 09CE07-46MS,
09CE07-46MSD

The quantitation limits for Methylene chloride in the following associated samples do not require any qualification but may be qualified "UJ" because all the calibration criteria was not met.

Methylene chloride
09CE07-04, 09CE07-10, 09CE07-24, 09CE07-27, 09CE07-28, 09CE07-29,
09CE07-30, 09CE07-31, 09CE07-32, 09CE07-33, 09CE07-34, 09CE07-35,
09CE07-36, 09CE07-40, 09CE07-45, 09CE07-46

MEE: The MEE laboratory control samples are LCS-641764 and LCS-641768. There were no MEE laboratory control sample duplicates analyzed. All recoveries were within the QC limits of 60 – 130%. No qualification of the samples is required.

7. FIELD BLANK AND FIELD DUPLICATE

VOC: Ten (10) samples; 09CE07-04, 09CE07-10, 09CE07-11, 09CE07-12, 09CE07-13, 09CE07-32, 09CE07-36, 09CE07-37, 09CE07-49 and 09CE07-50 are identified as Trip Blanks. Four (4) trip blanks; 09CE07-04, 09CE07-32, 09CE07-36 and 09CE07-49 contained no reportable target analytes. Sample results are summarized in the following tables:

Analytes	**09CE07-10**	**09CE07-11**	**09CE07-12**
Chloromethane	0.25 µg/L	ND	ND
Methylene chloride	ND	0.70 µg/L	0.49 µg/L

Analytes	**09CE07-13**	**09CE07-37**	**09CE07-50**
Chloromethane	ND	0.26 µg/L	0.31 µg/L
Methylene chloride	0.80 µg/L	0.52 µg/L	0.61 µg/L

Sample 09CE07-23 is identified as an Equipment Blank. Sample 09CE07-24 is identified as a Field Blank. Sample results are summarized in the following table:

Analytes	**09CE07-23**	**09CE07-24**
Acetone	ND	1.6 µg/L
Bromodichloromethane	0.062 µg/L	0.050 µg/L
Carbon disulfide	0.39 µg/L	ND
Chloroform	ND	1.9 µg/L
Chloromethane	ND	0.12 µg/L

Sample 09CE07-03 is a field replicate of 09CE07-02. Sample 09CE07-08 is a field replicate of 09CE07-07. Sample 09CE07-18 is a field replicate of 09CE07-17. Sample 09CE07-26 is a field replicate of 09CE07-25. Sample 09CE07-28 is a field replicate of 09CE07-27. Sample results and RPDs are summarized in the following tables:

Analytes	**09CE07-02**	**09CE07-03**	RPDs
	µg/L, df=100	µg/L, df=100	%
1,1,1,-Trichloroethane	130	130	0
1,1-Dichloroethane	11	11	0
1,1-Dichloroethene	8	8.2	2.5
Bromodichloromethane	4.9	5.4	9.7
Bromomethane	8.4	9	7.4
Carbon disulfide	42	43	2.4
Chloroform	3.8	3.5	8.2
Cis-1,2-Dichloroethene	83	88	5.8
Trichloroethene	740	780	5.3

Analytes	**09CE07-07**	**09CE07-08**	RPDs
	µg/L, df=10	µg/L, df=10	%
1,1-Dichloroethane	5.2	5	3.9
1,1-Dichloroethene	1.2	1.2	0
Bromodichloromethane	0.55	0.4	32
Bromomethane	1.2	ND	200
Carbon disulfide	4.2	ND	200
Chloroform	0.39	0.36	8.0
Cis-1,2-Dichloroethene	43	41	4.8
Dibromochloromethane	0.66	ND	200
Trans-1,2-Dichloroethene	0.77	0.74	4.0
Trichloroethene	17	16	6.1
Vinyl chloride	0.86	1	15

Analytes	**09CE07-17**	**09CE07-18**	RPDs
	µg/L	µg/L	%
1,1,1-Trichloroethane	0.19	0.17	11
Chloromethane	0.27	ND	200
Tetrachloroethene	0.065	0.08	21
Trichloroethene	0.17	0.17	0

Analytes	**09CE07-25**	**09CE07-26**	RPDs
	µg/L	µg/L	%
Cis-1,2-Dichloroethene	0.12	0.12	0
Toluene	0.068	0.075	9.8
Trichloroethene	0.23	0.23	0

Analytes	**09CE07-27**	**09CE07-28**	RPDs
	µg/L	µg/L	%
Cis-1,2-Dichloroethene	0.77	0.81	5.1
Trans-1,2-Dichloroethene	0.095	0.090	5.4
Trichloroethene	0.59	0.62	5.0

MEE: Sample 09CE07-23 is identified as an Equipment Blank. Sample 09CE07-24 is identified as a Field Blank. No gases were detected in either of the blanks.

Sample 09CE07-03 is a field replicate of 09CE07-02. Sample 09CE07-08 is a field replicate of 09CE07-07. Sample 09CE07-18 is a field replicate of 09CE07-17. Sample 09CE07-26 is a field replicate of 09CE07-25. Sample results and RPDs for these replicate pairs are summarized in the following table:

Analyte	**09CE07-02**	**09CE07-03**	RPDs
	Df = 1	Df = 5.0	
Methane	15	15	0.0 %
	09CE07-07	**09CE07-08**	
	Df = 10.0	Df = 10.0	
Methane	98	100	2.0 %
	09CE07-17	**09CE07-18**	
	Df = 1.0	Df = 1.0	
Methane	0	0.34	200 %
	09CE07-25	**09CE07-26**	
	Df = 10	Df = 2.0	
Methane	52	9.8	140 %

8. INTERNAL STANDARDS

The three internal standard's (Fluorobenzene, Chlorobenzene-d_5, 1,4-Dichlorobenzene-d_4) retention times and area counts for the VOC samples were within the QC limits; therefore, the results are acceptable.

9. COMPOUND IDENTIFICATION

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

The following VOC compounds were qualified "out of range" by the laboratory but their concentrations are greater than or equal to the Laboratory's LOD. Per the SAS, the Laboratory was instructed to "Report (sample values) down to the method detection limit" not the lab's in-house reporting limits (RLs). Some sample values were inadvertently not reported as the laboratory's RLs are greater than the SAS-requested RLs. The 'overlooked' values are reported by the Reviewer and qualified "J" as estimated since they did not comply with the Laboratory's QC criteria to be considered valid detections.

1,2-Dichloroethane (LOD = 0.03 µg/L, SAS RL = 0.2 µg/L, Lab RL = 0.11µg/L)
09CE07-30, 09CE07-48

Acetone (LOD = 1.5 µg/L, SAS RL = 2.0 µg/L, Lab RL = 5.2 µg/L)
09CE07-24, 09CE07-33

Bromodichloromethane (LOD = 0.03 µg/L, SAS RL = 0.05 µg/L, Lab RL = 0.12 µg/L)
09CE07-02

Bromoform (LOD = 0.040 µg/L, SAS RL = 0.2 µg/L, Lab RL = 0.13 µg/L)
09CE07-15

Bromomethane (LOD = 0.07 µg/L, SAS RL = 0.2 µg/L, Lab RL = 0.25 µg/L)
09CE07-01, 09CE07-02, 09CE07-03, 09CE07-05, 09CE07-06, 09CE07-07,
09CE07-09, 09CE07-14, 09CE07-21, MB-641994, MB-642015

Carbon Disulfide (LOD = 0.09 µg/L, SAS RL = 0.4 µg/L, Lab RL = 0.31 µg/L)
MB-641894

Chloroethane (LOD = 0.07 µg/L, SAS RL = 0.2 µg/L, Lab RL = 0.23 µg/L)
09CE07-35

Methyl tert-butyl ether (LOD = 0.08 µg/L, SAS RL = 0.2 µg/L, Lab RL = 0.26 µg/L)
09CE07-15

Vinyl chloride (LOD = 0.013 µg/L, SAS RL = 0.018 µg/L, Lab RL = 0.044 µg/L)
09CE07-01, 09CE07-05, 09CE07-06, 09CE07-09, 09CE07-16, 09CE07-40

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

VOC: All samples were waters and dilutions were run. The reporting limits for the VOC compounds were less than or equal to the reporting limits specified in the SAS contract for all analytes; except 1,1,2,2-Tetrachloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene. The requested reporting limit for cis-1,3-Dichloropropene was 0.016 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for trans-1,3-Dichloropropene was 0.015 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for 1,1,2,2-Tetrachloroethane was 0.018 µg/L and the actual reporting limit was 0.019 µg/L. Xylenes (total) was reported as m,p-Xylene and o-Xylene.

The following VOC samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

09CE07-17, 09CE07-18, 09CE07-35
1,1,1-Trichloroethane

09CE07-02, 09CE07-03
1,1-Dichloroethane

09CE07-01, 09CE07-02, 09CE07-03, 09CE07-06, 09CE07-07, 09CE07-08,
09CE07-15, 09CE07-35
1,1-Dichloroethene

09CE07-15, 09CE07-30, 09CE07-48
1,2-Dichloroethane

09CE07-24
Acetone

09CE07-01
Benzene

09CE07-02, 09CE07-08, 09CE07-22, 09CE07-35, 09CE07-40
Bromodichloromethane

09CE07-15
Bromoform

09CE07-21, CCB-55139, CCB1-52230, CCB2-52230
Bromomethane

09CE07-23, CCB2-52230, MB-641894, MB-642015
Carbon disulfide

09CE07-01
Chlorobenzene

09CE07-35
Chloroethane

09CE07-02, 09CE07-03, 09CE07-06, 09CE07-07, 09CE07-08, 09CE07-40
Chloroform

09CE07-22, 09CE07-24
Chloromethane

09CE07-05, 09CE07-25, 09CE07-26, 09CE07-48
Cis-1,2-Dichloroethene

09CE07-06, 09CE07-07, 09CE07-40
Dibromochloromethane

09CE07-45
Isopropylbenzene

09CE07-01, 09CE07-17, 09CE07-18, 09CE07-34
Tetrachloroethene

09CE07-25, 09CE07-26, 09CE07-30
Toluene

09CE07-06, 09CE07-07, 09CE07-08, 09CE07-14, 09CE07-16, 09CE07-27, 09CE07-28, 09CE07-29, 09CE07-31, 09CE07-40, 09CE07-42
Trans-1,2-Dichloroethene

09CE07-17, 09CE07-18, 09CE07-29, 09CE07-30, 09CE07-42
Trichloroethene

MEE: The reporting limit for Ethane, Ethene and Methane were less than or equal to 10 µg/L as specified in the SAS contract.

The following MEE samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

09CE07-06MS, 09CE07-06MSD, 09CE07-08, 09CE07-22, 09CE07-46MS, 09CE07-46MSD, LCS-641764, LCS-641768
Ethane

09CE07-06MS, 09CE07-06MSD, 09CE07-46MS, 09CE07-46MSD, LCS-641764, LCS-641768
Ethene

09CE07-07, 09CE07-09, 09CE07-14, 09CE07-16, 09CE07-18, 09CE07-22, 09CE07-25, 09CE07-26, 09CE07-33, 09CE07-40, 09CE07-45, 09CE07-46, 09CE07-46MS, 09CE07-46MSD, 09CE07-47, 09CE07-48, LCS-641764, LCS-641768
Methane

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The final shipment of samples arrived at the Laboratory on January 10, 2009. The Laboratory Case Narrative was prepared on January 26, 2009 and forwarded by Ch2mHill to the CRL after February 3, 2009.

Photocopies of the airbills were included with this package. The original sample tags, packing list and airbills should have been sent to CH2M HILL.

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: April 17, 2009

Copies of the most recent MDL studies were not included with this data package but MDL (LOD – Level of Detection) values are present on the Laboratory Form IAs.

The following analytes were detected in the following samples according to the raw data, but the analytes were not reported by the laboratory. The quantitation reports indicate that the target scans were out of range even though the laboratory software made positive identifications. No explanation for the omission of these analytes from the Form IAs were found in the Case Narrative; therefore the results were added to the spreadsheet by the Reviewer and qualified "J". The raw data is included with the hardcopy validation package for the following samples.

1,2-Dichloroethane
09CE07-30

Acetone
09CE07-24, 09CE07-33

Bromodichloromethane
09CE07-02

Bromomethane
09CE07-01, 09CE07-02, 09CE07-03, 09CE07-05, 09CE07-06, 09CE07-07, 09CE07-09, 09CE07-14, 09CE07-21, CCB-55139, CCB1-52230, CCB21-52230, MB-641994, MB-642015

Carbon disulfide
CCB2-55230, MB-641894

Chloroethane
09CE07-35

Methyl-tert-butyl ether
09CE07-15

Vinyl chloride
09CE07-01, 09CE07-05, 09CE07-06, 09CE07-09, 09CE07-16, 09CE07-40

VOC SAS Table II. QC Requirements lists the frequency of audits for method blanks as 'at least one per group of 10 or fewer samples'. The laboratory provided only 3 analyses identified as method blanks and an additional three analyses identified as Continuing Calibration Blanks. Volatile analyses require the analysis of a QC blank on each day of analysis and the volatile analyses spanned a 3-day time period. Inspections of both SW-846 Method 8000 (Determinative Chromatographic Separations, Sec. 7.7 & 8.2) and Method 8260 (Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, Sec. 8.4) indicate that the terms method blank and continuing calibration blank could describe the same QC sample. As the CCB samples were analyzed daily and followed the Continuing Calibration Verification Standard, the Reviewer regarded them as method blanks for this data package. No Analysis Data Sheets were provided for the CCB samples. Copies of the raw data for these QC samples and the Form 5As (Volatile Organic Instrument Performance Check) are included with the hardcopy validation package.

The methods blanks were also non-compliant with the QC requirements identified in Table II in the following instances;

a) MB-641894 is associated with 13 samples rather than 10 samples.
b) CCB1-52230 is associated with 13 samples rather than 10 samples.

The following VOC samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted compound results were reported for the affected samples:

09CE07-01, 09CE07-02, 09CE07-03, 09CE07-05, 09CE07-06, 09CE07-07,
09CE07-08, 09CE07-09, 09CE07-14, 09CE07-25, 09CE07-26, 09CE07-33,
09CE07-34, 09CE07-40, 09CE07-45, 09CE07-48

The Methane result reported for sample 09CE07-05 is incorrect on the Laboratory's Analysis Results Form, the concentration should be 1000 µg/L not 2.1 µg/L. The Lab forgot to multiply the results by the dilution factor. The Ethane result reported for sample 09CE07-06MS is incorrect on the Laboratory's Analysis Results Form, the concentration should be 0.22 µg/L not 0.37 µg/L. The Methane result reported for sample 09CE07-45 is incorrect on the Laboratory's Analysis Results Form, the concentration should be 2200 µg/L not 2000 µg/L.

The MEE quantitation limits were mis-identified for the following analytes in the following samples. The concentrations are suppose to reflect non-diluted analyses.

Ethane
09CE07-06, 09CE07-07, 09CE07-09, 09CE07-14, 09CE07-25, 09CE07-26,
09CE07-33, 09CE07-34, 09CE07-40, 09CE07-48

Ethene
09CE07-06, 09CE07-07, 09CE07-08, 09CE07-09, 09CE07-14, 09CE07-25,
09CE07-26, 09CE07-33, 09CE07-34, 09CE07-40, 09CE07-48

The following MEE samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted compound results were reported for the affected samples:

09CE07-01, 09CE07-03, 09CE07-05, 09CE07-06, 09CE07-07, 09CE07-08,
09CE07-09, 09CE07-14, 09CE07-25, 09CE07-26, 09CE07-33, 09CE07-34,
09CE07-40, 09CE07-45, 09CE07-48

Calculations for all gas concentrations are included in the Results spreadsheet submitted with the narrative.

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.

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: April 17, 2009

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: ____________

SUBJECT: **Review of Data**
Received for review on February 5, 2009

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 Company (WI)

CASE NUMBER: 09CE07 **SDG NUMBER: 70956-INO**

Number and Type of Samples: 27 water samples

Sample Numbers: 09CE07-01 - 03, 05 - 09, 14 - 18, 21 - 26, 33 - 35, 40, 45 – 48

Laboratory: CT Laboratories **Hrs. for Review:** ____________

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 27 water samples (see TABLE 1). The samples were collected between January 5 and 9, 2009. Samples 09CE07-25 and 09CE07-26 were analyzed for alkalinity, total organic carbon (TOC), sulfide, nitrate, sulfate, chloride, ammonia and orth-phosphate. The remaining samples were analyzed for alkalinity, total organic carbon (TOC), sulfide, nitrate, sulfate and chloride. All sample results are reported to the MDL. The samples were analyzed using SW846 9056 (anions), SW846 9060 (total organic carbon), EPA 310.2 (alkalinity), EPA 376.1 (sulfide) and EPA 350.1 (ammonia) analysis procedures.

Evidential Audit: All reporting forms provided are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms or sample tags were provided.

No MDL summaries were provided. It is unknown when MDLs were performed. MDL (LOD) and RL values recorded on the results Form 1 were used for evaluation of the data.

Alkalinity: The SAS requires that the lowest calibration point be run at 10.0 mg/L. The lowest point performed was 25 mg/L. All sample results were above 25 mg/L except samples 09CE07-23 and 09CE07-24, which were non-detects. These samples are qualified as estimated "UJ". All other alkalinity results are acceptable.

Ammonia: No defects were found. All ammonia results are acceptable

Chloride: No defects were found. All chloride results are acceptable.

Nitrate: The nitrate results for samples 09CE07-09, 09CE07-14, 09CE07-25, 09CE07-26, 09CE07-33, 09CE07-40 and 09CE07-47 were reported above the method detection limit (MDL) but below the reporting limit (RL) and are qualified as estimated "J". The remaining nitrate results are acceptable.

Ortho-phosphate: No defects were found. All ortho-phosphate results are acceptable.

Sulfate: No defects were found. All sulfate results are acceptable.

Sulfide: No defects were found. All sulfide results are acceptable.

TOC: The SAS requires a low standard be run to confirm the reporting limit of 1.0 mg/L. This was not performed. The lowest calibration standard was 10 mg/L. TOC results for samples 09CE07-01, 09CE07-25 and 09CE07-26 were greater than 10 mg/L and are acceptable. Non-detected TOC for samples 09CE07-23 and 09CE07-24 are qualified as estimated "UJ". The TOC results for the remaining samples are qualified as estimated "J". The TOC results for samples 09CE07-05, 09CE07-09, 09CE07-14, 09CE07-15, 09CE07-17, 09CE07-21, 09CE07-34, 09CE07-45, 09CE07-47 and 09CE07-48 were reported above the method detection limit (MDL) but below the reporting limit (RL) and are qualified estimated "J".

Other comments: 09CE07-02/09CE07-03, 09CE07-07/09CE07-08, 09CE07-17/09CE07-18 and 09CE07-25/09CE07-26 are field duplicate pairs. The duplicate RPDs for Chloride, Sulfate were above the acceptable limits for field duplicate pair 09CE07-07/09CE07-08; however, no sample results are qualified for field duplicates. Sample 09CE07-24 was identified as field blank. Sample 09CE07-23 was identified as equipment blank. The equipment blank and field blank showed no contamination.

TABLE 1

Lab ID	Sample ID	Sample location	Cooler Temp ®C	Collection Date	Collection Time	Received date
639527	09CE07-01	OEP-MW-103S	4.8	1/5/2009	17:20	1/6/2009
639529	09CE07-02	OEP-MW-103D	4.8	1/5/2009	17:20	1/6/2009
639531	09CE07-03	OEP-MW-103DFR	4.8	1/5/2009	17:25	1/6/2009
639683	09CE07-05	OEP-MW-105B	not recorded	1/6/2009	10:55	1/7/2009
639685	09CE07-06	OEP-MW-105S	not recorded	1/6/2009	11:40	1/7/2009
639690	09CE07-07	OEP-MW-105D	not recorded	1/6/2009	12:10	1/7/2009
639692	09CE07-08	OEP-MW-105DFR	not recorded	1/6/2009	12:15	1/7/2009
639694	09CE07-09	OEP-MW-3D	not recorded	1/6/2009	15:30	1/7/2009
639697	09CE07-14	OEP-MW-101B	not recorded	1/6/2009	16:25	1/7/2009
639688	09CE07-15	OEP-MW-102D	not recorded	1/6/2009	16:50	1/7/2009
639956	09CE07-16	OEP-MW-13D	2.0	1/7/2009	10:20	1/8/2009
639952	09CE07-17	OEP-MW-13S	1.4	1/7/2009	10:25	1/8/2009
639954	09CE07-18	OEP-MW-13SFR	1.4	1/7/2009	10:30	1/8/2009
639947	09CE07-21	OEP-MW-15S	1.4	1/7/2009	16:20	1/8/2009
639949	09CE07-22	OEP-MW-15D	1.4	1/7/2009	16:35	1/8/2009
639993	09CE07-23	OEP-EB-01	0.9	1/7/2009	17:00	1/8/2009
639995	09CE07-24	OEP-FB-01	0.9	1/7/2009	17:15	1/8/2009
639972	09CE07-25	OEP-SW-03	2.0	1/7/2009	16:50	1/8/2009
639986	09CE07-26	OEP-SW-03FR	2.0	1/7/2009	16:55	1/8/2009
640178	09CE07-33	OEP-MW-12S	1.9	1/8/2009	10:20	1/9/2009
640180	09CE07-34	OEP-MW-12B	1.9	1/8/2009	10:50	1/9/2009
640182	09CE07-35	OEP-MW-12D	not recorded	1/8/2009	11:05	1/9/2009
640185	09CE07-40	OEP-MW-5D	not recorded	1/8/2009	12:35	1/9/2009
640188	09CE07-45	OEP-MW-01D	not recorded	1/8/2009	15:35	1/9/2009
640190	09CE07-46	OEP-MW-04S	not recorded	1/8/2009	16:30	1/9/2009
640192	09CE07-47	OEP-MW-01S	1.8	1/8/2009	16:50	1/10/2009
640339	09CE07-48	OEP-MW-04D	1.3	1/9/2009	11:30	1/10/2009

Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Steffanie Tobin (TechLaw/ESAT)
Date: 03/15/2009

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 2/24/09

SUBJECT: Review of Data
Received for review on 2/5/09

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: 09CE07 **SDG NUMBER:** 70956-MET

Number and Type of Samples: 53 waters (27 total/26 dissolved)

Sample Numbers: 09CE07-01 thru -03, -05 thru -09, -14 thru -18, -21 thru -26, -33 thru -35, -40, -45 thru -48

Laboratory: CT Laboratories **Hrs. for Review:**

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 53 water samples (26 dissolved, 27 total, see attached table) which were collected between January 5 and 9, 2009 and received at the laboratory between January 6 and 10, 2009. They were analyzed for iron and manganese. Total and dissolved samples were assigned the same EPA sample IDs by the field personnel. See the attached table for specific Superfund and Laboratory identifiers. All sample results are reported to the MDL. The samples were analyzed using SW846 6010B (ICP-AES) analysis procedures.

Evidential Audit: All provided ICP reporting forms are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms, or sample tags were provided. Field Chain of Custodies were not signed by receiving personnel at the Laboratory for samples 09CE07-33, -34, -35, -40, -45, -46 and -47.

No analytical date was provided on the MDL summary form or the linearity form. MDL and linearity values recorded on the forms provided were used for evaluation of the data.

The Duplicate Forms included are for the LCS/LCSD and the MS/MSD. The laboratory performed post digestion spikes on perceived serial dilution failures for total metals samples. All serial dilutions are either acceptable or not applicable (the CLP requirement of the undiluted sample concentration being greater than 50x the MDL is used for determining applicability). No sample results are qualified due for serial dilution failures. Additionally, post digestion spikes do not remove qualifications for serial dilution failures.

No times are included on the Analysis Run Logs for the calibration. Four run logs were included with the case. Standards used on multiple "runs" are identified with different identifications. All total metals samples were analyzed in the same analytical run. Dissolved samples were analyzed in a separate run.

ICP-AES: Section 8(d) of the SAS requires that the RL must be shown to have been met before any samples are analyzed. Since the SAS does not define what recovery is "acceptable", this reviewer used the CLP CRI acceptance criteria of 100 +/- 50%. The laboratory analyzed a sample identified as "MRL 30,6" (MRL) which was at the SAS required reporting limit. All MRL samples analyzed failed greater than 200% recovery for Mn. Forms were included for MRL checks performed at the beginning of the runs but not the end. MRL samples performed at the end of the run (without bracketing QC sample raw results) failed greater than 200% recovery for Fe in both analytical runs. No results are qualified for the final MRL sample.

Mn results less than 10 times the true value of the MRL standard are estimated "J" for total samples 09CE07-07 thru -09, -15, -16, -34, -35, -45 and -47 and dissolved samples 09CE07-07 thru -09, -15, -16, -34, -35, -40, -45 and -46. No raw instrument results indicate that detects should have been reported between the MRL and the level at which non-detect results are reported (14 ug/L).

Reviewed by: Stephen Connet
Date: 2/24/2009

For Fe, all ICB/CCBs in the run for the total samples had negative results whose absolute value was greater than the MDL indicating a possible low bias. Total Fe results for 09CE07-01, -03, -14, -17, -18, -21 and -22 (those less than 5 times the blank value) are estimated "J-". Also, the total Fe results for 09CE07-03, -14 and -21 and dissolved results for 09CE07-01 are greater than the MDL but less than the reporting limit. Those results are estimated "J".

Other comments: Total and dissolved samples 09CE07-02/-03, -07/-08, -17/-18 and -25/-26 were identified as field duplicates. Duplicates were evaluated according to the same criteria as laboratory duplicates. All showed good correlation.

Total and dissolved samples for 09CE07-23 were identified as equipment blanks. Sample 09CE07-24 was identified as a field blank (total only). No contamination was found in any of the equipment or field blanks.

Lab ID	Sample ID	Lab ID	Sample ID	Sample Point	Sample Date	Sample Time
	(Total)		(Dissolved)			
639527	09CE07-01	639528	09CE07-01	OEP-MW-103S	1/5/2009	17:20
639529	09CE07-02	639530	09CE07-02	OEP-MW-103D	1/5/2009	17:20
639531	09CE07-03	639532	09CE07-03	OEP-MW-103DFR	1/5/2009	17:25
639683	09CE07-05	639684	09CE07-05	OEP-MW-105B	1/6/2009	10:55
639685	09CE07-06	639686	09CE07-06	OEP-MW-105S	1/6/2009	11:40
639690	09CE07-07	639691	09CE07-07	OEP-MW-105D	1/6/2009	12:10
639692	09CE07-08	639693	09CE07-08	OEP-MW-105DFR	1/6/2009	12:15
639694	09CE07-09	639695	09CE07-09	OEP-MW-003D	1/6/2009	15:30
639697	09CE07-14	639698	09CE07-14	OEP-MW-101B	1/6/2009	16:25
639688	09CE07-15	639689	09CE07-15	OEP-MW-102D	1/6/2009	16:50
639956	09CE07-16	639957	09CE07-16	OEP-MW-013D	1/7/2009	10:20
639952	09CE07-17	639953	09CE07-17	OEP-MW-013S	1/7/2009	10:25
639954	09CE07-18	639955	09CE07-18	OEP-MW-013SFR	1/7/2009	10:30
639947	09CE07-21	639948	09CE07-21	OEP-MW-015S	1/7/2009	16:20
639949	09CE07-22	639950	09CE07-22	OEP-MW-015D	1/7/2009	16:35
639993	09CE07-23	639994	09CE07-23	OEP-EB-001	1/7/2009	17:00
639995	09CE07-24			OEP-FB-001	1/7/2009	17:15
639972	09CE07-25	639985	09CE07-25	OEP-SW-03	1/7/2009	16:50
639986	09CE07-26	639987	09CE07-26	OEP-SW-03FR	1/7/2009	16:55
640178	09CE07-33	640179	09CE07-33	OEP-MW-012S	1/8/2009	10:20
640180	09CE07-34	640181	09CE07-34	OEP-MW-012B	1/8/2009	10:50
640182	09CE07-35	640183	09CE07-35	OEP-MW-012D	1/8/2009	11:05
640185	09CE07-40	640186	09CE07-40	OEP-MW-005D	1/8/2009	12:35
640188	09CE07-45	640189	09CE07-45	OEP-MW-001D	1/8/2009	15:35
640190	09CE07-46	640191	09CE07-46	OEP-MW-004S	1/8/2009	16:30
640192	09CE07-47	640193	09CE07-47	OEP-MW-001S	1/8/2009	16:50
640339	09CE07-48	640340	09CE07-48	OEP-MW-004D	1/9/2009	11:30

Reviewed by: Stephen Connet
Date: 2/24/2009

Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Stephen Connet
Date: 2/24/2009

Data Usability Evaluation
Oconomowoc Electroplating Company, Inc. Site, Ashippun, Wisconsin
WA No. 003-LRLR-05M8, Contract No. EP-S5-06-01

PREPARED FOR:	U.S. Environmental Protection Agency
PREPARED BY:	Adrienne Unger/CH2M HILL Heather Hodach/CH2M HILL
DATE:	May 15, 2009

This memorandum presents the data usability evaluation of the groundwater samples collected during the field investigation conducted at the Oconomowoc Electroplating Company, Inc., site in Ashippun, Wisconsin, during the week of July 14, 2008. CH2M HILL performed the sampling, and CT Laboratories, Inc. of Baraboo, Wisconsin, performed the analyses.

Fifty-nine groundwater and surface water samples were collected, including quality control (QC) samples, and were analyzed for one or more of the following U.S. Environmental Protection Agency (USEPA)-approved methods:

- Volatile organic compounds (VOCs) by USEPA SW-846 Method 8260
- Alkalinity by USEPA 310.2
- Ammonia by USEPA 350.1
- Chloride by USEPA SW-846 Method 9056
- Methane, ethane, and ethene by RSK 175
- Nitrate by USEPA SW-846 Method 9056
- Orthophosphate by USEPA SW-846 Method 9056
- Sulfate by USEPA SW-846 Method 9056
- Sulfide by USEPA 376.1
- Total organic carbon by USEPA SW-846 Method 9060
- Total metals by USEPA SW-846 Method 6010B
- Dissolved metals by USEPA SW-846 Method 6010B

As part of the quality assurance (QA) process outlined in the field sampling plan (CH2M HILL, 2006), QC samples were collected in the field to complement the assessment of overall data quality and usability. The QC samples collected were field duplicates, aliquots for laboratory matrix spike/matrix spike duplicates (MS/MSDs), a field blank, and an equipment blank. VOC trip blanks were also used as a means of QC; these samples were supplied by the laboratory.

The dataset was reviewed by the USEPA Environmental Service Assistance Team (ESAT) contractor, TechLaw, (Attachment 1) to assess the accuracy and precision of the method and the matrix using criteria established in the National Functional Guidelines (NFG) for data review. Completeness of the dataset was then derived. USEPA validators added data qualifiers when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

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

[U]	The sample target was analyzed for but not detected above the level of the associated limit of detection or quantitation.
[J]	The associated value is an estimated quantity. This qualifier was appended when the data indicated the presence of a specific target analyte but was below the stated reporting (or quantitation) limit, and/or when QC statistics alluded to an analytical bias.
[UJ]	The component was analyzed for but not detected at a level equal to or greater than the level of detection (LOD) or quantification (often the reporting limit [RL]). This flag was used when QC measurements indicated a possible low bias in the analytical data.
[R]	Rejected. The data were of insufficient quality to be deemed acceptable as reported or otherwise qualified.

Groundwater Samples

CH2M HILL reviewed the validation performed by USEPA for the groundwater samples in sample delivery group (SDG) 67764. Table 1 lists the sample identifications (IDs) and Station Locations that were reviewed (100 percent of all samples collected).

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
08CE15-01	OEP-JS-01	08CE15-21	OEP-PW-08	08CE15-41	OEP-JS-07
08CE15-02	OEP-JS-02	08CE15-22	OEP-PW-08	08CE15-42	OEP-MW-015S
08CE15-03	OEP-MW-004D	08CE15-23	OEP-PW-07	08CE15-43	OEP-MW-102D
08CE15-04	OEP-MW-004S	08CE15-24	OEP-PW-05	08CE15-44	OEP-JS-08
08CE15-05	OEP-MW-103D	08CE15-25	OEP-PW-03	08CE15-45	OEP-JS-09
08CE15-06	OEP-MW-103D	08CE15-26	OEP-PW-02	08CE15-46	OEP-MW-106S
08CE15-07	OEP-MW-103S	08CE15-27	OEP-PW-11	08CE15-47	OEP-MW-106D
08CE15-08	OEP-MW-005D	08CE15-28	OEP-EB-001	08CE15-48	OEP-MW-015D
08CE15-09	OEP-MW-105S	08CE15-29	OEP-JS-05	08CE15-49	OEP-FB-001
08CE15-10	OEP-MW-105B	08CE15-30	OEP-DW-01	08CE15-50	OEP-MW-013D
08CE15-11	OEP-JS-03	08CE15-31	OEP-MW-001S	08CE15-51	OEP-MW-013S

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
08CE15-12	OEP-MW-105D	08CE15-32	OEP-MW-001D	08CE15-52	OEP-MW-107S
08CE15-13	OEP-MW-105D(F)	08CE15-33	OEP-MW-003D	08CE15-53	OEP-MW-107S
08CE15-14	OEP-MW-101B	08CE15-34	OEP-JS-06	08CE15-54	OEP-MW-107D
08CE15-15	OEP-MW-101B	08CE15-35	OEP-MW-012B	08CE15-55	OEP-JS-10
08CE15-16	OEP-JS-04	08CE15-36	OEP-SW-01	08CE15-56	OEP-JS-11
08CE15-17	OEP-PW-04	08CE15-37	OEP-SW-01	08CE15-57	OEP-MW-015B
08CE15-18	OEP-PW-09	08CE15-38	OEP-SW-03	08CE15-58	OEP-MW-016S
08CE15-19	OEP-PW-01	08CE15-39	OEP-MW-012S	08CE15-59	OEP-SW-02
08CE15-20	OEP-PW-10	08CE15-40	OEP-MW-012D		

The USEPA validation case narratives and worksheets indicate which of these sample results were biased as a result of applicable QC statistics or other NFG requirements. The qualifications are described in Attachment 1. Seven results were rejected.

- The total manganese values for 08CE15-42 and 08CE15-50 were less than 5 times the MRL standard, and no true value of the MRL check was provided. Therefore, the sample results were qualified "R" as unusable.
- The instrument values of total and dissolved manganese for 08CE15-28 and total manganese for 08CE15-51 were less than the negative value of the RL. The sample results were qualified "R" as unusable.
- The raw instrument data for sample 08CE15-35 indicated results of 470 micrograms per liter (µg/L) iron and 14.0 µg/L manganese, however, samples were reported as non-detect. The sample results were qualified "R" as unusable.

The dataset completeness is 99.9 percent usable and may be used in the project decision-making process with qualification. In addition, approximately 10 percent of the data underwent a comparative review to evaluate the accuracy between the database and the USEPA validation reports. No discrepancies were noted.

Conclusions

The USEPA validation reports were verified to comply with the applicable NFG for data review. This verification confirmed that the validation performed by USEPA was complete for the entire dataset analyzed by CT Laboratories. Qualified data, if not rejected, are considered usable for the project decision-making process. The project data quality objectives (DQOs) established a completeness goal for the project at 90 percent. The percent completeness for these groundwater data is 99.9 percent (0.1 percent of the data were rejected) and met the established DQOs set forth in the quality assurance project plan (CH2M HILL, 2004).

Data summary tables of the results have been provided as a table in the *2008 Third Quarter Groundwater Report – OECI Site.* An electronic file of these data also will be submitted as part of this deliverable.

Reference Cited

CH2M HILL. 2004. *Quality Assurance Project Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin.* WA No. 236-RALR-05M8 Contract No. 68-W6-0025. October.

CH2M HILL. 2006. *Field Sampling Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin.* WA No. 003-LRLR-05MS Contract No. EP-SS-06-01. October.

Attachment 1

Validation Narratives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: August 18, 2008

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 Company (WI)

SAS Project: 08CE15

SDG Number: 67764-VOC

Number and Type of Samples: 59 Waters (59 VOCs/ 31 MEE)

Sample Numbers: 08CE15-01 through 08CE15-59

Laboratory: CT Laboratories

Hrs for Review:

Following are our findings:

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

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

Fifty-nine (59) preserved water samples listed in the following table were collected July 14 - 17, 2008. CT Laboratories of Baraboo, Wisconsin received the samples July 15 - 18, 2008. Two (2) vials for sample 08CE15-51, one (1) vial for sample 08CE15-52 and two (2) vials for sample 08CE15-54 were received at the laboratory already broken. One (1) gas vial for sample 08CE15-13 was broken during sample log-in. A total of ten (10) samples were received with a cooler temperature outside the optimum shipping range of 2 – 6 °C. The samples, sample location, sampling dates, receipt temps and analytical dates are identified in the following table. All fifty-nine (59) samples were analyzed July 21 – 25, 2008 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Thirty-one (31) samples were analyzed July 22nd and 28th , 2008 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

EPA ID	CTI Lab ID	Sample location	Date sampled	Receipt Temp, °C	VOC Analyses	MEE Analyses
08CE15-01	581656	OEP-JS-01	07/14/08	4.3	07/24/08	
08CE15-02	581642	OEP-JS-02	07/14/08	1.9	07/25/08	
08CE15-03	581643 /49	OEP-MW-004D	07/14/08	1.9	07/21/08	07/22/08
08CE15-04	581657 /58	OEP-MW-004S	07/14/08	4.3	07/23/08	07/22/08
08CE15-05	581652 /53	OEP-MW-103D	07/14/08	1.9	07/21/08	07/22/08
08CE15-06	581654 /55	OEP-MW-103DFR	07/14/08	1.9	07/21/08	07/22/08
08CE15-07	581659 /60	OEP-MW-103S	07/14/08	4.3	07/21/08	07/22/08
08CE15-08	581661 /62	OEP-MW-005D	07/14/08	4.3	07/21/08	07/22/08
08CE15-09	581993 /94	OEP-MW-105S	07/15/08	2.9	07/21/08	07/22/08
08CE15-10	581996 /97	OEP-MW-105B	07/15/08	2.9	07/23/08	07/22/08
08CE15-11	581998	OEP-JS-03	07/15/08	2.9	07/24/08	
08CE15-12	582014 /15	OEP-MW-105D	07/15/08	4.2	07/23/08	07/22/08
08CE15-13	582016 /17	OEP-MW-105DFR	07/15/08	4.2	07/23/08	07/22/08
08CE15-14	582018 /22	OEP-MW-101B	07/15/08	4.2	07/22/08	07/22/08
08CE15-15	582023 /24	OEP-MW-101BFR	07/15/08	4.2	07/22/08	07/22/08
08CE15-16	582025	OEP-JS-04	07/15/08	4.2	07/24/08	
08CE15-17	581999	OEP-PW-04	07/15/08	4.0	07/21/08	
08CE15-18	582000	OEP-PW-09	07/15/08	4.0	07/21/08	
08CE15-19	582001	OEP-PW-01	07/15/08	4.0	07/21/08	
08CE15-20	582002	OEP-PW-10	07/15/08	4.0	07/24/08	
08CE15-21	582003	OEP-PW-08	07/15/08	4.0	07/21/08	
08CE15-22	582004	OEP-PW-08FR	07/15/08	4.0	07/22/08	
08CE15-23	582005	OEP-PW-07	07/15/08	4.0	07/22/08	
08CE15-24	582006	OEP-PW-05	07/15/08	4.0	07/22/08	
08CE15-25	582007	OEP-PW-03	07/15/08	4.0	07/22/08	

08CE15-26	582008	OEP-PW-02	07/15/08	4.0	07/22/08	
08CE15-27	582009	OEP-PW-11	07/15/08	4.0	07/22/08	
08CE15-28	582010 /11	OEP-EB-01	07/15/08	4.0	07/22/08	07/22/08
08CE15-29	582012	OEP-JS-05	07/15/08	4.0	07/24/08	
08CE15-30	582013	OEP-DW-01	07/15/08	4.0	07/22/08	
08CE15-31	582026 /27	OEP-MW-001S	07/15/08	2.9	07/22/08	07/22/08
08CE15-32	582028 /29	OEP-MW-001D	07/15/08	2.9	07/23/08	07/22/08
08CE15-33	582030 /31	OEP-MW-003D	07/15/08	2.9	07/23/08	07/22/08
08CE15-34	582032	OEP-JS-06	07/15/08	2.9	07/25/08	
08CE15-35	582354 /60	OEP-MW-012B	07/16/08	3.2	07/23/08	07/28/08
08CE15-36	582390 /91	OEP-SW-01	07/16/08	3.1	07/23/08	07/28/08
08CE15-37	582392 /93	OEP-SW-01FR	07/16/08	3.1	07/23/08	07/28/08
08CE15-38	582361 /67	OEP-SW-03	07/16/08	3.2	07/23/08	07/28/08
08CE15-39	582369 /71	OEP-MW-012S	07/16/08	3.2	07/23/08	07/28/08
08CE15-40	582372 /73	OEP-MW-012D	07/16/08	3.2	07/23/08	07/28/08
08CE15-41	582374	OEP-JS-07	07/16/08	3.2	07/25/08	
08CE15-42	582394 /401	OEP-MW-015S	07/16/08	3.1	07/23/08	07/28/08
08CE15-43	582376 /78	OEP-MW-102D	07/16/08	3.2	07/23/08	07/28/08
08CE15-44	582402	OEP-JS-08	07/16/08	3.1	07/25/08	
08CE15-45	582380	OEP-JS-09	07/16/08	3.2	07/25/08	
08CE15-46	582381	OEP-MW-106S	07/16/08	3.2	07/23/08	
08CE15-47	582382	OEP-MW-106D	07/16/08	3.2	07/23/08	
08CE15-48	582383 (4)	OEP-MW-015D	07/16/08	3.2	07/23/08	07/28/08
08CE15-49	582385	OEP-FB-001	07/16/08	3.2	07/23/08	07/28/08
08CE15-50	582703 /04	OEP-MW-013D	07/17/08	1.9	07/24/08	07/28/08
08CE15-51	582705 /06	OEP-MW-013S	07/17/08	1.9	07/24/08	07/28/08
08CE15-52	582711	OEP-MW-107S	07/17/08	1.9	07/24/08	
08CE15-53	582712	OEP-MW-107SFR	07/17/08	1.9	07/25/08	
08CE15-54	582713	OEP-MW-107D	07/17/08	1.9	07/25/08	
08CE15-55	582714	OEP-JS-10	07/17/08	1.9	07/25/08	
08CE15-56	582684	OEP-JS-11	07/17/08	4.5	07/25/08	
08CE15-57	582686 /87	OEP-MW-015B	07/17/08	4.5	07/25/08	07/28/08
08CE15-58	582688 /89	OEP-MW-016S	07/17/08	4.5	07/25/08	07/28/08
08CE15-59	582700 /01	OEP-SW-02	07/17/08	4.5	07/25/08	07/28/08

The laboratory reported the results of 46 volatile analytes. Only the following 36 volatile analytes were requested in the SAS contract and only these analytes will be discussed in the following validation report.

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, total]	M & p-Xylene	o-Xylene
Isopropylbenzene	Methyl tert-butyl ether	

The method blanks for the SW-846 Method 8260B analyses are MB-583287, MB-585123 and MB-586820. In addition to the method blanks there are three (3) VOC Continuing Calibration Blanks (CCBs); CCB-51216, CCB-51217 and CCB-51218. The MEE method blanks are MB-585910, MB-586568, MB-588715 and MB-588916 for the Mod RSK 175 analyses. In addition to the method blanks there are two (2) MEE Continuing Calibration Blanks (CCBs); CCB-51216 and CCB-51217.

Samples 08CE15-09, 08CE15-20 and 08CE15-42 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses. Samples 08CE15-09 and 08CE15-42 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The VOC laboratory control samples are LCS-583276, LCS-584945 and LCS-586868. The VOC laboratory control duplicate samples are LCSD-586980, LCSD-585400 and LCSD-583944. The MEE laboratory control samples are LCS-585909 and LCS-586443. The MEE laboratory control sample duplicates are LCSD-588912 and LCSD-586569.

Eleven (11) samples; 08CE15-01, 08CE15-02, 08CE15-11, 08CE15-16, 08CE15-29, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-55 and 08CE15-56 are identified as Trip Blanks. Sample 08CE15-28 is identified as an Equipment Blank. Sample 08CE15-49 is identified as a Field Blank. Sample 08CE15-06 is a field replicate of 08CE15-05. Sample 08CE15-13 is a field replicate of 08CE15-12. Sample 08CE15-15 is a field replicate of 08CE15-14. Sample 08CE15-22 is a field replicate of 08CE15-21. Sample 08CE15-37 is a field replicate of 08CE15-36. Sample 08CE15-53 is a field replicate of 08CE15-52.

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

1. HOLDING TIME

Fifty-nine (59) preserved water samples listed in the following table were collected July 14 - 17, 2008. CT Laboratories of Baraboo, Wisconsin received the samples July 15 - 18, 2008. Two (2) vials for sample 08CE15-51, one (1) vial for sample 08CE15-52 and two (2) vials for sample 08CE15-54 were received at the laboratory already broken. One (1) gas vial for sample 08CE15-13 was broken during sample log-in. A total of ten (10) samples were received with a cooler temperature outside the optimum shipping range of 2 – 6 °C. All fifty-nine (59) samples were analyzed July 21 – 25, 2008 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through March 2011. Thirty-one (31) samples were analyzed July 22nd and 28th , 2008 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

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

VOC: The GC/MS tuning for SW-846 Method 8260B 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.

MEE: All GC/FID calibration complied with the amount and area for the MEE (Methane-Ethane-Ethene) standards. All samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the results are acceptable.

3. CALIBRATION

VOC: A 7-point calibration curve (0.2/2.0, 0.4/4.0, 1.0/10.0, 2.0/20.0, 4.0/40.0, 6.0/60.0 and 8.0/80.0 μg/L) was performed on July 19, 2008. The minimum RRFs for the five SPCC analytes (1,1-Dichloroethane, 1,1,2,2-Tetrachloroethane, Bromoform, Chlorobenzene and Chloromethane) were all met. The %RSD for the six CCC analytes (1,1-Dichloroethene, 1,2-Dichloropropane, Chloroform, Ethylbenzene, Toluene and Vinyl chloride) were less than 30%. All other analytes were evaluated for a %RSD less than 15%.

The %RSDs were greater than 15% for analytes 1,1,2,2-Tetrachloroethane, Acetone and Methylene chloride. All detections for 1,1,2,2-Tetrachloroethane, Acetone and Methylene chloride in the samples are qualified "J".

1,1,2,2-Tetrachloroethane
08CE15-09MS, 08CE15-09MSD, 08CE15-20MS, 08CE15-20MSD, 08CE15-42MS, 08CE15-42MSD, LCS-583276, LCS-584945, LCS-586868, LCSD-583944, LCSD-585400, LCSD-586980

Acetone
08CE15-02, 08CE15-04, 08CE15-09MS, 08CE15-09MSD, 08CE15-20MS, 08CE15-20MSD, 08CE15-36, 08CE15-37, 08CE15-38, 08CE15-42, 08CE15-42MS, 08CE15-42MSD, 08CE15-51, 08CE15-53, LCS-583276, LCS-584945, LCS-586868, LCSD-583944, LCSD-585400, LCSD-586980

Methylene chloride
08CE15-09, 08CE15-09MS, 08CE15-09MSD, 08CE15-11, 08CE15-13, 08CE15-20MS, 08CE15-20MSD, 08CE15-29, 08CE15-39, 08CE15-42MS, 08CE15-42MSD, 08CE15-53, 08CE15-54, 08CE15-58, 08CE15-59, LCS-583276, LCS-584945, LCS-586868, LCSD-583944, LCSD-585400, LCSD-586980

The quantitation limits for non-detected 1,1,2,2-Tetrachloroethane, Acetone and Methylene chloride in the samples are qualified “UJ”.

1,1,2,2-Tetrachloroethane
08CE15-01, 08CE15-02, 08CE15-03, 08CE15-04, 08CE15-05, 08CE15-06, 08CE15-07, 08CE15-08, 08CE15-09, 08CE15-10, 08CE15-11, 08CE15-12, 08CE15-13, 08CE15-14, 08CE15-15, 08CE15-16, 08CE15-17, 08CE15-18, 08CE15-19, 08CE15-20, 08CE15-21, 08CE15-22, 08CE15-23, 08CE15-24, 08CE15-25, 08CE15-26, 08CE15-27, 08CE15-28, 08CE15-29, 08CE15-30, 08CE15-31, 08CE15-32, 08CE15-33, 08CE15-34, 08CE15-35, 08CE15-36, 08CE15-37, 08CE15-38, 08CE15-39, 08CE15-40, 08CE15-41, 08CE15-42, 08CE15-43, 08CE15-44, 08CE15-45, 08CE15-46, 08CE15-47, 08CE15-48, 08CE15-49, 08CE15-50, 08CE15-51, 08CE15-52, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59, CCB-51216, CCB-51217, MB-583287, MB-585123, MB586820

Acetone
08CE15-01, 08CE15-03, 08CE15-05, 08CE15-06, 08CE15-07, 08CE15-08, 08CE15-09, 08CE15-10, 08CE15-11, 08CE15-12, 08CE15-13, 08CE15-14, 08CE15-15, 08CE15-16, 08CE15-17, 08CE15-18, 08CE15-19, 08CE15-20, 08CE15-21, 08CE15-22, 08CE15-23, 08CE15-24, 08CE15-25, 08CE15-26, 08CE15-27, 08CE15-28, 08CE15-29, 08CE15-30, 08CE15-31, 08CE15-32, 08CE15-33, 08CE15-34, 08CE15-35, 08CE15-39, 08CE15-40, 08CE15-41, 08CE15-43, 08CE15-44, 08CE15-45, 08CE15-46, 08CE15-47, 08CE15-48,

08CE15-49, 08CE15-50, 08CE15-52, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59, CCB-51216, CCB-51217, MB-583287, MB-585123, MB586820

Methylene chloride
08CE15-01, 08CE15-02, 08CE15-03, 08CE15-04, 08CE15-05, 08CE15-06, 08CE15-07, 08CE15-08, 08CE15-10, 08CE15-12, 08CE15-14, 08CE15-15, 08CE15-16, 08CE15-17, 08CE15-18, 08CE15-19, 08CE15-20, 08CE15-21, 08CE15-22, 08CE15-23, 08CE15-24, 08CE15-25, 08CE15-26, 08CE15-27, 08CE15-28, 08CE15-30, 08CE15-31, 08CE15-32, 08CE15-33, 08CE15-34, 08CE15-35, 08CE15-36, 08CE15-37, 08CE15-38, 08CE15-40, 08CE15-41, 08CE15-42, 08CE15-43, 08CE15-44, 08CE15-45, 08CE15-46, 08CE15-47, 08CE15-48, 08CE15-49, 08CE15-50, 08CE15-51, 08CE15-52, 08CE15-55, 08CE15-56, 08CE15-57, CCB-51216, CCB-51217, MB-583287, MB-585123, MB586820

Continuing Calibrations were conducted at the start of every analytical sequence. All analytes are evaluated for %Ds less than 20%.

The following samples are associated with a continuing calibration where one or more analytes has a %D greater than 20%. Detected compounds should be qualified "J".

2-Hexanone, 4-Methyl-2-pentanone, Trans-1,3-Dichloropropene
08CE15-20MS, 08CE15-20MSD, LCSD-585400

Carbon disulfide
08CE15-20MS, 08CE15-20MSD, 08CE15-42MS, 08CE15-42MSD, LCS-583276, LCS-586868, LCSD-585400, LCSD-586980

Chloromethane
LCS-584945

Methylene chloride
08CE15-13, 08CE15-20MS, 08CE15-20MSD, 08CE15-39, 08CE15-53, 08CE15-54, 08CE15-58, 08CE15-59, LCS-586868, LCSD-585400

Trans-1,2-Dichloroethene
08CE15-09MS, 08CE15-09MSD, 08CE15-22, 08CE15-23, 08CE15-25, 08CE15-27, LCSD-583944

The following samples are associated with a continuing calibration where one or more analytes has a %D greater than 20%. Non-detected quantitation limits should be qualified "UJ".

2-Hexanone
08CE15-02, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59, CCB-51218

4-Methyl-2-pentanone
08CE15-02, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59, CCB-51218

Carbon disulfide
08CE15-02, 08CE15-03, 08CE15-04, 08CE15-05, 08CE15-06, 08CE15-07, 08CE15-08, 08CE15-09, 08CE15-10, 08CE15-12, 08CE15-13, 08CE15-17, 08CE15-18, 08CE15-19, 08CE15-21, 08CE15-28, 08CE15-33, 08CE15-34, 08CE15-35, 08CE15-36, 08CE15-37, 08CE15-38, 08CE15-39, 08CE15-40, 08CE15-41, 08CE15-42, 08CE15-43, 08CE15-44, 08CE15-45, 08CE15-46, 08CE15-47, 08CE15-48, 08CE15-49, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59, CCB-51217, CCB-51218, MB-583287, MB-586820

Chloromethane
08CE15-11, 08CE15-20, MB-585123

Methylene chloride
08CE15-02, 08CE15-28, 08CE15-33, 08CE15-34, 08CE15-35, 08CE15-38, 08CE15-40, 08CE15-41, 08CE15-43, 08CE15-44, 08CE15-45, 08CE15-46, 08CE15-47, 08CE15-48, 08CE15-49, 08CE15-55, 08CE15-56, 08CE15-57, CCB-51218, MB-586820

Trans-1,2-Dichloroethene
08CE15-14, 08CE15-15, 08CE15-24, 08CE15-26, 08CE15-28, 08CE15-30, 08CE15-31, CCB-51216

Trans-1,3-Dichloropropene
08CE15-02, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59, CCB-51218

The following samples are associated with a continuing calibration where one or more surrogates have a %D greater than 20%. Detected and non-detected analytes are not qualified based only on whether the surrogate calibration criteria is fully met.

Bromofluorobenzene, Dibromofluoromethane, Toluene-d8
08CE15-03, 08CE15-04, 08CE15-05, 08CE1506, 08CE15-07, 08CE15-08, 08CE15-09, 08CE15-10, 08CE15-17, 08CE15-18, 08CE15-19, 08CE15-21, LCS-583276, MB-583287

1,2-Dichloroethane-d4, Dibromofluoromethane, Toluene-d8
08CE15-01, 08CE15-04RE, 08CE15-05RE, 08CE15-06RE, 08CE15-09MS, 08CE15-09MSD, 08CE15-09RE, 08CE15-10RE, 08CE15-11, 08CE15-14, 08CE15-15, 08CE15-16, 08CE15-20, 08CE15-22, 08CE15-23, 08CE15-24, 08CE15-25, 08CE15-26, 08CE15-27, 08CE15-28, 08CE15-29, 08CE15-30, 08CE15-31, 08CE15-36, 08CE15-37, 08CE15-40RE, 08CE15-42, 08CE15-42MS, 08CE15-42MSD, 08CE15-50, 08CE15-51, 08CE15-52, CCB-51216, CCB-51217, LCS-584945, LCSD-583944, LCSD-586980, MB-585123

1,2-Dichloroethane-d4, Bromofluorobenzene, Dibromofluoromethane, Toluene-d8
08CE15-02, 08CE15-12, 08CE15-13, 08CE15-20MS, 08CE15-20MSD, 08CE15-28, 08CE15-33, 08CE15-34, 08CE15-35, 08CE15-38, 08CE15-39, 08CE15-40, 08CE15-41, 08CE15-43, 08CE15-44, 08CE15-45, 08CE15-46, 08CE15-47, 08CE15-48, 08CE15-49, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59, CCB-51218, LCS-586868, LCSD-585400, MB-586820

MEE: A 7-pt Initial Calibration curve (2, 5, 10, 20, 50, 100 and 200 ppmV) was performed on February 8, 2008 and evaluated for a Goodness of Fit (correlation coefficient) ≥ 0.995. All %RSDs were less than 15%; therefore, the results do not require any qualification.

Continuing calibrations were analyzed on July 22nd, 23rd and 28th, 2008 at the appropriate frequency of 1 CCV after every 10 field samples. All %Ds were less than 20%; therefore, the results do not require any qualification.

4. BLANKS

VOC: The method blanks for the SW-846 Method 8260B analyses are MB-583287, MB-585123 and MB-586820. Method blank MB-583287 contains Styrene at 0.0616 µg/L. Method blank MB-585123 contains Styrene at 0.0326 µg/L. Method blank MB-586820 contained no target analytes. The analyte was not detected in any of the samples at a concentration below the SAS reporting limit of 0.2 µg/L; therefore no qualification was required for method blank contamination.

In addition to the method blanks there are three (3) VOC Continuing Calibration Blanks (CCBs); CCB-51216, CCB-51217 and CCB-51218. CCB-51216 contained

Styrene at 0.0654 µg/L. CCB-51217 contained no target analytes. No raw data was submitted for CCB-51218.

Sample 08CE15-49 is identified as a Field Blank. The field blank contained Bromodichloromethane at 0.050 µg/L, Chloroform at 1.6 µg/L and Chloromethane at 0.070 µg/L. The concentrations of Bromodichloromethane and Chloromethane were less than the SAS reporting limits of 0.2 µg/L. The concentration of Chloroform is above the SAS reporting limit of 0.2 µg/L.

The following samples reported Bromodichloromethane and Chloromethane below the SAS reporting limit. The presence of Chloromethane was qualified "U" as resulting from field blank contamination.

Chloromethane
08CE15-01, 08CE15-02, 08CE15-03, 08CE15-04, 08CE15-10, 08CE15-15, 08CE15-16, 08CE15-17, 08CE15-23, 08CE15-25, 08CE15-27, 08CE15-28, 08CE15-29, 08CE15-34, 08CE15-36, 08CE15-37, 08CE15-38, 08CE15-40, 08CE15-41, 08CE15-42, 08CE15-44, 08CE15-45, 08CE15-46, 08CE15-47, 08CE15-50, 08CE15-51, 08CE15-52, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57

The following samples reported Chloroform below the field blank concentration. The presence of the Chloroform was qualified "U" as resulting from field blank contamination.

Chloroform
08CE15-12, 08CE15-13, 08CE15-18, 08CE15-28, 08CE15-39, 08CE15-43, 08CE15-48, 08CE15-59

Sample 08CE15-28 is identified as an Equipment Blank. The sample contained no reportable target analytes.

Eleven (11) samples; 08CE15-01, 08CE15-02, 08CE15-11, 08CE15-16, 08CE15-29, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-55 and 08CE15-56 are identified as Trip Blanks. Seven (7) trip blanks; 08CE15-01, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-55 and 08CE15-56, contained no reportable target analytes; therefore no qualification was required for the samples associated with these trip blanks. Sample 08CE15-02 contained Acetone at 2.2 µg/L. Sample 08CE15-11 contained Methylene chloride at 2.0 µg/L. Sample 08CE15-16 contained Methylene chloride at 3.4 µg/L. Sample 08CE15-29 contained Methylene chloride at 5.6 µg/L.

The following samples reported Methylene chloride below the associated trip blank (08CE15-16) concentration. The presence of the Methylene chloride was qualified

"U" as resulting from trip blank contamination. The non-detect is ultimately qualified "UJ" because all the calibration criteria were not met.

Methylene chloride
08CE15-12

MEE: The MEE method blanks are MB-585910, MB-586568, MB-588715 and MB-588916 for the Mod RSK 175 analyses. In addition to the method blanks there are two (2) MEE Continuing Calibration Blanks (CCBs); CCB-51216 and CCB-51217.

None of the Method Blank had any contaminants; therefore, the results are acceptable. The Volatile Method Blank Summaries for Analytical Method Mod RSK 175 list the samples associated with each method blank.

Sample 08CE15-28 is identified as an Equipment Blank and it contained no MEE analytes. Sample 08CE15-49 is identified as a Field Blank and it contained no MEE analytes.

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

VOC: All SW-846 Method 8260B volatile surrogate compounds (1,2-Dichloroethane-d_4, Bromofluorobenzene, Dibromofluoromethane, Toluene-d_8) were within the QC limits (75-135%) for all VOC samples.

MEE: Surrogate recoveries are not applicable to RSK-175 analyses.

6A. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

VOC: Samples 08CE15-09, 08CE15-20 and 08CE15-42 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses.

The %recoveries for Methylene chloride were greater than the upper limit of 130% in samples 08CE15-09MS and 08CE15-09MSD. The %recovery for Methylene chloride was greater than the upper limit of 130% in sample 08CE15-09MS. The %recovery for Trichloroethene was less than 60% in sample 08CE15-09MSD. The RPDs were all less than 30%. The detection of Methylene chloride and Trichloroethene in the unspiked sample, 08CE15-09, is qualified "J".

The %recoveries for 1,1-Dichloroethene were greater than the upper of 130% in samples 08CE15-20MS and 08CE15-20MSD. The %recoveries for Carbon disulfide, Methylene chloride and trans-1,2-Dichloroethene were greater than the upper limit of 130% in sample 08CE15-20MS. The RPDs for Carbon disulfide and Methylene chloride were greater than 30%. The non-detections of 1,1-Dichloroethene and trans-1,2-Dichloroethene in the unspiked sample, 08CE15-20, are not qualified. The non-detection of Carbon disulfide and Methylene chloride in the unspiked sample, 08CE15-20, is qualified "UJ".

The %recoveries for 1,1-Dichloroethene, Carbon disulfide, Methylene chloride, trans-1,2-Dichloroethene and Vinyl chloride were greater than the upper of 130% in samples 08CE15-42MS and 08CE15-42MSD. All RPDs were less than 30. The non-detections of 1,1-Dichloroethene, Carbon disulfide, Methylene chloride, trans-1,2-Dichloroethene and Vinyl chloride in the unspiked sample, 08CE15-42, are not qualified. The non-detect for Methylene chloride is ultimately qualified "UJ" because all the calibration criteria were not met.

MEE: Samples 08CE15-09 and 08CE15-42 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The %recovery for Methane was greater than the upper limit of 130% in sample 08CE15-09MS. The %recovery for Ethane was greater than the upper limit of 130% in sample 08CE15-09MSD. The %recovery for Methane was less than the lower limit of 60% in sample 08CE15-09MSD. The RPD for Methane was greater than 30%. The detections of Ethane and Methane in the unspiked sample, 08CE15-09, are qualified "J".

All %recoveries were between 60% and 130% for all analytes in sample 08CE15-42MS. The %recovery for Methane was below 60% in sample 08CE15-42MSD. All RPDs were less than 30%. The detection of Methane in the unspiked sample, 08CE15-42, is qualified "J".

6B. LABORATORY CONTROL SAMPLES

VOC: The VOC laboratory control samples are LCS-583276, LCS-584945 and LCS-586868. The VOC laboratory control duplicate samples are LCSD-586980, LCSD-585400 and LCSD-583944.

LCS-583276 and LCSD-583944 were analyzed July 21 - 22, 2008. The percent recovery for Carbon disulfide was greater than the upper limit of 130% in LCSD-583944. The RPDs for Acetone, Carbon disulfide and Methylene chloride were greater than 30%. The detections of the analytes in the associated samples are qualified "J". The quantitation limits for the non-detected analytes in the following associated samples are qualified "UJ".

Acetone, Carbon disulfide, Methylene chloride
08CE15-03, 08CE15-05, 08CE15-06, 08CE15-07, 08CE15-08, 08CE15-09, 08CE15-09MS, 08CE15-09MSD, 08CE15-14, 08CE15-15, 08CE15-17, 08CE15-18, 08CE15-19, 08CE15-21, 08CE15-22, 08CE15-23, 08CE15-24, 08CE15-25, 08CE15-26, 08CE15-27, 08CE15-28, 08CE15-30, 08CE15-31

LCS-586868 and LCSD-586980 were analyzed July 22 - 23, 2008. The percent recoveries for Methylene chloride were greater than 130% for both LCS-586868 and LCSD-586980. All RPDs were less than 30%. The detection of Methylene chloride in the associated samples should be qualified "J". The quantitation limits for the non-detected Methylene chloride in the following associated samples do not require any qualification. The non-detects for Methylene chloride are ultimately qualified "UJ" because all the calibration criteria were not met.

Methylene chloride
08CE15-04, 08CE15-10, 08CE15-12, 08CE15-13, 08CE15-33, 08CE15-35, 08CE15-36, 08CE15-37, 08CE15-38, 08CE15-39, 08CE15-40, 08CE15-42, 08CE15-42MS, 08CE15-42MSD, 08CE15-43, 08CE15-46, 08CE15-47, 08CE15-48, 08CE15-49

LCS-584945 and LCSD-585400 were analyzed July 24, 2008. The percent recovery for Methylene chloride was greater than the upper limit of 130% in LCSD-585400. The RPD for Methylene chloride was greater than 30%. The detection of Methylene chloride in the associated samples is qualified "J". The quantitation limits for the non-detected Methylene chloride in the following associated samples is qualified "UJ".

Methylene chloride
08CE15-01, 08CE15-02, 08CE15-11, 08CE15-16, 08CE15-20, 08CE15-20MS, 08CE15-20MSD, 08CE15-29, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-50, 08CE15-51, 08CE15-52, 08CE15-53, 08CE15-54, 08CE15-55, 08CE15-56, 08CE15-57, 08CE15-58, 08CE15-59

MEE: The MEE laboratory control samples are LCS-585909 and LCS-586443. The MEE laboratory control sample duplicates are LCSD-588912 and LCSD-586569. All recoveries were within the QC limits of 60 – 130%. All RPDs were less than 30%. No qualification of the samples is required.

7. FIELD BLANK AND FIELD DUPLICATE

VOC: Eleven (1) samples; 08CE15-01, 08CE15-02, 08CE15-11, 08CE15-16, 08CE15-29, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-55 and 08CE15-56 are identified as Trip Blanks. Seven (7) trip blanks; 08CE15-01, 08CE15-34, 08CE15-41, 08CE15-44, 08CE15-45, 08CE15-55 and 08CE15-56, contained no reportable target analytes. Sample 08CE15-02 contained Acetone at 2.2 µg/L. Sample 08CE15-11 contained Methylene chloride at 2.0 µg/L. Sample 08CE15-16 contained Methylene chloride at 3.4 µg/L. Sample 08CE15-29 contained Methylene chloride at 5.6 µg/L.

Sample 08CE15-28 is identified as an Equipment Blank. The equipment blank contained no reportable target analytes.

Sample 08CE15-49 is identified as a Field Blank. The field blank contained Bromodichloromethane at 0.050 µg/L, Chloroform at 1.6 µg/L and Chloromethane at 0.070 µg/L.

Sample 08CE15-06 is a field replicate of 08CE15-05. Sample 08CE15-13 is a field replicate of 08CE15-12. Sample 08CE15-15 is a field replicate of 08CE15-14. Sample 08CE15-22 is a field replicate of 08CE15-21. Sample 08CE15-37 is a field replicate of 08CE15-36. Sample 08CE15-53 is a field replicate of 08CE15-52. Sample results and RPDs for these replicate pairs are summarized in the following table.

Analyte	**08CE15-05**	**08CE15-06**	RPDs
	Df = 1.0/100.0	Df = 1.0/100.0	
1,1,1-Trichloroethane	87	97	10.9 %
1,1,2-Trichloroethane	0.082	0.086	4.8 %
1,1-Dichloroethane	11	11	0.0 %
1,1-Dichloroethene	5	6.2	21.4 %
Cis-1,2-Dichloroethene	99	100	1.0 %
Trans-1,2-Dichloroethene	1.5	1.7	12.5 %
Trichloroethene	770	800	3.8 %
Vinyl chloride	0.18	0.22	20.0 %

Analyte	**08CE15-12**	**08CE15-13**	RPDs
	Df = 5.0	Df = 5.0	
1,1-Dichloroethane	6.7	6.6	1.5 %
1,1-Dichloroethene	1.7	1.6	6.1 %
Bromodichloromethane		0.23	200.0 %
Chloroform	0.12	0.29	82.9 %
Chloromethane	0.43	0.36	17.7 %
Cis-1,2-Dichloroethene	31	32	3.2 %
Dibromochloromethane		0.18	200.0 %
Methylene chloride		3.5	200.0 %
Trans-1,2-Dichloroethene	0.83	0.82	1.2 %
Trichloroethene	12	12	0.0 %
Vinyl chloride	0.47	0.48	2.1 %

Analyte	**08CE15-14**	**08CE15-15**	RPDs
	Df = 1.0	Df = 1.0	
Carbon disulfide	0.095		200.0 %
Chloromethane		0.095	200.0 %
Cis-1,2-Dichloroethene	0.29	0.24	18.9 %
Methyl tert-butyl ether	0.35	0.30	15.4 %
Trichloroethene	0.08	0.056	35.3 %

Analyte	**08CE15-21**	**08CE15-22**	RPDs
	Df = 1.0	Df = 1.0	
Cis-1,2-Dichloroethene	2.1	2.1	0.0 %
Methyl tert-butyl ether	0.89	0.86	3.4 %
Trans-1,2-Dichloroethene	0.12	0.10	18.2 %
Trichloroethene	0.17	0.15	12.5 %
Vinyl chloride	0.048	0.04	18.2 %

Analyte	**08CE15-36**	**08CE15-37**	RPDs
	Df = 1.0	Df = 1.0	
2-Butanone	0.86	1.1	24.5 %
Acetone	3.7	7.1	63.0 %
Chloromethane	0.054	0.074	31.2 %
Toluene	1.3	1.3	0.0 %

Analyte	**08CE15-52**	**08CE15-53**	RPDs
	Df = 1.0	Df = 1.0	
Acetone		2.9	200.0 %
Chloromethane	0.15	0.063	81.7 %
Methylene chloride		2.4	200.0 %

MEE: Sample 08CE15-28 is identified as an Equipment Blank and it contained no MEE analytes. Sample 08CE15-49 is identified as a Field Blank and it contained no MEE analytes.

Sample 08CE15-06 is a field replicate of 08CE15-05. Sample 08CE15-15 is a field replicate of 08CE15-14. Sample 08CE15-37 is a field replicate of 08CE15-36. Sample results and RPDs for these replicate pairs are summarized in the following table.

Analyte	**08CE15-05**	**08CE15-06**	RPDs
	Df = 10.0	Df = 5.0	
Methane	60	84	33.3 %
	08CE15-14	**08CE15-15**	
	Df = 10.0	Df = 10.0	
Methane	64	72	11.8 %
	08CE15-36	**08CE15-37**	
	Df = 20.0	Df = 20.0	
Methane	360	310	14.9 %

8. INTERNAL STANDARDS

The three internal standard's (Fluorobenzene, Chlorobenzene-d_5, 1,4-Dichlorobenzene-d_4) retention times and area counts for the VOC samples were within the QC limits; therefore, the results are acceptable.

9. COMPOUND IDENTIFICATION

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

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

VOC: All samples were waters and dilutions were run. The reporting limits for the VOC compounds were less than or equal to the reporting limits specified in the SAS contract for all analytes; except 1,1,2,2-Tetrachloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene. The requested reporting limit for cis-1,3-Dichloropropene was

0.016 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for trans-1,3-Dichloropropene was 0.015 µg/L and the actual reporting limit was 0.017 µg/L. The requested reporting limit for 1,1,2,2-Tetrachloroethane was 0.018 µg/L and the actual reporting limit was 0.019 µg/L. Xylenes (total) was reported as m,p-Xylene and o-Xylene.

The following VOC samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

1,1,1-Trichloroethane
08CE15-51

1,2-Dichloroethane
08CE15-03, 08CE15-23, 08CE15-40

1,1,2-Trichloroethane
08CE15-05, 08CE15-06

2-Butanone
08CE15-36, 08CE15-37, 08CE15-38

Acetone, Tetrachloroethene
08CE15-51

Bromodichloromethane, Dibromochloromethane
08CE15-13

Carbon disulfide
08CE15-14

Chloroethane
08CE15-40

Chloromethane
08CE12-49

Cis-1,2-Dichloroethene
08CE15-10, 08CE15-31, 08CE15-51

Ethylbenzene, Toluene
08CE15-32

Isopropylbenzene
08CE15-26, 08CE15-32

M,p-Xylene
08CE15-26

Styrene
MB-583287, MB-585123

Trans-1,2-Dichloroethene
08CE15-17, 08CE15-21, 08CE15-22, 08CE15-25, 08CE15-27, 08CE15-50

Trichloroethene
08CE15-14, 08CE15-15, 08CE15-17, 08CE15-18, 08CE15-21, 08CE15-22,

08CE15-23, 08CE15-24

MEE: The reporting limit for Ethane, Ethene and Methane were less than or equal to 10 µg/L as specified in the SAS contract.

The following MEE samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

Ethane
08CE15-09, 08CE15-09MS, 08CE15-09MSD, 08CE15-42MS, 08CE15-42MSD, 08CE15-59, LCS-585909, LCS-586443, LCSD-586569, LCSD-588912

Ethene
08CE15-09MS, 08CE15-09MSD, 08CE15-42MS, 08CE15-42MSD, 08CE15-58, LCS-585909, LCS-586443, LCSD-586569, LCSD-588912

Methane
08CE15-03, 08CE15-42, 08CE15-42MS, 08CE15-42MSD, 08CE15-43, 08CE15-48, 08CE15-51, LCS-585909, LCS-586443, LCSD-586569, LCSD-588912

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance.

12. ADDITIONAL INFORMATION

The final shipment of samples arrived at the Laboratory on July 18, 2008. The Laboratory Case Narrative was prepared on August 4, 2008 and forwarded by Ch2mHill to the CRL after August 15, 2008.

Photocopies of the airbills were included with this package. The original sample tags, packing list and airbills should have been sent to CH2M HILL.

Copies of the most recent MDL studies were not included with this data package but MDL (LOD – Level of Detection) values are present on the Laboratory Form Is.

No Form 1A – Volatile Organic Analysis was submitted for the analysis of sample 08CE15-44. All raw data for the analytical run (batch 51218, run 582402) was included in the data package. The reviewer regarded the run as a valid analysis and evaluated the sample accordingly. The raw data is included with the hardcopy validation package.

Reviewed by: Allison C Harvey / TechLaw-ESAT
Date: September 23, 2008

Bromomethane was detected in the following samples according to the raw data, but the analyte was not reported by the laboratory. The quantitation reports indicate that the target scan did not match the reference scan even though the laboratory software made a positive identification. No explanation for the omission was found in the Case Narrative. The raw data is included with the hardcopy validation package for the following samples.

08CE15-28, 08CE15-29, 08CE15-44

VOC SAS Table II. QC Requirements lists the frequency of audits for method blanks as 'at least one per group of 10 or fewer samples'. The laboratory provided only 3 analyses identified as method blanks and an additional two analyses identified as Continuing Calibration Blanks. Volatile analyses require the analysis of a QC blank on each day of analysis and the volatile analyses spanned a 5-day time period. Inspections of both SW-846 Method 8000 (Determinative Chromatographic Separations, Sec. 7.7 & 8.2) and Method 8260 (Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, Sec. 8.4) indicate that the terms method blank and continuing calibration blank could describe the same QC sample. As the CCB samples were analyzed daily and followed the Continuing Calibration Verification Standard, the Reviewer regarded them as method blanks for this data package. No Analysis Data Sheets were provided for the CCB samples. Copies of the raw data for these QC samples and the Form 5As (Volatile Organic Instrument Performance Check) are included with the hardcopy validation package.

The methods blanks were also non-compliant with the QC requirements identified in Table II in the following instances;

a) MB-583276 is associated with 12 samples rather than 10 samples.
b) CCB-51216 is associated with 11 samples rather than 10 samples.
c) MB-586820 is associated with 13 samples rather than 10 samples.
d) CCB-51218 is associated with 12 samples rather than 10 samples.

The following VOC samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted compound results were reported for the affected samples:

08CE15-05, 08CE15-06, 08CE15-07, 08CE15-08, 08CE15-09, 08CE15-12, 08CE15-13, 08CE15-39, 08CE15-40, 08CE15-43, 08CE15-48, 08CE15-58, 08CE15-59

The following MEE samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted compound results were reported for the affected samples:

08CE15-05, 08CE15-06, 08CE15-07, 08CE15-08, 08CE15-09, 08CE15-10,
08CE15-12, 08CE15-13, 08CE15-14, 08CE15-15, 08CE15-32, 08CE15-33,
08CE15-35, 08CE15-36, 08CE15-37, 08CE15-38, 08CE15-57, 08CE15-58,
08CE15-59

Raw data (pgs 721 thru 730) for three (3) MEE samples analyzed on July 22, 2008 were included with the data package. The CTL Sample IDs are 581466, 581467 and 581468.

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.

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: December 9, 2008

SUBJECT: Review of Data
Received for review on August 18, 2008

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 Company (WI)

CASE NUMBER: 08CE15 **SDG NUMBER:** 66764-INO

Number and Type of Samples: 31 water samples

Sample Numbers: 08CE15-01, -04, -06, -08, -12, -14, -17, -19, -21, -23, -25, -27, -32, -35, -37
-37, -39, -42, -48, -50, -52, -54, -56, -58, -65, -69, -74, -76, -79, -81, -87, -89

Laboratory: CT Laboratories **Hrs. for Review:** ________

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 31 water samples (see TABLE 1). The samples were collected between July 14 and 17, 2008. They were analyzed for alkalinity, total organic carbon (TOC), sulfide, nitrate, sulfate and chloride. All sample results are reported to the MDL. The samples were analyzed using SW846 9056 (anions), 9060 (total organic carbon), EPA 310.2 (alkalinity), and 376.1 (sulfide) analysis procedures.

Evidential Audit: All reporting forms provided are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms or sample tags were provided.

No MDL summaries were provided. It is unknown when MDLs were performed. MDL (LOD) values recorded on the results Form 1 were used for evaluation of the data. MDL and RL values on Form 1s are equal.

Alkalinity: The SAS requires that the lowest calibration point be run at 10.0 mg/L. The lowest point performed was 25 mg/L. All sample results were above 25 mg/L except samples 08CE15-28 and 08CE15-49, which were non-detects. These samples are flagged "UJ". All other alkalinity results are acceptable.

Ammonia: No defects were found. All ammonia results are acceptable

Chloride: No defects were found. All chloride results are acceptable.

Nitrate: No defects were found. All nitrate results are acceptable.

Ortho-phosphate: No defects were found. All ortho-phosphate results are acceptable.

Sulfate: The matrix spike recovery was below the acceptable limit for sample 08CE15-50. Samples 08CE15-50, -51, -57, -58 and -59 are flagged "J" and considered estimated. All other sulfate results are acceptable

Sulfide: No defects were found. All sulfide results are acceptable.

TOC: The SAS requires a low standard be run to confirm the reporting limit of 1.0 mg/L. This was not performed. The lowest calibration standard was 10 mg/L. TOC results for 08CE15-04 thru -06, -08 thru -10, -12 thru -15, -28, -31, -32, -39, -40, -42, -43, -48 thru -51, -57 and -58 are below 10 mg/L and are estimated "J" for detects and "UJ" for non-detects.

Other comments: Samples 08CE15-36/-37 were identified as a field duplicate pair. Duplicates were evaluated according to the same criteria as laboratory duplicates. All tests showed good correlation. Sample 08CE15-49 was identified as field blank. Sample 08CE15-28 was identified as equipment blank. The equipment blank and field blank showed no contamination.

Reviewed by: Paul Little (TechLaw/ESAT)
Date: 12/09/2008

TABLE 1

Lab ID	*EPA sample ID*	*Sample location*	*Cooler Tem.*	*Collection date*	*Collection time*	*Received date*
581643	08CE15-03	OPE-MW-004D	1.9	7/14/2008	12:15	7/15/2008
581649						
581657	08CE15-04	OPE-MW-004S	4.3	7/14/2008	11:00	7/15/2008
581658						
581652	08CE15-05	OEP-MW-103D	1.9	7/14/2008	15:30	7/15/2008
581653						
581654	08CE15-06	OEP-MW-103D	1.9	7/14/2008	15:35	7/15/2008
581655						
581659	08CE15-07	OEP-MW-103S	4.3	7/14/2008	15:40	7/15/2008
581660						
581661	08CE15-08	OEP-MW-005D	4.3	7/14/2008	16:25	7/15/2008
581662						
581993	08CE15-09	OEP-MW-105S	2.9	7/15/2008	10:25	7/16/2008
581994						
581996	08CE15-10	OEP-MW-105B	2.9	7/15/2008	11:40	7/16/2008
581997						
582014	08CE15-12	OEP-MW-105D	7.2	7/15/2008	10:45	7/16/2008
582015						
582016	08CE15-13	OEP-MW-105D	7.2	7/15/2008	10:50	7/16/2008
582017						
582018	08CE15-14	OEP-MW-101B	7.2	7/15/2008	14:55	7/16/2008
582022						
582023	08CE15-15	OEP-MW-101B	7.2	7/15/2008	16:25	7/16/2008
582024						
582010	08CE15-28	OEP-EB-001	Not recorded	7/15/2008	11:55	7/16/2008
582011						
582026	08CE15-31	OEP-MW-001S	2.9	7/15/2008	14:35	7/16/2008
582027						
582028	08CE15-32	OEP-MW-001D	2.9	7/15/2008	15:35	7/16/2008
582029						
582030	08CE15-33	OEP-MW-003D	2.9	7/15/2008	16:00	7/16/2008
582031						
582354	08CE15-35	OEP-MW-012B	3.2	7/15/2008	9:40	7/16/2008
582360						
582390	08CE15-36	OEP-SW-01	3.1	7/16/2008	10:10	7/17/2008
582391						
582392	08CE15-37	OEP-SW-01FR	3.1	7/16/2008	10:15	7/17/2008
582393						
582361	08CE15-38	OEP-SW-03	3.2	7/16/2008	10:30	7/17/2008
582367						
582369	08CE15-39	OEP-MW-012S	3.2	7/16/2008	9:35	7/17/2008
582371						
582372	08CE15-40	OEP-MW-012D	3.2	7/16/2008	10:25	7/17/2008
582373						
582394	08CE15-42	OEP-MW-015S	3.1	7/16/2008	12:25	7/17/2008

582376	08CE15-43	OEP-MW-102D	3.2	7/16/2008	12:10	7/17/2008
582378	08CE15-43	OEP-MW-102D	3.2	7/16/2008	12:10	7/17/2008
582383	08CE15-48	OEP-MW-015D	3.2	7/16/2008	15:50	7/17/2008
582384						
582385	08CE15-49	OEP-FB-001	3.2	7/16/2008	16:00	7/17/2008
582703	08CE15-50	OEP-MW-013D	1.9	7/17/2008	9:55	7/18/2008
582704						
582705	08CE15-51	OEP-MW-013S	1.9	7/17/2008	10:00	7/18/2008
582706						
582686	08CE15-57	OEP-MW-015B	4.5	7/17/2008	14:45	7/18/2008
582687						
582688	08CE15-58	OEP-MW-016S	4.5	7/17/2008	14:50	7/18/2008
582689						
582700	08CE15-59	OEP-SW-02	4.5	7/17/2008	15:15	7/18/2008
582701						

Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Paul Little (TechLaw/ESAT)
Date: 12/09/2008

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 11/10/08

SUBJECT: Review of Data
Received for review on 8/18/08

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: 08CE15 **SDG NUMBER:** 67764-MET

Number and Type of Samples: 58 waters (31 total/31 dissolved)

Sample Numbers: 08CE15-03 thru -10, -12 thru -15, -28, -31 thru -33, -35 thru -40, -42, -43, -48 thru -51, -57 thru -59

Laboratory: CT Laboratories **Hrs. for Review:** ______________

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 61 water samples (31 dissolved, 30 total, see attached table) which were collected between July 14 and 17, 2008 and received at the laboratory between July 15 and 17, 2008. They were analyzed for iron and manganese. Total and dissolved samples were assigned the same EPA sample IDs by the field personnel. See the attached table for specific identifiers. All sample results are reported to the MDL. The samples were analyzed using SW846 6010B (ICP-AES) analysis procedures.

Evidential Audit: All provided ICP reporting forms are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms, or sample tags were provided. Form 1s were not included for all dissolved samples; they were provided upon request.

No analytical date was provided on the MDL summary form or the linearity form. MDL and linearity values recorded on the forms provided were used for evaluation of the data.
The values provided for MDLs on the calibration blanks forms (30 for Fe, 10 for Mn) were different from the Level of Detection (LOD) listed on the Form 1s (8 total Fe, 5 dissolved Fe, 4 total Mn, 1.2 dissolved Mn). Reporting limits (RL) were equal to the LOD on the original Forms but were different for total metals Forms when the Forms were resubmitted. The resubmitted Forms are included with the data package. Dissolved LOD values are used for evaluation of the blank data. No values or units were filled in for the method blanks for the dissolved analyses.

The Duplicate Forms included (pages 1120-1123 in the case) are for the LCS/LCSD. No sample description is provided on the Form. Duplicate forms are also included for the MS/MSD. The laboratory performed post digestion spikes on perceived serial dilution failures and reported results unqualified. This does not make the data reportable. Samples affected by failed serial dilutions are qualified due to possible matrix interferences.

No times are included on the Analysis Run Logs for the calibration. Four run logs were included with the case; three represent parts of the same analytical run. Standards used on multiple "runs" are identified with different identifications. Some standards have 3 different identifiers for the same standard.

ICP-AES: Section 8(d) of the SAS requires that the RL must be shown to have been met before any samples are analyzed; both the "MRL" samples analyzed in the second analytical run (July 22 to 23, 2008) failed greater than 200% recovery for Mn. The laboratory states that an "MDL Check" was analyzed with an acceptable result for Mn. No Form was submitted for this sample and it is not listed on the Analysis Run Log. A sample identified as "mdl chk" on the raw data was analyzed, however, no true value was provided; therefore the recovery of that sample cannot be evaluated. All Mn results less than 5 times the true value of the MRL standard (total Mn for samples 08CE15-42 and -50) are rejected "R."

Results for dissolved sample 08CE15-35 are reported as non-detects. The raw instrument data indicate the results should be 470 ug/L Fe and 14.0 ug/L Mn. The non-detect results are rejected "R."

For Fe, the RPD for the serial dilution performed on dissolved sample 08CE15-09 was greater than 10% indicating possible physical or chemical interference; the dissolved Fe results for samples 08CE15-03 thru -10, -12 thru -15, -28, -31 thru -33, -35 and -38 thru -40 are estimated "J" for detects and "UJ" for non-detects due to possible physical or chemical interference. Finally, the serial dilution for 08CE15-42 dissolved is noted by the laboratory as having failed; however, the undiluted sample result is less than 50 times the MDL. Application of serial dilution as a control criteria is not warranted.

For Mn, the absolute value for total method blank 51260 (laboratory ID 581857) was greater than the SAS required reporting limit. The Mn result for total samples 08CE15-32, -33, -35 and -40 are estimated "J-" due to a possible low bias. Also, non-detect Mn results for 08CE15-28 (total and dissolved) and -51 total are rejected "R" because the instrument value is less than the negative SAS required reporting limit. Additionally, the dissolved Mn result for 08CE15-51 is estimated "J" because the reported results are between the LOD and the SAS required RL. Finally, the serial dilution for 08CE15-42 dissolved is noted by the laboratory as having failed; however, the undiluted sample result is less than 50 times the MDL. Application of serial dilution as a control criteria is not warranted.

Other comments: Total and dissolved samples 08CE15-05/-06, -12/-13, -14/-15 and -36/-37 were identified as field duplicates. Duplicates were evaluated according to the same criteria as laboratory duplicates. All showed good correlation except total samples 08CE15-14/-15 (iron only); no sample results were qualified for field duplicate failure.

Total and dissolved samples 08CE15-28 were identified as equipment blanks. Sample 08CE15-49 was identified as a field blank (total only) on the Field Chain of Custody. It was analyzed as a dissolved (undigested) sample. No contamination was found in any of the equipment or field blanks.

Reviewed by: Stephen Connet
Date: 11/10/2008

Lab ID	Sample ID	Lab ID	Sample ID	Sample Point	Sample Date	Sample Time
	(Total)		(Dissolved)			
581643	08CE15-03	581649	08CE15-03	OEP-MW-004D	7/14/2008	12:15
581657	08CE15-04	581658	08CE15-04	OEP-MW-004S	7/14/2008	11:00
581652	08CE15-05	581653	08CE15-05	OEP-MW-103D	7/14/2008	15:30
581654	08CE15-06	581655	08CE15-06	OEP-MW-103DFR	7/14/2008	15:35
581659	08CE15-07	581660	08CE15-07	OEP-MW-103S	7/14/2008	15:40
581661	08CE15-08	581662	08CE15-08	OEP-MW-005D	7/14/2008	16:25
581993	08CE15-09	581994	08CE15-09	OEP-MW-105S	7/15/2008	10:25
581996	08CE15-10	581997	08CE15-10	OEP-MW-105B	7/15/2008	11:40
582014	08CE15-12	582015	08CE15-12	OEP-MW-105D	7/15/2008	10:45
582016	08CE15-13	582017	08CE15-13	OEP-MW-105DFR	7/15/2008	10:50
582018	08CE15-14	582022	08CE15-14	OEP-MW-101B	7/15/2008	14:50
582023	08CE15-15	582024	08CE15-15	OEP-MW-101BFR	7/15/2008	14:55
582010	08CE15-28	582011	08CE15-28	OEP-EB-001	7/15/2008	11:55
582026	08CE15-31	582027	08CE15-31	OEP-MW-001S	7/15/2008	14:35
582028	08CE15-32	582029	08CE15-32	OEP-MW-001D	7/15/2008	15:35
582030	08CE15-33	582031	08CE15-33	OEP-MW-003D	7/15/2008	16:00
582354	08CE15-35	582360	08CE15-35	OEP-MW-012B	7/16/2008	9:40
582390	08CE15-36	582391	08CE15-36	OEP-SW-01	7/16/2008	10:10
582392	08CE15-37	582393	08CE15-37	OEP-SW-01FR	7/16/2008	10:15
582361	08CE15-38	582367	08CE15-38	OEP-SW-03	7/16/2008	10:30
582369	08CE15-39	582371	08CE15-39	OEP-MW-012S	7/16/2008	9:35
582372	08CE15-40	582373	08CE15-40	OEP-MW-012D	7/16/2008	10:25
582394	08CE15-42	582401	08CE15-42	OEP-MW-015S	7/16/2008	12:25
582376	08CE15-43	582378	08CE15-43	OEP-MW-102D	7/16/2008	12:10
582383	08CE15-48	582384	08CE15-48	OEP-MW-015D	7/16/2008	15:50
582385	08CE15-49			OEP-FB-001	7/16/2008	16:00
582703	08CE15-50	582704	08CE15-50	OEP-MW-013D	7/17/2008	9:55
582705	08CE15-51	582706	08CE15-51	OEP-MW-013S	7/17/2008	10:00
582686	08CE15-57	582687	08CE15-57	OEP-MW-015B	7/17/2008	14:45
582688	08CE15-58	582689	08CE15-58	OEP-MW-016S	7/17/2008	14:50
582700	08CE15-59	582701	08CE15-59	OEP-SW-02	7/17/2008	15:15

Reviewed by: Stephen Connet
Date: 11/10/2008

Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: Stephen Connet
Date: 11/10/2008

Data Usability Evaluation
Oconomowoc Electroplating Company, Inc. Site, Ashippun, Wisconsin
WA No. 003-LRLR-05M8, Contract No. EP-S5-06-01

PREPARED FOR:	U.S. Environmental Protection Agency
PREPARED BY:	Adrienne Unger/CH2M HILL
DATE:	May 15, 2009

This memorandum presents the data usability evaluation of the groundwater samples collected during the field investigation conducted at the Oconomowoc Electroplating Company, Inc., site in Ashippun, Wisconsin, during the week of October 6, 2008. CH2M HILL performed the sampling, and CT Laboratories, Inc. of Baraboo, Wisconsin, performed the analyses.

Fifty-seven groundwater and surface water samples were collected, including quality control (QC) samples, and were analyzed for one or more of the following U.S. Environmental Protection Agency (USEPA)-approved methods:

- Volatile organic compounds (VOCs) by USEPA SW-846 Method 8260
- Alkalinity by USEPA 310.2
- Ammonia by USEPA 350.1
- Chloride by USEPA SW-846 Method 9056
- Methane, ethane, and ethene by RSK 175
- Nitrate by USEPA SW-846 Method 9056
- Orthophosphate by USEPA SW-846 Method 9056
- Sulfate by USEPA SW-846 Method 9056
- Sulfide by USEPA 376.1
- Total organic carbon by USEPA SW-846 Method 9060
- Total metals by USEPA SW-846 Method 6010B
- Dissolved metals by USEPA SW-846 Method 6010B

As part of the quality assurance (QA) process outlined in the field sampling plan (CH2M HILL, 2006), QC samples were collected in the field to complement the assessment of overall data quality and usability. The QC samples collected were field duplicates, aliquots for laboratory matrix spike/matrix spike duplicates (MS/MSDs), a field blank, and an equipment blank. VOC trip blanks were also used as a means of QC; these samples were supplied by the laboratory.

The dataset was reviewed by the USEPA Environmental Service Assistance Team (ESAT) contractor, TechLaw, (Attachment 1) to assess the accuracy and precision of the method and the matrix using criteria established in the National Functional Guidelines (NFG) for data review. Completeness of the dataset was then derived. USEPA validators added data qualifiers when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

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

[U] The sample target was analyzed for but not detected above the level of the associated limit of detection or quantitation.

[J] The associated value is an estimated quantity. This qualifier was appended when the data indicated the presence of a specific target analyte but was below the stated reporting (or quantitation) limit, and/or when QC statistics alluded to an analytical bias.

[UJ] The component was analyzed for but not detected at a level equal to or greater than the level of detection (LOD) or quantification (often the reporting limit [RL]). This flag was used when QC measurements indicated a possible low bias in the analytical data.

[R] Rejected. The data were of insufficient quality to be deemed acceptable as reported or otherwise qualified.

Groundwater Samples

CH2M HILL reviewed the validation performed by USEPA for the groundwater samples in sample delivery group (SDG) 69525. Table 1 lists the sample identifications (IDs) and Station Locations that were reviewed (100 percent of all samples collected).

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
09CE01-01	OEP-MW-103S	09CE01-20	OEP-MW-04S	09CE01-39	OEP-PW-03
09CE01-02	OEP-MW-103SFR	09CE01-21	OEP-MW-04D	09CE01-40	OEP-PW-03FR
09CE01-03	OEP-MW-3D	09CE01-22	OEP-MW-01S	09CE01-41	OEP-JS-08
09CE01-04	OEP-MW-103D	09CE01-23	OEP-MW-01D	09CE01-42	OEP-MW-12B
09CE01-05	OEP-MW-5D	09CE01-24	OEP-SW-01	09CE01-43	OEP-MW-12D
09CE01-06	OEP-JS-01	09CE01-25	OEP-PW-01	09CE01-44	OEP-MW-12S
09CE01-07	OEP-MW-105S	09CE01-26	OEP-PW-02	09CE01-45	OEP-PW-11
09CE01-08	OEP-MW-105B	09CE01-27	OEP-PW-07	09CE01-46	OEP-MW-106S
09CE01-09	OEP-MW-105D	09CE01-28	OEP-PW-04	09CE01-47	OEP-MW-106D
09CE01-10	OEP-MW-101B	09CE01-29	OEP-PW-08	09CE01-48	OEP-SW-03
09CE01-11	OEP-JS-02	09CE01-30	OEP-PW-09	09CE01-49	OEP-SW-03FR
09CE01-12	OEP-FB-01	09CE01-31	OEP-MW-102D	09CE01-50	OEP-JS-09
09CE01-13	OEP-MW-15D	09CE01-32	OEP-JS-05	09CE01-51	OEP-JS-10

TABLE 1
Sample Summary by Laboratory ID and Station Location
Oconomowoc Electroplating

Sample ID	Location	Sample ID	Location	Sample ID	Location
09CE01-14	OEP-MW-15D FR	09CE01-33	OEP-JS-06	09CE01-52	OEP-DW-01
09CE01-15	OEP-MW-15B	09CE01-34	OEP-JS-07	09CE01-53	OEP-JS-11
09CE01-16	OEP-MW-15S	09CE01-35	OEP-MW-13S	09CE01-54	OEP-MW-107D
09CE01-17	OEP-EB-01	09CE01-36	OEP-MW-13D	09CE01-55	OEP-MW-107S
09CE01-18	OEP-JS-03	09CE01-37	OEP-PW-10	09CE01-56	OEP-MW-16S
09CE01-19	OEP-JS-04	09CE01-38	OEP-PW-05	09CE01-57	OEP-SW-02

The USEPA validation case narratives and worksheets indicate which of these sample results were biased as a result of applicable QC statistics or other NFG requirements. The qualifications are described in Attachment 1. Three results were rejected.

- The percent recovery for styrene was less than 20% in the matrix spike duplicate for sample 09CE01-25. The non-detected sample result for styrene in the unspiked sample, 09CE01-25, was qualified "R" as unusable.
- The percent recoveries for ethane and ethene were less than 20% in the matrix spike duplicate for sample 09CE01-22. The non-detected sample results for ethane and ethene in the unspiked sample, 09CE01-22, were qualified "R" as unusable.

The dataset completeness is 99.9 percent usable and may be used in the project decision-making process with qualification. In addition, approximately 10 percent of the data underwent a comparative review to evaluate the accuracy between the database and the USEPA validation reports. No discrepancies were noted.

Conclusions

The USEPA validation reports were verified to comply with the applicable NFG for data review. This verification confirmed that the validation performed by USEPA was complete for the entire dataset analyzed by CT Laboratories. Qualified data, if not rejected, are considered usable for the project decision-making process. The project data quality objectives (DQOs) established a completeness goal for the project at 90 percent. The percent completeness for these groundwater data is 99.9 percent (0.1 percent of the data were rejected) and met the established DQOs set forth in the quality assurance project plan (CH2M HILL, 2004).

Data summary tables of the results have been provided as a table in the *2008 Fourth Quarter Groundwater Report – OECI Site.* An electronic file of these data also will be submitted as part of this deliverable.

Reference Cited

CH2M HILL. 2004. *Quality Assurance Project Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin*. WA No. 236-RALR-05M8 Contract No. 68-W6-0025. October.

CH2M HILL. 2006. *Field Sampling Plan, Oconomowoc Electroplating, Oconomowoc, Wisconsin*. WA No. 003-LRLR-05MS Contract No. EP-SS-06-01. October.

Attachment 1
Validation Narratives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: November 10, 2008

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 Company (WI)

SAS Project: 09CE01 SDG Number: 69525-ORG

Number and Type of Samples: 57 Waters (57 VOCs/ 30 MEE)

Sample Numbers: 09CE01-01 through 09CE01-57

Laboratory: CT Laboratories Hrs for Review:

Following are our findings:

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

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

Fifty seven (57) preserved water samples listed in the following table were collected from 10/06/08 through 10/16/08. CT Laboratories of Baraboo, Wisconsin received the samples from 10/07/08 through 10/17/08. A total of eleven (11) samples were received with a cooler temperature outside the optimum shipping range of 2 – 6 ®C. The samples, sample location, sampling dates, receipt temperatures and analytical dates are identified in the following table. All fifty seven (57) samples were analyzed from 10/13/08 through 10/28/08 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through May 2009. Thirty (30) samples were analyzed 10/18/08 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

EPA ID	CTI Lab ID	Sample location	Date sampled	Receipt Temp	VOC Analyses	MEE Analyses
09CE01-01	613050	OEP-MW-103S	10/06/08	2.8	10/14/08	10/18/08
09CE01-02	613052	OEP-MW-103SFR	10/06/08	2.8	10/14/08	10/18/08
09CE01-03	613054	OEP-MW-3D	10/06/08	2.8	10/13&14/08	10/18/08
09CE01-04	613045	OEP-MW-103D	10/06/08	2.8	10/13&16/08	10/18/08
09CE01-05	613047	OEP-MW-5D	10/06/08	2.8	10/14/08	10/18/08
09CE01-06	613049	OEP-JS-01	10/06/08	2.8	10/14/08	
09CE01-07	613530	OEP-MW-105S	10/07/08	1.8	10/14&15/08	10/18/08
09CE01-07 MS	615288	OEP-MW-105S			10/14/08	
09CE01-07 MSD	615289	OEP-MW-105S			10/14/08	
09CE01-07 MS	618180	OEP-MW-105S				10/18/08
09CE01-07 MSD	618181	OEP-MW-105S				10/18/08
09CE01-08	613511	OEP-MW-105B	10/07/08	2.4	10/14/08	10/18/08
09CE01-09	613513	OEP-MW-105D	10/07/08	2.4	10/15/08	10/18/08
09CE01-10	613533	OEP-MW-101B	10/07/08	1.8	10/14/08	10/18/08
09CE01-11	613535	OEP-JS-02	10/07/08	1.8	10/14/08	
09CE01-12	613516	OEP-FB-01	10/07/08	2.4	10/13/08	10/18/08
09CE01-13	613521	OEP-MW-15D	10/07/08	3.2	10/14/08	10/18/08
09CE01-14	613523	OEP-MW-15DFR	10/07/08	3.2	10/14/08	10/18/08
09CE01-15	613525	OEP-MW-15B	10/07/08	3.2	10/14/08	10/18/08
09CE01-16	613527	OEP-MW-15S	10/07/08	3.2	10/14/08	10/18/08
09CE01-17	613518	OEP-EB-01	10/07/08	2.4	10/13/08	10/18/08
09CE01-18	613520	OEP-JS-03	10/07/08	2.4	10/14/08	
09CE01-19	613529	OEP-JS-04	10/07/08	3.2	10/14/08	
09CE01-20	613798	OEP-MW-04S	10/08/08	1.2	10/15/08	10/18/08
09CE01-21	613800	OEP-MW-04D	10/08/08	1.2	10/15/08	10/18/08
09CE01-22	613758	OEP-MW-01S	10/08/08	2.2	10/16/08	10/18/08
09CE01-22 MS	616219	OEP-MW-01S			10/16/08	

EPA ID	CTI Lab ID	Sample location	Date sampled	Receipt Temp	VOC Analyses	MEE Analyses
09CE01-22 MSD	616220	OEP-MW-01S			10/16/08	
09CE01-22 MS	618185	OEP-MW-01S				10/18/08
09CE01-22 MSD	618186	OEP-MW-01S				10/18/08
09CE01-23	613768	OEP-MW-01D	10/08/08	2.2	10/14/08	10/18/08
09CE01-24	613817	OEP-SW-01	10/08/08	1.2	10/15/08	10/18/08
09CE01-25	613783	OEP-PW-01	10/06/08	2.4	10/15/08	
09CE01-25 MS	616072	OEP-PW-01			10/16/08	
09CE01-25 MSD	616073	OEP-PW-01			10/16/08	
09CE01-26	613784	OEP-PW-02	10/06/08	2.4	10/15/08	
09CE01-27	613785	OEP-PW-07	10/06/08	2.4	10/15/08	
09CE01-28	613786	OEP-PW-04	10/08/08	2.4	10/15/08	
09CE01-29	613787	OEP-PW-08	10/08/08	2.4	10/15/08	
09CE01-30	613788	OEP-PW-09	10/08/08	2.4	10/15/08	
09CE01-31	613775	OEP-MW-102D	10/08/08	1.6	10/15/08	10/18/08
09CE01-32	613777	OEP-JS-05	10/08/08	1.6	10/15/08	
09CE01-33	613774	OEP-JS-06	10/08/08	2.2	10/15/08	
09CE01-34	613819	OEP-JS-07	10/08/08	1.2	10/16/08	
09CE01-35	613778	OEP-MW-13S	10/08/08	1.6	10/14/08	10/18/08
09CE01-36	613780	OEP-MW-13D	10/08/08	1.6	10/15/08	10/18/08
09CE01-37	613789	OEP-PW-10	10/08/08	2.4	10/15/08	
09CE01-38	613790	OEP-PW-05	10/08/08	2.4	10/15/08	
09CE01-39	613791	OEP-PW-03	10/08/08	2.4	10/15/08	
09CE01-40	613794	OEP-PW-03FR	10/08/08	2.4	10/15/08	
09CE01-41	613796	OEP-JS-08	10/08/08	2.4	10/15/08	
09CE01-42	614321	OEP-MW-12B	10/09/08	2.8	10/17/08	10/18/08
09CE01-43	614326	OEP-MW-12D	10/09/08	2.8	10/17/08	10/18/08
09CE01-44	614328	OEP-MW-12S	10/09/08	2.8	10/17/08	10/18/08
09CE01-45	614290	OEP-PW-11	10/08/08	2.2	10/16/08	
09CE01-46	614291	OEP-MW-106S	10/09/08	2.2	10/16&17/08	
09CE01-47	614292	OEP-MW-106D	10/09/08	2.2	10/16/08	
09CE01-48	614310	OEP-SW-03	10/09/08	2.8	10/16/08	10/18/08
09CE01-49	614312	OEP-SW-03FR	10/09/08	2.8	10/17/08	10/18/08
09CE01-50	614314	OEP-JS-09	10/09/08	2.8	10/16/08	
09CE01-51	614293	OEP-JS-10	10/09/08	2.2	10/16/08	
09CE01-52	614294	OEP-DW-01	10/09/08	2.2	10/16/08	
09CE01-53	616356	OEP-JS-11	10/16/08	2.0	10/28/08	
09CE01-54	616358	OEP-MW-107D	10/16/08	2.0	10/28/08	
09CE01-55	616359	OEP-MW-107S	10/16/08	2.0	10/28/08	
09CE01-56	616360	OEP-MW-16S	10/16/08	2.0	10/28/08	10/18/08
09CE01-56 MS	621450	OEP-MW-16S			10/28/08	

EPA ID	CTI Lab ID	Sample location	Date sampled	Receipt Temp	VOC Analyses	MEE Analyses
09CE01-56 MSD	621451	OEP-MW-16S			10/28/08	
09CE01-57	616382	OEP-SW-02	10/16/08	2.0	10/28/08	10/18/08

The laboratory reported the results of 46 volatile analytes. Only the following 36 volatile analytes were requested for SW-846 Method 8260 in the SAS contract and only these analytes will be discussed in the following validation report.

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, total]	M & p-Xylene	o-Xylene
Isopropylbenzene	Methyl tert-butyl ether	

The method blanks for the SW-846 Method 8260B analyses are MB-614790, MB-615290, MB-616218 and MB-620435. In addition to the method blanks there are four (4) VOC Continuing Calibration Blanks (CCBs); CCB1-10/14/08, CCB2-10/15/08, CCB3-10/16/08 and CCB4-10/17/08. The MEE method blanks are MB-618176, MB-618179, MB-618184 and MB-618187 for the Mod RSK 175 analyses.

Samples 09CE01-07, 09CE01-22, 09CE01-25 and 09CE01-56 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses. Samples 09CE01-07 and 09CE01-22 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The VOC laboratory control samples are LCS-614789, LCS-615734, LCS-616212 and LCS-620381. The VOC laboratory control duplicate samples are LCSD-615287, LCSD-616071, LCSD-616232 and LCSD-620497. The MEE laboratory control samples are LCS-618175 and LCS-618183. The MEE laboratory control sample duplicate are LCSD-618182 and LCSD-618188.

Eleven (11) samples; 09CE01-06, 09CE01-11, 09CE01-18, 09CE01-19, 09CE01-32, 09CE01-33, 09CE01-34, 09CE01-41, 09CE01-50, 09CE01-51 and 09CE01-53 are identified as trip blanks. Sample 09CE01-17 is identified as an equipment blank. Sample 09CE01-12 is identified as a field blank. Sample 09CE01-02 is a field replicate of 09CE01-01. Sample 09CE01-14 is a field replicate of 09CE01-13. Sample 09CE01-40 is a field replicate of 09CE01-39. Sample 09CE01-49 is a field replicate of 09CE01-48.

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

1. HOLDING TIME

Fifty seven (57) preserved water samples listed in the following table were collected from 10/06/08 through 10/16/08. CT Laboratories of Baraboo, Wisconsin received the samples from 10/07/08 through 10/17/08. A total of eleven (11) samples were received with a cooler temperature outside the optimum shipping range of 2 – 6 ®C. All fifty seven (57) samples were analyzed from 10/13/08 through 10/28/08 by SW-846 Method 8260 for the volatile list of organic analytes identified in the SAS contract for estimated dates of collection January 2007 through May 2009. Thirty (30) samples were analyzed 10/18/08 by RSK 175 for Methane, Ethane and Ethene as identified in the SAS contract for estimated dates of collection January 2007 through March 2011.

The VOA and MEE 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

VOC: The GC/MS tuning for SW-846 Method 8260B complied with the mass list and ion abundance criteria for BFB. All samples were analyzed within the twelve (12) hour periods for instrument performance checks with the exception of LCS-616232 which was analyzed outside the 12-hours limit. No qualification is required for these QC samples.

MEE: All GC/FID calibration complied with the amount and area for the MEE (Methane-Ethane-Ethene) standards. All samples were analyzed within the twelve (12) hour periods for instrument performance checks; therefore, the results are acceptable.

3. CALIBRATION

VOC: 7-point calibration curves (0.2/2.0, 0.4/4.0, 1.0/10.0, 2.0/20.0, 4.0/40.0, 6.0/60.0 and 8.0/80.0 µg/L) were performed on 10/13/2008 and 10/27/2008. The average RRF (0.0474) for Acetone in the initial calibration of 10/13/2008 was less than 0.05 but greater than the minimum RRF of 0.01 currently used in SOW SOM01.1. All %RSDs were less than 15% or r^2 (correlation coefficient) > 0.995 with the exception of r^2 for Methylene chloride which was 0.991 for the initial calibration of 10/27/2008. The following samples are associated with initial calibrations where the analyte has r^2 was less than 0.995. Detected compound should be qualified "J".

Methylene chloride
09CE01-53, 09CE01-56MS, 09CE01-56MSD, LCS-620381, LCSD-620497

The following samples are associated with initial calibrations where the analyte has r^2 less than 0.995. Non-detected compound should be qualified "UJ".

Methylene chloride
09CE01-54, 09CE01-55, 09CE01-56, 09CE01-57, MB-620435

Continuing Calibrations were conducted at the start of every analytical sequence. All analytes are evaluated for %Ds less than 20%. No minimum RRF values were identified in the SAS contract. The following samples are associated with continuing calibrations where the analytes have %Ds greater than 20%. Detected compounds should be qualified "J".

2-Butanone, 2-Hexanone, 4-Methyl-2-pentanone
09CE01-22MS, 09CE01-22MSD, LCS-616212, LCSD-616232

Acetone
09CE01-07MS, 09CE01-07MSD, 09CE01-22MS, 09CE01-22MSD, 09CE01-50, LCS-614789, LCS-616212, LCSD-615287, LCSD-616232

Carbon disulfide, Chloroethane
09CE01-25MS, 09CE01-25MSD, LCSD-616071

Methylene chloride
09CE01-07MS, 09CE01-07MSD, 09CE01-11, 09CE01-18, 09CE01-19, 09CE01-53, 09CE01-56MS, 09CE01-56MSD, LCS-620381, LCSD-615287, LCSD-620497

Trans-1,2-Dichloroethene
09CE01-45

The following samples are associated with continuing calibrations where the analytes have %Ds greater than 20%. Non-detected quantitation limits should be qualified "UJ".

2-Butanone, 2-Hexanone, 4-Methyl-2-pentanone
09CE01-22, 09CE01-34, 09CE01-42, 09CE01-43, 09CE01-44, 09CE01-45, 09CE01-46, 09CE01-47, 09CE01-48, 09CE01-49, 09CE01-50, 09CE01-51, 09CE01-52, MB-616218

Acetone
09CE01-01, 09CE01-02, 09CE01-03, 09CE01-04, 09CE01-05, 09CE01-06, 09CE01-07, 09CE01-08, 09CE01-10, 09CE01-11, 09CE01-12, 09CE01-13, 09CE01-14, 09CE01-15, 09CE01-16, 09CE01-17, 09CE01-18, 09CE01-19, 09CE01-22, 09CE01-34, 09CE01-42, 09CE01-43, 09CE01-44, 09CE01-45, 09CE01-46, 09CE01-47, 09CE01-48, 09CE01-49, 09CE01-51, 09CE01-52, MB-614790, MB-616218, CCB1-10/14/08

Carbon disulfide, Chloromethane
CCB3-10/16/08

Methylene chloride
09CE01-01, 09CE01-02, 09CE01-03, 09CE01-04, 09CE01-05, 09CE01-06, 09CE01-07, 09CE01-08, 09CE01-10, 09CE01-12, 09CE01-13, 09CE01-14, 09CE01-15, 09CE01-16, 09CE01-17, 09CE01-20, 09CE01-23, 09CE01-25, 09CE01-26, 09CE01-27, 09CE01-28, 09CE01-29, 09CE01-30, 09CE01-31, 09CE01-35, 09CE01-36, 09CE01-37, 09CE01-38, 09CE01-39, 09CE01-40, 09CE01-54, 09CE01-55, 09CE01-56, 09CE01-57, MB-614790, MB-615290, MB-620435, CCB1-10/14/08

Trans-1,2-Dichloroethene
09CE01-46, CCB4–10/17/08

MEE: 7-pt Initial Calibration curves (2, 5, 10, 20, 50, 100 and 200 ppmV) were performed on 10/18/2008 and evaluated for a Goodness of Fit (correlation coefficient) ≥ 0.995. All r^2 were greater than 0.995; therefore, the results do not require any qualification.

Six continuing calibrations were analyzed on 10/18/2008 at the appropriate frequency of 1 CCV per 10 field samples. All %Ds were less than 20%; therefore, the results do not require any qualification.

4. BLANKS

VOC: The method blanks for the SW-846 Method 8260B analyses are MB-614790, MB-615290, MB-616218 and MB-620435. In addition to the method blanks there are four (4) VOC Continuing Calibration Blanks (CCBs); CCB1-10/14/08, CCB2-10/15/08, CCB3-10/16/08 and CCB4-10/17/08. The samples associated with each blank were determined from the Volatile Organic Instrument Performance Check Forms and the Method Blank Summaries. Copies of the Form 5As are included with the hardcopy validation package.

Method blanks MB-614790 and MB-620435 contained no target analytes; therefore no qualification is required for the samples associated with these method blanks. MB-615290 contained Bromomethane at 0.089 ug/L and MB-616218 contained Bromomethane at 0.073 ug/L. Bromomethane was not reported by the laboratory for MB-615290 and MB-616218. However, no qualification is required because Bromomethane was not detected in the samples associated with MB-615290 and MB-616218. The raw data for method blanks MB-615290 and MB-616218 are included with the hardcopy validation package.

CCB2-10/15/08 contained Vinyl chloride at 0.016 µg/L and CCB3-10/16/08 contained Bromomethane at 0.0711µg/L. Vinyl chloride was detected in samples 09CE01-09 and 09CE01-21 but the results were greater than SAS RL and 5X the blanks results; therefore, no qualification was required. Vinyl chloride and Bromomethane were not detected in the remaining associated samples with CCB2-10/15/08 and CCB3-10/16/08.

Eleven (11) samples; 09CE01-06, 09CE01-11, 09CE01-18, 09CE01-19, 09CE01-32, 09CE01-33, 09CE01-34, 09CE01-41, 09CE01-50, 09CE01-51 and 09CE01-53 are identified as Trip Blanks. Sample 09CE01-17 is identified as an Equipment Blank. Sample 09CE01-12 is identified as a Field Blank. The sample results were qualified for blank contamination in the order of:

1- Method blanks/CCBs
2- Trip blanks
3- Field blank & equipment blank.

The contamination of the trip blanks, field blank, equipment blank and the lists of samples associated with each QC blank are summarized in the excel worksheet included with the hardcopy validation package.

The following samples reported Chloromethane greater than laboratory RL but less than the dilution-adjusted SAS RL (0.2 µg/L). The presence of Chloromethane was qualified "U" and elevated to the SAS RL as resulting from trip blank contamination in the following samples.

Chloromethane
09CE01-04, 09CE01-09, 09CE01-20, 09CE01-25, 09CE01-43, 09CE01-44, 09CE01-49

The following samples reported Chloromethane and Methylene chloride greater than the SAS RL but less than 5X the blank results. The presence of these analytes were qualified "U" or "UJ because not all calibration or surrogate criteria was met" and reported at the sample value as resulting from trip blank contamination. The sample values are reported with a "U" flag.

Chloromethane
09CE01-03, 09CE01-08, 09CE01-10, 09CE01-13, 09CE01-14, 09CE01-15, 09CE01-16, 09CE01-21, 09CE01-22, 09CE01-23, 09CE01-24, 09CE01-26, 09CE01-27, 09CE01-28, 09CE01-29, 09CE01-30, 09CE01-31, 09CE01-35, 09CE01-36, 09CE01-37, 09CE01-38, 09CE01-39, 09CE01-40, 09CE01-42, 09CE01-45, 09CE01-46, 09CE01-47, 09CE01-48, 09CE01-52, 09CE01-54, 09CE01-55, 09CE01-57

Methylene chloride
09CE01-09, 09CE01-13, 09CE01-31, 09CE01-55, 09CE01-56, 09CE01-57

The following samples reported Chloroform greater than laboratory RL but less than SAS RL. The presence of these analytes were qualified "U" or "UJ because not all surrogate criteria was met" and elevated to the SAS RL as resulting from field blank contamination.

Chloroform
09CE01-01, 09CE01-02, 09CE01-05, 09CE01-09, 09CE01-13, 09CE01-14, 09CE01-22, 09CE01-30, 09CE01-31, 09CE01-43, 09CE01-44, 09CE01-56

The following samples reported Bromodichloromethane and Chloroform greater than the SAS RL but less than 5X the blank results. The presence of these analytes were qualified "U" and reported at the sample value as resulting from field & equipment blank contamination.

Bromodichloromethane
09CE01-14, 09CE01-31

Chloroform
09CE01-13, 09CE01-31

MEE: The MEE method blanks are MB-618176, MB-618179, MB-618184 and MB-618187 for the Mod RSK 175 analyses. None of the Method Blanks had any contaminants; therefore, the results are acceptable.

Sample 09CE01-12 is identified as a field blank and it contained Methane at 0.34 ug/L. The following samples reported Methane greater than laboratory RL but less than the undiluted SAS RL (10 µg/L). The presence of Methane was qualified "U" and elevated to the SAS RL as resulting from field blank contamination:

Methane
09CE01-13, 09CE01-14, 09CE01-16, 09CE01-20, 09CE01-22, 09CE01-31, 09CE01-35, 09CE01-48, 09CE01-49

5. SYSTEM MONITORING COMPOUND AND SURROGATE RECOVERY

VOC: 1,2-Dichloroethane-d_4, Bromofluorobenzene, Dibromofluoromethane and Toluene-d_8 were used as surrogates for the volatile analyses using SW-846 Method 8260. The percent recoveries of Toluene-d_8 in samples 09CE01-23, 09CE01-25MSD, 09CE01-29, 09CE01-30, 09CE01-45, 09CE01- 46 and 09CE01-55 were below the SAS limits of 75-135%. All detected compounds are qualified "J" and non-detected compounds are qualified "UJ".

MEE: Surrogate recoveries are not applicable to RSK-175 analyses.

6A. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

VOC: Samples 09CE01-07, 09CE01-22, 09CE01-25 and 09CE01-56 are the parent samples used for the VOC Matrix Spike / Matrix Spike Duplicate analyses.

The %recovery for Trichloroethene was greater than the upper limit of 130% in samples 09CE01-07MS. The %recoveries for Methylene chloride were greater than the upper limit of 130% in samples 09CE01-07MS and 09CE01-07MSD. The detection of Trichloroethene in the unspiked sample, 09CE01-07, should be qualified "J". Non-detected Methylene chloride in the unspiked sample, 09CE01-07, is not qualified for this criterion but ultimately qualified "UJ" because all calibration criteria was not met.

The %recoveries for 1,1-Dichloroethene, Chloroethane and Methylene chloride were greater than the upper limit of 130% in sample 09CE01-22MSD. The %recoveries for Bromomethane, Methyl tert-butyl ether, trans-1,2-Dichloroethene and Vinyl chloride were greater than the upper limit of 130% in samples 09CE01-22MS and 09CE01-22MSD. The %recoveries for Styrene were less than the lower limit 60% and greater than or equal to 20% in samples 09CE01-22MS and 09CE01-22MSD. The RPD for Methylene chloride was above the SAS limit of 30%. Non-detected Methylene chloride and Styrene in the unspiked sample, 09CE01-22, should be qualified "UJ". Non-detected 1,1-Dichloroethene, Bromomethane, Chloroethane, Methyl tert-butyl ether, trans-1,2-Dichloroethene and Vinyl chloride in the unspiked sample, 09CE01-22, are not qualified for this criterion.

The %recoveries for m&p-Xylene and o-Xylene were less than the lower limit 60% and greater than or equal to 20% in sample 09CE01-25MSD. The %recovery for Styrene was less than the lower limit 60% and greater than or equal to 20% in sample 09CE01-25MS. The %recovery for Styrene was less than 20% in sample 09CE01-25MSD. The %recoveries for Methyl tert-butyl ether and trans-1,2-Dichloroethene were greater than the upper limit of 130% in samples 09CE01-25MS and 09CE01-25MSD. The %recovery for Vinyl chloride was greater than the upper limit of 130% in sample 09CE01-25MS. The RPDs for m&p-Xylene, o-Xylene and Styrene were above the SAS limit of 30%. Non-detected m&p-Xylene and o-Xylene in the unspiked sample, 09CE01-25, should be qualified "UJ". Non-detected Styrene in the unspiked sample, 09CE01-25, should be qualified "R". Non-detected Methyl tert-butyl ether, trans-1,2-Dichloroethene and Vinyl chloride in the unspiked sample, 09CE01-25, are not qualified for this criterion.

The %recovery for cis-1,2-Dichloroethene was greater than the upper limit of 130% in sample 09CE01-56MS. The %recoveries for Methylene chloride were greater than the upper limit of 130% in samples 09CE01-56MS and 09CE01-56MSD. The

%recoveries for Bromomethane were less than the lower limit 60% and greater than or equal to 20% in samples 09CE01-56MS and 09CE01-56MSD. All RPDs were less than 30%. The detection of cis-1,2-Dichloroethene in the unspiked sample, 09CE01-56, should be qualified "J". Non-detected Bromomethane in the unspiked sample, 09CE01-56, should be qualified "UJ". Non-detected Methylene chloride in the unspiked sample, 09CE01-56, is not qualified for this criterion but qualified "UJ" because not all calibration criteria was met.

MEE: Samples 09CE01-07 and 09CE01-22 are the parent samples used for the MEE Matrix Spike / Matrix Spike Duplicate analyses.

The %recoveries for Methane were greater than the upper limit of 130% in samples 09CE01-07MS and 09CE01-07MSD. All RPDs were less than 30%. Non-detected Methane in the unspiked sample, 09CE01-07, is not qualified for this criterion.

The %recovery for Methane was greater than the upper limit of 130% in sample 09CE01-22MSD. The %recoveries for Ethane and Ethene were less than the lower limit 60% and greater than or equal to 20% in sample 09CE01-22MS. The %recoveries for Ethane and Ethene were below 20% in sample 09CE01-22MSD. The RPDs for Ethane and Ethene were greater than 30%. Non-detected Ethane and Ethene in the unspiked sample, 09CE01-22, should be qualified "R". Non-detected Methane in the unspiked sample, 09CE01-22, is not qualified for this criterion.

6B. LABORATORY CONTROL SAMPLES

VOC: The VOC laboratory control samples are LCS-614789, LCS-615734, LCS-616212 and LCS-620381. The VOC laboratory control duplicate samples are LCSD-615287, LCSD-616071, LCSD-616232 and LCSD-620497.

LCS-614789 and LCSD-615287 were analyzed 10/13/2008 and 10/14/2008. The percent recoveries for all compounds were within the QC limits (60 – 130%). All RPDs were less than 30%. The samples associated with these LCS/LCSD samples, did not require any qualification.

LCS-615734 and LCSD-616071 were analyzed 10/15/2008 and 10/16/2008. The %recoveries for Methylene chloride were greater than the upper limit of 130% in samples LCS-615734 and LCSD-616071. The RPD for 1,1,2,2-Tetrachloroethane was greater than 30%. The detection for Methylene chloride in the following associated samples should be qualified "J". Non-detected Methylene chloride is not qualified for this criterion.

Methylene chloride
09CE01-25MS, 09CE01-25MSD, 09CE01-32, 09CE01-33, 09CE01-41

1,1,2,2-Tetrachloroethane
09CE01-25MS, 09CE01-25MSD

The quantitation limits for the non-detected 1,1,2,2-Tetrachloroethane in the following associated samples should be qualified "UJ".

1,1,2,2-Tetrachloroethane
09CE01-09, 09CE01-20, 09CE01-21, 09CE01-23, 09CE01-24, 09CE01-25, 09CE01-26, 09CE01-27, 09CE01-28, 09CE01-29, 09CE01-30, 09CE01-31, 09CE01-32, 09CE01-33, 09CE01-35, 09CE01-36, 09CE01-37, 09CE01-38, 09CE01-39, 09CE01-40, 09CE01-41

LCS-616212 and LCSD-616232 were analyzed 10/16/2008 and 10/17/2008. The %recoveries for Methylene chloride were greater than the upper limit of 130% in samples LCS-616212 and LCSD-616232. All RPDs were less than 30%. Non-detected Methylene chloride in samples 09CE01-22, 09CE01-45 and 09CE01-46 are ultimately qualified "UJ" because MS/MSD RPD or surrogate criteria was not met. Non-detected Methylene chloride for samples 09CE01-42, 09CE01-47, 09CE01-48, 09CE01-49, 09CE01-50 and 09CE01-52 are not qualified for this criterion. Detected Methylene chloride in the following samples should be qualified "J". Non-detected Methylene chloride is not qualified for this criterion.

Methylene chloride
09CE01-22MS, 09CE01-22MSD, 09CE01-34 , 09CE01-43, 09CE01-44, 09CE01-51

LCS-620381 and LCSD-620497 were analyzed 10/28/2008. The %recoveries for Methylene chloride were greater than the upper limit of 130% in samples LCS-620381 and LCSD-620497. The %recovery for Bromomethane was less than the lower limit of 60% and greater than or equal to 20% in sample LCSD-620497. The RPD for Bromomethane was greater than 30%. The detected compound in the following samples should be qualified "J".

Bromomethane
09CE01-56MS, 09CE01-56MSD

Methylene chloride
09CE01-53, 09CE01-56MS, 09CE01-56MSD

Non-detected Bromomethane for the following samples should be qualified "UJ".

Bromomethane
09CE01-53, 09CE01-54, 09CE01-55, 09CE01-56, 09CE01-57

Non-detected Methylene chloride for samples 09CE01-54, 09CE01-55, 09CE01-56 and 09CE01-57 are ultimately qualified "UJ" because not all surrogate or calibration criteria were met.

MEE: The MEE laboratory control samples are LCS-618175 and LCS-618183. The MEE laboratory control sample duplicates are LCSD-618182 and LCSD-618188.

All recoveries were within the QC limits of 60 – 130%. All RPDs were within the QC limits of 30%.

7. FIELD BLANK AND FIELD DUPLICATE

VOC: Eleven (11) samples; 09CE01-06, 09CE01-11, 09CE01-18, 09CE01-19, 09CE01-32, 09CE01-33, 09CE01-34, 09CE01-41, 09CE01-50, 09CE01-51 and 09CE01-53 are identified as trip blanks. Sample 09CE01-17 is identified as an equipment blank. Sample 09CE01-12 is identified as a field blank. The contamination of the trip blanks, field blank, equipment blank and the lists of samples associated with each QC blank are summarized in the excel worksheet included with the hardcopy validation package.

Sample 09CE01-02 is a field replicate of 09CE01-01. Sample 09CE01-14 is a field replicate of 09CE01-13. Sample 09CE01-40 is a field replicate of 09CE01-39. Sample 09CE01-49 is a field replicate of 09CE01-48. Sample results and RPDs for these replicate pairs are summarized in the excel tables which are included with the hardcopy validation package.

MEE: Sample 09CE01-12 is identified as a field Blank and it contained Methane at 0.34 ug/L. Sample 09CE01-02 is a field replicate of 09CE01-01. Sample 09CE01-14 is a field replicate of 09CE01-13. Sample 09CE01-49 is a field replicate of 09CE01-48. No compounds of interest were found in these samples.

8. INTERNAL STANDARDS

The three internal standard's (Fluorobenzene, Chlorobenzene-d_5, 1,4-Dichlorobenzene-d_4) retention times and area counts for the VOC samples were within the QC limits; therefore, the results are acceptable.

9. COMPOUND IDENTIFICATION

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

10. COMPOUND QUANTITATION AND REPORTED DETECTION LIMITS

VOC: All samples were waters and dilutions were run. The reporting limits for the VOC compounds were less than or equal to the reporting limits specified in the SAS contract for all analytes; except 1,1,2,2-Tetrachloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene. The Laboratory MDL/LOD and SAS reporting limits are summarized in the excel table included with the hardcopy validation package. The non-detected 1,1,2,2-Tetrachloroethane, cis-1,3-Dichloropropene and trans-1,3-Dichloropropene in all samples, QC samples and blanks are qualified as "UJ" because the laboratory was unable to detect these compound at the concentration required by the SAS.

All results reported to the laboratory's detection limit or Level of Detection (LOD). The following VOC samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

1,1,1-Trichloroethane
09CE01-04, 09CE01-22, 09CE01-35, 09CE01-43

1,1,2-Trichloroethane, 1,1-Dichloroethane
09CE01-04

1,1-Dichloroethene
09CE01-01, 09CE01-02, 09CE01-07, 09CE01-09, 09CE01-23, 09CE01-30, 09CE01-35, 09CE01-43

1,2-Dichloroethane
09CE01-21, 09CE01-30, 09CE01-35, 09CE01-38, 09CE01-40, 09CE01-45

Acetone
09CE01-50

Benzene
09CE01-31

Bromodichloromethane, Styrene
09CE01-12, 09CE01-17

Carbon disulfide
09CE01-03, 09CE01-42, 09CE01-57

Chloromethane
09CE01-34

Chlorobenzene
09CE01-01, 09CE01-02, 09CE01-57

cis-1,2-Dichloroethene
09CE01-04, 09CE01-08, 09CE01-21

Dibromochloromethane
09CE01-01, 09CE01-02, 09CE01-05, 09CE01-09, 09CE01-13, 09CE01-31, 09CE01-43, 09CE01-44

Ethylbenzene
09CE01-57

Isopropylbenzene
09CE01-23

Methylene chloride
09CE01-18

Tetrachloroethene
09CE01-01

Toluene
09CE01-30

trans-1,2-Dichloroethene
09CE01-05, 09CE01-09, 09CE01-28, 09CE01-36, 09CE01-39, 09CE01-40, 09CE01-45, 09CE01-56

Trichloroethene
09CE01-10, 09CE01-29, 09CE01-30, 09CE01-38, 09CE01-43

MEE: The reporting limits for Ethane, Ethene and Methane were less than 10 µg/L as specified in the SAS contract. All results were reported to the laboratory 's detection limit. Methane for 09CE01-35 was reported at 49 ug/L. Only 0.49 ug/L of Methane was detected according to raw data page 839. Ethane was reported at 0.85 ug/L and Ethene was reported at 3.1 ug/L for sample 09CE01-56. According to raw data page 865, Ethane was not detected and Ethene was detected at 0.85 ug/L for sample 09CE01-56. Raw data for these two samples are included with hardcopy validation package.

The following MEE samples reported analyte concentrations below the SAS reporting limits but above the laboratory's detection limits. The concentrations should be qualified as estimated, "J".

Ethane
09CE01-05, 09CE01-07, 09CE01-07MS, 09CE01-07MSD, 09CE01-22MS, 09CE01-22MSD, 09CE01-57, LCS-618175, LCS-618183, LCSD-618182, LCSD-618188

Ethene
09CE01-07MS, 09CE01-07MSD, 09CE01-22MS, 09CE01-22MSD, 09CE01-56, LCS-618175, LCS-618183, LCSD-618182, LCSD-618188

Methane
09CE01-07MS, 09CE01-07MSD, 09CE01-12, 09CE01-22MS, 09CE01-22MSD, LCS-618175, LCS-618183, LCSD-618182, LCSD-618188

11. SYSTEM PERFORMANCE

GC/MS baseline indicated acceptable performance. GC baseline indicated acceptable performance

12. ADDITIONAL INFORMATION

The final shipment of samples arrived at the Laboratory on 10/17/2008. The Laboratory Case Narrative was prepared on 11/04/2008 and forwarded by Ch2mHill on 11/05/2008 which is within 21 calendar days after sample receipt.

Photocopies of the airbills were included with this package. The original sample tags, packing list and airbills should have been sent to CH2M HILL.

Copies of the most recent MDL studies were not included with this data package but MDL (LOD – Level of Detection) values are present on the Laboratory Form Is.

VOC SAS Table II. QC Requirements lists the frequency of audits for method blanks as ‘at least one per group of 10 or fewer samples’. The laboratory provided only 4 analyses identified as method blanks and an additional four analyses identified as Continuing Calibration Blanks. Volatile analyses require the analysis of a QC blank on each day of analysis and the volatile analyses spanned a 6-day time period. Inspections of both SW-846 Method 8000 (Determinative Chromatographic Separations, Sec. 7.7 & 8.2) and Method 8260 (Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry, Sec. 8.4) indicate that the terms method blank and continuing calibration blank could describe the same QC sample. As the CCB samples were analyzed daily and followed the Continuing Calibration Verification Standard, the Reviewer regarded them as method blanks for this data package. No Analysis Data Sheets were provided for the CCB samples. Copies of the raw data for these QC samples and the Form 5As (Volatile Organic Instrument Performance Check) are included with the hardcopy validation package.

Reviewed by: Steffanie Tobin / TechLaw-ESAT
Date: February 17, 2009

The methods blanks were also non-compliant with the QC requirements identified in Table II in the following instances;

a) MB-615290 is associated with 15 samples rather than 10 samples.
b) MB-616218 is associated with 13 samples rather than 10 samples.

The following VOC samples had analyte concentrations that exceeded the instruments calibration range. The samples were re-analyzed at various dilutions and only the diluted compound results were reported for the affected samples:

09CE01-04, 09CE01-07

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.

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: January 22, 2009

SUBJECT: Review of Data
Received for review on November 10, 2008

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 Company (WI)

CASE NUMBER: 09CE01 **SDG NUMBER:** 69525-INO

Number and Type of Samples: 31 water samples

Sample Numbers: 09CE01-01 - 10, 12 - 17, 20 - 24, 31, 35 - 36, 42 - 44, 48 - 49, 56 – 57

Laboratory: CT Laboratories **Hrs. for Review:**

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 31 water samples (see TABLE 1). The samples were collected between October 6 and 16, 2008. They were analyzed for alkalinity, total organic carbon (TOC), sulfide, nitrate, sulfate and chloride. All sample results are reported to the MDL. The samples were analyzed using SW846 9056 (anions), 9060 (total organic carbon), EPA 310.2 (alkalinity), and 376.1 (sulfide) analysis procedures.

Evidential Audit: All reporting forms provided are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms or sample tags were provided.

No MDL summaries were provided. It is unknown when MDLs were performed. MDL (LOD) values recorded on the results Form 1 were used for evaluation of the data. MDL and RL values on Form 1s are equal.

Alkalinity: The SAS requires that the lowest calibration point be run at 10.0 mg/L. The lowest point performed was 25 mg/L. All sample results were above 25 mg/L except samples 09CE01-12, 09CE01-17, 09CE01-24, and 09CE01-49, which were non-detects. These samples are flagged "UJ". All other alkalinity results are acceptable.

Ammonia: No defects were found. All ammonia results are acceptable

Chloride: No defects were found. All chloride results are acceptable.

Nitrate: No defects were found. All nitrate results are acceptable.

Ortho-phosphate: No defects were found. All ortho-phosphate results are acceptable.

Sulfate: The matrix spike recovery was below the acceptable limit for sample 09CE01-44. Samples 09CE01-42, -43, -44, -48, and -49 are flagged "J" and considered estimated. All other sulfate results are acceptable.

Sulfide: The matrix spike recovery was below the acceptable limit for sample 09CE01-57. The duplicate RPD was below the acceptable limit for sample 09CE01-57. Sample 09CE01-56 is flagged "J" and considered estimated. All other sulfide results are acceptable.

TOC: The SAS requires a low standard be run to confirm the reporting limit of 1.0 mg/L. This was not performed. The lowest calibration standard was 10 mg/L. TOC results for 09CE01-03 thru -05, -07 thru -10, -12 thru -17, -20 thru -23, -31, -35, -36, -42 thru 44 and -56 are below 10 mg/L and are estimated "J" for detects and "UJ" for non-detects.

Other comments: Samples 09CE01-01/-02, 09CE01-13/-14 and 09CE01-48/-49 were identified as a field duplicate pair. Duplicates were evaluated according to the same criteria as laboratory duplicates. All tests showed good correlation. Sample 09CE01-12 was identified as field blank. Sample 09CE01-17 was identified as equipment blank. The equipment blank and field blank showed no contamination.

TABLE 1

Lab ID	*EPA sample ID*	*Sample location*	*Cooler Tem.*	*Collection date*	*Collection time*	*Received date*
613050	09CE01-01	OPE-MW-103S	2.8	10/6/2008	15:00	10/7/2008
613051						
613052	09CE01-02	OPE-MW-103SFR	2.8	10/6/2008	15:05	10/7/2008
613053						
613054	09CE01-03	OEP-MW-3D	2.8	10/6/2008	16:45	10/7/2008
613055						
613045	09CE01-04	OEP-MW-103D	2.8	10/6/2008	15:20	10/7/2008
613046						
613047	09CE01-05	OEP-MW-5D	2.8	10/6/2008	17:05	10/7/2008
613048						
613530	09CE01-07	OEP-MW-105S	1.8	10/7/2008	10:20	10/8/2008
613531						
613511	09CE01-08	OEP-MW-105B	2.4	10/7/2008	10:45	10/8/2008
613512						
613513	09CE01-09	OEP-MW-105D	2.4	10/7/2008	12:30	10/8/2008
613514						
613533	09CE01-10	OEP-MW-101B	1.8	10/7/2008	12:20	10/8/2008
613534						
613516	09CE01-12	OEP-FB-01	2.4	10/7/2008	15:00	10/8/2008
613521	09CE01-13	OEP-MW-15D	2.4	10/7/2008	15:50	10/8/2008
613522						
613523	09CE01-14	OEP-MW-15D FR	2.4	10/7/2008	15:55	10/8/2008
613524						
613525	09CE01-15	OEP-MW-15B	2.4	10/7/2008	16:00	10/8/2008
613526						
613527	09CE01-16	OEP-MW-15S	2.4	10/7/2008	16:55	10/8/2008
613528						
613518	09CE01-17	OEP-EB-01	2.4	10/7/2008	17:10	10/8/2008
613519						
613798	09CE01-20	OEP-MW-04S	1.2	10/8/2008	10:30	10/9/2008
613799						
613800	09CE01-21	OEP-SW-04D	1.2	10/8/2008	11:30	10/9/2008
613801						
613758	09CE01-22	OEP-MW-01S	2.2	10/8/2008	10:25	10/9/2008
613766						
613768	09CE01-23	OEP-MW-01D	NOT RECORDED	10/8/2008	12:20	10/9/2008
613773						
613817	09CE01-24	OEP-SW-01	1.2	10/8/2008	12:10	10/9/2008
613818						
613775	09CE01-31	OEP-MW-102D	1.6	10/8/2008	14:32	10/9/2008
613776						

613778	09CE01-35	OEP-MW-13S	1.6	10/8/2008	14:40	10/92008
613779						
613780	09CE01-36	OEP-MW-13D	1.6	10/8/2008	15:25	10/9/2008
613781						
614321	09CE01-42	OEP-MW-12B	NOT RECORDED	10/9/2008	10:25	10/10/2008
614325						
614326	09CE01-43	OEP-MW-12D	NOT RECORDED	10/9/2008	10:20	10/10/2008
614327						
614328	09CE01-44	OEP-MW-12S	NOT RECORDED	10/9/2008	11:35	10/10/2008
614329						
614310	09CE01-48	OEP-SW-03	2.8	10/9/2008	14:25	10/10/2008
614311						
614312	09CE01-49	OEP-SW-03FR	2.8	10/9/2008	14:30	10/10/2008
614313						
616360	09CE01-56	OEP-MW-16S	2.0	10/16/2008	13:42	10/17/2008
616377						
616382	09CE01-57	OEP-SW-02	2.0	10/16/2008	14:10	10/19/2008
616383						

Data Qualifier Sheet

Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: James Abston (TechLaw/ESAT)
Date: 01/22/2009

Regional Transmittal Form

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 1/23/09

SUBJECT: Review of Data
Received for review on 11/10/08

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: 09CE01 **SDG NUMBER:** 69525-MET

Number and Type of Samples: 61 waters (31 total/ 30 dissolved)

Sample Numbers: 09CE01-01 thru -10, -12 thru -17, -20 thru -24, -31, -35, -36, -42 thru -44, -48 thru -49, -56 thru –57

Laboratory: CT Laboratories **Hrs. for Review:** ______

Following are our findings:

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

Narrative

The laboratory's portion of this case contains 61 water samples (31 total, 30 dissolved, see attached table) which were collected between October 6 and 16, 2008 and received at the laboratory between October 7 and 17, 2008. They were analyzed for iron and manganese. Total and dissolved samples were assigned the same EPA sample IDs by the field personnel. See the attached table for specific Superfund and Laboratory identifiers. All sample results are reported to the MDL. The samples were analyzed using SW846 6010B (ICP-AES) analysis procedures.

Evidential Audit: All provided ICP reporting forms are CLP-like documents. All documents provided are copies. No location is noted for the originals. No DC-1 or DC-2 forms, or sample tags were provided. The Field Chain of Custody was not signed by receiving personnel at the Laboratory for samples 09CE01-56 and -57

No analytical date was provided on the MDL summary form or the linearity form. MDL and linearity values recorded on the forms provided were used for evaluation of the data.
The values provided for MDLs on the calibration blanks forms (30 for Fe, 10 for Mn) were different from the Level of Detection (LOD) listed on the Form 1s (8 total Fe, 5 dissolved Fe, 4 total Mn, 1.2 dissolved Mn).

The Duplicate Forms included are for the LCS/LCSD and the MS/MSD. The laboratory performed post digestion spikes on perceived serial dilution failures and reported results unqualified. This does not make the data reportable. Samples affected by failed serial dilutions are qualified due to possible matrix interferences. The CLP requirement of the undiluted sample concentration being greater than 50x the MDL is used for determining applicability.

No times are included on the Analysis Run Logs for the calibration. Six run logs were included with the case; four were from one analytical run on October 13-14 and two were from another run on October 24-25. The same standards used on multiple "runs" are identified with different identifications.

ICP-AES: Section 8(d) of the SAS requires that the RL must be shown to have been met before any samples are analyzed. Since the SAS does not define what recovery is "acceptable", this reviewer used the CLP CRI acceptance criteria of 100 +/- 50%. The laboratory analyzed a sample identified as "mdl chk 3010" (MRL) which was at the SAS required reporting limit for Mn. The Fe concentration of the standard is 16 ug/L, which is just over half the SAS required reporting limit. All MRL samples except the final one in the October 24 analytical run passed the CLP requirement. All Fe results for that run are greater than 20x the MRL concentration. No results are qualified for the final MRL sample.

For Fe, all the serial dilution performed were either acceptable or the Fe concentration in the original sample was less than 50x the MDL and is not considered applicable. The preparation blank for batch 26834 had a negative value whose absolute value was greater than the MDL. The total Fe sample result for 09CE01-10 is affected by a possible low bias and is estimated "J-". Fe was detected in some of the CCBs. The total Fe sample results for 09CE01-01, -02 and -04 are affected by the negative preparation blank and by the positive CCBs. Those results are estimated "J" due to an unknown bias. The dissolved Fe result for 09CE01-10 is affected by a positive CCB; that result is estimated "J+" due to possible contamination. Finally, the total Fe results for 09CE01-01, -02, -04, -10 and -44, and dissolved Fe results for 09CE01-01 and -10 are greater than the MDL but less than the SAS required reporting limit; those results are estimated "J".

For Mn, the RPD for the serial dilution performed on dissolved sample 09CE01-22 was greater than 10% indicating possible physical or chemical interference; the dissolved Mn results for samples 09CE01-10, -20, -22, -23 and -36 are estimated "J" for detects and "UJ" for non-detects due to possible physical or chemical interference.

Other comments: Total and dissolved samples 09CE01-01/-02, -13/-14 and -48/-49 were identified as field duplicates. Duplicates were evaluated according to the same criteria as laboratory duplicates. All showed good correlation.

Total and dissolved samples for 09CE01-17 were identified as equipment blanks. Sample 09CE01-12 was identified as a field blank (total only). No contamination was found in any of the equipment or field blanks.

Lab ID	**Sample ID**	**Lab ID**	**Sample ID**	**Sample Point**	**Sample Date**	**Sample Time**
(Total)	(Total)	(Dissolved)	(Dissolved)			
613050	09CE01-01	613051	09CE01-01	OPE-MW-103S	10/6/2008	15:00
613052	09CE01-02	613053	09CE01-02	OPE-MW-103SFR	10/6/2008	15:05
613054	09CE01-03	613055	09CE01-03	OEP-MW-3D	10/6/2008	16:45
613045	09CE01-04	613046	09CE01-04	OEP-MW-103D	10/6/2008	15:20
613047	09CE01-05	613048	09CE01-05	OEP-MW-5D	10/6/2008	17:05
613530	09CE01-07	613531	09CE01-07	OEP-MW-105S	10/7/2008	10:20
613511	09CE01-08	613512	09CE01-08	OEP-MW-105B	10/7/2008	10:45
613513	09CE01-09	613514	09CE01-09	OEP-MW-105D	10/7/2008	12:30
613533	09CE01-10	613534	09CE01-10	OEP-MW-101B	10/7/2008	12:20
513516	09CE01-12			OEP-FB-01	10/7/2008	15:00
613521	09CE01-13	613522	09CE01-13	OEP-MW-15D	10/7/2008	15:50
613523	09CE01-14	613524	09CE01-14	OEP-MW-15D FR	10/7/2008	15:55
613525	09CE01-15	613526	09CE01-15	OEP-MW-15B	10/7/2008	16:00
613527	09CE01-16	613528	09CE01-16	OEP-MW-15S	10/7/2008	16:55
613518	09CE01-17	613519	09CE01-17	OEP-EB-01	10/7/2008	17:10
613798	09CE01-20	613799	09CE01-20	OEP-MW-04S	10/8/2008	10:30
613800	09CE01-21	613801	09CE01-21	OEP-SW-04D	10/8/2008	11:30
613758	09CE01-22	613766	09CE01-22	OEP-MW-01S	10/8/2008	10:25
613768	09CE01-23	613773	09CE01-23	OEP-MW-01D	10/8/2008	12:20
613817	09CE01-24	613818	09CE01-24	OEP-SW-01	10/8/2008	12:10
613775	09CE01-31	613776	09CE01-31	OEP-MW-102D	10/8/2008	14:32
613778	09CE01-35	613779	09CE01-35	OEP-MW-13S	10/8/2008	14:40
613780	09CE01-36	613781	09CE01-36	OEP-MW-13D	10/8/2008	15:25
614321	09CE01-42	614325	09CE01-42	OEP-MW-12B	10/9/2008	10:25
614326	09CE01-43	614327	09CE01-43	OEP-MW-12D	10/9/2008	10:20
614328	09CE01-44	614329	09CE01-44	OEP-MW-12S	10/9/2008	11:35
614310	09CE01-48	614311	09CE01-48	OEP-SW-03	10/9/2008	14:25
614312	09CE01-49	614313	09CE01-49	OEP-SW-03FR	10/9/2008	14:30
616360	09CE01-56	616377	09CE01-56	OEP-MW-16S	10/16/2008	13:42
616382	09CE01-57	616383	09CE01-57	OEP-SW-02	10/16/2008	14:10

Reviewed by: James Abston
Date: 1/23/2009

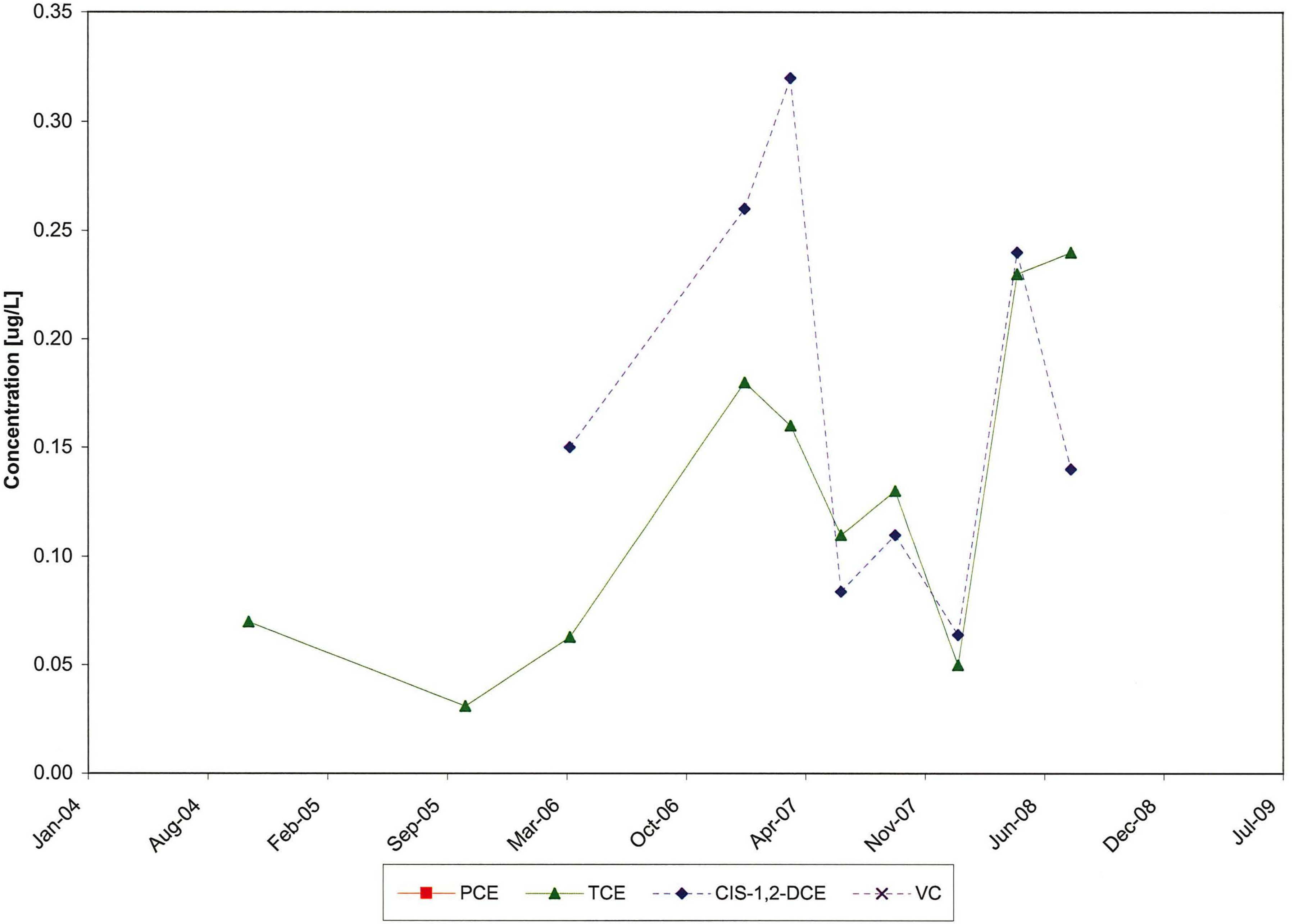
Data Qualifier Sheet

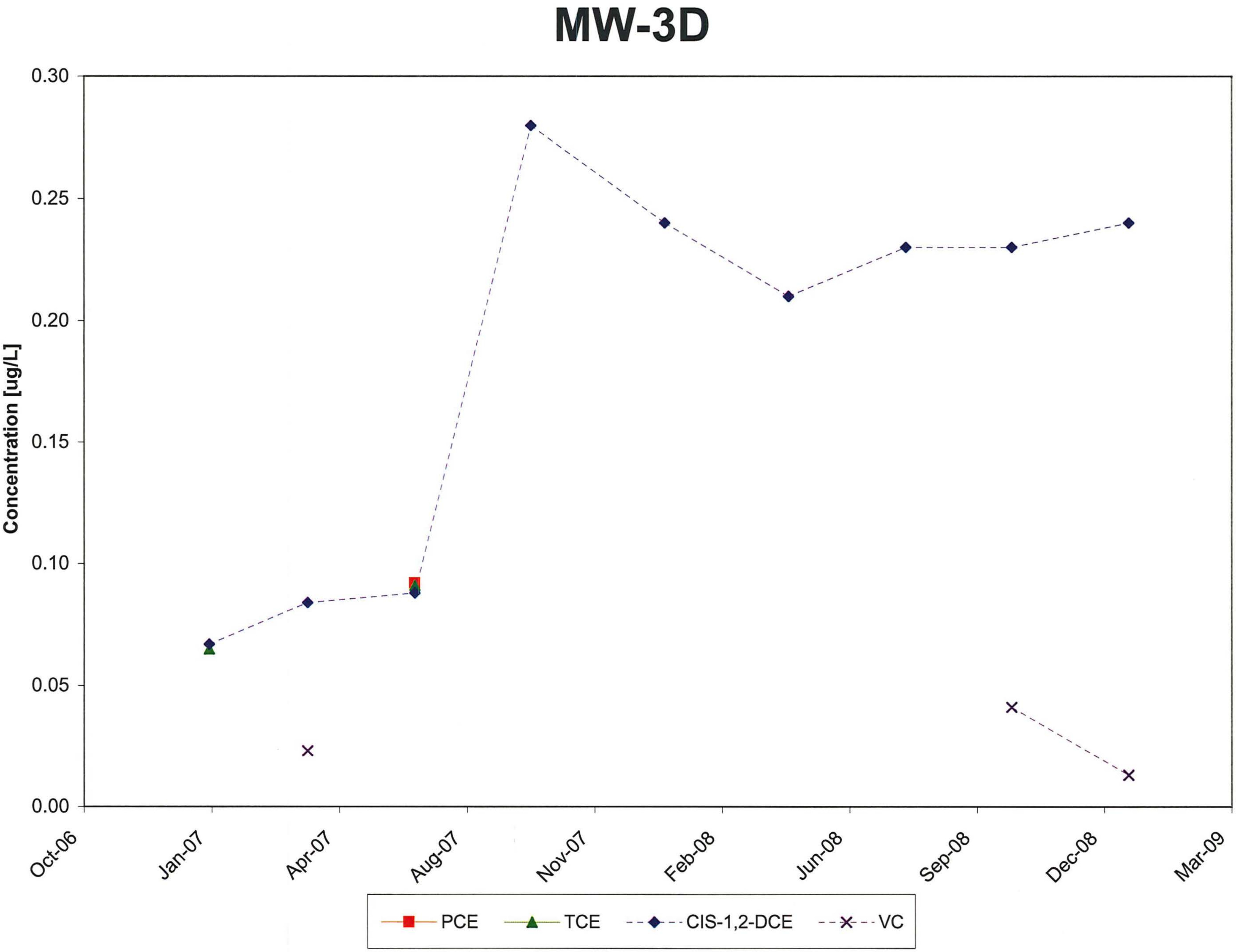
Qualifiers	Data Qualifier Definitions
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Reviewed by: James Abston
Date: 1/23/2009

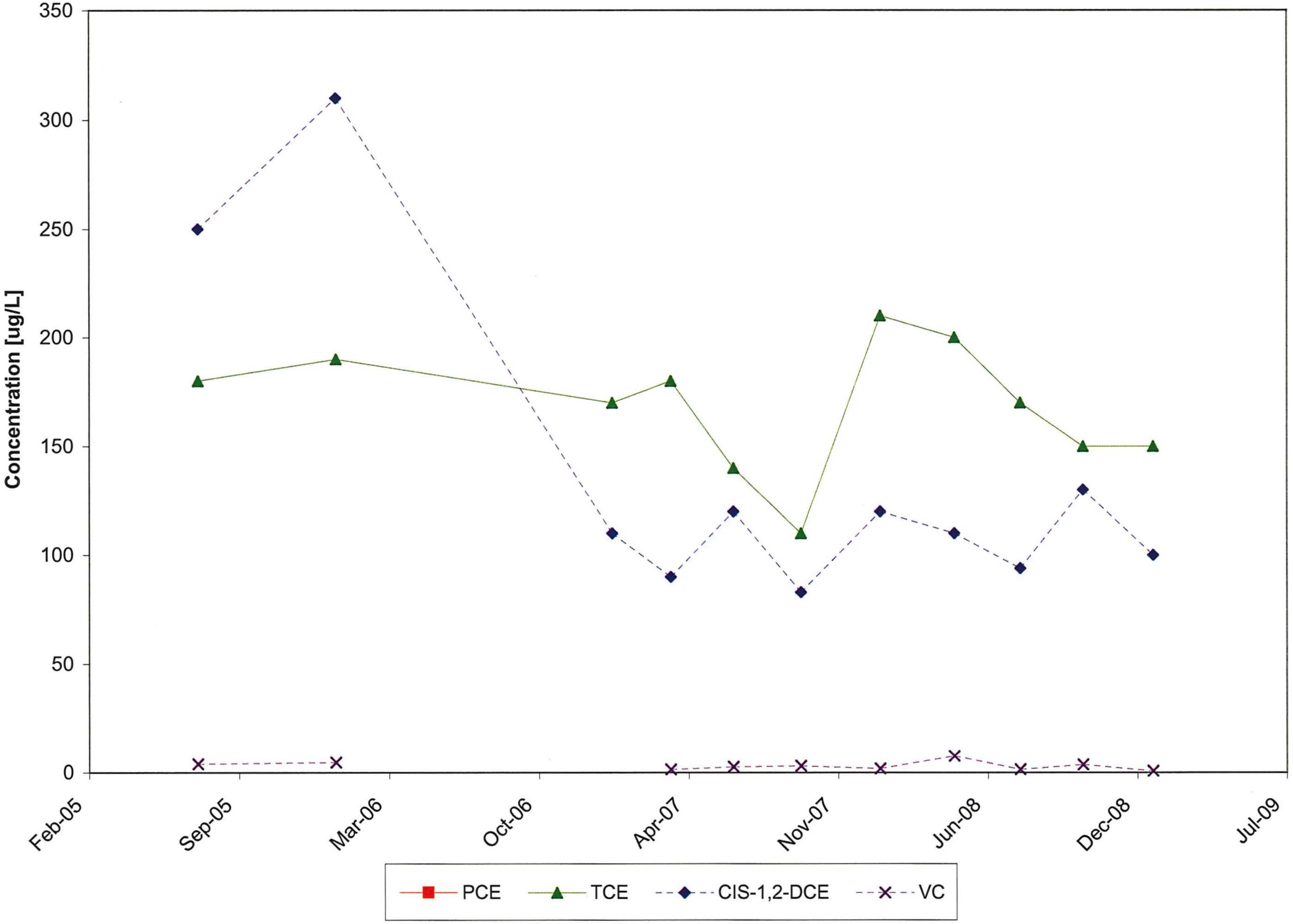
Appendix B
VOC Concentration Trend Graphs

MW-1S


0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Concentration [ug/L]
Jan-04
Aug-04
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

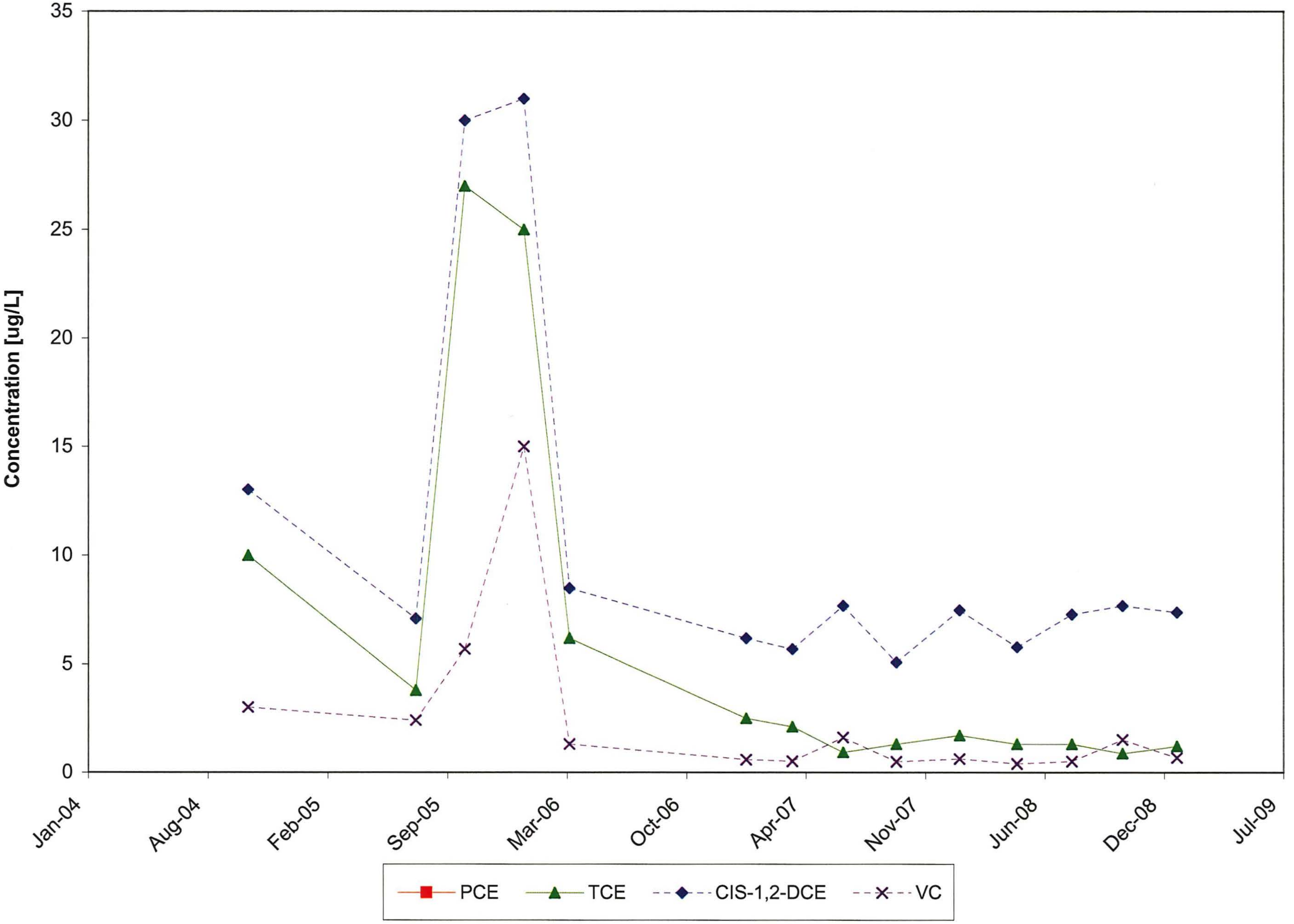

MW-3D
Concentration [ug/L]
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Oct-06
Jan-07
Apr-07
Aug-07
Nov-07
Feb-08
Jun-08
Sep-08
Dec-08
Mar-09
PCE
TCE
CIS-1,2-DCE
VC

MW-5D



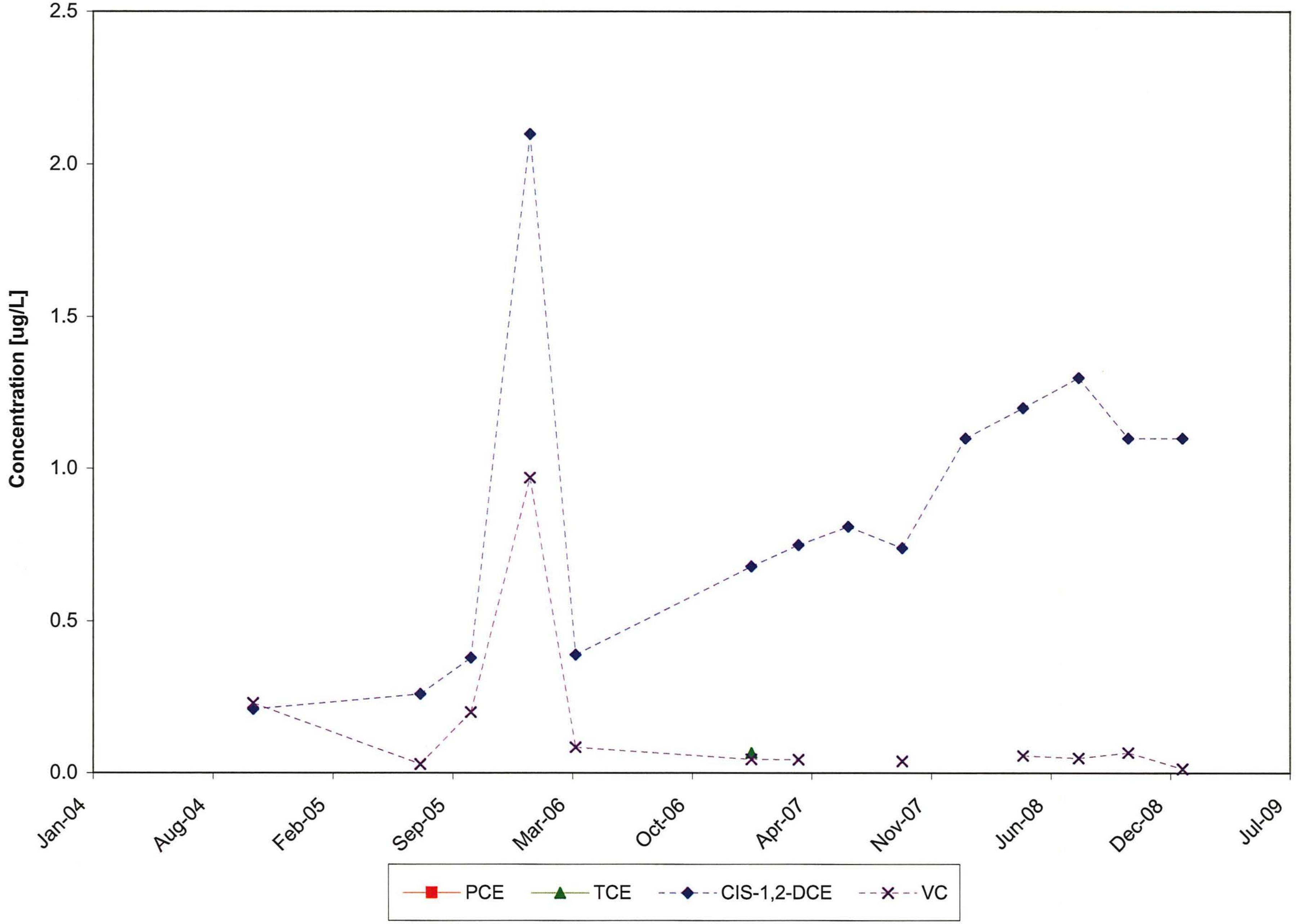
350
300
250
200
150
100
50
0
Concentration [ug/L]
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

MW-12D

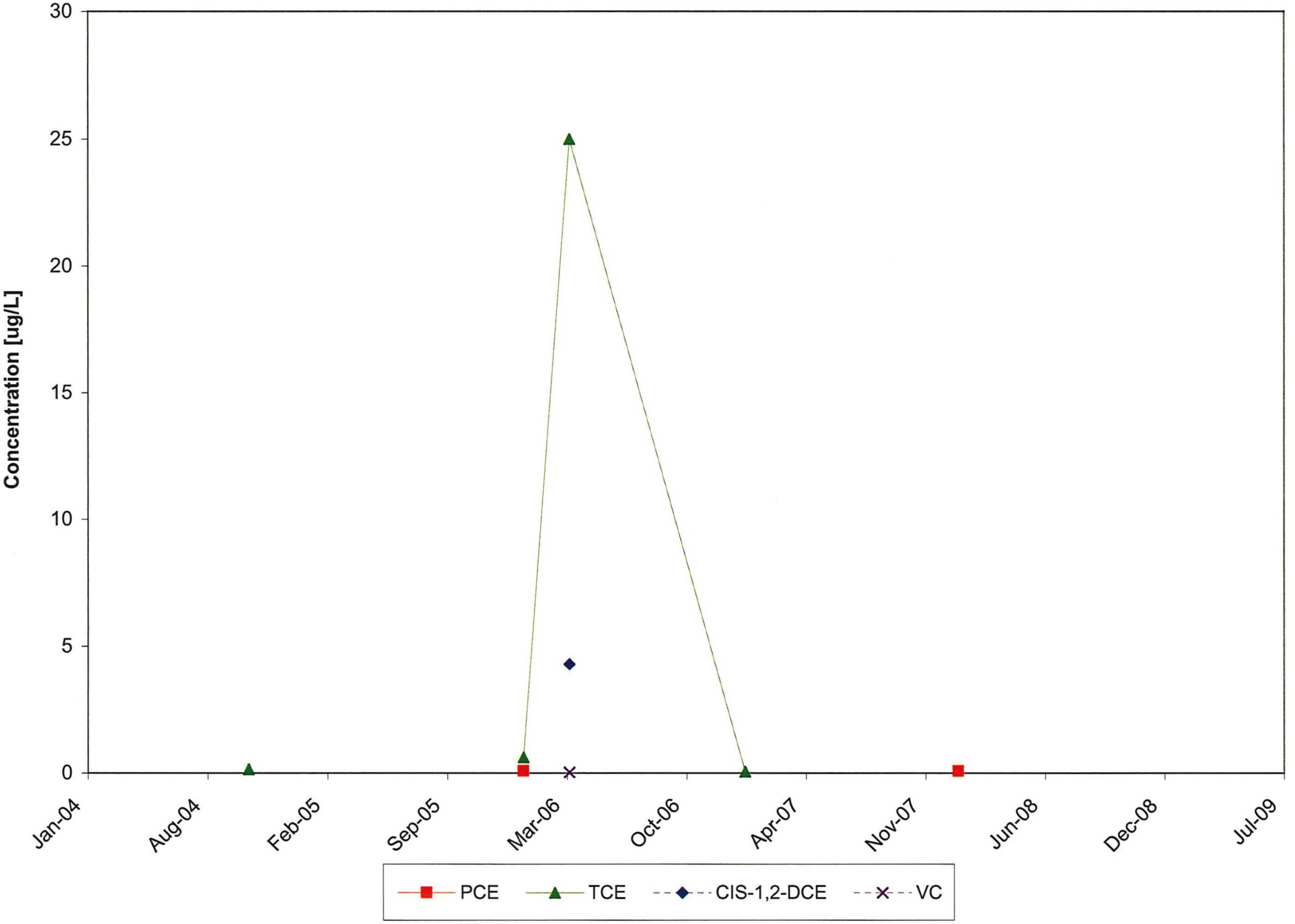


Concentration [ug/L]
35
30
25
20
15
10
5
0
Jan-04
Aug-04
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

MW-13D

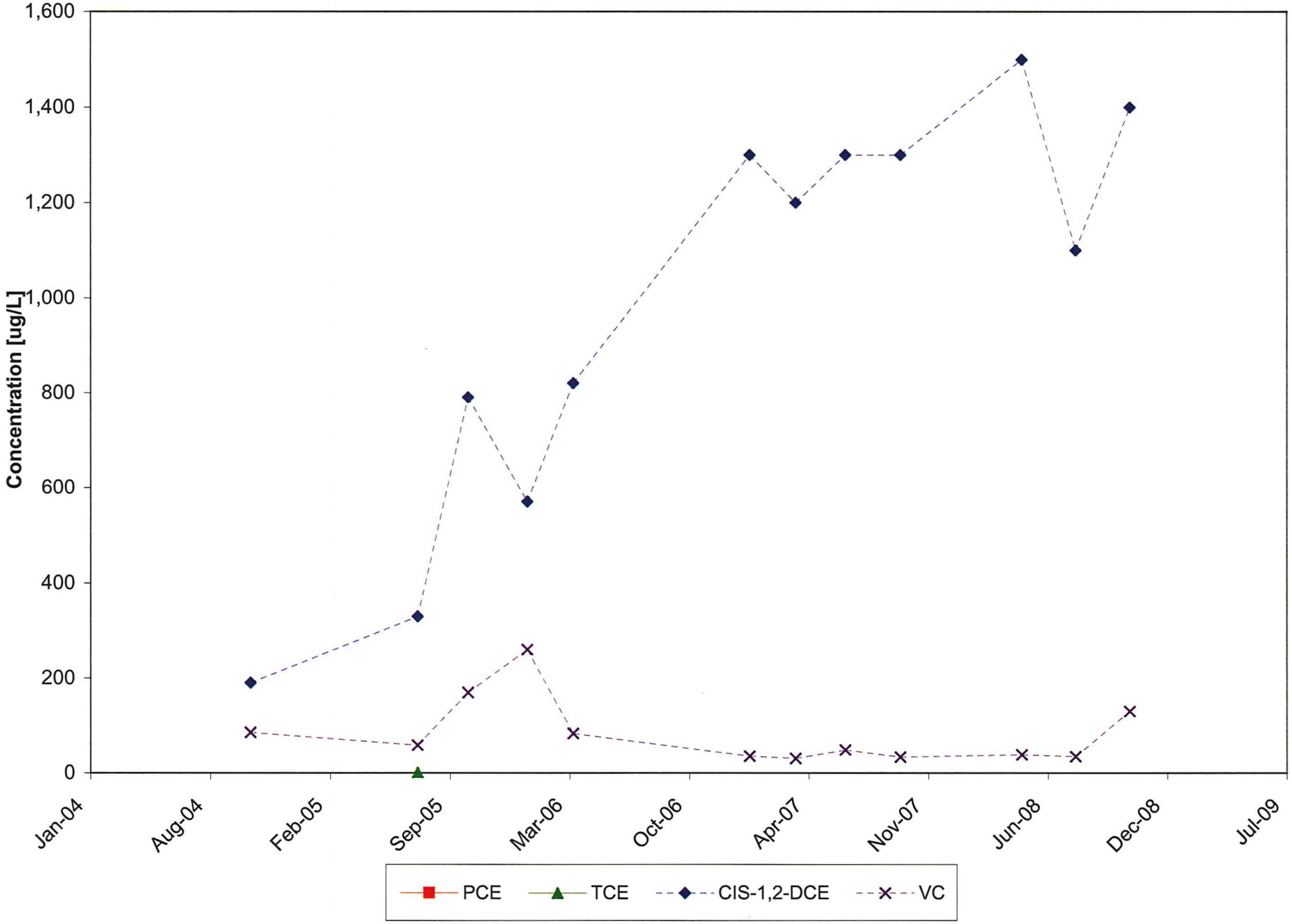

Concentration [ug/L]
2.5
2.0
1.5
1.0
0.5
0.0
Jan-04
Aug-04
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

MW-15S



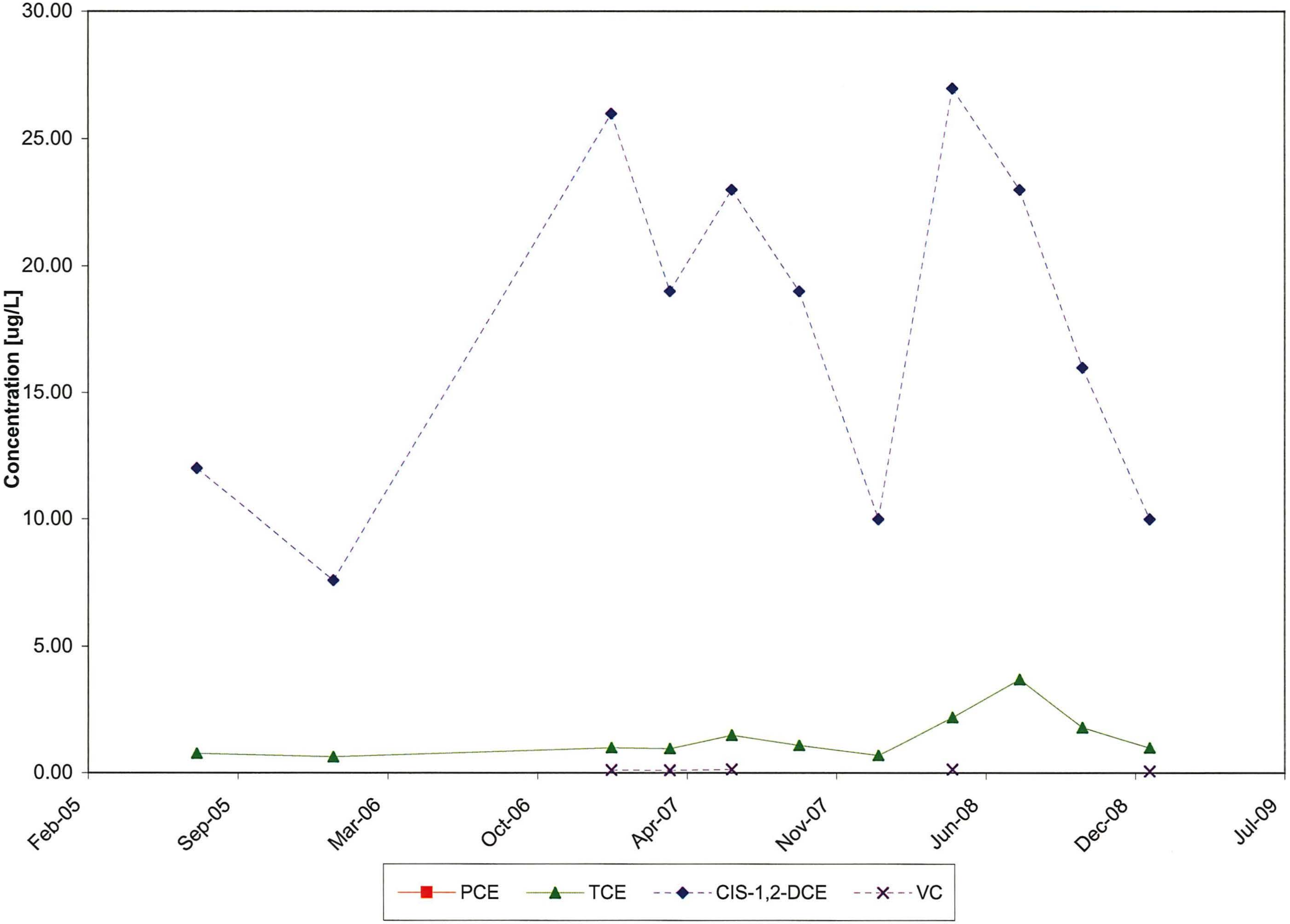
30
25
20
15
10
5
0
Concentration [ug/L]
Jan-04
Aug-04
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

MW-16S

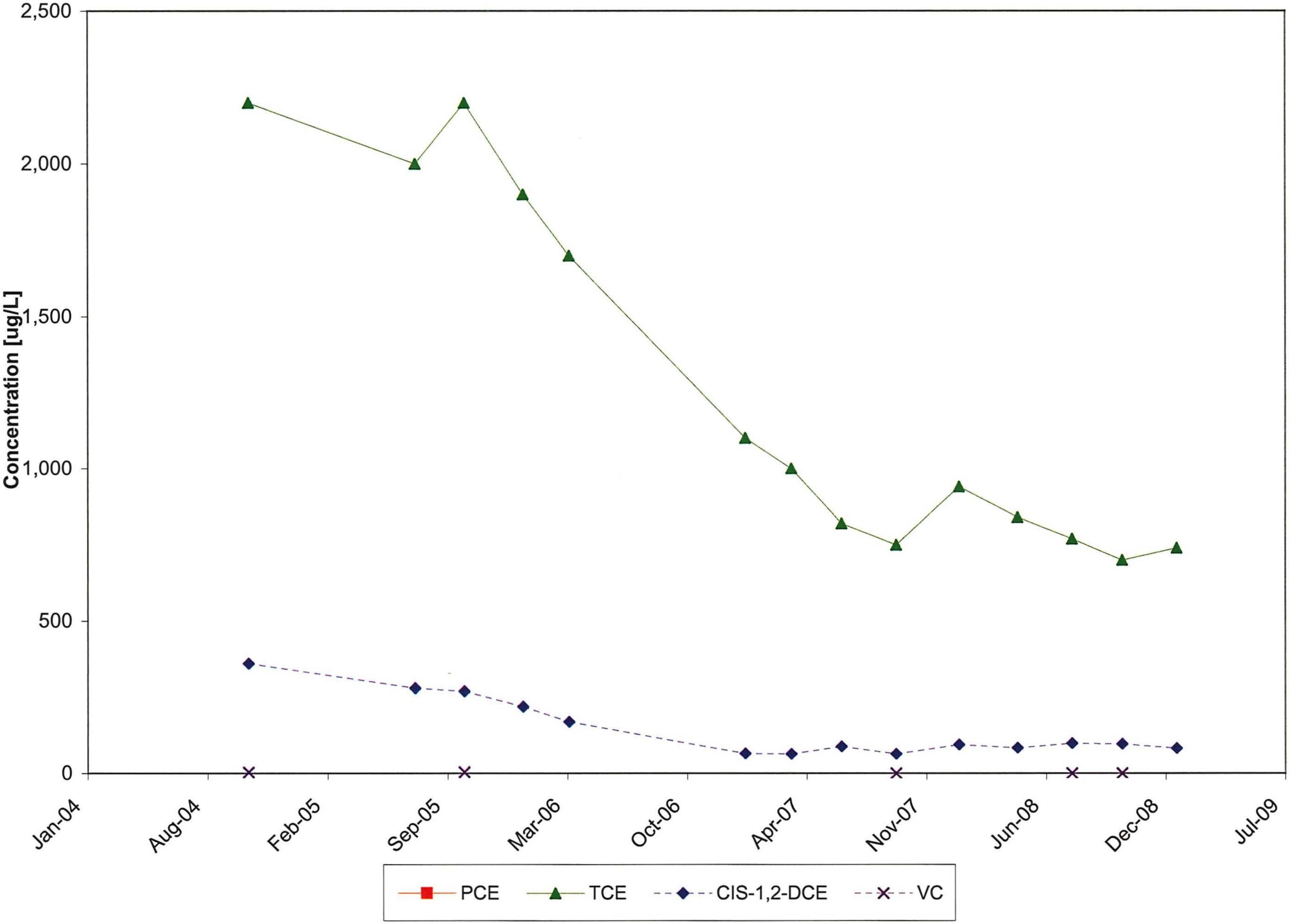


Concentration [ug/L]
1,600
1,400
1,200
1,000
800
600
400
200
0
Jan-04
Aug-04
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

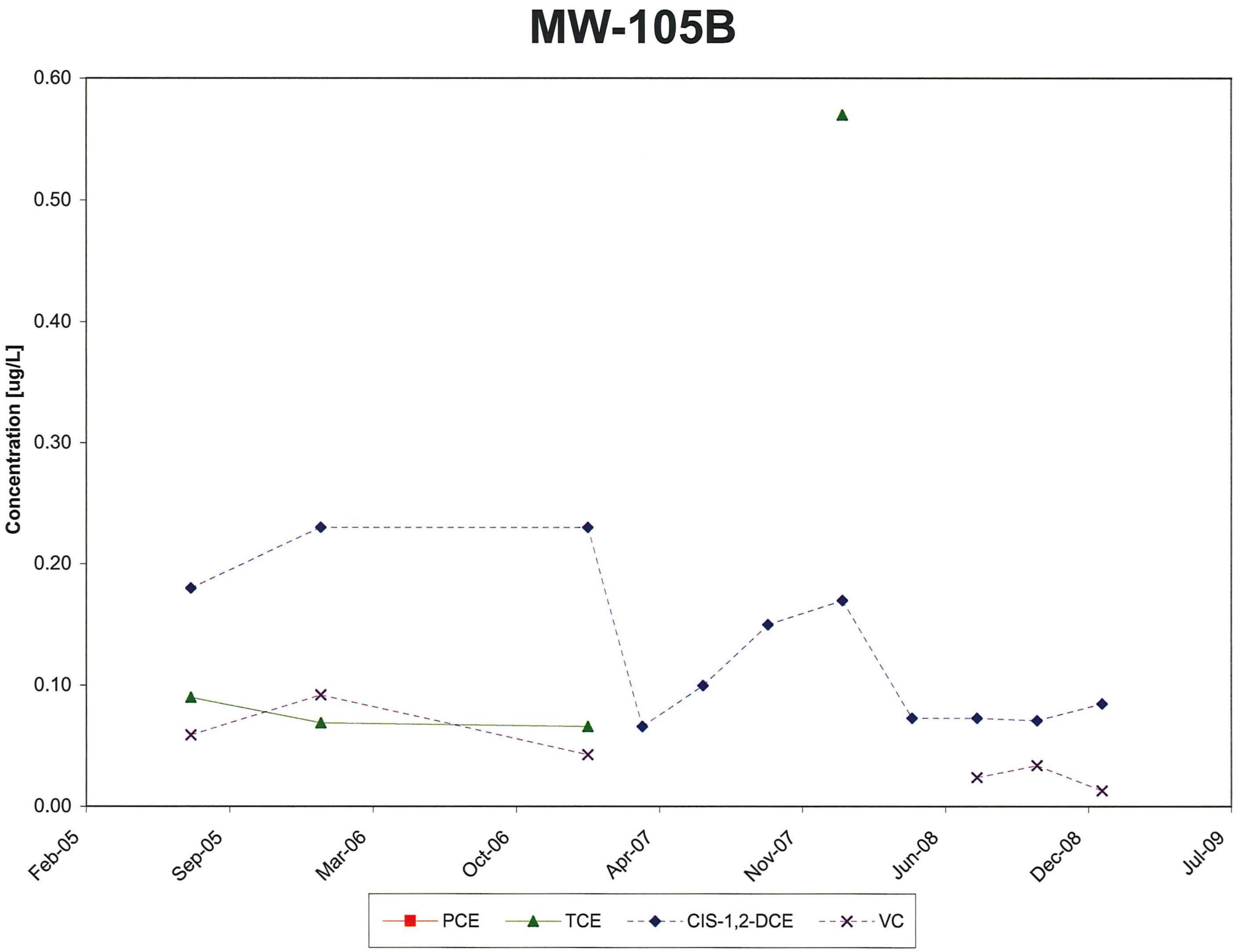
MW-102D


30.00
25.00
20.00
15.00
10.00
5.00
0.00
Concentration [ug/L]
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

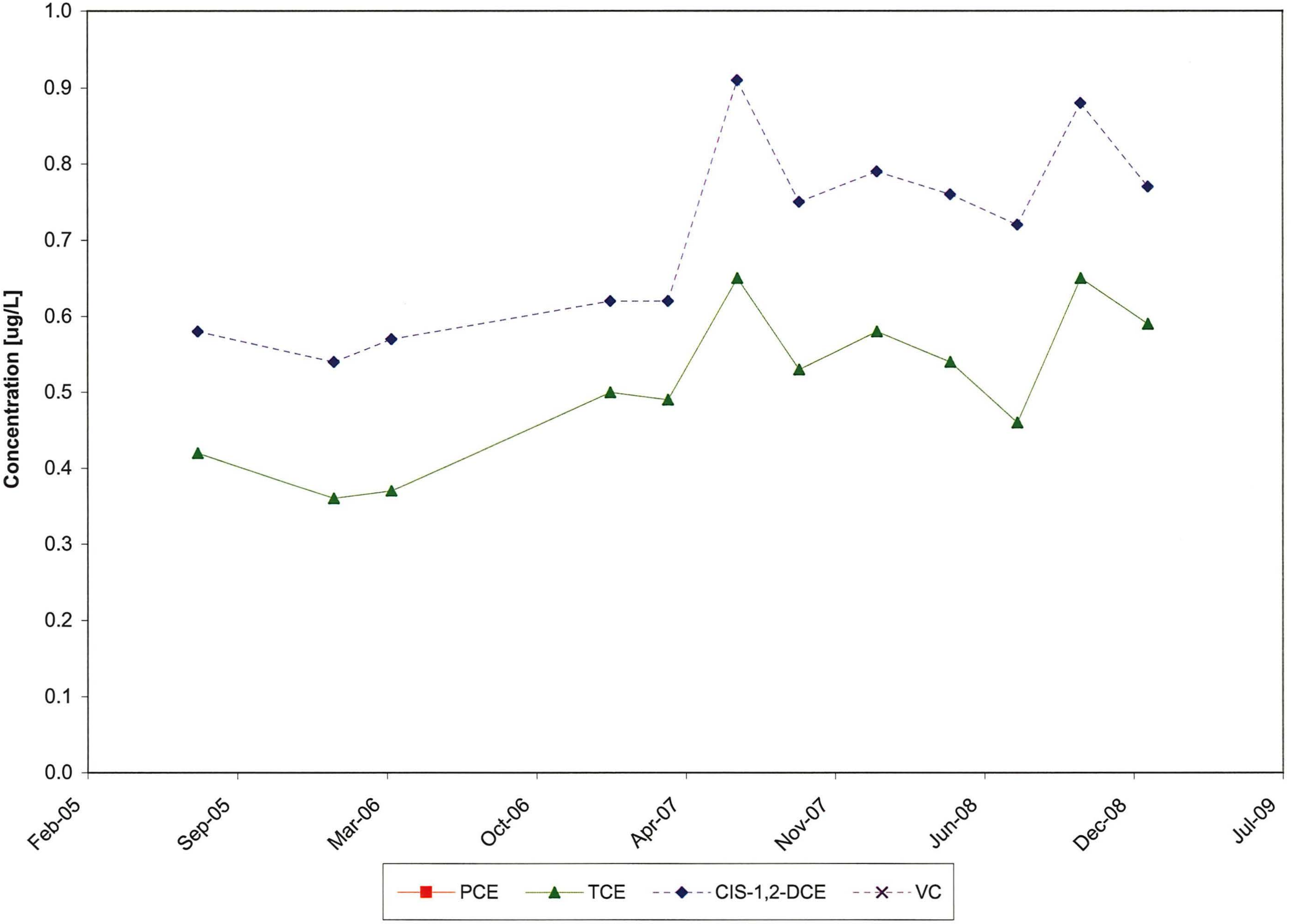
MW-103D



2,500
2,000
1,500
1,000
500
0
Concentration [ug/L]
Jan-04
Aug-04
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

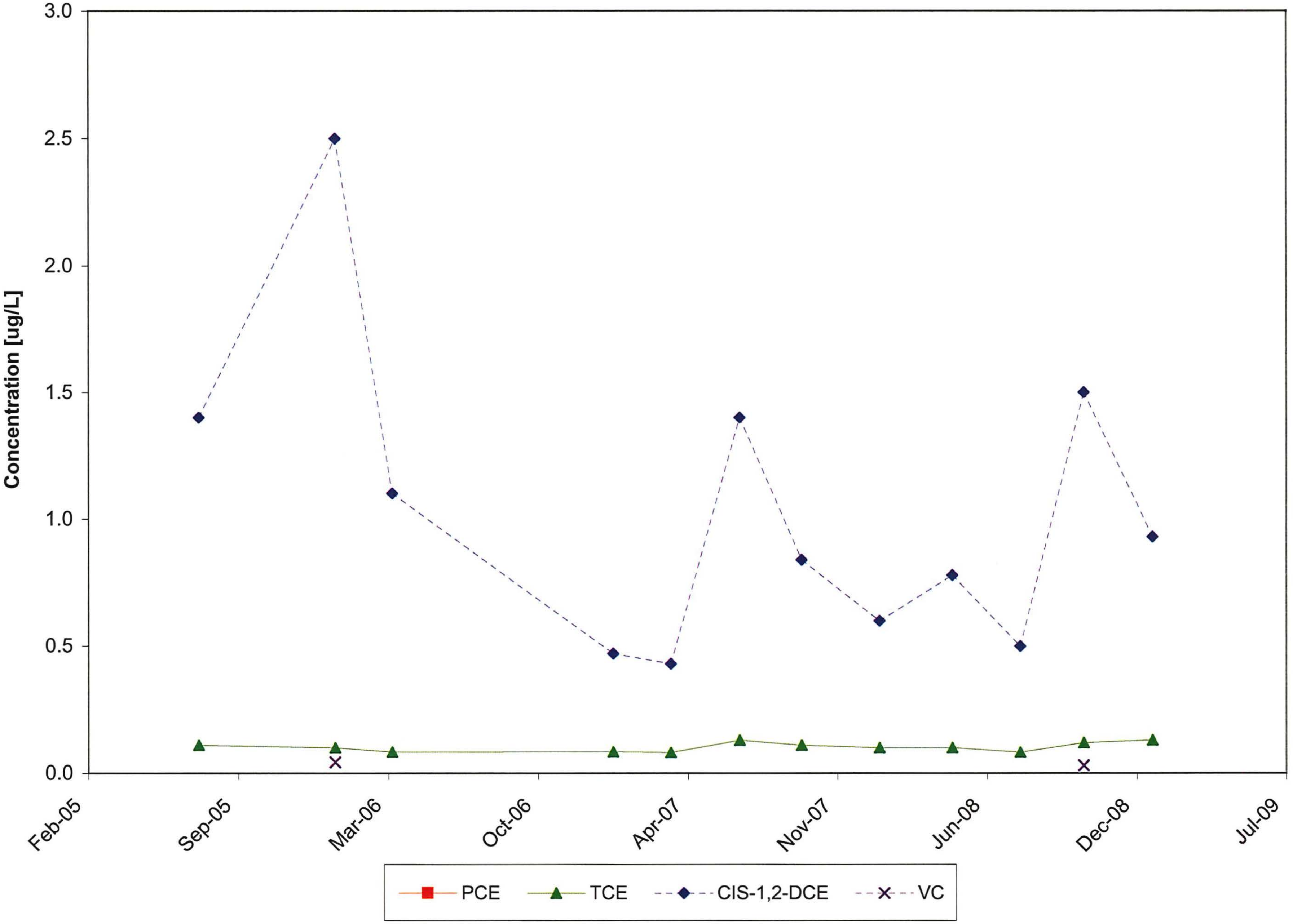

MW-105B
Concentration [ug/L]
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

PW-03

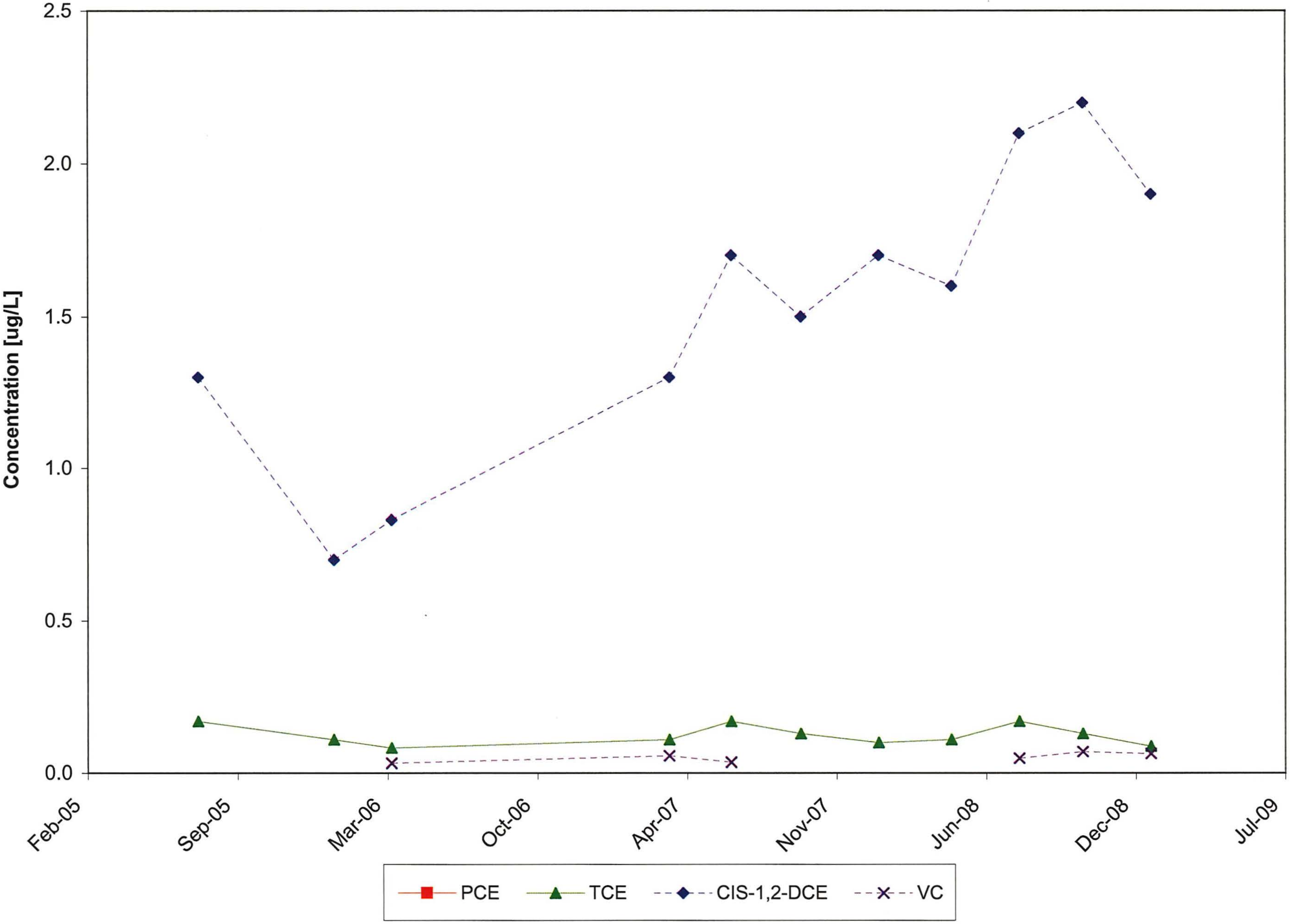


Concentration [ug/L]
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

PW-05

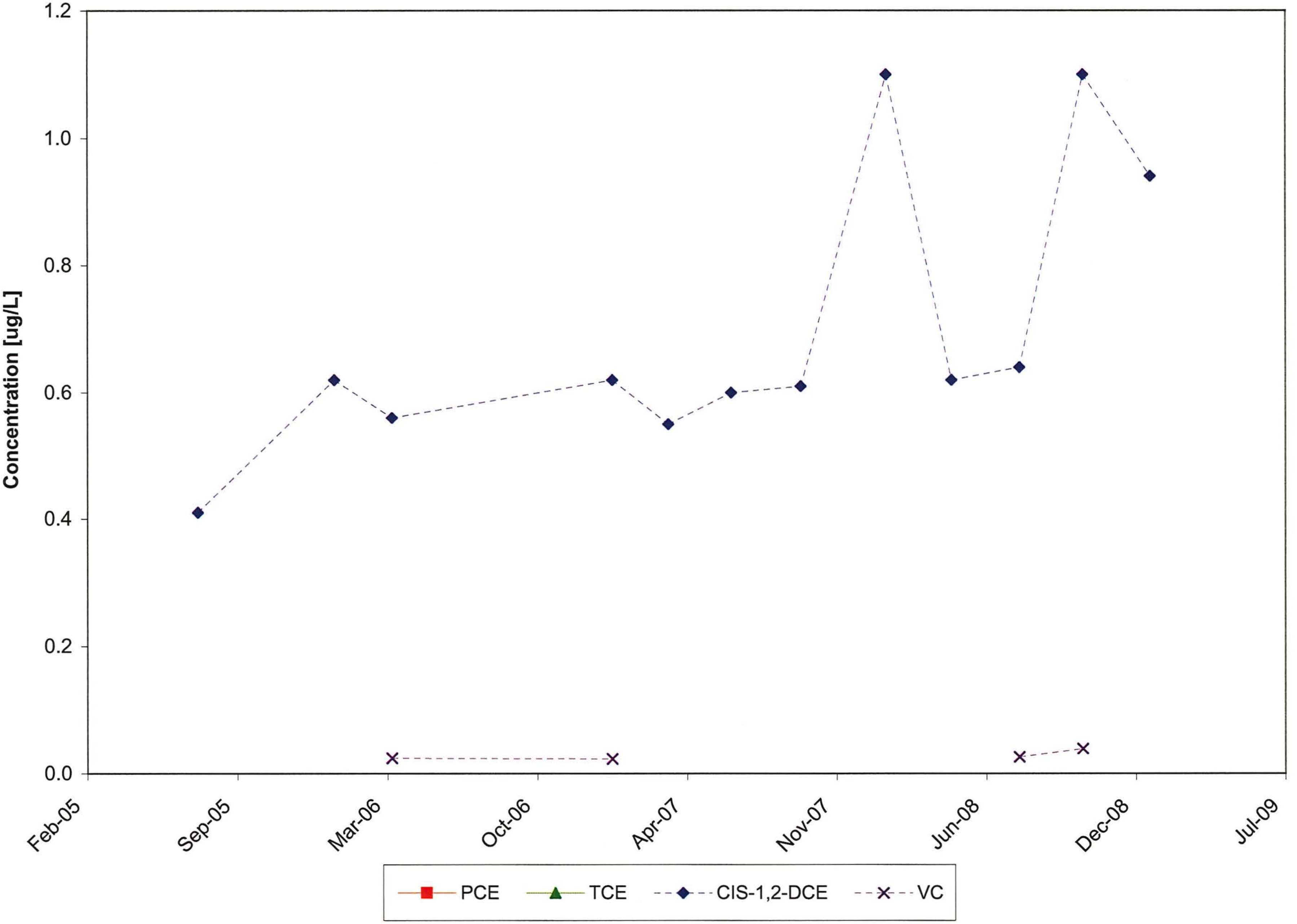

3.0
2.5
2.0
1.5
1.0
0.5
0.0
Concentration [ug/L]
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

PW-08



2.5
2.0
1.5
1.0
0.5
0.0
Concentration [ug/L]
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC

PW-11



1.2
1.0
0.8
0.6
0.4
0.2
0.0
Concentration [ug/L]
Feb-05
Sep-05
Mar-06
Oct-06
Apr-07
Nov-07
Jun-08
Dec-08
Jul-09
PCE
TCE
CIS-1,2-DCE
VC