



engineering and constructing a better tomorrow

March 1, 2006

Mrs. Janice Adams
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
Gaylord Field Office
2100 West M-32
Gaylord, Michigan 49735-9282

Subject: Final Technical Memorandum No. 13
Wickes Manufacturing TCE Plume Site
Mancelona, Antrim County, Michigan
Contract Order No. P-3000536

Dear Mrs. Adams:

MACTEC has finalized "Technical Memorandum No. 13 - Quarterly Groundwater Sampling – Fall 2005 for the Former Wickes Manufacturing TCE Plume Site. As requested, please find enclosed six copies of the final Technical Memorandum No. 13 and an electronic copy of this document. If you have questions about these materials or any other matter, please contact me at 231-922-9050.

Sincerely,

MACTEC Engineering and Consulting of Michigan, Inc.

A handwritten signature in cursive script that reads "Steven Murray".

Steven Murray, C.P.G. by SKO with permission
Site Manager

A handwritten signature in cursive script that reads "Michael O'Hearn".

Michael O'Hearn, P.E.
Senior Principal Engineer

SDM/sko

Enclosure

TECHNICAL MEMORANDUM NO. 13

DATE: March 1, 2006
PROJECT: Wickes Manufacturing TCE Plume Site
Mancelona, Antrim County, Michigan
SUBJECT: Quarterly Groundwater Sampling – Fall 2005
PREPARED BY: MACTEC Engineering and Consulting of Michigan, Inc.

INTRODUCTION

The purpose of this Technical Memorandum is to document the Fall 2005 quarterly groundwater sampling event. This work was conducted in accordance with MACTEC Engineering and Consulting, Inc.'s (MACTEC's) final Work Plan, Task 2: "Conduct Quarterly Groundwater Monitoring," and the final Quality Assurance Project Plan. MACTEC completed this work as directed by the Michigan Department of Environmental Quality (MDEQ), Gaylord Field Office. The results obtained during this and other sampling events will be used to support a supplemental groundwater model and feasibility study.

SCOPE OF WORK

Field activities included the collection of groundwater samples from 43 monitoring wells for analysis of volatile organic compounds (VOCs). Three monitoring wells were also sampled for analysis of selected metals. Groundwater samples were collected using standard groundwater sampling procedures (pump or bailer) with the exception of 21 monitoring wells that were sampled for VOCs using passive diffusion bags (PDBs). Samples were analyzed by the MDEQ Laboratory. During this quarterly sample collection event, the depth to groundwater was measured in 57 monitoring wells.

SCHEDULE

MACTEC personnel sampled the monitoring wells from October 24 through October 27, 2005. The final analytical reports for the samples were received from the MDEQ Laboratory on January 3, 2006.

PERSONNEL

The following MACTEC personnel were onsite to conduct field activities: Jeff Doerr (Staff Geologist), Joe Koeneman (Staff Environmental Scientist), and Steve Murray (Site Manager).

FIELD PROCEDURES

Groundwater samples were collected from 43 monitoring wells in accordance with the procedures described in the Quality Assurance Project Plan, except as noted on the sample records. The general procedures for each well are summarized below:

- Using an electronic water-level indicator, the depth to groundwater in the well was measured to the nearest 0.01 feet.
- Pumped samples – The sampling pump intake was positioned at approximately the midpoint of the saturated screen interval.
- Pumped samples – One tubing volume of groundwater was removed prior to initiating indicator parameter measurement. Pumping of groundwater was conducted at a flow rate of 0.1 to 0.5 liters per minute.
- The monitoring wells were sampled after these parameters had stabilized within 10 percent for turbidity and dissolved oxygen, 3 percent for specific conductance and temperature, and 0.1 pH units for a minimum of three consecutive readings.
- Samples were collected directly from the sampling spigot on the pump discharge line at a low flow rate to avoid agitating samples and possibly degassing volatile organic compounds.
- Samples for metals analysis were not filtered.
- A bailer was used to collect a sample from MW-30 after purging three casing volumes of groundwater.
- Samples were collected in certified clean sample bottles provided by the analytical laboratory and preserved in the field, as appropriate for the analysis. Samples were placed on ice in a sample cooler immediately after sampling.
- The sampling technique, sample depth, indicator parameters, and analytical methods were recorded on Groundwater Sampling Records (Appendix A).
- Following sample collection, purge water was returned to the ground surface near the well from which it was obtained, with the exception of those wells on the Dura property. Purge water from the wells on the Dura property was containerized and taken offsite for subsequent management.
- Sampling equipment and the water-level probe were decontaminated following the collection of each sample. Equipment was decontaminated with a solution of distilled water and Alconox. Decontamination water was containerized in 55-gallon drums for subsequent management.

TECHNICAL MEMORANDUM NO. 13

To evaluate laboratory and field procedures, MACTEC collected the following quality control samples: blind duplicates, field blanks, trip blanks, matrix spike/matrix spike duplicates, and equipment blanks. A list of groundwater samples collected and the associated quality control samples is presented in Table 1.

In addition to using the standard sample collection procedures, MACTEC collected groundwater samples from 21 of the deepest monitoring wells using PDBs. The PDBs were initially filled with distilled water and lowered to the middle of the screened interval of each well. Organic compounds dissolved in the groundwater diffuse into the bag containing the distilled water. Following a two-week equilibration period, the PDBs were retrieved, and the water from within the bag was placed into the appropriate sample containers for laboratory analysis.

RESULTS

Depth-to-groundwater measurements and groundwater elevations are presented in Table 2. The interpreted water-table elevation and groundwater flow direction are presented in Figure 1. Based on these elevations, the horizontal water-table gradient is approximately 0.008 feet per foot in the area between Mancelona and Schuss Mt. Road. This gradient increases to approximately 0.018 feet per foot in the area between monitoring wells MW-46 and MW-67. The vertical gradients for the well pairs at locations H, J, and K were 0.003, 0.002, and 0.01 feet per foot upward, respectively.

Tables 3 and 4 present the laboratory analytical results for VOCs and selected metals in groundwater samples, respectively. The laboratory data reports are presented in Appendix B. Analytes detected in groundwater samples during the October 2005 and all previous events are compared with the 1994 PA 451, Part 201, Generic Cleanup Criteria (June 2005) in Table 5. Analytes detected during the most recent sampling event include: 2-methylnaphthalene; cis-1,2-dichloroethene; naphthalene; n-butylbenzene; trans-1,2-dichloroethene; tetrachloroethene, trichloroethene (TCE); chromium, iron, and manganese. VOCs detected during the Fall 2005 sampling event are presented in Figure 2.

TCE was detected in 24 of the 43 monitoring wells sampled at concentrations ranging from 3.6 micrograms per liter ($\mu\text{g/L}$) to 170 $\mu\text{g/L}$. The MDEQ Generic Residential & Commercial I Drinking Water Criterion (RDWC) for TCE (5 $\mu\text{g/L}$) was exceeded in 23 of the monitoring well locations.

The interpreted extent of TCE in the water-table aquifer is depicted in Figure 3. As shown in this figure, the longitudinal axis of the TCE plume extends along the flow path from the source area through locations of monitoring well D (110 $\mu\text{g/L}$), MW-45 (170 $\mu\text{g/L}$), and MW-67 (110 $\mu\text{g/L}$). TCE was not

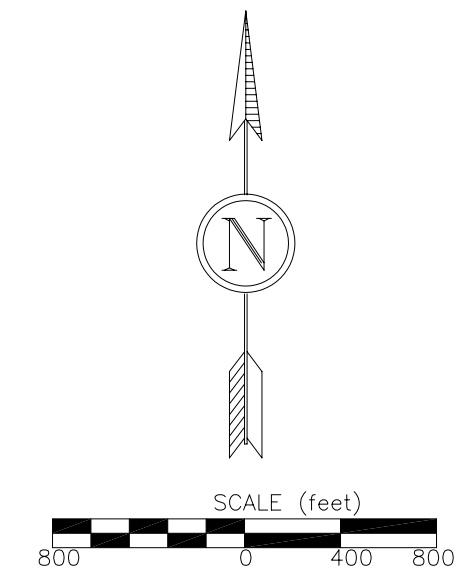
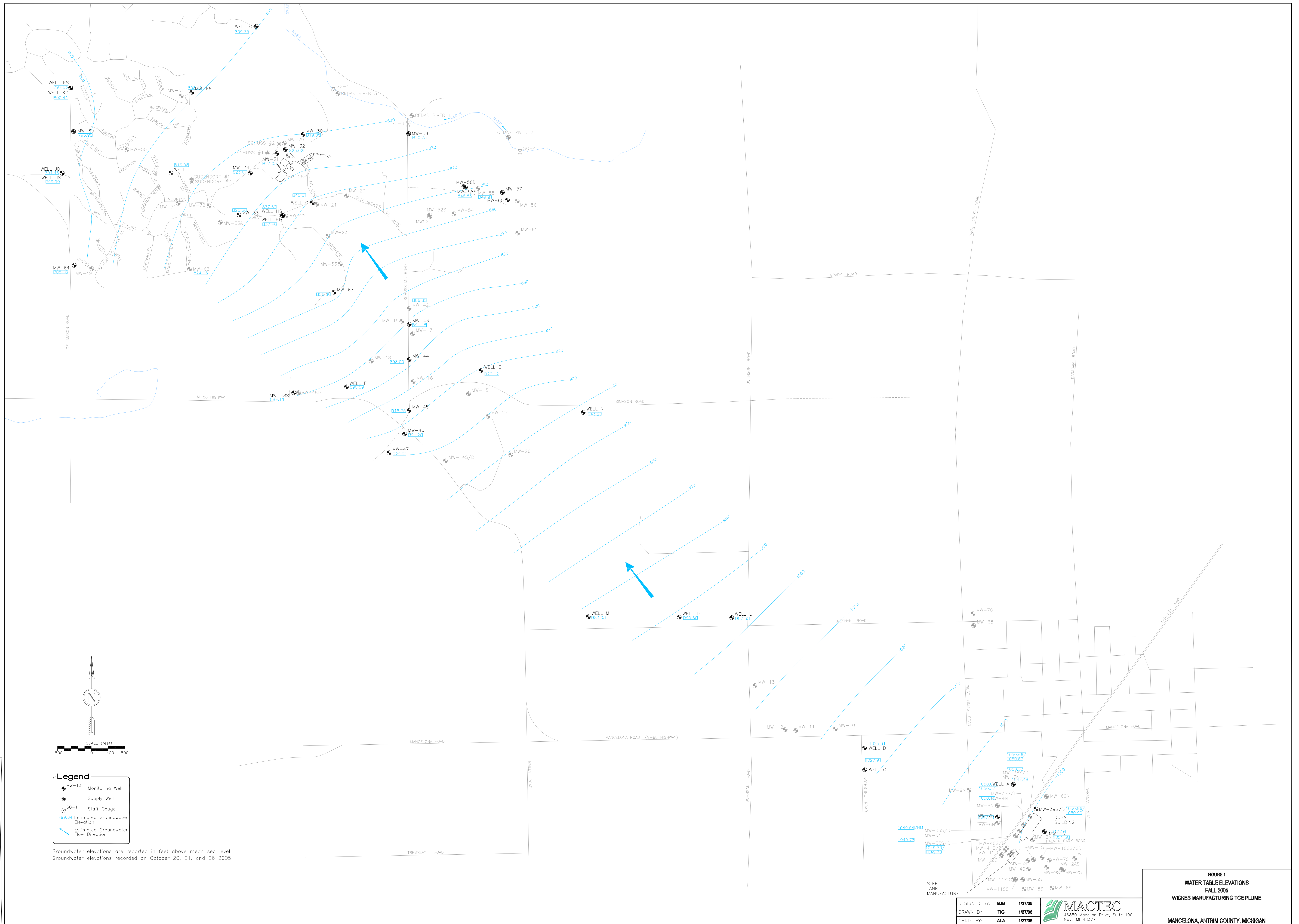
detected in monitoring wells located farthest downgradient from the site (i.e., MW-64, MW-65, MW-66, Js/d, Ks/d, and O). The estimated lateral extent of TCE in groundwater is indicated by the absence of TCE in samples collected from wells MW-48s and MW-60. It should be noted that the TCE concentrations for all sampled wells were used to estimate the iso-concentration contours shown on Figure 3, regardless of variations in the elevations of the screened intervals.

Three wells (MW-01N, MW-44, and C) were sampled for the following: total antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, selenium, silver, manganese, mercury, and zinc. The analytical results for iron and manganese samples did exceed the respective RDWC in MW-44. The analytical results did exceed the RDWC for lead at location MW-01N, and zinc at location C.

General Comparison with Previous Groundwater Data

Groundwater elevation and TCE concentration trend graphs for selected monitoring wells within the TCE plume are presented in Appendix C. In general, the groundwater elevation and groundwater analytical data collected during the Fall 2005 sampling event were consistent with the data collected during the previous quarterly sampling events.

FIGURES



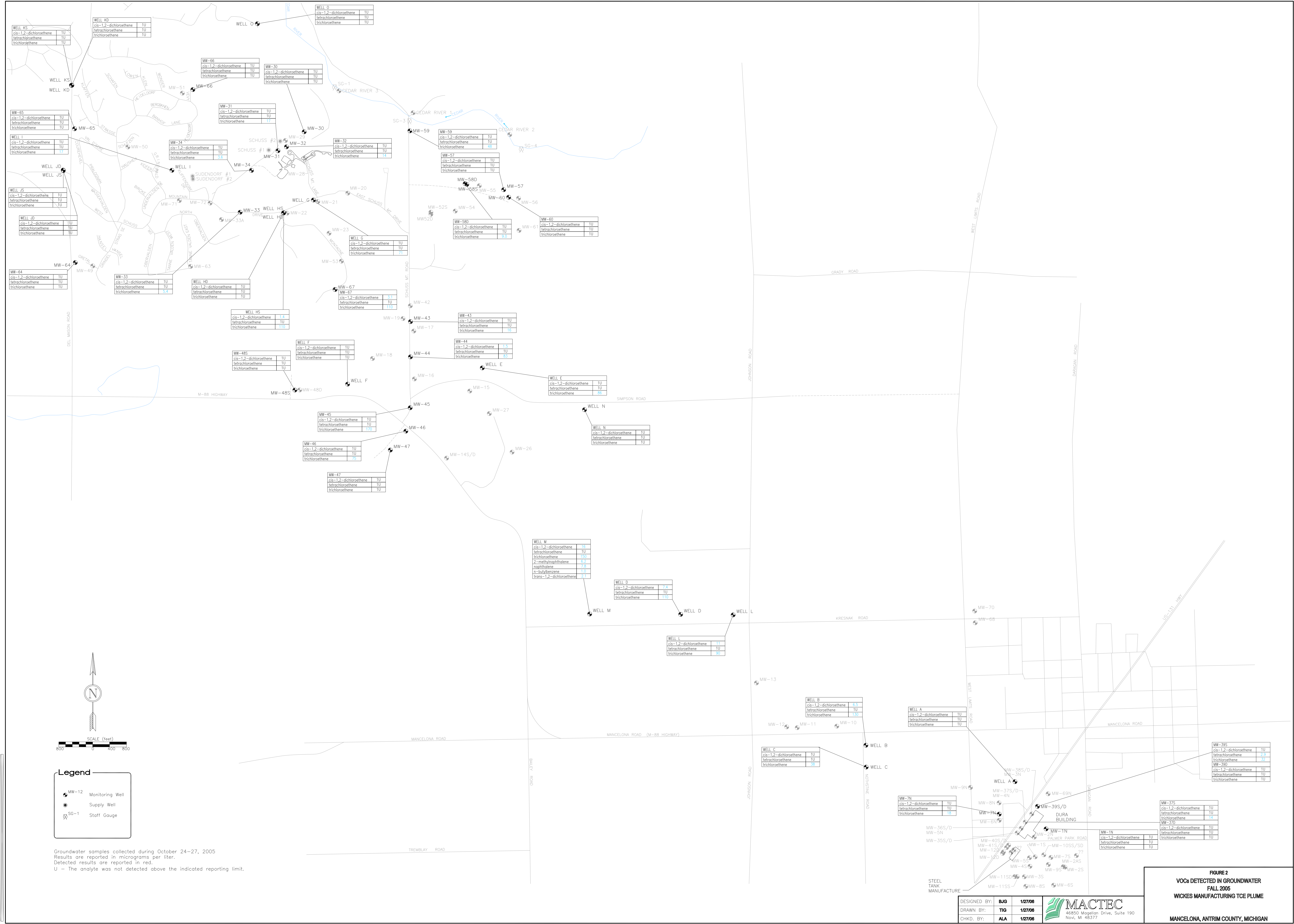
- Legend**
- MW-12 Monitoring Well
 - Supply Well
 - SG-1 Staff Gauge
 - 799.84 Estimated Groundwater Elevation
 - Estimated Groundwater Flow Direction

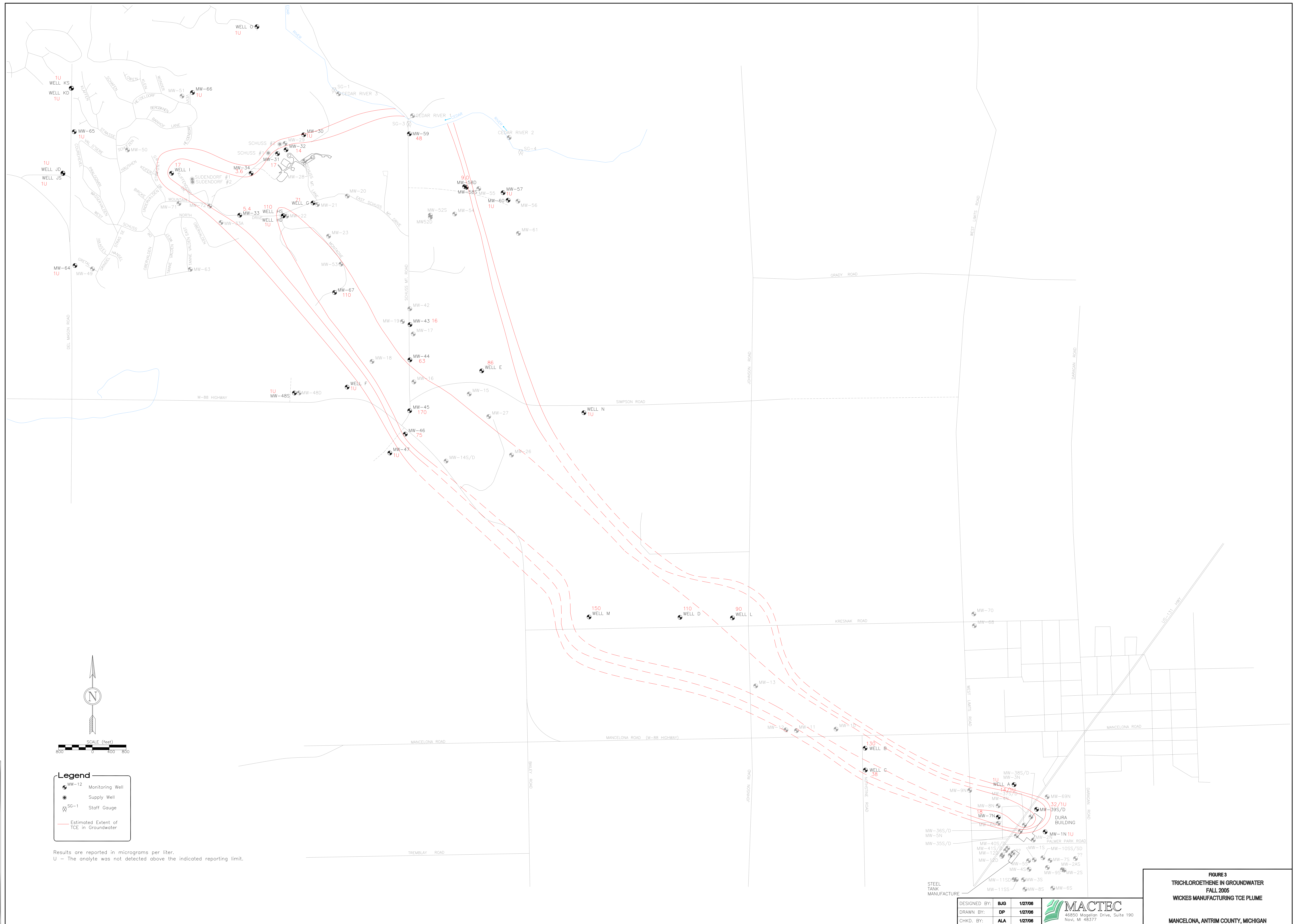
Groundwater elevations are reported in feet above mean sea level.
 Groundwater elevations recorded on October 20, 21, and 26 2005.

DESIGNED BY: **BJG** 1/27/06
 DRAWN BY: **TIG** 1/27/06
 CHKD. BY: **ALA** 1/27/06



FIGURE 1
WATER TABLE ELEVATIONS
FALL 2005
WICKES MANUFACTURING TCE PLUME
MANCLONA, ANTRIM COUNTY, MICHIGAN





Legend

- MW-12 Monitoring Well
- Supply Well
- SG-1 Staff Gauge
- Estimated Extent of TCE in Groundwater

Results are reported in micrograms per liter.
 U - The analyte was not detected above the indicated reporting limit.

DESIGNED BY: BJB 1/27/06
 DRAWN BY: DP 1/27/06
 CHKD. BY: ALA 1/27/06



FIGURE 3
TRICHLOROETHENE IN GROUNDWATER
FALL 2005
WICKES MANUFACTURING TCE PLUME
MANCELONA, ANTRIM COUNTY, MICHIGAN

TABLES

**Table 1. Summary of Groundwater Samples Collected - Fall 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan**

Well Identification	Sample Date	Sample Depth (feet BTOC)	Laboratory Analyses	Sampling Method	Quality Control Samples
MW-01N	10/26/2005	79	VOCs Metals	Pump	EB-02
MW-07N	10/24/2005	80	VOCs	PDB	
MW-30	10/24/2005	36	VOCs	Bailed	
MW-31	10/27/2005	90	VOCs	Pump	
MW-32	10/27/2005	90	VOCs	Pump	
MW-33	10/27/2005	118	VOCs	Pump	
MW-34	10/26/2005	93	VOCs	Pump	
MW-37D	10/26/2005	110	VOCs	Pump	
MW-37S	10/26/2005	79	VOCs	Pump	MW-103 (Duplicate)
MW-39D	10/26/2005	111	VOCs	Pump	
MW-39S	10/26/2005	84	VOCs	Pump	
MW-43	10/27/2005	160	VOCs	Pump	
MW-44	10/27/2005	125	VOCs Metals	Pump	
MW-45	10/24/2005	181	VOCs	PDB	
MW-46	10/24/2005	200	VOCs	PDB	
MW-47	10/24/2005	200	VOCs	PDB	
MW-48S	10/25/2005	80	VOCs	Pump	MW-102 (Duplicate)
MW-57	10/25/2005	71	VOCs	Pump	
MW-58D	10/26/2005	150	VOCs	Pump	
MW-59	10/27/2005	30	VOCs	Pump	MS/MSD
MW-60	10/26/2005	91	VOCs	Pump	
MW-64	10/25/2005	258	VOCs	PDB	
MW-65	10/25/2005	340	VOCs	PDB	
MW-66	10/24/2005	347	VOCs	PDB	
MW-67	10/24/2005	258	VOCs	PDB	

prepared by BJJ 01-27-06
reviewed by ALA 01-27-06

**Table 1. Summary of Groundwater Samples Collected - Fall 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan**

Well Identification	Sample Date	Sample Depth (feet BTOC)	Laboratory Analyses	Sampling Method	Quality Control Samples
A	10/25/2005	85	VOCs	Pump	
B	10/24/2005	185	VOCs	PBD	MW-100 (Duplicate)
C	10/27/2005	110	VOCs Metals	Pump	EB-03
D	10/24/2005	375	VOCs	PDB	MW-101 (Duplicate)
E	10/27/2005	115	VOCs	Pump	
F	10/24/2005	170	VOCs	PDB	
G	10/27/2005	100	VOCs	Pump	
Hs	10/27/2005	125	VOCs	Pump	MS/MSD
Hd	10/24/2005	178	VOCs	PDB	
I	10/24/2005	270	VOCs	PDB	
Js	10/25/2005	331	VOCs	PDB	
Jd	10/25/2005	455	VOCs	PDB	
Ks	10/25/2005	344	VOCs	PDB	
Kd	10/25/2005	436	VOCs	PDB	
L	10/24/2005	351	VOCs	PDB	
M	10/24/2005	420	VOCs	PDB	
N	10/25/2005	260	VOCs	PDB	EB-01
O	10/25/2005	176	VOCs	PDB	
Equipment Blanks					
EB-01	10/25/2005	-	VOCs		
EB-02	10/26/2005	-	VOCs		
EB-03	10/27/2005	-	VOCs		

- BTOC - Below top of casing
VOCs - Volatile organic compounds (SW-846 8260B)
Metals - Metals: antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, selenium, silver, manganese, mercury, and zinc (SW-846 6020)
MS/MSD - Matrix spike and matrix spike duplicate
Pump - Low-flow sampling with submersible bladder pump
PDB - Passive diffusion bag sampler
Bailer - Disposable (polyethylene) or Teflon bailer

**Table 2. Groundwater Elevation Measurements - Fall 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan**

Monitoring Well	TOC Elevation (feet amsl)	Depth to Water (feet BTOC)	Groundwater Elevation (feet amsl)
MW-01N	1,118.96	71.80	1,047.16
MW-02N	1,124.32	73.02	1,051.30
MW-03N	1,124.27	73.74	1,050.53
MW-04N	1,123.62	73.49	1,050.13
MW-05N	1,122.80	73.02	1,049.78
MW-07N	1,117.99	70.58	1,047.41
MW-30	845.41	25.56	819.85
MW-31	834.60	11.55	823.05
MW-32	832.40	9.38	823.02
MW-33	843.18	16.82	826.36
MW-34	841.76	18.09	823.67
MW-35d	1,121.86	72.16	1,049.70
MW-35s	1,121.87	72.14	1,049.73
MW-36s	1,122.45	72.91	1,049.54
MW-37d	1,123.81	73.44	1,050.37
MW-37s	1,123.65	73.60	1,050.05
MW-38d	1,124.73	74.10	1,050.63
MW-38s	1,124.51	73.85	1,050.66
MW-39d	1,125.08	74.18	1,050.90
MW-39s	1,124.91	73.95	1,050.96
MW-42	927.65	40.80	886.85
MW-43	921.68	30.53	891.15
MW-44	915.20	17.20	898.00
MW-45	941.75	23.00	918.75
MW-46	945.09	23.89	921.20
MW-47	960.36	30.45	929.91
MW-48d	NA	39.88	-
MW-48s	941.41	52.30	889.11
MW-55	871.91	22.00	849.91
MW-57	NA	19.36	-
MW-58d	NA	23.37	-
MW-58s	872.53	23.68	848.85
MW-59	823.97	3.22	820.75
MW-60	NA	25.06	-
MW-63	844.79	20.76	824.03
MW-64	961.56	253.40	708.16
MW-65	1,058.52	261.54	796.98
MW-66	1,076.38	268.28	808.10
MW-67	973.29	116.49	856.80
A	1,124.36	76.88	1,047.48
B	1,108.52	83.21	1,025.31
C	1,089.11	61.20	1,027.91
D	1,126.16	135.56	990.60
E	955.10	32.98	922.12
F	940.57	49.98	890.59
G	843.33	2.82	840.51
Hs	846.99	9.37	837.62
Hd	847.16	9.76	837.40
I	938.28	122.20	816.08
Js	1,059.24	259.34	799.90
Jd	1,059.51	265.05	794.46
Ks	1,063.25	266.20	797.05
Kd	1,064.13	263.72	800.41
L	1,126.32	128.97	997.35
M	1,133.53	150.50	983.03
N	1,091.78	148.58	943.20
O	904.01	94.66	809.35

TOC - Top of casing
amsl - Above mean sea level
BTOC - Below top of casing
NA - Not available

Measurements performed October 20, 21 and 26, 2005.

prepared by BJB 01-27-06
reviewed by ALA 01-27-06

Table 3. Groundwater Analytical Results - Fall 2005
Volatile Organic Compounds
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification:	MW-01N	MW-07N	MW-30	MW-31	MW-32	MW-33	MW-34	MW-37d	MW-37s	MW-37s
Sampling Date:	10/26/2005	10/24/2005	10/24/2005	10/27/2005	10/27/2005	10/27/2005	10/26/2005	10/26/2005	10/26/2005	10/26/2005
	Duplicate									
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acrylonitrile	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethyl ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diisopropyl Ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethyltertiarybutylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m&p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl iodide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyltertiarybutylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
p-Isopropyl toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butyl Alcohol	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Amylmethylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrahydrofuran	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,4-Dichloro-2-butene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	1 U	18	1 U	17	14	5.4	3.6	1 U	14	14
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Results are reported in micrograms per liter.

U - The analyte was not detected above the indicated reporting limit.

prepared by BJB 01-27-06
reviewed by ALA 01-27-06

Table 3. Groundwater Analytical Results - Fall 2005
Volatile Organic Compounds
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification:	MW-39d	MW-39s	MW-43	MW-44	MW-45	MW-46	MW-47	MW-48s	MW-48s	MW-57	MW-58d
Sampling Date:	10/26/2005	10/26/2005	10/27/2005	10/27/2005	10/24/2005	10/24/2005	10/24/2005	10/25/2005	10/25/2005	10/25/2005	10/26/2005
	Duplicate										
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acrylonitrile	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethyl ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diisopropyl Ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethyltertiarybutylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m&p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl iodide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyltertiarybutylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
p-Isopropyl toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butyl Alcohol	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Tetrachloroethene	1 U	2.9	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Amylmethylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrahydrofuran	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,4-Dichloro-2-butene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	1 U	32	16	83	170	75	1 U	1 U	1 U	1 U	9.0
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Results are reported in micrograms per liter.

U - The analyte was not detected above the indicated reporting limit.

prepared by BJJ 01-27-06
reviewed by ALA 01-27-06

Table 3. Groundwater Analytical Results - Fall 2005
Volatile Organic Compounds
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification:	MW-59	MW-60	MW-64	MW-65	MW-66	MW-67	A	B	B	C
Sampling Date:	10/27/2005	10/26/2005	10/25/2005	10/25/2005	10/24/2005	10/24/2005	10/25/2005	10/24/2005	10/24/2005	10/27/2005
	Duplicate									
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acrylonitrile	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	3.1	1 U	6.5	6.5	1 U
cis-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethyl ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diisopropyl Ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethyltertiarybutylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m&p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl iodide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyltertiarybutylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
p-Isopropyl toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butyl Alcohol	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Amylmethylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrahydrofuran	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,4-Dichloro-2-butene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	48	1 U	1 U	1 U	1 U	110	1 U	130	120	38
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Results are reported in micrograms per liter.

U - The analyte was not detected above the indicated reporting limit.

prepared by BJK 01-27-06
reviewed by ALA 01-27-06

Table 3. Groundwater Analytical Results - Fall 2005
Volatile Organic Compounds
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification:	D	E	F	G	Hs	Hd	I	Js	Jd	Ks
Sampling Date:	10/24/2005	10/27/2005	10/24/2005	10/27/2005	10/27/2005	10/24/2005	10/24/2005	10/25/2005	10/25/2005	10/25/2005
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acrylonitrile	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	7.4	1 U	1 U	1 U	1.4	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethyl ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diisopropyl Ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethyltertiarybutylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m&p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl iodide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyltertiarybutylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
p-Isopropyl toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butyl Alcohol	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Amylmethylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrahydrofuran	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,4-Dichloro-2-butene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	110	86	1 U	71	110	1 U	17	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Results are reported in micrograms per liter.

U - The analyte was not detected above the indicated reporting limit.

prepared by BJB 01-27-06
reviewed by ALA 01-27-06

Table 3. Groundwater Analytical Results - Fall 2005
Volatile Organic Compounds
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification:	Kd	L	M	N	O	EB-01	EB-02	EB-03
Sampling Date:	10/25/2005	10/24/2005	10/24/2005	10/25/2005	10/25/2005	10/25/2005	10/26/2005	10/27/2005
1,1,1,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (MEK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	5 U	5 U	6.2	5 U	5 U	5 U	5 U	5 U
Acetone	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acrylonitrile	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.3
Chloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	1 U	11	16	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethyl ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diisopropyl Ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethyltertiarybutylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m&p-Xylene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl iodide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyltertiarybutylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	5 U	5 U	7.8	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1.0	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
p-Isopropyl toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butyl Alcohol	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Amylmethylether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrahydrofuran	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	2.1	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,4-Dichloro-2-butene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	1 U	90	150	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Results are reported in micrograms per liter.

U - The analyte was not detected above the indicated reporting limit.

prepared by BJB 01-27-06
reviewed by ALA 01-27-06

Table 4. Groundwater Analytical Results - Fall 2005
Metals (unfiltered samples)
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification:	MW-01N	MW-44	C
Sample Date:	10/26/2005	10/27/2005	10/27/2005
Antimony - Total	NA	1 U	NA
Arsenic - Total	1.0	NA	1 U
Barium - Total	19	NA	35
Cadmium - Total	0.2 U	NA	0.2 U
Chromium - Total	2.8	62	16
Copper - Total	4.7	NA	1.7
Iron - Total	NA	35,000	NA
Lead - Total	5.0	NA	2.2
Selenium - Total	1 U	NA	1 U
Silver - Total	0.2 U	NA	0.2 U
Manganese - Total	NA	650	NA
Mercury - Total	0.2 U	NA	0.2 U
Zinc - Total	28	NA	3,100

Results are reported in micrograms per liter.

U - The analyte was not detected above the indicated reporting limit.

NA - Not Analyzed

Table 5. Analytes Detected * in Groundwater: May 2003 - October 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification	Sample Date	2-Butanone	2-Methylnaphthalene	Acetone	cis-1,2-DCE	Napthalene	n-Butylbenzene	PCE	THF	trans-1,2-DCE	TCE	Chromium (total)	Manganese	Iron
		RCDW: 13,000 GSI: 2,200 GC: 240,000,000	260 ID 25,000	730 1,700 31,000,000	70 620 200,000	520 13 31,000	80 ID 5,900	5 45 12,000	95 11,000 1,600,000	100 1,500 220,000	5 200 22,000	100 11 460,000	50 1,900 9,100,000	300 NA 58,000,000
MW-01N	May-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1.9	1 U	5 U	20 U
	Aug-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	5 U	84
	Nov-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	15	1 U	5 U	20 U
	Apr-04	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	1 U	5 U	20 U
	Jul-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	1 U	7.4	20 U
	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	1 U	5 U	20 U
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	1 U	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	22	360	17,000
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	2.8	NS	NS
MW-07N	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	26	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	18	NS	NS	NS
MW-08N	May-03	5 U	5 U	20 U	29	5 U	1 U	13	5 U	1 U	420	1.2	5 U	20 U
	Aug-03	5 U	5 U	20 U	42	5 U	1 U	11	5 U	1 U	420	1.4	6.6	20 U
	Nov-03	50 U	5 U	200 U	40	5 U	1 U	23	50 U	1 U	470	1.4	6.5	20 U
	Apr-04	50 U	5 U	20 U	15	5 U	1 U	1 U	50 U	1 U	230	1.7	5 U	20 U
	Jul-04	5 U	5 U	20 U	9.8	5 U	1 U	16	5 U	1 U	170	1.3	6.2	20 U
MW-28	May-03	780	5 U	20 U	1 U	5 U	1 U	1 U	790	1 U	1 U	NS	NS	NS
	Aug-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	7.6	1 U	1 U	NS	NS	NS
	Nov-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
MW-30	May-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Aug-03	17	5 U	20 U	1 U	5 U	1 U	1 U	1,600	1 U	1 U	NS	NS	NS
	Nov-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Apr-04	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Jul-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
MW-31	May-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	5.2	NS	NS	NS
	Aug-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	7.2	NS	NS	NS
	Nov-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	7.8	NS	NS	NS
	Apr-04	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	6.7	NS	NS	NS
	Jul-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	5.6	NS	NS	NS
	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	9.7	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	17	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	17	NS	NS	NS
MW-32	May-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	8.8	NS	NS	NS
	Aug-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	9.9	NS	NS	NS
	Nov-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	9.3	NS	NS	NS
	Apr-04	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	15	NS	NS	NS
	Jul-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	5.8	NS	NS	NS
	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	9.1	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	15	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	17	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	14	NS	NS	NS

Table 5. Analytes Detected * in Groundwater: May 2003 - October 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification	Sample Date	2-Butanone		2-Methylnaphthalene		Acetone		cis-1,2-DCE		Napthalene		n-Butylbenzene		PCE		THF		trans-1,2-DCE		TCE		Chromium (total)		Manganese		Iron	
		RCDW:	13,000	260	730	70	520	80	5	95	100	5	100	100	5	100	100	100	100	100	100	100	100	100	100	100	100
		GSI:	2,200	ID	1,700	620	13	45	11,000	1,500	200	11	1,900	NA													
		GC:	240,000,000	25,000	31,000,000	200,000	31,000	5,900	12,000	1,600,000	220,000	22,000	460,000	9,100,000	58,000,000												
MW-33	May-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	21	NS	NS	NS													
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	94	NS	NS	NS													
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	98	NS	NS	NS													
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	22	NS	NS	NS													
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	16	NS	NS	NS													
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	9.4	NS	NS	NS													
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	9.2	NS	NS	NS													
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	13	NS	NS	NS													
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	5.4	NS	NS	NS													
MW-34	May-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	2.0	NS	NS	NS													
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	2.2	NS	NS	NS													
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	3.4	NS	NS	NS													
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	2.6	NS	NS	NS													
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	1.4	NS	NS	NS													
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	3.0	NS	NS	NS													
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	2.8	NS	NS	NS													
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	4.1	NS	NS	NS													
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	3.6	NS	NS	NS													
MW-36D	May-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	27	NS	NS	NS													
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	1.1	NS	NS	NS													
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	1 U	NS	NS	NS													
MW-36S	May-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	3.1	NS	NS	NS													
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	15	NS	NS	NS													
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	26	NS	NS	NS													
MW-37S	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	7.7	NS	NS	NS													
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	7.4	NS	NS	NS													
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	15	NS	NS	NS													
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	19	NS	NS	NS													
	Jul-05		5 U	5 U	20 U	17	5 U	1 U	27	5 U	1 U	210	NS	NS	NS												
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	14	NS	NS	NS													
MW-37D	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	2.3	NS	NS	NS													
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	1 U	NS	NS	NS													
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	1 U	NS	NS	NS													
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	25 U	1 U	1 U	NS	NS	NS													
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	1 U	NS	NS	NS													
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	1 U	NS	NS	NS													
MW-38D	May-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	1.9	NS	NS	NS													
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	1 U	NS	NS	NS													
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	5 U	1 U	3.9	NS	NS	NS													
MW-38S	May-03		5 U	5 U	20 U	19	5 U	1 U	10	5 U	1 U	140	NS	NS	NS												
	Aug-03		5 U	5 U	20 U	4.5	5 U	1 U	7.0	5 U	1 U	83	NS	NS	NS												
	Nov-03		5 U	5 U	20 U	9.1	5 U	1 U	9.3	5 U	1 U	140	NS	NS	NS												
MW-39S	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1.4	5 U	1 U	32	NS	NS	NS												
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	6.7	25 U	1 U	60	NS	NS	NS												
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	2.9	25 U	1 U	36	NS	NS	NS												
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	43	NS	NS	NS												
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	4.8	5 U	1 U	83	NS	NS	NS												
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	2.9	5 U	1 U	32	NS	NS	NS												

Table 5. Analytes Detected * in Groundwater: May 2003 - October 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification	Sample Date	RCDW: GSI: GC:	2-Butanone 13,000 2,200 240,000,000	2-Methylnapthalene 260 ID 25,000	Acetone 730 1,700 31,000,000	cis-1,2-DCE 70 620 200,000	Napthalene 520 13 31,000	n-Butylbenzene 80 ID 5,900	PCE 5 45 12,000	THF 95 11,000 1,600,000	trans-1,2-DCE 100 1,500 220,000	TCE 5 200 22,000	Chromium (total) 100 11 460,000	Manganese 50 1,900 9,100,000	Iron 300 NA 58,000,000
MW-39D	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
MW-43	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	23	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	31	NS	NS	NS
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	39	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	31	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	22	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	25	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	23	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	20	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	16	NS	NS	NS
MW-44	May-03		5 U	5 U	20 U	1.9	5 U	1 U	1 U	5 U	1 U	78	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1.8	5 U	1 U	1 U	5 U	1 U	87	4.9	6.6	27
	Nov-03		5 U	5 U	20 U	1.9	5 U	1 U	1 U	5 U	1 U	82	NS	NS	NS
	Apr-04		5 U	5 U	20 U	2.4	5 U	1 U	1 U	5 U	1 U	83	NS	NS	NS
	Jul-04		5 U	5 U	25 U	2.2	5 U	1 U	1 U	25 U	1 U	59	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1.9	5 U	1 U	1 U	25 U	1 U	69	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1.8	5 U	1 U	1 U	25 U	1 U	67	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1.9	5 U	1 U	1 U	5 U	1 U	79	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1.5	5 U	1 U	1 U	5 U	1 U	83	62	650	35,000
MW-45	May-03		5 U	5 U	20 U	4.0	5 U	1 U	1 U	5 U	1 U	180	25	5.9	26
	Aug-03		5 U	5 U	20 U	2.5	5 U	1 U	1 U	5 U	1 U	200	23	5 U	20 U
	Nov-03		5 U	5 U	20 U	2.2	5 U	1 U	1 U	5 U	1 U	190	21	NS	27
	Apr-04		5 U	5 U	20 U	1.4	5 U	1 U	1 U	5 U	1 U	180	18	6.1	20 U
	Jul-04		5 U	5 U	25 U	2.2	5 U	1 U	1 U	25 U	1 U	120	18	5 U	20 U
	Oct-04		5 U	5 U	25 U	1.5	5 U	1 U	1 U	25 U	1 U	150	17	5 U	30
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	140	16	5 U	20 U
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	180	18	42	2,600
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	170	NS	NS	NS
MW-46	May-03		5 U	5 U	20 U	2.0	5 U	1 U	1 U	5 U	1 U	97	NS	NS	NS
	Aug-03		5 U	5 U	20 U	2.1	5 U	1 U	1 U	5 U	1 U	100	9.5	6.0	30
	Nov-03		5 U	5 U	20 U	3.0	5 U	1 U	1 U	5 U	1 U	110	NS	NS	NS
	Apr-04		5 U	5 U	20 U	4.7	5 U	1 U	1 U	5 U	1 U	200	NS	NS	NS
	Jul-04		5 U	5 U	25 U	4.6	5 U	1 U	1 U	25 U	1 U	140	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	35	NS	NS	NS
	Apr-05		5 U	5 U	25 U	4.5	5 U	1 U	1 U	25 U	1 U	160	NS	NS	NS
	Jul-05		5 U	5 U	20 U	3.4	5 U	1 U	1 U	5 U	1 U	110	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	75	NS	NS	NS
MW-47	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	5.7	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1.5	NS	NS	NS
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS

Table 5. Analytes Detected * in Groundwater: May 2003 - October 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification	Sample Date	RCDW: GSI: GC:	2-Butanone	2-Methylnapthalene	Acetone	cis-1,2-DCE	Napthalene	n-Butylbenzene	PCE	THF	trans-1,2-DCE	TCE	Chromium (total)	Manganese	Iron
			13,000	260	730	70	520	80	5	95	100	5	100	50	300
			2,200	ID	1,700	620	13	ID	45	11,000	1,500	200	11	1,900	NA
			240,000,000	25,000	31,000,000	200,000	31,000	5,900	12,000	1,600,000	220,000	22,000	460,000	9,100,000	58,000,000
MW-48S	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
MW-57	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1.4	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
MW-58D	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	14	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	11	NS	NS	NS
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	11	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	5.3	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	4.9	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	4.3	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	6.9	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	12	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	9.0	NS	NS	NS
MW-59	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	31	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	32	NS	NS	NS
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	41	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	43	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	35	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	37	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	43	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	47	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	48	NS	NS	NS
MW-60	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Aug-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
MW-63	Nov-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
MW-64	May-03		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Aug-03		39	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Nov-03		5 U	5 U	110	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Apr-04		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Jul-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS

Table 5. Analytes Detected * in Groundwater: May 2003 - October 2005
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification	Sample Date	RCDW:	2-Butanone	2-Methylnapthalene	Acetone	cis-1,2-DCE	Napthalene	n-Butylbenzene	PCE	THF	trans-1,2-DCE	TCE	Chromium (total)	Manganese	Iron
		GSI:	13,000 2,200	260 ID	730 1,700	70 620	520 13	80 ID	5 45	95 11,000	100 1,500	5 200	100 11	50 1,900	300 NA
		GC:	240,000,000	25,000	31,000,000	200,000	31,000	5,900	12,000	1,600,000	220,000	22,000	460,000	9,100,000	58,000,000
MW-65	May-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	100	1 U	1 U	NS	NS	NS	
	Aug-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	110	1 U	1 U	NS	NS	NS	
	Nov-03	5 U	5 U	20 U	1 U	5 U	1 U	1 U	95	1 U	1 U	NS	NS	NS	
	Apr-04	5 U	5 U	20 U	1 U	5 U	1 U	1 U	100	1 U	1 U	NS	NS	NS	
	Jul-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	170	1 U	1 U	NS	NS	NS	
	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
	MW-66	May-03	5 U	5 U	57	1 U	5 U	1 U	1 U	50	1 U	1 U	NS	NS	NS
Aug-03		5 U	5 U	49	1 U	5 U	1 U	1 U	54	1 U	1 U	NS	NS	NS	
Nov-03		5 U	5 U	92	1 U	5 U	1 U	1 U	64	1 U	1 U	NS	NS	NS	
Apr-04		5 U	5 U	39	1 U	5 U	1 U	1 U	47	1 U	1 U	NS	NS	NS	
Jul-04		5 U	5 U	68	1 U	5 U	1 U	1 U	76	1 U	1 U	NS	NS	NS	
Oct-04		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS	
Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS	
Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
MW-67		May-03	5 U	5 U	20 U	2.2	5 U	1 U	1 U	5 U	1 U	110	NS	NS	NS
	Aug-03	5 U	5 U	20 U	2.3	5 U	1 U	1 U	5 U	1 U	140	NS	NS	NS	
	Nov-03	5 U	5 U	20 U	3.4	5 U	1 U	1 U	5 U	1 U	150	NS	NS	NS	
	Apr-04	5 U	5 U	20 U	2.0	5 U	1 U	1 U	5 U	1 U	99	NS	NS	NS	
	Jul-04	5 U	5 U	25 U	1.5	5 U	1 U	1 U	25 U	1 U	57	NS	NS	NS	
	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	35	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	4.0	5 U	1 U	1 U	25 U	1 U	130	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	3.6	5 U	1 U	1 U	5 U	1 U	120	NS	NS	NS	
	Oct-05	5 U	5 U	20 U	3.1	5 U	1 U	1 U	5 U	1 U	110	NS	NS	NS	
	A	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
Apr-05		5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS	
Jul-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
Oct-05		5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
B	Nov-04	5 U	5 U	25 U	5.3	5 U	1 U	1 U	25 U	1 U	95	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	6.2	5 U	1 U	1 U	25 U	1 U	110	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	8.2	5 U	1 U	1.2	5 U	1 U	150	NS	NS	NS	
	Oct-05	5 U	5 U	20 U	6.5	5 U	1 U	1 U	5 U	1 U	130	NS	NS	NS	
C	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	33	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	37	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	41	16	110	3,200	
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	38	16	NS	NS	
D	Nov-04	5 U	5 U	25 U	6.7	5 U	1 U	1 U	25 U	1 U	120	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	6.5	5 U	1 U	1 U	25 U	1 U	130	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	7.3	5 U	1 U	1 U	5 U	1 U	150	NS	NS	NS	
	Oct-05	5 U	5 U	20 U	7.4	5 U	1 U	1 U	5 U	1 U	110	NS	NS	NS	
E	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	60	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	63	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	90	NS	NS	NS	
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	86	NS	NS	NS	
F	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS	
G	Nov-04	5 U	5 U	25 U	1.2	5 U	1 U	1 U	25 U	1 U	69	NS	NS	NS	
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	53	NS	NS	NS	
	Jul-05	5 U	5 U	20 U	1.2	5 U	1 U	1 U	5 U	1 U	67	NS	NS	NS	
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	71	NS	NS	NS	

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Wickes Manufacturing TCE Plume Site
Mancelona, Michigan

Well Identification	Sample Date	2-Butanone	2-Methylnaphthalene	Acetone	cis-1,2-DCE	Napthalene	n-Butylbenzene	PCE	THF	trans-1,2-DCE	TCE	Chromium (total)	Manganese	Iron
		RCDW: 13,000	260	730	70	520	80	5	95	100	5	100	50	300
		GSI: 2,200	ID	1,700	620	13	ID	45	11,000	1,500	200	11	1,900	NA
GC: 240,000,000	25,000	31,000,000	200,000	31,000	5,900	12,000	1,600,000	220,000	22,000	460,000	9,100,000	58,000,000		
Hs	Oct-04	5 U	5 U	25 U	1.4	5 U	1 U	1 U	25 U	1 U	56	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	100	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1.5	5 U	1 U	1 U	5 U	1 U	94	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1.4	5 U	1 U	1 U	5 U	1 U	110	NS	NS	NS
Hd	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
I	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	12	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	14	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	17	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	17	NS	NS	NS
Js	Nov-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
Jd	Nov-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
Ks	Nov-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
Kd	Nov-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
L	Nov-04	5 U	5 U	25 U	6.7	5 U	1 U	1 U	25 U	1 U	80	NS	NS	NS
	Apr-05	5 U	5 U	25 U	12	5 U	1 U	1 U	25 U	1 U	150	NS	NS	NS
	Jul-05	5 U	5 U	20 U	14	5 U	1 U	1 U	5 U	1 U	170	NS	NS	NS
	Oct-05	5 U	5 U	20 U	11	5 U	1 U	1 U	5 U	1 U	90	NS	NS	NS
M	Nov-04	5 U	5 U	25 U	19	5 U	1 U	1 U	25 U	1 U	210	NS	NS	NS
	Apr-05	5 U	5 U	25 U	20	5 U	1 U	1 U	25 U	1 U	200	NS	NS	NS
	Jul-05	5 U	5 U	20 U	21	5 U	1 U	1 U	5 U	1 U	220	NS	NS	NS
	Oct-05	5 U	6.2	20 U	16	7.8	1.0	1 U	5 U	2.1	150	NS	NS	NS
N	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
O	Oct-04	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Apr-05	5 U	5 U	25 U	1 U	5 U	1 U	1 U	25 U	1 U	1 U	NS	NS	NS
	Jul-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS
	Oct-05	5 U	5 U	20 U	1 U	5 U	1 U	1 U	5 U	1 U	1 U	NS	NS	NS

Results and criteria are reported in micrograms per liter.

- * - Other inorganics may have been detected (see Table 4).
- U - The analyte was not detected above the indicated reporting limit.
- NS - Not sampled

- DCE - cis-1,2-Dichloroethene and trans 1,2-Dichloroethene
- PCE - Tetrachloroethene
- THF - Tetrahydrofuran
- TCE - Trichloroethene

MDEQ Part 201 Cleanup Criteria (June 2005)

- RCDW - Residential & Commercial I Drinking Water
 - GSI - Groundwater/Surface Water Interface
 - GC - Groundwater Contact
 - ID - Insufficient Data
 - NA - Not available
- Chromium criteria are for hexavalent chromium.

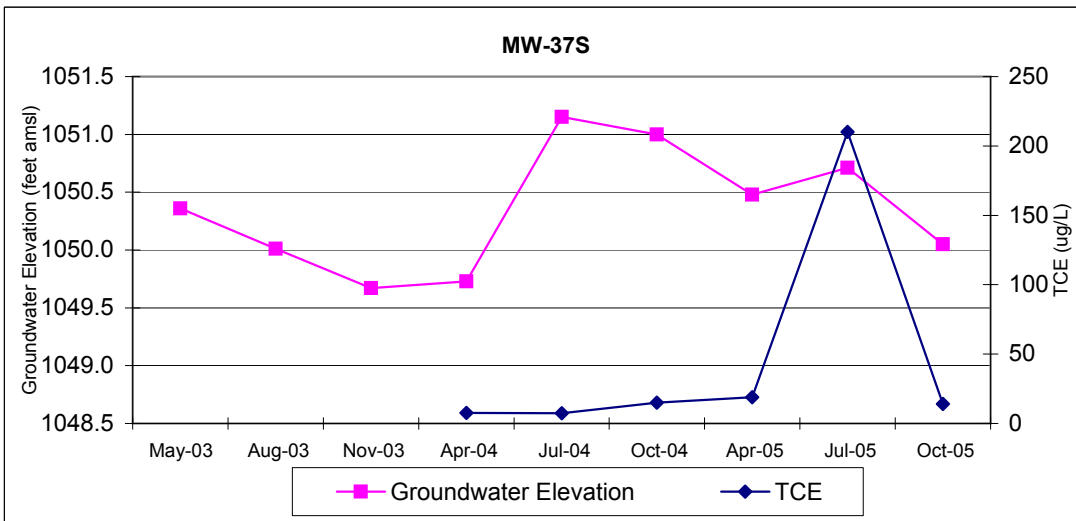
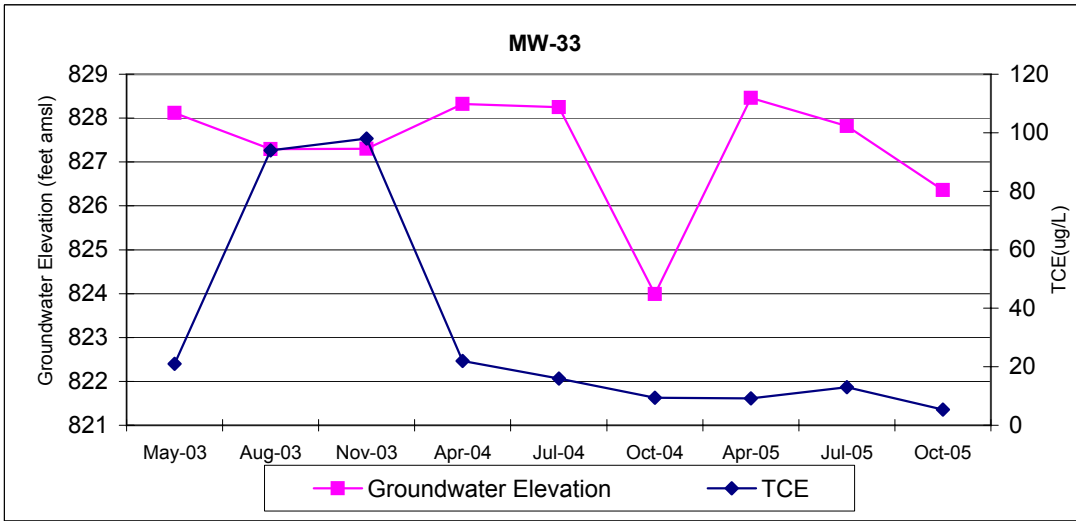
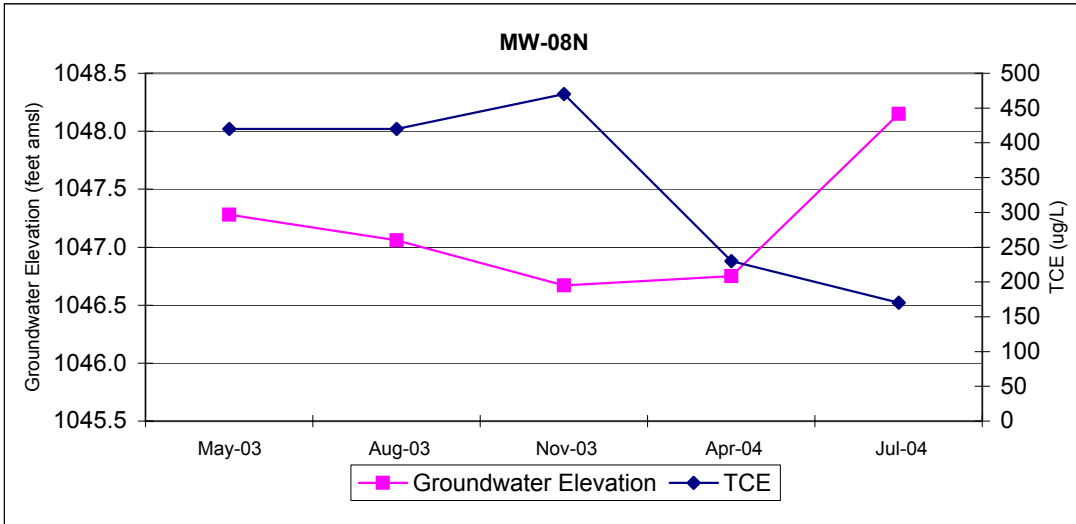
110 - The result exceeds one or more of the applicable MDEQ Part 201 Generic Cleanup Criteria (June 2005).

GROUNDWATER SAMPLING RECORDS

LABORATORY ANALYSIS REPORTS

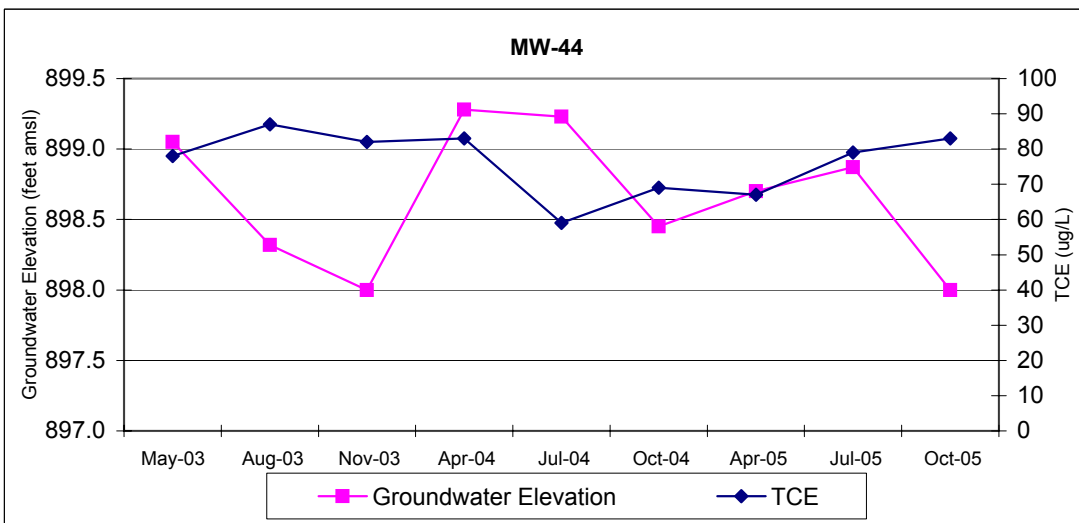
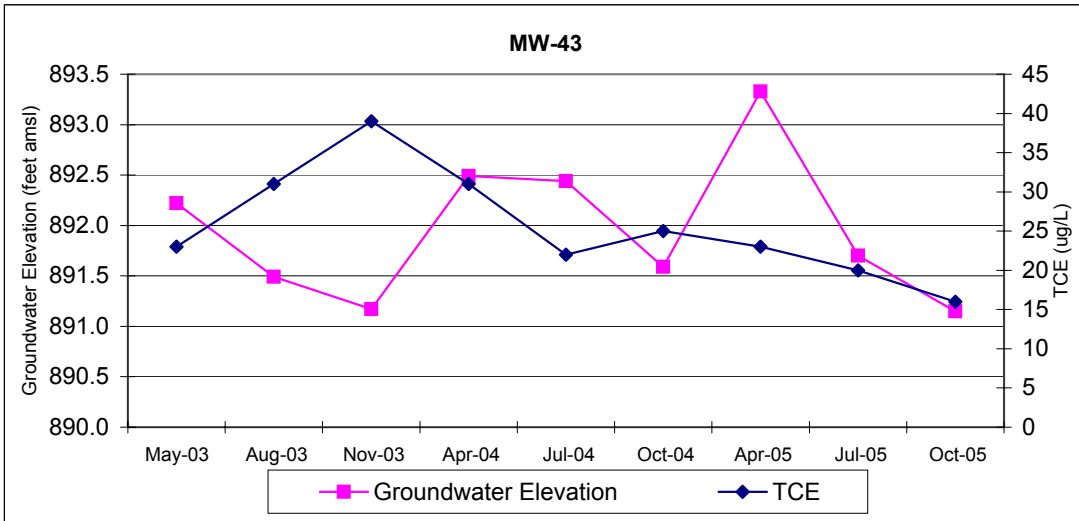
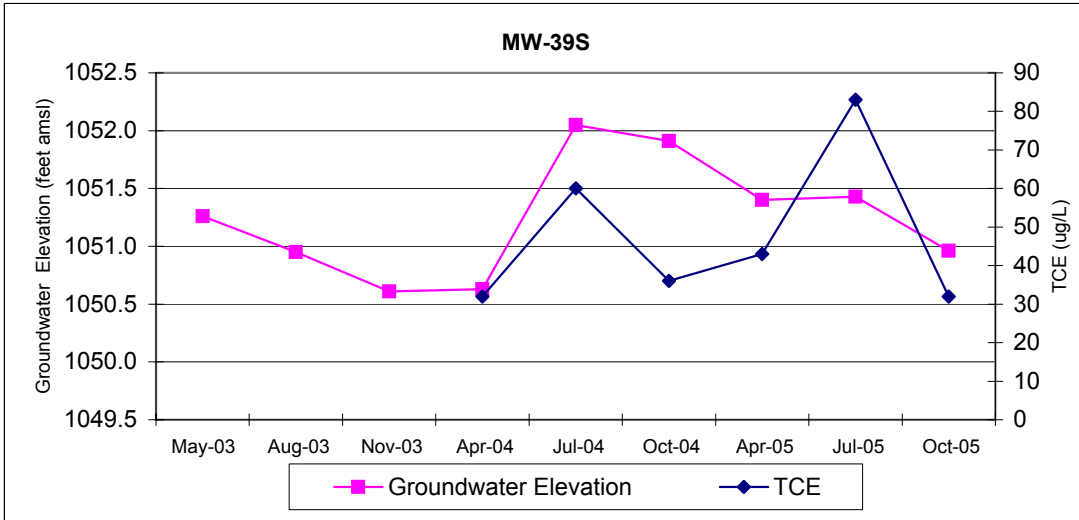
**GROUNDWATER ELEVATION AND
TCE CONCENTRATION TREND GRAPHS**

**Appendix C. Groundwater Elevations and TCE Concentrations versus Time
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan**



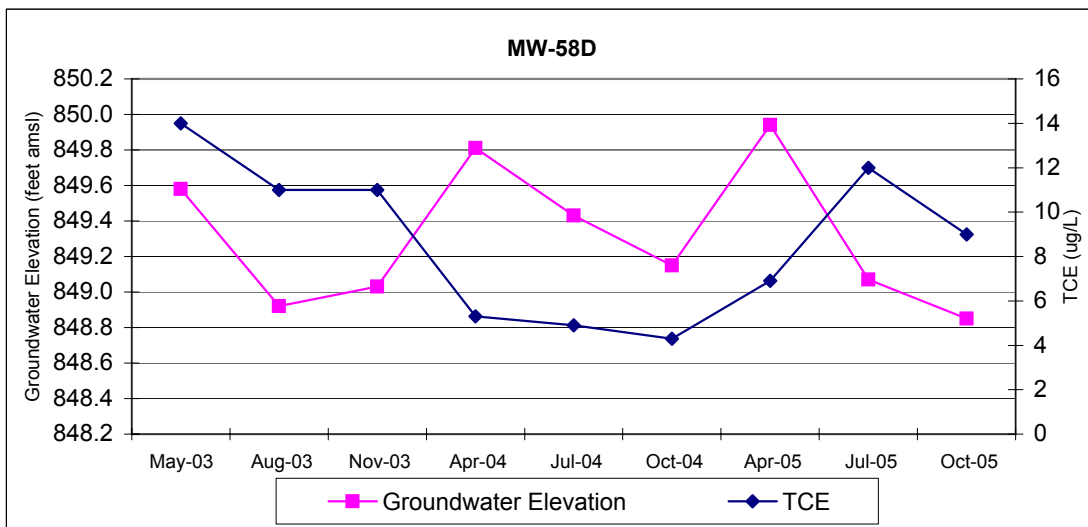
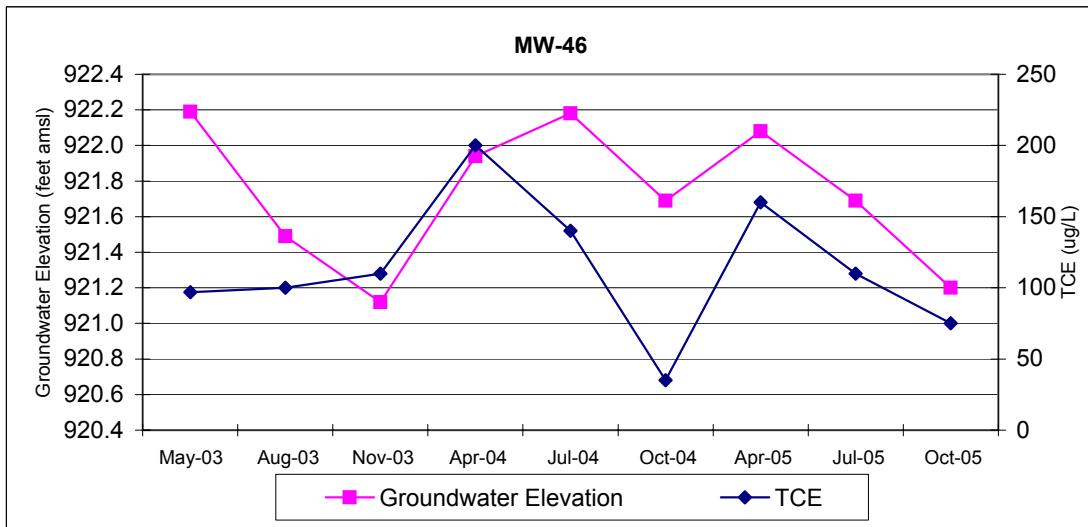
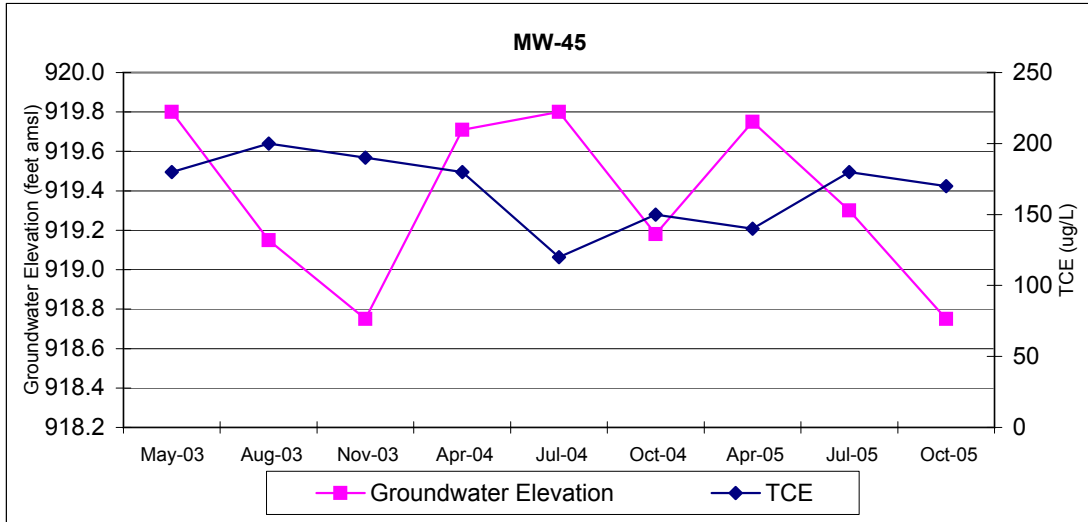
prepared by BJB 01-27-06
reviewed by ALA 01-27-06

**Appendix C. Groundwater Elevations and TCE Concentrations versus Time
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan**



prepared by BJB 01-27-06
reviewed by ALA 01-27-06

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Wickes Manufacturing TCE Plume Site
Mancelona, Michigan**



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**Appendix C. Groundwater Elevations and TCE Concentrations versus Time
Wickes Manufacturing TCE Plume Site
Mancelona, Michigan**

