Golder Associates

RECEIVED
FEB 4 2013
RRD-MDEQ
GRAND RAPIDS DISTRICT

January 31, 2013

Project No. 12388894

Paul Knoerr
Environmental Quality Analyst/Geologist
Department of Environmental Quality
Grand Rapids District
350 Ottawa, NW
Grand Rapids, Michigan 49503

**RE: 2012 ANNUAL GROUNDWATER MONITORING REPORT
FORMER WHITE CONSOLIDATED INDUSTRIES – BELDING SITE
100 EAST MAIN STREET, BELDING, MICHIGAN**

Dear Mr. Knoerr:

As authorized by Electrolux, Golder Associates Inc. (Golder) completed the 2012 annual groundwater monitoring event for the former White Consolidated Industries (WCI) Belding site (the "Site") on November 5 and 6, 2012. The Site is located at 100 East Main Street in Belding, Ionia County, Michigan (Figure 1). The 2012 annual groundwater monitoring event was conducted in general conformance with an approved monitoring plan and subsequent correspondence from the Michigan Department of Environmental Quality (MDEQ) regarding seasonal variation of annual monitoring events. The findings of the November 2012 annual groundwater sampling event are presented in this report.

BACKGROUND

An approved annual groundwater monitoring plan, prepared in December 1996, was appended to the *Limited Industrial Remedial Action Plan* (RAP) prepared by the Dragun Corporation of Berkley, Michigan (Dragun) in 1998. Annual groundwater monitoring has been conducted in accordance with the 1996 monitoring plan and the MDEQ's requested variation of sampling time since 1999.

2012 ANNUAL GROUNDWATER SAMPLING EVENT

The monitoring network at the Site consists of 12 permanent monitoring wells: MW-1 through MW-11 with shallow (MW-4S) and deep (MW-4D) wells at MW-4. Two monitoring wells, MW-10 and MW-11, are located on the adjoining VFW property. Figure 2 shows the groundwater monitoring well locations.

Golder measured static water levels in the wells during the November 2012 sampling event. The flush-mount surface completion for monitoring well MW-5 is missing and this well is filled with sediment above the screened interval and therefore, did not provide reliable static water level data and could not be sampled. Monitoring well MW-5 is proposed to be abandoned and dropped from the monitoring program with the MDEQ's approval.

Groundwater samples were collected from the remaining 11 monitoring wells and grab samples of surface water were collected from the Flat River at two locations SW1 and SW2 (Figure 2). Golder collected the groundwater samples in accordance with the 1996 monitoring plan and the sampling procedure revisions that comply with MDEQ's Remediation and Redevelopment Division Operational Memorandum No. 2 (RRD OM2), Attachment 5. Golder also collected QA/QC samples in accordance with RRD OM2.

A total of 15 samples (including a field duplicate and trip blank) were submitted to TriMatrix Laboratories, Inc. located in Grand Rapids, Michigan for analysis of volatile organic compounds (VOCs). In addition, groundwater samples from monitoring wells MW-4S, MW-6, MW-7, MW-10 (including a blind duplicate

Golder Associates Inc.
15851 South US 27, Suite 50
Lansing, MI 48906 USA
Tel: (517) 482-2262 Fax: (517) 482-2460 www.golder.com

Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation

from MW-10), MW-11 and surface water sample SW2 were analyzed for the following intrinsic bioremediation indicator parameters:

- Dissolved iron and manganese
- Nitrogen, ammonia
- Nitrogen, Kjeldahl
- Nitrogen, nitrate plus nitrite
- Sulfate and chloride
- Total organic carbon

RESULTS

Well construction details and the 2012 static water levels are summarized on Table 1. As shown on Figure 2, the majority of the wells comprising the monitoring network are located at the groundwater surface water interface (GSI) along the Flat River. The static water elevations on Table 1 were used to plot groundwater contours on Figure 2, which show that the direction of groundwater flow was northeast toward the Flat River on November 5, 2012. The water elevations at MW-4S and MW-4D were 88.08 and 89.88 feet, respectively indicating an upward vertical gradient at MW-4, further confirming groundwater flows toward the Flat River.

The 2012 groundwater analytical results are summarized on Table 2 along with historical groundwater quality data from 2008 through 2011 (2001 through 2007 groundwater quality data were included in previous annual reports). The results on Table 2 are color-coded according to the year in which samples were collected: blue for the 2012 annual sampling event and yellow for the 2008 through 2011 annual sampling events. Results were compared with generic GSI criteria and nonresidential drinking water (NRDW) criteria (Remediation Division "Revised Part 201 Cleanup Criteria and Part 213 Risk-Based Screening Levels", September 28, 2012). As noted in the Table 2 footnotes, mixing zone-based GSI values for trichloroethene (4,200 µg/L) and vinyl chloride (8,000 µg/L) were presented in the October 27, 1998 Limited Industrial RAP for the Site.

Based on our review of historical groundwater data, the 2012 analytical results are consistent with results for the 2001 through 2011 sampling events. The highest VOC concentrations remain at monitoring well MW-6, which is located adjacent to the historical source area (former Catch Basin No. 10). Detected concentrations of trichloroethene (TCE) (2,600 µg/L) and *cis*-1,2-dichloroethene (130 µg/L) in the sample from MW-6 exceed the NRDW criteria of 5.0 µg/L and 70 µg/L, respectively.

Lower concentrations of TCE are present in the groundwater downgradient from the source area and concentrations of TCE degradation by-products (e.g., *cis*-1,2-dichloroethene and vinyl chloride) increase towards the Flat River. These observations are consistent with previous sampling results. TCE was not detected above the laboratory reporting limit in any of the GSI wells during 2012 and has not been detected in the GSI wells since 2009 when it was detected at 3.5 µg/L in monitoring well MW-4S. Vinyl chloride was detected at 160 µg/L in MW-1, 390 µg/L in MW-4S, and 31 µg/L in MW-8. These results are above the NRDW criterion for Vinyl Chloride (2.0 µg/L) but more than an order of magnitude below the mixing zone-based GSI criterion (8,000 µg/L) presented in the RAP.

Previous groundwater sampling events demonstrated that concentrations of electron receptors for anaerobic degradation (manganese and iron) and chloride increase downgradient from the historical source area suggesting that reduction of chlorinated hydrocarbons at the Site is due to intrinsic bioremediation. The 2012 analytical results for the intrinsic bioremediation indicator parameters are consistent with previous results, supporting the conclusion that anaerobic degradation is continuing.

Overall, groundwater quality at the Site has improved since 2001. Source area concentrations, as represented by groundwater quality at MW-6, have remained relatively stable since 2004. Vinyl chloride concentrations in the GSI monitoring wells have remained relatively stable and are more than an order of magnitude below the mixing zone-based GSI criterion for vinyl chloride presented in the RAP.

Surface water samples were collected from the Flat River at two locations, SW1 and SW2 (Figure 2), during the 2012 monitoring event. No VOCs were detected in either sample during the 2012 sampling event.

CLOSING

The next annual groundwater sampling event is tentatively scheduled for summer 2013. A drilling program was conducted at the Site during January 2013 in support of a revised mixing zone determination. Upon completion of the field activities, Golder will prepare a submittal to MDEQ with a refined groundwater flow map and proposed mixing zone-based GSI criteria for the constituents currently exceeding the generic GSI criteria (TCE and vinyl chloride).

Please contact Brad Johnson (517-318-3250) if you have any questions regarding this groundwater monitoring report for the former WCI site in Belding, Michigan.

GOLDER ASSOCIATES INC.

Bradley S. Johnson, Ph.D.
Senior Scientist

for:
Alistair Macdonald, CPG, LSP
Senior Consultant and Principal

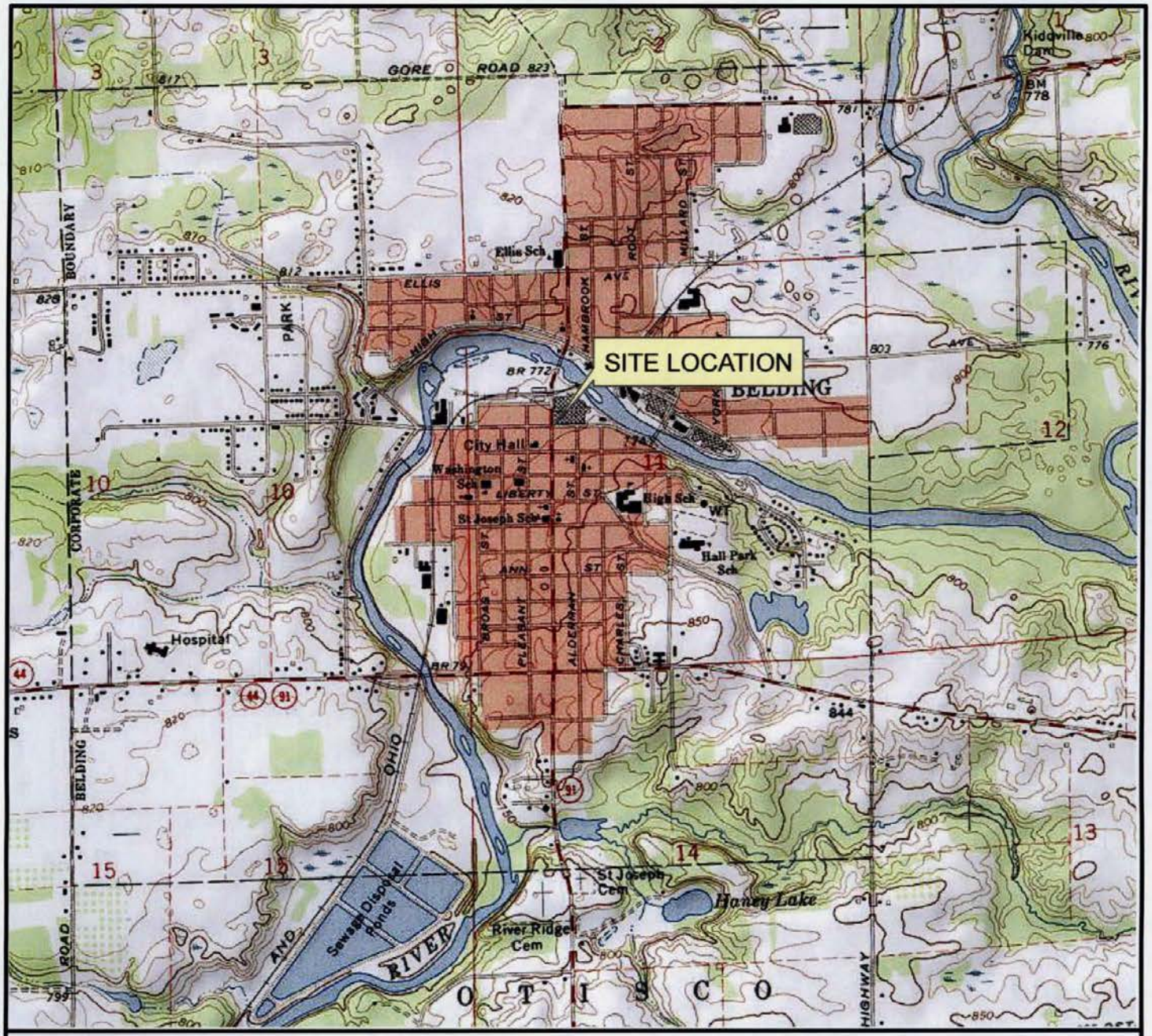
Attachments:

Figure 1	Site Location Map
Figure 2	Groundwater Flow Direction on November 5, 2012
Table 1	Well Construction Details and Static Water Elevations
Table 2	Summary of Groundwater and Surface Water Analytical Results
Attachment A	TriMatrix Laboratories, Inc. Analytical Report

cc: David M. Chromy – Electrolux North America, Inc.
John A. Heer – Walter & Haverfield LLP
Douglas J. Ucci – Quantum Management Group, Inc.

BSJ/APTM/DJU/bsj

FIGURES



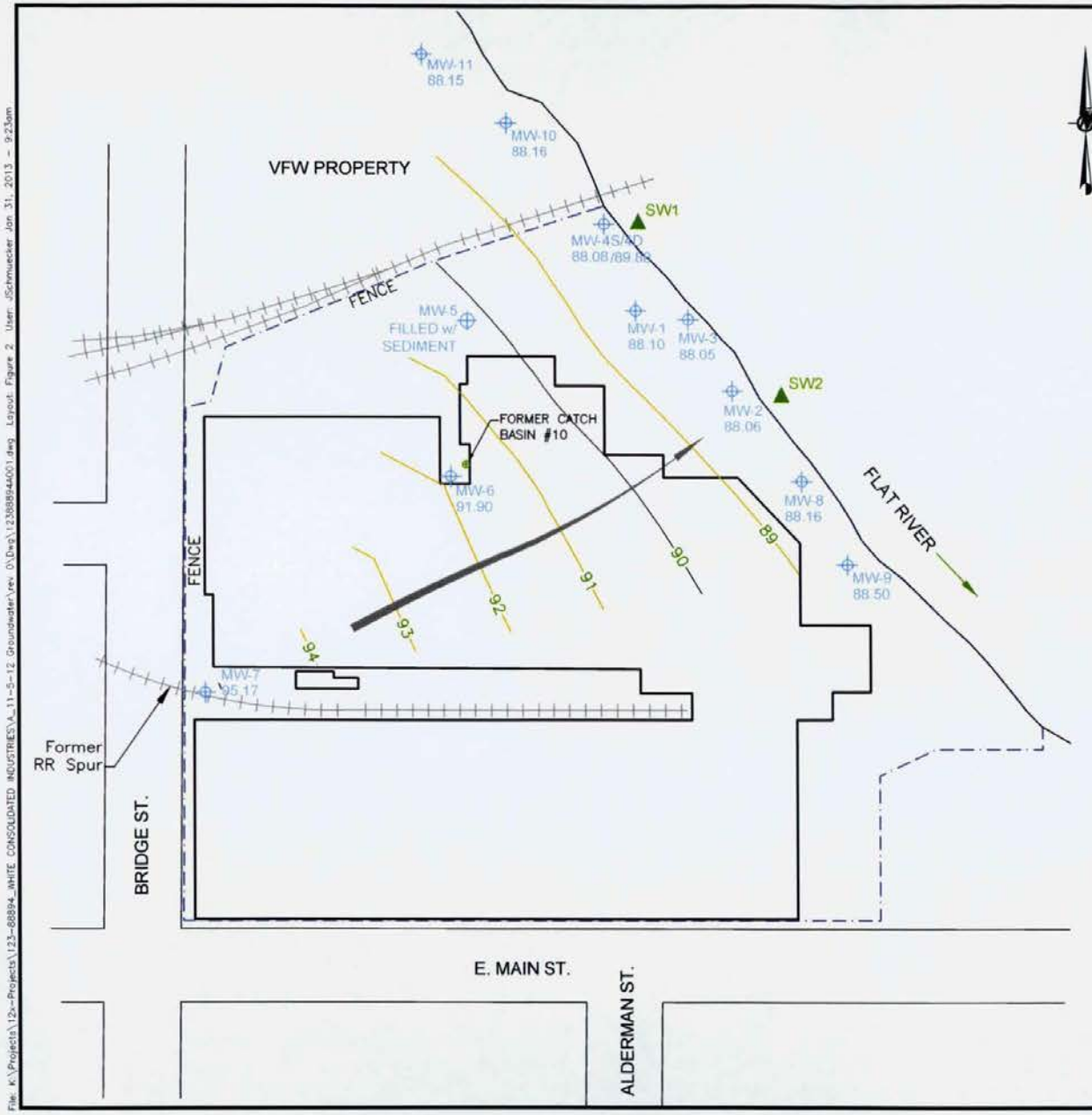
REFERENCE: U.S. GEOLOGIC SURVEY 7.5 MINUTE BELDING, MI TOPOGRAPHIC QUADRANGLE MAP, 1972.

2000 1000 0 2000 Feet

Golder Associates
Michigan

SCALE	AS SHOWN	**SITE LOCATION MAP**	
DATE	01/08/13	FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE	
DESIGN	BSJ	100 E. MAIN STREET	
GIS	MGG	BELDING, IONIA COUNTY, MICHIGAN	
FILE No.	12388894A000-GIS	CHECK	
PROJECT No. 123-88894	REV. 0	REVIEW	2012 ANNUAL GROUNDWATER MONITORING REPORT — FIGURE 1

H:\12x-Projects\123-88894-Belding Site\figures\A-2012 Annual GW Report\12388894A000-GIS.mxd



LEGEND

- PROPERTY BOUNDARY (NOTE 1)
- RAILROAD TRACK (NOTE 1)
- MW-1 — MONITOR WELL AND STATIC WATER ELEVATION ON 11/05/12 (NOTE 2)
- SW1 — SURFACE WATER SAMPLE LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION

NOTES

1. BASE DRAWING ADAPTED FROM "BELDING PRODUCTS PLANT LAYOUT," PREPARED BY FACTORY MUTUAL ENGINEERING ASSOCIATION, DATED 8-16-69.
2. WELL LOCATIONS ADAPTED FROM THE LIMITED INDUSTRIAL RAP, PREPARED BY THE DRAGUN CORPORATION, DATED 10-27-98.

80 0 80
SCALE FEET

Golder Associates
Great Lakes

PROJECT 2012 ANNUAL GROUNDWATER MONITORING REPORT
FORMER WHITE CONSOLIDATED INDUSTRIES
100 E. MAIN STREET
BELDING, IONIA COUNTY, MICHIGAN

TITLE GROUNDWATER FLOW DIRECTION ON NOVEMBER 5, 2012

PROJECT No. 123-88894		
FILE No. 12388894A001		
REV. 0	SCALE AS SHOWN	
DESIGN	BSJ	01/03/13
CADD	MGO	01/03/13
CHECK		
REVIEW		

FIGURE 2

File: K:\Projects\12x-Projects\123-88894_WHITE CONSOLIDATED INDUSTRIES\A_11-5-12 Groundwater\rev 0\Dwg\12388894A001.dwg Layout: Figure 2 User: JSchmuecker Jan 31, 2013 - 9:23am

TABLES

TABLE 1: WELL CONSTRUCTION DETAILS AND STATIC WATER ELEVATIONS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE
BELDING, IONIA COUNTY, MICHIGAN

Monitoring Well	Ground Surface (ft)	Top of Casing (ft)	Top of Screen (ft BGS)	Bottom of Screen (ft BGS)	Screened Interval Elevation (ft)	Measured 11/5/2012 & 11/6/2012		
						Depth to Water (ft BTOC)	Depth to Water (ft BGS)	Water Elev. (ft)
MW1	92.21	91.85	7.0	12.0	85.21 - 80.21	3.75	4.11	88.10
MW2	92.40	94.47	8.0	13.0	84.40 - 79.40	6.41	4.34	88.06
MW3	92.30	94.38	7.0	12.0	85.30 - 80.30	6.33	4.25	88.05
MW4S	93.40	95.70	9.0	14.0	84.40 - 79.40	7.62	5.32	88.08
MW4D	93.00	95.30	17.0	22.0	76.00 - 71.00	5.42	3.12	89.88
MW5	94.65	94.32	9.0	14.0	85.65 - 80.65	cover missing - filled in w/ sediment		
MW6	97.08	96.68	6.0	11.0	91.08 - 86.08	4.78	5.18	91.90
MW7	100.22	99.94	7.0	12.0	93.22 - 88.22	4.77	5.05	95.17
MW8	93.75	93.29	9.0	14.0	84.75 - 79.75	5.13	5.59	88.16
MW9	96.90	96.60	14.0	19.0	82.90 - 77.90	8.10	8.40	88.50
MW10	95.60	97.82	11.0	16.0	84.60 - 79.60	9.66	7.44	88.16
MW11	95.20	97.88	10.0	15.0	85.20 - 80.20	9.73	7.05	88.15

Notes & Abbreviations:

ft - Elevation in feet relative to an arbitray on-site reference elevation (100 ft)
ft BGS - Indicates feet below ground surface
ft BTOC - Indicates feet below Top-of-Casing

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

Parameter	GSI [1]	NRDW [3]	units	MW-1 7/15/08	MW-1 5/6/09	MW-1 10/25/10	MW-1 8/18/11	MW-1 11/5/12	MW-2 7/16/08	MW-2 5/6/09	MW-2 10/25/10	MW-2 8/18/11	MW-2 11/5/12	MW-3 7/15/08
Volatile Organic Compounds														
Benzene	200	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
Toluene	270	790 (E)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
2-Butanone (MEK)	2,200	38,000	µg/L	ND	ND	<5.0	<5.0	<5.0	ND	ND	<5.0	<5.0	<5.0	ND
Chloroethane	1,100 (X)	1,700	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	3.1	2.0	60
Chloromethane	ID	1,100	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
1,1-Dichloroethane	740	2,500	µg/L	ND	ND	1.8	2.1	2.1	ND	ND	<1.0	<1.0	<1.0	ND
1,1-Dichloroethene	130	7.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
cis-1,2-Dichloroethene	620	70 (A)	µg/L	4.1	3.7	6.0	14	22	ND	1.3	<1.0	1.7	<1.0	ND
trans-1,2-Dichloroethene	1,500	100 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
Tetrachloroethene	60 (X)	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
1,1,1-Trichloroethane	200	200	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
1,1,2-Trichloroethane	330 (X)	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
Trichloroethene [2]	4,200	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND
Vinyl Chloride [2]	8,000	2.0 (A)	µg/L	**160**	**96**	**140**	**160**	**160**	ND	**8.9**	<1.0	**9.4**	**2.6**	ND
Metals and General Chemistry														
Iron	NA	NA	µg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	NA	NA	µg/L	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Ammonia	NA	NA	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nitrate plus Nitrite	NA	NA	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Kjeldahl	NA	NA	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chloride	(FF)	250,000 (E)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Sulfate	NA	250,000 (E)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Total Organic Carbon	NA	NA	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters														
Dissolved Oxygen	NA	NA	mg/L	2.10	0.29	0.21	0.00	0.02	2.40	0.30	0.34	0.00	0.00	1.70
Eh	NA	NA	mV	-71.2	-93.0	-65	-56	-111	-93.6	-100	-113	-68	-150	-86.7
Conductivity	NA	NA	mS/cm	0.820	0.677	0.759	0.634	0.557	0.686	0.719	0.681	0.610	0.705	0.588
pH	NA	NA	s.u.	7.07	7.27	7.03	6.82	7.07	6.98	7.05	7.03	6.82	6.97	6.94
Temperature	NA	NA	C	18.0	11.5	18.1	22.26	15.0	16.6	11.9	16.1	17.8	13.7	16.9

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

Parameter	GSI [1]	NRDW [3]	units	DUP 7/15/08	MW-3 5/6/09	MW-3 10/25/10	MW-3 8/18/11	MW-3 11/5/12	MW-4S 7/15/08	MW-4S 5/7/09	MW-4S 10/25/10	DUP 10/25/10	MW-4S 8/18/11	MW-4S 11/5/12
Volatile Organic Compounds														
Benzene	200	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	1.1	ND	<5.0	<5.0	<5.0	<5.0
Toluene	270	790 (E)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<5.0	<5.0	<5.0	<5.0
2-Butanone (MEK)	2,200	38,000	µg/L	ND	ND	<5.0	<5.0	<5.0	ND	ND	<25	<25	<25	<25
Chloroethane	1,100 (X)	1,700	µg/L	58	66	41	50	84	ND	ND	<5.0	<5.0	<5.0	<5.0
Chloromethane	ID	1,100	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	740	2,500	µg/L	ND	ND	<1.0	<1.0	<1.0	1.9	4.5	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	130	7.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	5.5	12	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	620	70 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	**290**	**330**	**160**	**160**	**260**	**210**
trans-1,2-Dichloroethene	1,500	100 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	11	ND	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	60 (X)	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	200	200	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	330 (X)	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	<5.0	<5.0	<5.0	<5.0
Trichloroethene [2]	4,200	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	3.5	<5.0	<5.0	<5.0	<5.0
Vinyl Chloride [2]	8,000	2.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	**740**	**380**	**590**	**580**	**390**	**490**
Metals and General Chemistry														
Iron	NA	NA	µg/L	--	--	--	--	--	6,600	5,600	7,800	7,800	8,200	6,800
Manganese	NA	NA	µg/L	--	--	--	--	--	770	750	800	830	590	640
Nitrogen, Ammonia	NA	NA	mg/L	--	--	--	--	--	0.78	0.49	0.63	0.64	0.49	0.49
Nitrate plus Nitrite	NA	NA	mg/L	--	--	--	--	--	ND	ND	<0.050	<0.050	0.49	<0.050
Nitrogen, Kjeldahl	NA	NA	mg/L	--	--	--	--	--	0.90	0.60	0.76	0.81	0.71	0.75
Chloride	(FF)	250,000 (E)	mg/L	--	--	--	--	--	110	78	84	85	56	51
Sulfate	NA	250,000 (E)	mg/L	--	--	--	--	--	21	17	14	14	18	15
Total Organic Carbon	NA	NA	mg/L	--	--	--	--	--	--	--	5.0	4.9	4.8	4.1
Field Parameters														
Dissolved Oxygen	NA	NA	mg/L	1.70	0.67	0.36	0.00	0.01	2.80	0.13	0.50	0.50	0.00	0.51
Eh	NA	NA	mV	-86.7	-99.0	-110	-128	-142	-46.5	-30.0	-91	-91	-69	-75
Conductivity	NA	NA	mS/cm	0.588	0.646	0.556	0.479	0.576	0.860	0.788	0.861	0.861	0.748	0.723
pH	NA	NA	s.u.	6.94	7.12	7.11	6.98	7.04	6.91	6.96	6.87	6.87	6.76	6.88
Temperature	NA	NA	C	16.9	11.6	16.8	17.6	14.6	16.3	11.0	17.5	17.5	17.7	14.6

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

Parameter	GSI [1]	NRDW [3]	units	MW-4D 7/15/08	MW-4D 5/6/09	MW-4D 10/25/10	MW-4D 8/18/11	MW-4D 11/5/12	MW-5 7/15/08	MW-5 5/7/09	MW-5 2010-2012	MW-6 7/16/08	DUP 7/16/08	MW-6 5/7/09
Volatile Organic Compounds														
Benzene	200	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND	Well filled w/ sediment above screened interval, could not sample	ND	ND	ND
Toluene	270	790 (E)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		ND	ND	ND
2-Butanone (MEK)	2,200	38,000	µg/L	ND	ND	<5.0	<5.0	<5.0	ND	ND		ND	ND	ND
Chloroethane	1,100 (X)	1,700	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		ND	ND	ND
Chloromethane	ID	1,100	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		ND	ND	ND
1,1-Dichloroethane	740	2,500	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		ND	ND	ND
1,1-Dichloroethene	130	7.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		ND	ND	ND
cis-1,2-Dichloroethene	620	70 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	1.0		62	64	54
trans-1,2-Dichloroethene	1,500	100 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		6.0	5.3	ND
Tetrachloroethene	60 (X)	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		4.9	5.6	**7.0**
1,1,1-Trichloroethane	200	200	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		6.5	6.5	4.6
1,1,2-Trichloroethane	330 (X)	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		ND	ND	ND
Trichloroethene [2]	4,200	5.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		**2,000**	**2,000**	**960**
Vinyl Chloride [2]	8,000	2.0 (A)	µg/L	ND	ND	<1.0	<1.0	<1.0	ND	ND		ND	ND	ND
Metals and General Chemistry														
Iron	NA	NA	µg/L	--	--	--	--	--	2,000	2,500	No sample as noted above	ND	ND	ND
Manganese	NA	NA	µg/L	--	--	--	--	--	110	280		ND	ND	ND
Nitrogen, Ammonia	NA	NA	mg/L	--	--	--	--	--	1.00	0.82		ND	ND	ND
Nitrate plus Nitrite	NA	NA	mg/L	--	--	--	--	--	ND	ND		3.7	3.7	5.3
Nitrogen, Kjeldahl	NA	NA	mg/L	--	--	--	--	--	2.0	0.90		0.3	0.3	0.2
Chloride	(FF)	250,000 (E)	mg/L	--	--	--	--	--	ND	320		17	16	ND
Sulfate	NA	250,000 (E)	mg/L	--	--	--	--	--	3.9	24		37	37	32
Total Organic Carbon	NA	NA	mg/L	--	--	--	--	--	13	2.1		2.2	2.1	2.1
Field Parameters														
Dissolved Oxygen	NA	NA	mg/L	5.20	0.80	1.23	0.06	1.51	--	--	No sample	8.90	8.90	8.81
Eh	NA	NA	mV	-41.2	-45.0	-79	-103	-85	--	--		60.4	60.4	233
Conductivity	NA	NA	mS/cm	0.367	0.404	0.388	0.390	0.396	--	--		0.389	0.389	0.374
pH	NA	NA	s.u.	7.65	7.72	7.73	7.56	7.68	--	--		6.74	6.74	6.44
Temperature	NA	NA	C	14.5	13.3	16.8	16.6	13.0	--	--		24.3	24.3	12.0

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

Parameter	GSI [1]	NRDW [3]	units	MW-6 10/25/10	MW-6 8/18/11	MW-6 11/5/12	MW-7 7/16/08	MW-7 5/7/09	MW-7 10/26/10	MW-7 8/18/11	MW-7 11/6/12	MW-8 7/15/08	MW-8 5/6/09	MW-8 10/25/10
Volatile Organic Compounds														
Benzene	200	5.0 (A)	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Toluene	270	790 (E)	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
2-Butanone (MEK)	2,200	38,000	µg/L	<120	<120	130	ND	ND	<5.0	<5.0	<5.0	ND	ND	<5.0
Chloroethane	1,100 (X)	1,700	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Chloromethane	ID	1,100	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1-Dichloroethane	740	2,500	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1-Dichloroethene	130	7.0 (A)	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
cis-1,2-Dichloroethene	620	70 (A)	µg/L	**230**	**210**	**130**	ND	ND	<1.0	<1.0	<1.0	2.8	2.6	1.8
trans-1,2-Dichloroethene	1,500	100 (A)	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	1.3	1.1	1.1
Tetrachloroethene	60 (X)	5.0 (A)	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1,1-Trichloroethane	200	200	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1,2-Trichloroethane	330 (X)	5.0 (A)	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Trichloroethene [2]	4,200	5.0 (A)	µg/L	**3,800**	**4,200**	**2,600**	2.1	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Vinyl Chloride [2]	8,000	2.0 (A)	µg/L	<25	<25	<25	ND	ND	<1.0	<1.0	<1.0	**37**	**26**	**31**
Metals and General Chemistry														
Iron	NA	NA	µg/L	<10	21	20	--	160	<10	<10	14	--	--	--
Manganese	NA	NA	µg/L	<10	<10	19	--	--	<10	<10	<10	--	--	--
Nitrogen, Ammonia	NA	NA	mg/L	<0.050	<0.050	0.098	ND	ND	<0.050	<0.050	<0.025	--	--	--
Nitrate plus Nitrite	NA	NA	mg/L	3.9	4.7	4.7	1.3	2.1	0.66	0.98	6.0	--	--	--
Nitrogen, Kjeldahl	NA	NA	mg/L	<0.50	<0.50	<0.50	0.20	0.20	<0.50	<0.50	<0.50	--	--	--
Chloride	(FF)	250,000 (E)	mg/L	3.5	4.8	2.6	31	11	17	9.0	8.0	--	--	--
Sulfate	NA	250,000 (E)	mg/L	17	27	18	10	9.0	10	12	10	--	--	--
Total Organic Carbon	NA	NA	mg/L	1.8	1.9	1.7	1.3	1.3	0.95	1.3	0.93	--	--	--
Field Parameters														
Dissolved Oxygen	NA	NA	mg/L	1.08	0.38	0.35	5.80	9.87	5.12	4.85	5.95	2.80	0.24	0.49
Eh	NA	NA	mV	57.9	69.9	117	23.8	197	44.6	106	122	-47.3	-42	-103
Conductivity	NA	NA	mS/cm	0.373	0.363	0.407	0.498	0.470	0.539	0.487	0.503	0.771	0.804	0.801
pH	NA	NA	s.u.	6.87	6.68	6.74	7.69	7.52	7.53	7.37	7.47	6.91	7.09	6.98
Temperature	NA	NA	C	14.3	18.2	11.7	16.3	9.62	15.7	20.5	12.3	15.7	10.3	14.7

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

Parameter	GSI [1]	NRDW [3]	units	MW-8 8/18/11	MW-8 11/5/12	MW-9 7/15/08	MW-9 5/6/09	DUP 5/6/09	MW-9 10/25/10	MW-9 8/18/11	MW-9 11/5/12	MW-10 7/16/08	MW-10 5/7/09	MW-10 10/26/10
Volatile Organic Compounds														
Benzene	200	5.0 (A)	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Toluene	270	790 (E)	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
2-Butanone (MEK)	2,200	38,000	µg/L	<5.0	<5.0	ND	ND	ND	<5.0	<5.0	<5.0	ND	ND	<5.0
Chloroethane	1,100 (X)	1,700	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Chloromethane	ID	1,100	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1-Dichloroethane	740	2,500	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1-Dichloroethene	130	7.0 (A)	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
cis-1,2-Dichloroethene	620	70 (A)	µg/L	3.7	2.8	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
trans-1,2-Dichloroethene	1,500	100 (A)	µg/L	1.2	1.3	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Tetrachloroethene	60 (X)	5.0 (A)	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1,1-Trichloroethane	200	200	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
1,1,2-Trichloroethane	330 (X)	5.0 (A)	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Trichloroethene [2]	4,200	5.0 (A)	µg/L	<1.0	<1.0	ND	ND	ND	<1.0	<1.0	<1.0	ND	ND	<1.0
Vinyl Chloride [2]	8,000	2.0 (A)	µg/L	**23**	**31**	ND	ND	ND	<1.0	1.2	<1.0	ND	ND	<1.0
Metals and General Chemistry														
Iron	NA	NA	µg/L	--	--	--	--	--	--	--	--	1,900	2,500	2,400
Manganese	NA	NA	µg/L	--	--	--	--	--	--	--	--	530	570	500
Nitrogen, Ammonia	NA	NA	mg/L	--	--	--	--	--	--	--	--	1.1	0.69	0.68
Nitrate plus Nitrite	NA	NA	mg/L	--	--	--	--	--	--	--	--	ND	ND	<0.050
Nitrogen, Kjeldahl	NA	NA	mg/L	--	--	--	--	--	--	--	--	3.40	0.90	0.74
Chloride	(FF)	250,000 (E)	mg/L	--	--	--	--	--	--	--	--	390	380	300
Sulfate	NA	250,000 (E)	mg/L	--	--	--	--	--	--	--	--	2.0	10	<1.0
Total Organic Carbon	NA	NA	mg/L	--	--	--	--	--	--	--	--	4.2	5.0	2.7
Field Parameters														
Dissolved Oxygen	NA	NA	mg/L	0.00	0.06	4.60	0.28	0.28	0.96	0.75	0.12	3.10	0.53	0.45
Eh	NA	NA	mV	-60.2	-108	-112.9	-64.0	-64.0	-96.7	-70.9	-154	-63.1	-42.0	-71.1
Conductivity	NA	NA	mS/cm	0.756	0.756	0.533	0.570	0.570	0.467	0.720	0.446	1.71	1.95	1.65
pH	NA	NA	s.u.	6.92	6.89	7.35	7.37	7.37	7.20	7.06	7.22	7.06	7.01	7.00
Temperature	NA	NA	C	16.8	12.8	14.4	11.8	11.8	15.5	15.2	13.0	13.9	14.3	14.4

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

Parameter	GSI [1]	NRDW [3]	units	MW-10 8/18/11	DUP1 8/18/11	MW-10 11/6/12	DUP 11/6/12	MW-11 7/16/08	MW-11 5/7/09	MW-11 10/26/10	MW-11 8/18/11	MW-11 11/6/12	SW1 7/16/08	SW1 5/6/09
Volatile Organic Compounds														
Benzene	200	5.0 (A)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
Toluene	270	790 (E)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
2-Butanone (MEK)	2,200	38,000	µg/L	<5.0	<5.0	<5.0	<5.0	ND	ND	<5.0	<5.0	<5.0	ND	ND
Chloroethane	1,100 (X)	1,700	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
Chloromethane	ID	1,100	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
1,1-Dichloroethane	740	2,500	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
1,1-Dichloroethene	130	7.0 (A)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
cis-1,2-Dichloroethene	620	70 (A)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
trans-1,2-Dichloroethene	1,500	100 (A)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
Tetrachloroethene	60 (X)	5.0 (A)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
1,1,1-Trichloroethane	200	200	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
1,1,2-Trichloroethane	330 (X)	5.0 (A)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
Trichloroethene [2]	4,200	5.0 (A)	µg/L	<1.0	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
Vinyl Chloride [2]	8,000	2.0 (A)	µg/L	1.0	1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	ND	ND
Metals and General Chemistry														
Iron	NA	NA	µg/L	1,500	1,500	2,600	2,500	25,000	29,000	23,000	23,000	18,000	--	--
Manganese	NA	NA	µg/L	370	380	460	440	3,200	3,200	3,100	2,500	2,500	--	--
Nitrogen, Ammonia	NA	NA	mg/L	0.67	0.68	0.74	0.79	13	21	12	15	12	--	--
Nitrate plus Nitrite	NA	NA	mg/L	<0.050	<0.050	<0.050	<0.050	ND	ND	<0.050	<0.050	<0.050	--	--
Nitrogen, Kjeldahl	NA	NA	mg/L	0.82	0.79	0.87	0.94	15	19	14	17	13	--	--
Chloride	(FF)	250,000 (E)	mg/L	260	260	200	200	310	330	340	320	340	--	--
Sulfate	NA	250,000 (E)	mg/L	8.3	8.5	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0	--	--
Total Organic Carbon	NA	NA	mg/L	2.5	2.6	2.9	3.0	9.5	9.3	7.3	11.0	8.3	--	--
Field Parameters														
Dissolved Oxygen	NA	NA	mg/L	0.00	--	0.05	--	2.20	0.39	0.55	0.00	0.00	--	--
Eh	NA	NA	mV	-54.1	--	-82.0	--	-74.2	-84	-91	-70.6	-97	--	--
Conductivity	NA	NA	mS/cm	1.71	--	1.53	--	1.92	2.41	2.04	2.31	2.25	--	--
pH	NA	NA	s.u.	6.92	--	6.97	--	6.70	6.73	6.76	6.62	6.64	--	--
Temperature	NA	NA	C	14.7	--	13.0	--	16.8	11.32	16.0	16.8	14.3	--	--

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

Parameter	GSI [1]	NRDW [3]	units	SW1 10/25/10	SW1 8/18/11	SW1 11/6/12	SW2 7/16/08	SW2 5/6/09	SW2 10/25/10	SW2 8/18/11	SW2 11/6/12
Volatile Organic Compounds											
Benzene	200	5.0 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
Toluene	270	790 (E)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
2-Butanone (MEK)	2,200	38,000	µg/L	<5.0	<5.0	<5.0	ND	ND	<5.0	<5.0	<5.0
Chloroethane	1,100 (X)	1,700	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
Chloromethane	ID	1,100	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
1,1-Dichloroethane	740	2,500	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
1,1-Dichloroethene	130	7.0 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	620	70 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	1,500	100 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
Tetrachloroethene	60 (X)	5.0 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	200	200	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	330 (X)	5.0 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
Trichloroethene [2]	4,200	5.0 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	3.5	<1.0	<1.0
Vinyl Chloride [2]	8,000	2.0 (A)	µg/L	<1.0	<1.0	<1.0	ND	ND	<1.0	<1.0	<1.0
Metals and General Chemistry											
Iron	NA	NA	µg/L	--	--	--	ND	ND	130	160	230
Manganese	NA	NA	µg/L	--	--	--	ND	ND	30	33	50
Nitrogen, Ammonia	NA	NA	mg/L	--	--	--	0.058	0.036	<0.050	<0.050	<0.025
Nitrate plus Nitrite	NA	NA	mg/L	--	--	--	0.880	0.440	0.850	0.74	1.2
Nitrogen, Kjeldahl	NA	NA	mg/L	--	--	--	0.700	0.800	0.630	0.65	0.54
Chloride	(FF)	250,000 (E)	mg/L	--	--	--	28	15	25	24	26
Sulfate	NA	250,000 (E)	mg/L	--	--	--	29	14	28	26	33
Total Organic Carbon	NA	NA	mg/L	--	--	--	4.9	8.5	5.3	6.2	4.8
Field Parameters											
Dissolved Oxygen	NA	NA	mg/L	--	--	11.5	--	--	--	--	11.5
Eh	NA	NA	mV	--	--	74	--	--	--	--	112
Conductivity	NA	NA	mS/cm	--	--	0.537	--	--	--	--	0.535
pH	NA	NA	s.u.	--	--	8.33	--	--	--	--	8.16
Temperature	NA	NA	C	--	--	4.56	--	--	--	--	4.71

Golder Associates

TABLE 2: SUMMARY OF GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS
FORMER WHITE CONSOLIDATED INDUSTRIES - BELDING SITE

NOTES:

[1] GSI = Groundwater surface water interface criteria (Remediation Division "Revised Part 201 Cleanup Criteria and Part 213 Risk-Based Screening Levels", Attachment 1, Table 1: Groundwater - Residential and Nonresidential. September 28, 2012).
[2] For Trichloroethene and Vinyl Chloride, mixing zone-based GSI values of 4,200 and 8,000 µg/l, respectively were presented in the October 27, 1998 Limited Industrial RAP for the site.
[3] NRDW - Nonresidential drinking water criteria (Attachment 1, Table 1: Groundwater - Residential and Nonresidential. September 28, 2012).
[4] For both the GSI and NRDW criteria, "NA" indicates criterion not available and "ID" indicates inadequate data to develop a criterion.
[5] ND = Non detect (laboratory reporting limits unknown for pre-2010 monitoring events).
[6] "--" indicates no sample collected for the designated analysis.
[7] Bold data exceed GSI and/or NRDW criteria.

Part 201 Cleanup Criteria Footnotes:

(A) Criterion is the state of Michigan drinking water standard established pursuant to Section 5 of 1976 PA 399, MCL 325.1005.

(E) Criterion is the aesthetic drinking water value, as required by Section 20120a(5) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

(X) The GSI criterion shown in the generic cleanup criteria tables is not protective for surface water that is used as a drinking water source.

(FF) The chloride GSI criterion shall be 125 mg/l when the discharge is to surface waters of the state designated as public water supply sources or 50 mg/l when the discharge is to the Great Lakes or connecting waters.

ATTACHMENT A

TRIMATRIX LABORATORIES

November 26, 2012

Golder Associates, Inc. - MI
Attn: Mr. Brad Johnson
15851 S. US 27, Suite 50
Lansing, MI 48906

Project: Belding Groundwater Monitoring

Dear Mr. Brad Johnson,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1211134	11/07/2012	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#11-054-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#002841); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#03068); Michigan DPH (#0034); Minnesota DPH (#367345); New York ELAP (#46503); North Carolina DNRE (#659); Texas CEQ (#T104704495-12-2); Virginia DCLS (#1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-09-00163).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

James D. McFadden
Project Chemist

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-1**	Sampled:	11/05/12 14:12
Lab Sample ID:	**1211134-01**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/12/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	**2.1**	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	**22**	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	**160**	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*100*	*85-118*
1,2-Dichloroethane-d4	*104*	*87-122*
Toluene-d8	*96*	*85-113*
4-Bromofluorobenzene	*98*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-2**	Sampled:	11/05/12 12:08
Lab Sample ID:	**1211134-02**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/12/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	**2.0**	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	**2.6**	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*104*	*87-122*
Toluene-d8	*97*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

This report shall not be reproduced except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-3**	Sampled:	11/05/12 13:05
Lab Sample ID:	**1211134-03**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/12/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	**84**	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*105*	*87-122*
Toluene-d8	*96*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-4s**	Sampled:	11/05/12 16:35
Lab Sample ID:	**1211134-04**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	5	Analyzed:	11/12/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<5.0	5.0
75-00-3	Chloroethane	<5.0	5.0
74-87-3	Chloromethane	<5.0	5.0
75-34-3	1,1-Dichloroethane	<5.0	5.0
75-35-4	1,1-Dichloroethene	<5.0	5.0
156-59-2	cis-1,2-Dichloroethene	**210**	5.0
156-60-5	trans-1,2-Dichloroethene	<5.0	5.0
78-93-3	2-Butanone (MEK)	<25	25
127-18-4	Tetrachloroethene	<5.0	5.0
108-88-3	Toluene	<5.0	5.0
71-55-6	1,1,1-Trichloroethane	<5.0	5.0
79-00-5	1,1,2-Trichloroethane	<5.0	5.0
79-01-6	Trichloroethene	<5.0	5.0
75-01-4	Vinyl Chloride	**490**	5.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*105*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-4s**	Sampled:	11/05/12 16:35
Lab Sample ID:	**1211134-04**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Iron	**6800**	10	ug/L	1	USEPA-6010C	11/16/12 16:29	KLV	1213995
Manganese	**640**	10	ug/L	1	USEPA-6010C	11/16/12 16:29	KLV	1213995

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-4s**	Sampled:	11/05/12 16:35
Lab Sample ID:	**1211134-04**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Nitrogen, Inorganic	**0.49**	0.050	mg/L	1	SM 4500 NH3F+NO3G	11/12/12 18:49	CAC	[CALC]
Nitrogen, Ammonia	**0.49**	0.025	mg/L	1	SM 4500-NH3 G 20th	11/12/12 18:49	CAC	1213916
Nitrogen, Nitrate+Nitrite	<0.050	0.050	mg/L	1	SM 4500-NO3 F 20th	11/08/12 14:31	CAC	1213968
Nitrogen, Total Kjeldahl	**0.75**	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	11/12/12 10:44	CLB	1213745
Nitrogen, Organic	<0.50	0.50	mg/L	1	EPA-351.2/4500-NH3G	11/19/12 15:43	CLB	1214032
Chloride	**51**	1.0	mg/L	1	SM 4500-Cl E 20th	11/13/12 10:31	LMA	1213938
Sulfate	**15**	5.0	mg/L	1	ASTM D516-90 (02)	11/14/12 13:43	LMA	1214081
Carbon, Total Organic	**4.1**	0.50	mg/L	1	SM 5310 C 20th	11/14/12 15:55	KAR	1214176

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-4d**	Sampled:	11/05/12 15:18
Lab Sample ID:	**1211134-05**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/12/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*106*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-6**	Sampled:	11/05/12 17:55
Lab Sample ID:	**1211134-06**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	25	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<25	25
75-00-3	Chloroethane	<25	25
74-87-3	Chloromethane	<25	25
75-34-3	1,1-Dichloroethane	<25	25
75-35-4	1,1-Dichloroethene	<25	25
156-59-2	cis-1,2-Dichloroethene	**130**	25
156-60-5	trans-1,2-Dichloroethene	<25	25
78-93-3	2-Butanone (MEK)	**130**	120
127-18-4	Tetrachloroethene	<25	25
108-88-3	Toluene	<25	25
71-55-6	1,1,1-Trichloroethane	<25	25
79-00-5	1,1,2-Trichloroethane	<25	25
79-01-6	Trichloroethene	**2600**	25
75-01-4	Vinyl Chloride	<25	25

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*100*	*85-118*
1,2-Dichloroethane-d4	*106*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-6**	Sampled:	11/05/12 17:55
Lab Sample ID:	**1211134-06**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Iron	**20**	10	ug/L	1	USEPA-6010C	11/16/12 16:40	KLV	1213995
Manganese	**19**	10	ug/L	1	USEPA-6010C	11/16/12 16:40	KLV	1213995

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-6**	Sampled:	11/05/12 17:55
Lab Sample ID:	**1211134-06**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Nitrogen, Inorganic	**4.8**	0.50	mg/L	10	SM 4500 NH3F+NO3G	11/12/12 18:49	CAC	[CALC]
Nitrogen, Ammonia	**0.098**	0.025	mg/L	1	SM 4500-NH3 G 20th	11/12/12 18:49	CAC	1213916
Nitrogen, Nitrate+Nitrite	**4.7**	0.50	mg/L	10	SM 4500-NO3 F 20th	11/08/12 16:19	CAC	1213968
Nitrogen, Total Kjeldahl	<0.50	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	11/12/12 10:44	CLB	1213745
Nitrogen, Organic	<0.50	0.50	mg/L	1	EPA-351.2/4500-NH3G	11/19/12 15:43	CLB	1214032
Chloride	**2.6**	1.0	mg/L	1	SM 4500-Cl E 20th	11/13/12 10:31	LMA	1213938
Sulfate	**18**	5.0	mg/L	1	ASTM D516-90 (02)	11/14/12 13:46	LMA	1214081
Carbon, Total Organic	**1.7**	0.50	mg/L	1	SM 5310 C 20th	11/14/12 16:06	KAR	1214176

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-7**	Sampled:	11/06/12 11:42
Lab Sample ID:	**1211134-07**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*107*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-7**	Sampled:	11/06/12 11:42
Lab Sample ID:	**1211134-07**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Iron	**14**	10	ug/L	1	USEPA-6010C	11/16/12 16:44	KLV	1213995
Manganese	<10	10	ug/L	1	USEPA-6010C	11/16/12 16:44	KLV	1213995

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-7**	Sampled:	11/06/12 11:42
Lab Sample ID:	**1211134-07**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Nitrogen, Inorganic	**6.0**	0.50	mg/L	10	SM 4500 NH3F+NO3G	11/12/12 18:58	CAC	[CALC]
Nitrogen, Ammonia	<0.025	0.025	mg/L	1	SM 4500-NH3 G 20th	11/12/12 18:58	CAC	1213916
Nitrogen, Nitrate+Nitrite	**6.0**	0.50	mg/L	10	SM 4500-NO3 F 20th	11/08/12 16:20	CAC	1213968
Nitrogen, Total Kjeldahl	<0.50	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	11/12/12 10:44	CLB	1213745
Nitrogen, Organic	<0.50	0.50	mg/L	1	EPA-351.2/4500-NH3G	11/19/12 15:43	CLB	1214032
Chloride	**8.0**	1.0	mg/L	1	SM 4500-Cl E 20th	11/13/12 10:31	LMA	1213938
Carbon, Total Organic	**0.93**	0.50	mg/L	1	SM 5310 C 20th	11/14/12 16:17	KAR	1214176
Sulfate	**10**	5.0	mg/L	1	ASTM D516-90 (02)	11/14/12 13:46	LMA	1214081

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-8**	Sampled:	11/05/12 11:02
Lab Sample ID:	**1211134-08**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	**2.8**	1.0
156-60-5	trans-1,2-Dichloroethene	**1.3**	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	**31**	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*107*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-9**	Sampled:	11/05/12 10:05
Lab Sample ID:	**1211134-09**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*107*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-10**	Sampled:	11/06/12 09:45
Lab Sample ID:	**1211134-10**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*108*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-10**	Sampled:	11/06/12 09:45
Lab Sample ID:	**1211134-10**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Iron	**2600**	10	ug/L	1	USEPA-6010C	11/16/12 16:48	KLV	1213995
Manganese	**460**	10	ug/L	1	USEPA-6010C	11/16/12 16:48	KLV	1213995

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-10**	Sampled:	11/06/12 09:45
Lab Sample ID:	**1211134-10**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Nitrogen, Inorganic	**0.74**	0.050	mg/L	1	SM 4500 NH3F+NO3G	11/12/12 18:58	CAC	[CALC]
Nitrogen, Ammonia	**0.74**	0.025	mg/L	1	SM 4500-NH3 G 20th	11/12/12 18:58	CAC	1213916
Nitrogen, Nitrate+Nitrite	<0.050	0.050	mg/L	1	SM 4500-NO3 F 20th	11/08/12 14:34	CAC	1213968
Nitrogen, Total Kjeldahl	**0.87**	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	11/12/12 10:44	CLB	1213745
Nitrogen, Organic	<0.50	0.50	mg/L	1	EPA-351.2/4500-NH3G	11/19/12 15:43	CLB	1214032
Chloride	**200**	5.0	mg/L	5	SM 4500-Cl E 20th	11/13/12 10:54	LMA	1213938
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (02)	11/14/12 14:25	LMA	1214082
Carbon, Total Organic	**2.9**	0.50	mg/L	1	SM 5310 C 20th	11/14/12 16:29	KAR	1214176

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-11**	Sampled:	11/06/12 08:35
Lab Sample ID:	**1211134-11**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*107*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616 975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-11**	Sampled:	11/06/12 08:35
Lab Sample ID:	**1211134-11**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
***Iron**	**18000**	10	ug/L	1	USEPA-6010C	11/16/12 16:52	KLV	1213995
***Manganese**	**2500**	10	ug/L	1	USEPA-6010C	11/16/12 16:52	KLV	1213995

*See Statement of Data Qualifications

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**MW-11**	Sampled:	11/06/12 08:35
Lab Sample ID:	**1211134-11**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Nitrogen, Inorganic	**12**	0.62	mg/L	25	SM 4500 NH3F+NO3G	11/12/12 19:21	CAC	[CALC]
***Nitrogen, Ammonia**	**12**	0.62	mg/L	25	SM 4500-NH3 G 20th	11/12/12 19:21	CAC	1213916
*Nitrogen, Nitrate+Nitrite	<0.050	0.050	mg/L	1	SM 4500-NO3 F 20th	11/08/12 14:35	CAC	1213968
***Nitrogen, Total Kjeldahl**	**13**	5.0	mg/L	10	USEPA-351.2 Rev. 2.0	11/19/12 09:42	CLB	1214122
Nitrogen, Organic	**1.3**	0.50	mg/L	1	EPA-351.2/4500-NH3G	11/19/12 15:43	CLB	1214032
Chloride	**340**	5.0	mg/L	5	SM 4500-Cl E 20th	11/13/12 10:54	LMA	1213938
Carbon, Total Organic	**8.3**	1.0	mg/L	2	SM 5310 C 20th	11/14/12 16:40	KAR	1214176
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (02)	11/14/12 14:25	LMA	1214082

*See Statement of Data Qualifications

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**Duplicate**	Sampled:	11/06/12 00:00
Lab Sample ID:	**1211134-12**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*101*	*85-118*
1,2-Dichloroethane-d4	*108*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**Duplicate**	Sampled:	11/06/12 00:00
Lab Sample ID:	**1211134-12**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Iron	**2500**	10	ug/L	1	USEPA-6010C	11/16/12 17:22	KLV	1213995
Manganese	**440**	10	ug/L	1	USEPA-6010C	11/16/12 17:22	KLV	1213995

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616 975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**Duplicate**	Sampled:	11/06/12 00:00
Lab Sample ID:	**1211134-12**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Nitrogen, Inorganic	**0.79**	0.050	mg/L	1	SM 4500 NH3F+NO3G	11/12/12 18:58	CAC	[CALC]
Nitrogen, Ammonia	**0.79**	0.025	mg/L	1	SM 4500-NH3 G 20th	11/12/12 18:58	CAC	1213916
Nitrogen, Nitrate+Nitrite	<0.050	0.050	mg/L	1	SM 4500-NO3 F 20th	11/08/12 14:41	CAC	1213968
Nitrogen, Total Kjeldahl	**0.94**	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	11/19/12 09:37	CLB	1214122
Nitrogen, Organic	<0.50	0.50	mg/L	1	EPA-351.2/4500-NH3G	11/19/12 15:43	CLB	1214032
Chloride	**200**	5.0	mg/L	5	SM 4500-Cl E 20th	11/13/12 10:54	LMA	1213938
Sulfate	<1.0	1.0	mg/L	1	ASTM D516-90 (02)	11/14/12 14:25	LMA	1214082
Carbon, Total Organic	**3.0**	0.50	mg/L	1	SM 5310 C 20th	11/14/12 17:15	KAR	1214176

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**SW-1**	Sampled:	11/06/12 10:25
Lab Sample ID:	**1211134-13**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/13/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K14016

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*100*	*85-118*
1,2-Dichloroethane-d4	*107*	*87-122*
Toluene-d8	*95*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**SW-2**	Sampled:	11/06/12 10:45
Lab Sample ID:	**1211134-14**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/12/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K13040

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*102*	*85-118*
1,2-Dichloroethane-d4	*108*	*87-122*
Toluene-d8	*96*	*85-113*
4-Bromofluorobenzene	*101*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**SW-2**	Sampled:	11/06/12 10:45
Lab Sample ID:	**1211134-14**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Iron	**230**	10	ug/L	1	USEPA-6010C	11/16/12 17:26	KLV	1213995
Manganese	**50**	10	ug/L	1	USEPA-6010C	11/16/12 17:26	KLV	1213995

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**SW-2**	Sampled:	11/06/12 10:45
Lab Sample ID:	**1211134-14**	Sampled By:	R. Heslop
Matrix:	Water	Received:	11/07/12 16:55

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Nitrogen, Inorganic	**1.2**	0.25	mg/L	5	SM 4500 NH3F+NO3G	11/12/12 18:58	CAC	[CALC]
Nitrogen, Ammonia	<0.025	0.025	mg/L	1	SM 4500-NH3 G 20th	11/12/12 18:58	CAC	1213916
Nitrogen, Nitrate+Nitrite	**1.2**	0.25	mg/L	5	SM 4500-NO3 F 20th	11/08/12 16:21	CAC	1213968
Nitrogen, Total Kjeldahl	**0.54**	0.50	mg/L	1	USEPA-351.2 Rev. 2.0	11/19/12 09:37	CLB	1214122
Nitrogen, Organic	**0.52**	0.50	mg/L	1	EPA-351.2/4500-NH3G	11/19/12 15:43	CLB	1214032
Chloride	**26**	1.0	mg/L	1	SM 4500-Cl E 20th	11/13/12 10:31	LMA	1213938
Sulfate	**33**	5.0	mg/L	1	ASTM D516-90 (02)	11/14/12 13:49	LMA	1214081
Carbon, Total Organic	**4.8**	0.50	mg/L	1	SM 5310 C 20th	11/14/12 17:38	KAR	1214176

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**Golder Associates, Inc. - MI**	Work Order:	**1211134**
Project:	Belding Groundwater Monitoring	Description:	Laboratory Services
Client Sample ID:	**Trip Blank**	Sampled:	11/06/12 00:00
Lab Sample ID:	**1211134-15**	Sampled By:	TML
Matrix:	Water	Received:	11/07/12 16:55
Unit:	ug/L	Prepared:	11/13/2012 By: DLV
Dilution Factor:	1	Analyzed:	11/13/12 By: DLV
QC Batch:	1213954	Analytical Batch:	2K14016

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
71-43-2	Benzene	<1.0	1.0
75-00-3	Chloroethane	<1.0	1.0
74-87-3	Chloromethane	<1.0	1.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
127-18-4	Tetrachloroethene	<1.0	1.0
108-88-3	Toluene	<1.0	1.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-01-4	Vinyl Chloride	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*100*	*85-118*
1,2-Dichloroethane-d4	*108*	*87-122*
Toluene-d8	*94*	*85-113*
4-Bromofluorobenzene	*101*	*82-110*

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL

QC Batch: 1213954 5030B Aqueous Purge & Trap/USEPA-8260B

Method Blank — Analyzed: 11/12/2012 By: DLV
Unit: ug/L — Analytical Batch: 2K13040

Benzene		<1.0				1.0
Chloroethane		<1.0				1.0
Chloromethane		<1.0				1.0
1,1-Dichloroethane		<1.0				1.0
1,1-Dichloroethene		<1.0				1.0
cis-1,2-Dichloroethene		<1.0				1.0
trans-1,2-Dichloroethene		<1.0				1.0
2-Butanone (MEK)		<5.0			--	5.0
Tetrachloroethene		<1.0				1.0
Toluene		<1.0				1.0
1,1,1-Trichloroethane		<1.0				1.0
1,1,2-Trichloroethane		<1.0				1.0
Trichloroethene		<1.0				1.0
Vinyl Chloride		<1.0				1.0
Surrogates:						
Dibromofluoromethane			*101*	*85-118*		
1,2-Dichloroethane-d4			*103*	*87-122*		
Toluene-d8			*97*	*85-113*		
4-Bromofluorobenzene			*98*	*82-110*		

Method Blank — Analyzed: 11/13/2012 By: DLV
Unit: ug/L — Analytical Batch: 2K14016

Benzene		<1.0				1.0
Chloroethane		<1.0				1.0
Chloromethane		<1.0				1.0
1,1-Dichloroethane		<1.0				1.0
1,1-Dichloroethene		<1.0				1.0
cis-1,2-Dichloroethene		<1.0				1.0
trans-1,2-Dichloroethene		<1.0				1.0
2-Butanone (MEK)		<5.0				5.0
Tetrachloroethene		<1.0				1.0
Toluene		<1.0				1.0
1,1,1-Trichloroethane		<1.0				1.0
1,1,2-Trichloroethane		<1.0				1.0
Trichloroethene		<1.0				1.0
Vinyl Chloride		<1.0				1.0

Continued on next page

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
QC Batch: 1213954 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B								
Method Blank (Continued)					Analyzed:		11/13/2012	By: DLV
Unit: ug/L					Analytical Batch:		2K14016	
Surrogates:								
Dibromofluoromethane				*101*	*85-118*			
1,2-Dichloroethane-d4				*108*	*87-122*			
Toluene-d8				*94*	*85-113*			
4-Bromofluorobenzene				*101*	*82-110*			
Laboratory Control Sample					Analyzed:		11/12/2012	By: DLV
Unit: ug/L					Analytical Batch:		2K13040	
Benzene		40.0	**41.6**	104	84-119	--	20	1.0
1,1-Dichloroethene		40.0	**40.8**	102	77-123	--	20	1.0
Toluene		40.0	**41.1**	103	85-118	--	20	1.0
Trichloroethene		40.0	**38.2**	95	82-119	--	20	1.0
Surrogates:								
Dibromofluoromethane				*101*	*85-118*			
1,2-Dichloroethane-d4				*103*	*87-122*			
Toluene-d8				*102*	*85-113*			
4-Bromofluorobenzene				*101*	*82-110*			
Laboratory Control Sample					Analyzed:		11/13/2012	By: DLV
Unit: ug/L					Analytical Batch:		2K14016	
Benzene		40.0	**42.4**	106	84-119	--	20	1.0
1,1-Dichloroethene		40.0	**41.4**	104	77-123	--	20	1.0
Toluene		40.0	**39.8**	99	85-118	--	20	1.0
Trichloroethene		40.0	**36.3**	91	82-119	--	20	1.0
Surrogates:								
Dibromofluoromethane				*100*	*85-118*			
1,2-Dichloroethane-d4				*107*	*87-122*			
Toluene-d8				*98*	*85-113*			
4-Bromofluorobenzene				*105*	*82-110*			
Laboratory Control Sample Duplicate					Analyzed:		11/12/2012	By: DLV
Unit: ug/L					Analytical Batch:		2K13040	
Benzene		40.0	**39.8**	100	84-119	4	20	1.0
1,1-Dichloroethene		40.0	**39.3**	98	77-123	4	20	1.0
Toluene		40.0	**38.9**	97	85-118	5	20	1.0
Trichloroethene		40.0	**36.4**	91	82-119	5	20	1.0
Surrogates:								
Dibromofluoromethane				*101*	*85-118*			

Continued on next page

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 1213954 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Laboratory Control Sample Duplicate (Continued) — Analyzed: 11/12/2012 By: DLV
Unit: ug/L — Analytical Batch: 2K13040

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Surrogates (Continued):								
1,2-Dichloroethane-d4				*101*	*87-122*			
Toluene-d8				*100*	*85-113*			
4-Bromofluorobenzene				*101*	*82-110*			

Matrix Spike 1211134-11 MW-11 — Analyzed: 11/13/2012 By: DLV
Unit: ug/L — Analytical Batch: 2K14016

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Benzene	<1.0	40.0	**45.6**	114	80-129	--	9	1.0
1,1-Dichloroethene	<1.0	40.0	**44.4**	111	74-134	--	11	1.0
Toluene	<1.0	40.0	**42.5**	106	79-129	--	9	1.0
Trichloroethene	<1.0	40.0	**37.9**	95	75-127	--	10	1.0
Surrogates:								
Dibromofluoromethane				*100*	*85-118*			
1,2-Dichloroethane-d4				*106*	*87-122*			
Toluene-d8				*96*	*85-113*			
4-Bromofluorobenzene				*104*	*82-110*			

Matrix Spike Duplicate 1211134-11 MW-11 — Analyzed: 11/14/2012 By: DLV
Unit: ug/L — Analytical Batch: 2K14016

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Benzene	<1.0	40.0	**45.2**	113	80-129	0.7	9	1.0
1,1-Dichloroethene	<1.0	40.0	**44.5**	111	74-134	0.3	11	1.0
Toluene	<1.0	40.0	**42.3**	106	79-129	0.5	9	1.0
Trichloroethene	<1.0	40.0	**39.3**	98	75-127	4	10	1.0
Surrogates:								
Dibromofluoromethane				*100*	*85-118*			
1,2-Dichloroethane-d4				*106*	*87-122*			
Toluene-d8				*96*	*85-113*			
4-Bromofluorobenzene				*105*	*82-110*			

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Iron/USEPA-6010C									
QC Batch: 1213995 (3010A Digestion)							Analyzed: 11/16/2012		By: KLV
Method Blank			<10	ug/L					10
Laboratory Control Sample		400	**409**	ug/L	102	80-120			10
Analyte: Manganese/USEPA-6010C									
QC Batch: 1213995 (3010A Digestion)							Analyzed: 11/16/2012		By: KLV
Method Blank			<10	ug/L					10
Laboratory Control Sample		400	**410**	ug/L	103	80-120			10

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Carbon, Total Organic/SM 5310 C 20th									
QC Batch: 1214176 (General Inorganic Prep)							Analyzed: 11/14/2012		By: KAR
Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		2.00	**2.20**	mg/L	110	84-118		20	0.50
1211134-11 [MW-11]									
Matrix Spike	8.28	4.00	**12.6**	mg/L	108	75-124		20	1.0
Matrix Spike Duplicate	8.28	4.00	**12.7**	mg/L	109	75-124	0.5	20	1.0
Analyte: Chloride/SM 4500-Cl E 20th									
QC Batch: 1213938 (General Inorganic Prep)							Analyzed: 11/13/2012		By: LMA
Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		50.0	**49.8**	mg/L	100	90-106		20	1.0
1211134-11 [MW-11]									
Matrix Spike	337	50.0	**386**	mg/L	98	72-123		20	5.0
Matrix Spike Duplicate	337	50.0	**392**	mg/L	111	72-123	2	20	5.0
Analyte: Nitrogen, Ammonia/SM 4500-NH3 G 20th									
QC Batch: 1213916 (General Inorganic Prep)							Analyzed: 11/12/2012		By: CAC
Method Blank			<0.025	mg/L					0.025
Laboratory Control Sample		0.500	**0.482**	mg/L	96	90-110		20	0.025
1211134-11 [MW-11]									
Matrix Spike	12.0	0.500	**12.7**	mg/L	**146**	90-110		20	0.62
Matrix Spike Duplicate	12.0	0.500	**12.6**	mg/L	**112**	90-110	1	20	0.62
Analyte: Nitrogen, Nitrate+Nitrite/SM 4500-NO3 F 20th									
QC Batch: 1213968 (General Inorganic Prep)							Analyzed: 11/08/2012		By: CAC
Method Blank			<0.050	mg/L					0.050
Laboratory Control Sample		0.500	**0.504**	mg/L	101	90-110		20	0.050
1211134-11 [MW-11]									
Matrix Spike	0.0120	0.500	**0.468**	mg/L	91	90-110		20	0.050
Matrix Spike Duplicate	0.0120	0.500	**0.455**	mg/L	**89**	90-110	3	20	0.050
Analyte: Nitrogen, Total Kjeldahl/USEPA-351.2 Rev. 2.0									
QC Batch: 1213745 (351.2 TKN Digestion)							Analyzed: 11/12/2012		By: CLB
Method Blank			<0.50	mg/L					0.50

Continued on next page

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
Analyte: Nitrogen, Total Kjeldahl/USEPA-351.2 Rev. 2.0 (Continued)									
QC Batch: 1213745 (Continued) (351.2 TKN Digestion)								Analyzed: 11/12/2012	By: CLB
Laboratory Control Sample		2.00	**1.91**	mg/L	96	90-110		20	0.50
QC Batch: 1214122 (351.2 TKN Digestion)								Analyzed: 11/19/2012	By: CLB
Method Blank			<0.50	mg/L					0.50
Laboratory Control Sample		2.00	**1.85**	mg/L	92	90-110		20	0.50
1211134-11 [MW-11]									
Matrix Spike	13.3	2.00	**15.4**	mg/L	109	90-110		20	5.0
Matrix Spike Duplicate	13.3	2.00	**16.0**	mg/L	**140**	90-110	4	20	5.0
Analyte: Sulfate/ASTM D516-90 (02)									
QC Batch: 1214081 (General Inorganic Prep)								Analyzed: 11/14/2012	By: LMA
Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		20.0	**19.9**	mg/L	99	88-116		20	1.0
QC Batch: 1214082 (General Inorganic Prep)								Analyzed: 11/14/2012	By: LMA
Method Blank			<1.0	mg/L					1.0
Laboratory Control Sample		20.0	**19.5**	mg/L	97	88-116		20	2.0
1211134-11 [MW-11]									
Matrix Spike	<2.0	20.0	**20.4**	mg/L	102	55-151		20	2.0
Matrix Spike Duplicate	<2.0	20.0	**20.6**	mg/L	103	55-151	0.8	20	2.0

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

STATEMENT OF DATA QUALIFICATIONS

Total Metals by EPA 6000/7000 Series Methods

Qualification: The % difference in results between the sample and a serial dilution of the sample exceeded the control limit. Sample matrix interference is suspected and the reported result is considered estimated.

Analysis: USEPA-6010C

Sample/Analyte:		
1211134-11	MW-11	Manganese

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration for the same analyte was greater than or equal to 4 times the spiked amount; matrix QC results are not available.

Analysis: USEPA-6010C

Sample/Analyte:		
1211134-11	MW-11	Iron
1211134-11	MW-11	Manganese

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

TRIMATRIX LABORATORIES

STATEMENT OF DATA QUALIFICATIONS

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample concentration for the same analyte was greater than or equal to 4 times the spiked amount; the reported matrix spike results cannot be used to evaluate the sample.

Analysis: SM 4500-NH3 G 20th

Sample/Analyte: 1211134-11 MW-11 Nitrogen, Ammonia

Qualification: The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control limit. The unspiked sample result is not qualified.

Analysis: SM 4500-NO3 F 20th

Sample/Analyte: 1211134-11 MW-11 Nitrogen, Nitrate+Nitrite

Analysis: USEPA-351.2 Rev. 2.0

Sample/Analyte: 1211134-11 MW-11 Nitrogen, Total Kjeldahl

Qualification: The following reported test methods and analyte(s) are exceptions to our NELAP Fields of Accreditation, or for which accreditation is not required, applicable, or available.

Analysis: EPA-351.2/4500-NH3G

Analyte(s): Nitrogen, Organic

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories Inc.
Individual sample results relate only to the sample tested.
5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

This report shall not be reproduced, except in full, without written authorization of TriMatrix Laboratories, Inc.
Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com