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ENVIRONMENT

Pamela Mylotta
Bureau of Remediation and Redevelopment
Department of Natural Resources
2300 North Dr. Martin Luther King Jr. Drive
Milwaukee, Wisconsin 53212

Subject:
Remedial Action Progress Report, Former Norge Village Cleaners/Norman Getz Property, 6854 West Beloit Road, West Allis, Wisconsin, BRRTS# 02-41-271535

FID 241287200
ACTION: 43
Comment: Remedial Action

Date:
7 February 2007

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Dear Ms. Mylotta:

The purpose of this letter is to provide you with a summary of the results of remedial activities that have been performed to date at the Former Norge Village Cleaners (Norman Getz) property (the Site). ARCADIS is proceeding with remedial action in accordance with the "*Remedial Activities Progress Report and Work Plan for Supplemental Remediation Services*" dated June 8, 2005, and approved by the Wisconsin Department of Natural Resources (WDNR) on June 30, 2005. In the approval letter, you requested a status report be submitted to WDNR after a year of injection events had been completed.

A summary of the remediation and groundwater monitoring activities conducted through November 2006 is presented below. Based on a review of the analytical results, the carbon injections have been successful at reducing the mass of tetracholorethene (PCE) in groundwater. ARCADIS recommends proceeding with the remaining injection events proposed in the June 2005 work plan to allow the reductive dechlorination process to continue toward completion.

Status of Remediation Activities

Remediation activities were initiated at the Site in May 2003. A groundwater remediation pilot study was conducted between May and December 2003. The results of the pilot study were summarized in a letter submitted to the WDNR on January 26, 2004. The pilot study confirmed that enhanced biodegradation was a feasible groundwater remediation strategy. ARCADIS implemented soil and groundwater remediation to reduce the overall mass of contaminants at the Site through targeted source removal and in-situ groundwater treatment.

ARCADIS completed 12 injection events between March 2004 and May 2005 under the original remediation proposal dated January 15, 2003. In June 2005 ARCADIS requested a change order for 12 supplemental injection events in conjunction with additional groundwater monitoring. After receiving approval of the change order from the WDNR to continue the groundwater treatment program, the City of West Allis approved an additional loan to Norman Getz (the Responsible Party [RP]) in December 2005 to proceed with the supplemental remediation activities. The results of the remediation activities conducted through November 2006 are summarized herein.

Soil Excavation

Following completion of the pilot study, approximately 650 tons of PCE-impacted soil were excavated from two areas beneath the Site building in February and March, 2004. The purpose of the soil excavation was to remove the most highly impacted soils to protect human health and remove the source area to limit continuing groundwater impact. Prior to backfilling the soil excavations, ARCADIS collected soil confirmation samples from the base and sidewalls of each excavation area. The soil excavation areas, sampling locations, and PCE confirmation results are summarized on Figure 1. ARCADIS estimates approximately 30 to 35 pounds of PCE were removed from beneath the building as a result of the soil excavation activities. Residual PCE soil concentrations ranged from 11,000 micrograms per kilogram (g/kg) to 24,400 g/kg in Excavation Area 1, and from 51 to 964 g/kg in Excavation Area 2.

During the soil backfilling activities, ARCADIS installed an injection gallery at the base of Excavation Area 1 to provide a delivery system for the carbon amendment solution beneath the building. The injection gallery consisted of sections of slotted horizontal piping that were laid at the base of the excavation, as shown on Figure 1. The horizontal piping was then plumbed to vertical injection ports that extended to the surface to provide access to the injection gallery once the excavation was backfilled. In addition, a passive soil vapor collection system was installed within the excavation beneath the concrete slab of the building. The vent system piping was connected to a passive wind turbine and discharges to the outside of the building to facilitate the removal of potential vapors from beneath the building.

Injection Activities

Enhanced biodegradation is being utilized to address the groundwater constituents at the Site. Application of a carbon amendment solution was initiated at the property in March 2004 to stimulate the biodegradation of PCE and its daughter products to the innocuous end products ethene and ethane. As indicated above, an infiltration gallery and passive vent system were installed within the larger interior excavation (Area 1). In addition, 11 vertical injection wells were installed outside the building to treat the groundwater plume. The Site layout and the locations of all injection and monitoring wells are shown on Figure 2. Approximately 1,000 to 1,500 gallons of carbon amendment solution have been applied to the infiltration gallery and injection wells at 4 to 8 week intervals. Quarterly sampling has been conducted to evaluate the progress of remediation.

Table 1 presents a summary of the injection activities that have been completed to date. The first injection event was completed on March 1, 2004, and the most recent injection event was completed on November 13, 2006. Injection activities were temporarily suspended between July 2005 and January 2006 while additional project funding was secured by the RP for the supplemental scope of work approved by the WDNR on June 30, 2005. During each injection event, approximately 10 to 300 gallons of a dilute solution of water and molasses were injected into each of the injection wells, and 350 to 600 gallons were injected into the injection gallery. As of November 2006, approximately 20,240 gallons of solution have been injected via the injection gallery and wells during the injection events.

Minor modifications to the injection program were implemented over time in response to the groundwater sampling results and field observations. For example, in July 2004 Monitoring Well MW-10 was converted to an injection well to increase the volume of molasses solution applied in this area. Injections into Injection Well IW-5 were terminated at the same time, and IW-5 was converted to a monitoring well to evaluate the effect of injections that were initiated in MW-10 in July 2004.

Analytical Results

Analytical results for the groundwater samples collected during the baseline (pre-injection) monitoring event in February 2004 and the subsequent groundwater sampling events are presented in Table 2. A subset of the groundwater analytical results from select wells are shown on Figure 3.

Graphs of the volatile organic compounds (VOC) groundwater trends over time for MW-2, MW-3, and MW-11 are presented on Figure 4. The graphs show PCE and its daughter products (trichloroethene, cis-1,2-dichloroethene, vinyl chloride, and ethene) for each well on the date the sample was collected. Sample dates were converted to days since the initial injection event occurred (Day 0). The VOC data are shown in micromoles per liter. Each of these compounds has a different molecular weight, thus evaluating concentration data using a unit weight per liter format does not represent a true picture of the bioremediation progress. By presenting the VOC units using molar ratios, we can observe the actual change in the amount of chlorinated compounds being remediated at the Site.

It is noted that Monitoring Wells MW-1, MW-5, and MW-6 were abandoned in November 2004 to facilitate modifications to the parking area that were completed in 2005. Those three wells were located hydraulically upgradient or sidegradient of the source area, and chlorinated VOCs were generally absent in those wells both prior to and after the commencement of the groundwater treatment program.

Based on the analytical results, the enhanced biodegradation stimulated by the carbon amendment solution has been effective at reducing the concentrations of PCE in most of the monitoring wells. Concentrations of PCE in MW-2 and MW-11 have decreased nearly 100 percent since injections commenced. Concentrations of PCE initially decreased more than 90 percent (from 13,000 micrograms per liter [µg/L] to 960 µg/L in March 2005) in Monitoring Well MW-3, which historically contained the highest levels of PCE. The PCE concentrations in MW-3 increased in January 2006 following the 6-month period (between Day 504 and Day 700, Figure 4) when injections were temporarily suspended. However, based on the continued presence of degradation products and ethene production in MW-3 through October 2006, the degradation process has resumed following the continuation of injection activities in January 2006. In November 2006 ARCADIS increased the total volume of molasses solution applied to each injection well to further enhance the degradation process.

As expected, the concentrations of PCE degradation products produced via dechlorination (trichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, vinyl chloride, and ethene) increased during the remediation activities. These compounds degrade sequentially as dechlorination occurs. The concentration of each degradation product initially peaks as dechlorination occurs, and then decreases as the previous compound in the sequence is depleted. Evidence of complete

dechlorination is observed in the elevated concentrations of the end products ethene and ethane.

The cumulative concentrations of chlorinated volatile organic compounds (CVOC) and ethene (converted to micromoles per liter) are shown on Figure 4 for select monitoring wells. As the PCE concentrations have decreased, the cumulative concentration of total CVOC daughter products increased over time and peaked between Days 261 and 375, indicating that significant reductive dechlorination was occurring. As Figure 4 indicates, the cumulative CVOC and ethene concentrations exceeded the initial PCE concentrations. The increase in total CVOC concentrations over time is due to significant desorption from the soil to the groundwater that typically occurs with the application of the carbon amendment solution. The desorption phenomena fosters remediation of sorbed-phase constituents as dissolution of the sorbed constituents occur. The dissolved constituents then proceed through the reductive dechlorination process, ultimately producing the benign end-products ethene and ethane. As shown on Figure 4, the ratio of ethene to total chlorinated CVOC is increasing over time as sequential dechlorination proceeds.

Analytical results for monitoring wells located downgradient and sidegradient of the injection area have remained essentially unchanged. Chlorinated hydrocarbons have not been detected at the downgradient well (MW-9), the sidegradient wells (MW-7 and MW-8), or the piezometer (PZ-1). These wells continue to define the extent of impacts and indicate that the remediation activities appear to have stabilized downgradient migration of the plume.

Pathway to Closure

This facility is occupied by a commercial laundromat (no PCE usage), and paved areas. The potential risk from the contaminants of concern can be addressed through the utilization of the existing surficial features (building and paved areas) as engineering controls; and through implementation of the following administrative controls:

1. Maintain the property for non-residential, commercial usage.

2. Maintain the existing passive vapor control system beneath the floor slab to allow potential VOC vapors to vent to the atmosphere.

3. Register the Site on the WDNR Geographical Information System (GIS) registry.

4. Groundwater monitoring to demonstrate that the remaining groundwater plume is stable or receding.

The pathway to closure for this Site is outlined as follows:

1. Source removal was performed to reduce the mass of constituents that can leach to the groundwater table. An estimated 30 to 35 pounds of VOCs were removed from the Site through this effort.

2. Utilize engineering and administrative controls to close out Site. These controls will include the vapor control system, and the current developed building and pavement areas.

3. We have performed groundwater remediation through enhanced bioremediation via carbon solution injections at the site. We will continue groundwater monitoring at the Site to demonstrate that constituent concentrations are stable or decreasing. The presence of clean wells and a piezometer beyond the margins of the plume suggests that plume stability exists at the Site.

Recommendations

Based on a review of the analytical results, the carbon injections have been successful at reducing PCE concentrations by over 90 percent in most wells. However, ARCADIS recommends proceeding with the three remaining proposed injection events approved in the June 2005 work plan to reduce the concentrations of the degradation products to levels that can be managed through natural attenuation. ARCADIS plans to cease injections within the injection gallery and focus the remaining injection activities on the vertical injection wells outside the building. In addition, the amount of solution applied to each injection well during upcoming injection events will be increased to accelerate the degradation process. Upon completion of the remaining injection events, injections will cease and ARCADIS will implement post-injection monitoring on a quarterly basis.

We believe that we have met the requirements of s. NR 726 for case closure. Once we have halted active groundwater remediation activities, limited monitoring is proposed to demonstrate that the remaining groundwater plume will be stable. Once plume stability has been demonstrated, we will request project closure from the WDNR.

Closing

We appreciate your assistance with this project. Should you have any questions regarding the enclosed information or require additional information, please call us at your convenience.

Sincerely,

ARCADIS U.S., Inc.

Dawn Gabardi
Project Hydrogeologist

James E Bannantine
Senior Hydrogeologist

Copies:
Donald P. Gallo - Reinhart, Boerner, Van Deuren
Norman Getz
Kristi Johnson - City of West Allis

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Table 1. Summary of Carbon Amendment Solution Injected Through November 2006, Former Norge Village Cleaners, West Allis, Wisconsin.

Date of Injection	Amount Injected (Gallons of Solution)												Infiltration Gallery	Total Gallons in Inject Wells	Total Gallons
	IW-1	IW-2	IW-3	IW-4	IW-5*	MW-10*	IW-6	IW-7	IW-8	IW-9	IW-10	IW-11			
3/1/04	50	50	3	17	9	0	50	20	21	22	16	16	657	274	931
3/25/04	46	44	50	51	40	0	49	48	43	50	45	47	503	513	1,016
4/22/04	30	30	50	71	50	0	75	50	78	64	50	50	347	598	945
5/20/04	39	40	50	76	50	0	75	45	76	75	38	36	438	600	1,038
6/21/04	30	33	50	75	70	0	75	50	61	75	55	50	350	624	974
7/28/04	30	0	50	75	0	60	90	45	60	90	50	50	360	600	960
9/3/04	30	0	50	76	0	70	90	25	30	90	50	50	467	561	1,028
10/14/04	30	0	50	80	0	80	90	20	20	90	50	50	440	560	1,000
11/24/04	20	10	15	50	0	50	50	10	10	50	25	25	0	315	315
1/12/05	30	10	30	50	0	50	55	0	25	55	25	25	500	355	855
3/21/05	30	0 (buried)	30	50	0	31	50	30	0 (buried)	50	30	30	620	331	951
5/10/05	30	15	30	50	0	50	50	45	50	50	30	50	547	450	997
7/18/05	40	15	50	80	0	85	80	50	50	80	30	30	410	590	1,000
1/30/06	50	30	40	50	0	80	90	40	50	80	30	40	400	580	980
3/2/06	50	30	35	65	0	85	20	40	50	75	15	30	435	495	930
4/12/06	40	30	30	65	0	85	80	40	50	20	12	15	448	467	915
6/10/06	40	20	40	70	0	90	80	40	50	20	10	15	480	475	955
7/20/06	40	20	19	70	0	90	80	40	50	30	19	20	480	478	958
8/28/06	60	30	20	70	0	110	90	40	50	40	20	20	440	550	990
10/3/06	60	30	40	70	0	110	90	40	50	50	30	30	400	600	1,000
11/13/06	120	85	65	0	0	320	300	210	210	70	60	60	0	1,500	1,500
Totals	**895**	**522**	**797**	**1,261**	**219**	**1,446**	**1,709**	**928**	**1,084**	**1,226**	**690**	**739**	**8,722**	**11,516**	**20,238**

* Due to concerns with the distribution of the molasses solution, Well MW-10 was converted to an injection well, and IW-5 was converted to a monitoring well in July 2004.

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Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	NR 140	NR 140	MW-1				MW-2					
Sample Date	ES	PAL	2/2/04	5/19/04	8/17/04	10/29/04	2/3/04	3/22/04	4/21/04	5/18/04	8/16/04	10/14/04
VOCs (µg/L)												
1,1-Dichloroethylene	7	0.7	<0.50	<0.50	<0.50	<0.50	<0.50	<80	<10	<5.0	***6.7***	NA
Benzene	5	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<32	<4.0	<2.0	<1.6	NA
cis-1,2-Dichloroethylene	70	7	<0.50	<0.50	<0.50	<0.50	<100	<80	***150***	***370***	***20,000***	NA
Naphthalene	40	8	<0.25	<0.25	<0.25	<0.25	<0.25	***83***	7	2.9	2.2	NA
Tetrachloroethylene	5	0.5	<0.50	<0.50	<0.50	<0.50	***30,000***	***7,100***	***970***	***160***	***28***	NA
Toluene	1,000	200	<0.20	<0.20	<0.20	<0.20	0.24	<32	<4.0	<2.0	<1.6	NA
trans-1,2-Dichloroethylene	100	20	<0.50	<0.50	<0.50	<0.50	<0.50	<80	<10	7.5	***190***	NA
Trichloroethylene	5	0.5	<0.20	<0.20	<0.20	<0.20	***7.7***	<32	***190***	***290***	***16***	NA
Vinyl chloride	0.2	0.02	<0.20	<0.20	<0.20	<0.20	<0.20	<32	<4.0	<2.0	***350***	NA
Xylenes, Total	10,000	1000	<0.50	<0.50	<0.50	<0.50	<0.50	***120***	<10	<5.0	<4.0	NA
Total Organic Carbon (mg/L)	--	--	1.9 B	NA	NA	NA	3.0 B	41	9.3 M	10 M	74	280
Dissolved Gases (µg/L)												
Ethane	--	--	<0.005	NA	NA	NA	<0.005	0.088	0.1	0.035	0.16	NA
Ethene	--	--	<0.005	NA	NA	NA	<0.005	0.18	0.12	1.1	78	NA
Methane	--	--	0.27	NA	NA	NA	0.29	3.6	6	11	74	NA
Field Parameters												
Dissolved Oxygen (mg/L)	--	--	4.52	6.57	5.21	NA	3.06	2.53	0.05	0.02	0.12	NA
ORP (mV)	--	--	165.1	200	49.2	NA	135.9	47.8	-175.5	-86.4	-145.7	NA
pH	--	--	6.8	6.74	6.71	NA	7.06	6.93	6.76	6.51	6.65	NA
Specific Conductance (uS/cm)	--	--	4,510	4,577	4,662	NA	1,184	945	1,212	1,444	1,508	NA
Temperature (C)	--	--	11.28	11.32	15.64	NA	11.21	9.96	9.56	10.35	15.19	NA

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

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Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	MW-2 (continued)						MW-3					
Sample Date	**11/17/04**	**3/2/05**	**1/12/06**	**4/25/06**	**7/26/06**	**10/25/06**	**9/4/03**	**12/3/03**	**2/3/04**	**3/22/04**	**4/21/04**	**5/19/04**
VOCs (µg/L)												
1,1-Dichloroethylene	<160	<250	<20	<20	<100	<100	<50	<160	***25***	<160	<120	<120
Benzene	<64	<100	<8.0	<8.0	<40	<40	<25	<64	<0.20	<64	<50	<50
cis-1,2-Dichloroethylene	***33,000***	***65,000***	***3,300***	***12,000***	***23,000***	***7,500***	***230***	***24,000***	***24,000***	***19,000***	***19,000***	***34,000***
Naphthalene	<80	<120	<10	<10	<50	<50	<25	<80	<0.25	<80	<62	***88***
Tetrachloroethylene	<160	<250	<20	<20	<100	<100	***13,000***	***2,900***	***4,800***	***5,900***	***8,600***	***6,700***
Toluene	<64	<100	<8.0	<8.0	<40	<40	<25	<64	<0.20	<64	<50	<50
trans-1,2-Dichloroethylene	***370***	***740***	***120***	***210***	***170 J***	<100	<50	***610***	***300***	***200***	***260***	***450***
Trichloroethylene	<64	<100	<8.0	***12 J***	<40	<40	***100***	***2,200***	***750***	***1,000***	***620***	***650***
Vinyl chloride	***3,800***	***3,000***	***1,500***	***1,300***	***8,100***	***3,200***	<25	<64	***640***	***1,200***	***780***	***380***
Xylenes, Total	<160	<250	<20	<20	<100	<100	<50	<160	<0.50	<160	<120	<120
Total Organic Carbon (mg/L)	340	74	13.1	34.8	22.3	8.56	1.6	NA	7.1 B	460	230	250
Dissolved Gases (µg/L)												
Ethane	0.33	NA	0.42	0.59	1.9	78	3.2	1.6	3.8	6.6	4.3	23
Ethene	500	NA	2,700	1,300	3,700	1,300	2.6	3.8	28	84	220	1,600
Methane	980	NA	4,000	6,400	7,300	6,900	0.75	81	420	870	630	2,600
Field Parameters												
Dissolved Oxygen (mg/L)	0.64	0.26	0.16	0.32	0.16	0.1	0.08	NM	1.21	2.68	0.13	0.03
ORP (mV)	-89.1	-88.3	-81.4	-124.3	-80.3	-75.2	-34	-304.7	-176.6	-108.9	-146.4	-96.9
pH	6.35	6.39	6.67	6.55	6.49	6.56	6.95	6.46	6.72	6.24	6.5	6.66
Specific Conductance (uS/cm)	2,137	649	1,519	1,363	1,128	1,534	8,269	5,937	6,419	7,078	6,957	6,547
Temperature (C)	14.69	9.45	10.56	9.75	15.03	16.54	14.7	13.11	10.98	6.6	8.89	9.69

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

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Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	MW-3 (continued)								MW-4			
Sample Date	**8/17/04**	**10/14/04**	**11/17/04**	**3/11/05**	**1/12/06**	**4/25/06**	**7/26/06**	**10/25/06**	**9/4/03**	**12/3/03**	**2/4/04**	**3/23/04**
VOCs (µg/L)												
1,1-Dichloroethylene	<400	NA	<400	<250	<50	<50	<100	<100	<0.50	<0.50	<0.50	<0.50
Benzene	<160	NA	<160	<100	<20	<20	<40	<40	<0.25	***0.58***	<0.20	<0.20
cis-1,2-Dichloroethylene	***70,000***	NA	***25,000***	***120,000***	***7,700***	***9,800***	***7,000***	***2,100***	0.72	0.74	1.9	1.4
Naphthalene	***230***	NA	***280***	<120	<25	<25	<50	<50	<0.25	<0.25	<0.25	<0.25
Tetrachloroethylene	<400	NA	<400	***960***	***3,200***	***2,700***	***3,100***	***9,000***	***15***	***6.2***	***2.1***	***1.8***
Toluene	<160	NA	<160	<100	<20	<20	<40	<40	<0.25	0.71	<0.20	<0.20
trans-1,2-Dichloroethylene	***690***	NA	***490***	***560***	<50	<50	<100	<100	<0.50	<0.50	0.79	<0.50
Trichloroethylene	<160	NA	<160	***350***	***280***	***490***	***350***	***730***	0.47	0.44	***2.7***	0.44
Vinyl chloride	***17,000***	NA	***36,000***	***36,000***	***6,000***	***3,300***	***2,000***	***620***	<0.25	<0.20	***1.2***	<0.20
Xylenes, Total	<400	NA	<400	<250	<50	<50	<100	<100	<0.50	0.55	<0.50	<0.50
Total Organic Carbon (mg/L)	390	360	230	390 M	37.6	406	103	3.71	3.2	NA	6.6 B	3.3
Dissolved Gases (µg/L)												
Ethane	7.7	NA	7.5	NA	87	120	63	100	0.014	0.068	<0.005	0.062
Ethene	2,000	NA	7,100	NA	5,900	7,100	7,600	3,000	0.015	0.048	<0.005	0.097
Methane	4,400	NA	5,600	NA	11,000	15,000	13,000	13,000	2.7	15	0.44	2.4
Field Parameters												
Dissolved Oxygen (mg/L)	0.11	NA	1.26	0.3	0.25	0.32	0.15	0.04	0.05	0.31	5.23	4.51
ORP (mV)	-61	NA	-136.6	-94.5	-121.8	-95.1	-133.9	-120.4	-116.2	-34	59.7	120.2
pH	6.52	NA	7	6.51	6.78	6.43	6.6	6.68	7.13	7.24	7.04	7.12
Specific Conductance (uS/cm)	4,157	NA	3,127	949	2,116	1,916	2,024	2,552	1,065	1,028	1,008	1,019
Temperature (C)	15.97	NA	14.84	8.49	11.89	9.16	14.48	16.7	13.61	12.88	10.6	8.54

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

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Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	MW-4 (continued)										MW-5
Sample Date	**5/19/04**	**6/21/04**	**8/17/04**	**11/18/04**	**7/18/05**	**1/12/06**	**1/12/06 (dup)**	**4/25/06**	**7/26/06**	**10/25/06**	**10/29/04**
VOCs (µg/L)											
1,1-Dichloroethylene	***11***	<80	<25	<25	<2.0	<1.0	<0.50	<1.0	<2.0	<1.0	<0.50
Benzene	<0.20	<32	<10	<10	<0.80	<0.40	<0.20	<0.40	<0.80	<0.40	***5.3***
cis-1,2-Dichloroethylene	***21,000***	***10,000***	***3,100***	***1,200***	***260***	***170***	***150***	***160***	***130***	***86***	<0.50
Naphthalene	<0.25	<40	***46***	<12	<1.0	<0.50	0.45 J	<0.50	<1.0	<0.50	<0.25
Tetrachloroethylene	***6.4***	<80	<25	<25	***2.6 J***	***2.1 J***	***4***	<1.0	***3 J***	***1.1 J***	<0.50
Toluene	<0.20	<32	<10	<10	<0.80	<0.40	<0.20	0.78 J	<0.80	<0.40	<0.20
trans-1,2-Dichloroethylene	***260***	***120***	***62***	***30***	6.5 J	4.3	5.1	2.2 J	2.1 J	<1.0	<0.50
Trichloroethylene	***24***	<32	<10	<10	<0.80	***0.98 J***	***1.3***	<0.40	***2.2 J***	***1.4***	<0.20
Vinyl chloride	***1***	<32	***77***	***42***	***50***	***34***	***32***	***95***	***45***	***45***	<0.20
Xylenes, Total	<0.50	<80	<25	<25	<2.0	<1.0	<0.50	<1.0	<2.0	<1.0	<0.50
Total Organic Carbon (mg/L)	260	220	24	7.3	NA	4.67	NA	31.6	8.07	1.84	NA
Dissolved Gases (µg/L)											
Ethane	0.016	NA	0.032	0.12	NA	0.77	NA	2.4	6.9	17	NA
Ethene	0.24	NA	42	100	NA	19	NA	120	60	63	NA
Methane	12	NA	350	550	NA	75	NA	310	170	390	NA
Field Parameters											
Dissolved Oxygen (mg/L)	5.15	3.75	1.1	1.28	NA	3.15	NA	0.66	0.53	1.06	NA
ORP (mV)	178.3	28.8	-59.3	-63.8	NA	199.4	NA	-105.7	-82.9	-104	NA
pH	6.68	6.78	6.85	7.96	NA	7.22	NA	6.87	6.88	7.25	NA
Specific Conductance (uS/cm)	1,614	1,087	1,102	372	NA	883	NA	1,223	953	1,236	NA
Temperature (C)	10.02	11.29	13.42	13.1	NA	12.23	NA	10.95	14.75	15.97	NA

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

ARCADIS

Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	MW-6				MW-7					MW-8		
Sample Date	**2/2/04**	**5/19/04**	**8/17/04**	**10/29/04**	**2/2/04**	**5/19/04**	**8/17/04**	**11/18/04**	**1/12/06**	**2/2/04**	**5/19/04**	**8/17/04**
VOCs (µg/L)												
1,1-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Naphthalene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Tetrachloroethylene	<0.50	***0.52***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.25	<0.20	<0.20	<0.20	<0.20
trans-1,2-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	***0.51***	<0.20	<0.20	<0.20	0.32	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl chloride	***0.22***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes, Total	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Organic Carbon (mg/L)	3.3 B	NA	NA	NA	3.4 B	4.4 M	4.4 M	NA	3.49	2.9 B	NA	NA
Dissolved Gases (µg/L)												
Ethane	0.0057	NA	NA	NA	0.0078	0.005	0.027	NA	< 0.025	<0.005	NA	NA
Ethene	<0.005	NA	NA	NA	<0.005	0.015	<0.005	NA	< 0.025	<0.005	NA	NA
Methane	0.52	NA	NA	NA	0.64	0.49	1.7	NA	7.5	0.62	NA	NA
Field Parameters												
Dissolved Oxygen (mg/L)	4.59	6.71	4.16	NA	3.38	8	5.31	1.37	6.85	3.81	7.92	6.05
ORP (mV)	152.6	214.6	86.5	NA	-185.8	163.9	87.4	139.1	253.1	-134.7	177.3	90.4
pH	6.97	6.89	6.82	NA	6.67	6.62	6.61	5.42	6.84	7.24	7.12	7.04
Specific Conductance (uS/cm)	2,077	2,821	2,490	NA	6,325	7,281	7,127	5,441	4,626	1,215	1,533	1,348
Temperature (C)	11.11	10.83	13.47	NA	10.94	11.02	16.43	15.95	11.05	11.72	12.02	16.1

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

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Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	MW-8 (continued)		MW-9							MW-10		
Sample Date	**11/18/04**	**1/12/06**	**2/3/04**	**3/23/04**	**4/21/04**	**5/19/04**	**8/17/04**	**11/18/04**	**1/12/06**	**2/4/04**	**3/23/04**	**4/21/04**
VOCs (µg/L)												
1,1-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20
Benzene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<8.0
cis-1,2-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	2.8	<20
Naphthalene	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<10
Tetrachloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	***96***	***300***	***1,700***
Toluene	<0.20	<0.20	<0.20	<0.20	<0.20	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<8.0
trans-1,2-Dichloroethylene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20
Trichloroethylene	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	***2***	***2.3***	***8.4***
Vinyl chloride	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<8.0
Xylenes, Total	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<20
Total Organic Carbon (mg/L)	NA	2.51	4.3 B	4.9 M	6.5 M	11 M	8.2 M	7.7 M	8.15	2.0 B	1.4 M	1.7 M
Dissolved Gases (µg/L)												
Ethane	NA	< 0.025	<0.005	0.034	0.013	0.005	<0.005	0.014	0.032	0.015	0.044	0.0088
Ethene	NA	< 0.025	<0.005	0.2	0.1	0.0066	0.088	1.4	1.5	0.0088	0.06	0.03
Methane	NA	0.93	0.47	2.5	1.1	0.34	0.71	4.2	3.8	0.36	1.7	0.58
Field Parameters												
Dissolved Oxygen (mg/L)	0.93	5.78	4.63	8.69	5.84	7.83	5.68	1.39	6.43	5.15	9.82	7.36
ORP (mV)	194.6	247.1	157.7	117	38.6	202.4	110.7	155.1	239.4	104.2	166.1	53.8
pH	4.38	7.02	7.02	6.83	7.05	6.96	6.86	4.92	6.97	6.98	6.82	7.1
Specific Conductance (uS/cm)	1,259	1,479	2,571	2,544	2,508	2,477	2,545	2,069	2,601	4,177	3,984	2,378
Temperature (C)	16.66	13.33	10.79	9.59	10.77	11.85	15.98	16.54	12.44	10.29	9.11	9.81

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

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Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	MW-10 (continued)		MW-11									
Sample Date	**5/19/04**	**6/21/04**	**2/27/04**	**3/22/04**	**4/21/04**	**5/18/04**	**6/17/04**	**8/17/04**	**11/17/04**	**3/2/05**	**1/12/06**	**4/25/06**
VOCs (µg/L)												
1,1-Dichloroethylene	<2.0	<2.0	0.64	<0.50	<50	<50	<1,000	<200 P	<250	<100	<0.50	<0.50
Benzene	<0.80	<0.80	<0.20	<0.20	<20	<20	<400	<80 P	<100	<40	<0.20	<0.20
cis-1,2-Dichloroethylene	<2.0	<2.0	***1,600***	***740***	***6,100***	***87,000***	***86,000***	***28,000 P***	***110,000***	***8,300***	***18***	***97***
Naphthalene	<1.0	<1.0	<0.25	<0.25	<25	<25	<500	<100 P	<120	<50	<0.25	0.27 J
Tetrachloroethylene	***190***	***530***	***5,200***	***1,600***	***2,300***	<50	<1,000	<200 P	<250	<100	***14***	***12***
Toluene	<0.80	<0.80	0.35	<0.20	<20	<20	<400	<80 P	<100	<40	<0.20	<0.20
trans-1,2-Dichloroethylene	<2.0	<2.0	8.6	6.3	<50	***490***	***1,600***	<200 P	***600***	<100	<0.50	<0.50
Trichloroethylene	***2.7***	***2.3***	***170***	***110***	***350***	***280***	<400	***350 P***	<100	<40	***3.1***	***2.7***
Vinyl chloride	<0.80	<0.80	***32***	***16***	***43***	***150***	<400	***100 P***	***20,000***	***11,000***	***5.2***	***220***
Xylenes, Total	<2.0	<2.0	<0.50	<0.50	<50	<50	<1,000	<200 P	<250	<100	<0.50	<0.50
Total Organic Carbon (mg/L)	1.1	1.7 M	1.6 M	1.8 M	20 M	420	540	2,400	2,400	150 M	4.15	8.25
Dissolved Gases (µg/L)												
Ethane	0.005	NA	0.048	0.094	0.42	1.2	NA	0.85	2.5	NA	0.58	63
Ethene	0.013	NA	0.51	0.26	2.3	17	NA	33	1,200	NA	43	450
Methane	0.41	NA	3.1	3.6	33	53	NA	400	1,900	NA	680	6,100
Field Parameters												
Dissolved Oxygen (mg/L)	4.26	7.79	4.82	4.95	0.1	0.07	0.05	0.11	1.1	0.19	0.17	1.22
ORP (mV)	204.7	330.1	208.4	181.3	-286	-473.8	-236.9	-99.4	-37.6	-122.2	-115.8	-59.8
pH	7.18	7.23	7.33	7.04	6.69	6.07	5.99	5.49	5.76	6.21	6.83	6.78
Specific Conductance (uS/cm)	1,241	336	6,018	5,847	5,373	5,261	4,990	7,332	4,390	5,043	2,695	1,756
Temperature (C)	11.5	13.22	9.86	9.2	8.83	10.1	11.49	15.3	15.3	8.67	10.58	9.24

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

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Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	MW-11 (continued)			PZ-1					IW-4	IW-5	
Sample Date	**4/25/06 (dup)**	**7/26/06**	**10/25/06**	**2/4/04**	**3/23/04**	**5/19/04**	**8/17/04**	**11/18/04**	**2/27/04**	**8/17/04**	**10/14/04**
VOCs (µg/L)											
1,1-Dichloroethylene	<2.0	***1.1 J***	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	NA
Benzene	<0.80	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40	NA
cis-1,2-Dichloroethylene	***85***	***32***	***31***	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	***130***	NA
Naphthalene	<1.0	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.50	NA
Tetrachloroethylene	***12***	***21***	***15***	***2.4***	<0.50	<0.50	<0.50	<0.50	***58***	***65***	NA
Toluene	<0.80	<0.20	<0.20	<0.20	0.34	<0.20	<0.20	0.3	<0.20	<0.40	NA
trans-1,2-Dichloroethylene	<2.0	0.54 J	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	NA
Trichloroethylene	***3.1***	***5.6***	***5.2***	<0.20	<0.20	<0.20	<0.20	<0.20	*0.9*	*12*	NA
Vinyl chloride	***200***	***14***	***12***	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40	NA
Xylenes, Total	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	NA
Total Organic Carbon (mg/L)	NA	5.86	41.5	7.4 B	5.8	NA	NA	NA	2.5	16	240
Dissolved Gases (µg/L)											
Ethane	NA	63	99	<0.005	0.041	NA	NA	NA	0.019	<0.005	NA
Ethene	NA	35	24	<0.005	0.059	NA	NA	NA	0.036	0.065	NA
Methane	NA	1,800	2,500	0.18	1.6	NA	NA	NA	1.1	110	NA
Field Parameters											
Dissolved Oxygen (mg/L)	NA	0.18	0.44	4.83	5.83	6.55	1.19	3.85	NA	5.06	NA
ORP (mV)	NA	-119.8	-169.34	45.9	79.2	169.4	-49.4	-47.8	NA	12.1	NA
pH	NA	6.54	6.63	7.84	7.97	7.99	7.9	7.46	NA	6.82	NA
Specific Conductance (uS/cm)	NA	3,498	4,584	365	406	409	436	373	NA	911	NA
Temperature (C)	NA	14.63	16.55	13.14	12.53	13.47	12.97	12.82	NA	15.68	NA

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

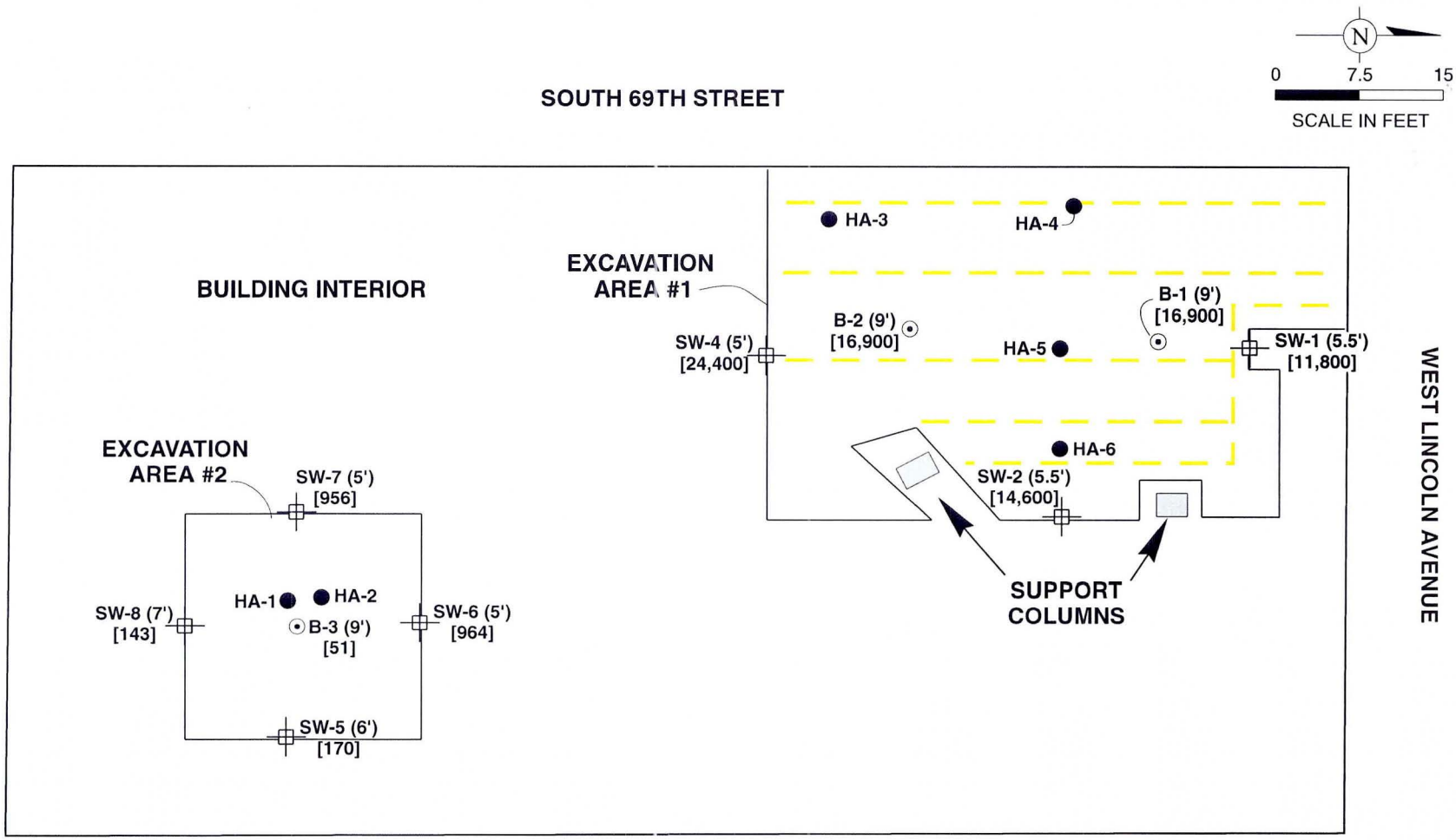
ARCADIS

Table 2. Summary of Groundwater Monitoring Data for Former Getz Property, West Allis, Wisconsin.

Well Name	IW-5 (continued)						
Sample Date	**11/18/04**	**3/2/05**	**1/12/06**	**4/25/06**	**7/26/06**	**7/26/06 (dup)**	**10/25/06**
VOCs (µg/L)							
1,1-Dichloroethylene	<1.0	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
Benzene	<0.40	<0.40	<0.20	<0.20	<0.20	<0.40	<0.20
cis-1,2-Dichloroethylene	***13***	3.9	***12***	3	2.5	2.9 J	3.8
Naphthalene	<0.50	<0.50	<0.25	<0.25	<0.25	<0.50	<0.25
Tetrachloroethylene	***4***	***75***	***93***	***91***	***130***	***110***	***150***
Toluene	<0.40	<0.40	<0.20	<0.20	<0.20	<0.40	<0.20
trans-1,2-Dichloroethylene	<1.0	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
Trichloroethylene	***1.3***	***3***	***8.2***	***3.8***	***3.7***	***3.2***	***4.2***
Vinyl chloride	***4.4***	***2.2***	***1.2***	***0.46 J***	***0.39 J***	<0.40	***0.6 J***
Xylenes, Total	<1.0	<1.0	<0.50	<0.50	<0.50	<1.0	<0.50
Total Organic Carbon (mg/L)	160	2.7 M	2.82	2.14	2.47	NA	1.27
Dissolved Gases (µg/L)							
Ethane	0.077	NA	4.5	0.94	0.38	NA	1.1
Ethene	2.7	NA	3.6	2.5	1	NA	2.6
Methane	16,000	NA	4,500	3,900	600	NA	610
Field Parameters							
Dissolved Oxygen (mg/L)	0.1	0.53	3.85	5	4.57	NA	3.2
ORP (mV)	-111.9	-89	228.3	12.3	49.7	NA	-33.5
pH	6.14	6.44	7.01	6.79	6.79	NA	7.21
Specific Conductance (uS/cm)	2,225	708	2,444	2,715	2,409	NA	3,203
Temperature (C)	14.81	10.25	11.73	9.58	17.77	NA	16.4

100	Concentration exceeds the NR 140 Preventive Action Limit (PAL).
100	Concentration exceeds the NR 140 Enforcement Standard (ES).
B	Blank is contaminated.
C	Celsius.
L	Common lab solvent and contaminant.
M	Matrix interference.
mV	Millivolts.
mg/L	Milligrams per liter.
µg/L	Micrograms per liter.
µS/cm	Microsiemens per centimeter.
NA	Not analyzed.
NE	Not established.
Q	Result is between the limit of detection and the limit of quantitation.
VOCs	Volatile organic compounds.

DWG DATE: 13MAY05	PN: REINHART\WI1027\GETZ	FILE NO.: GRAPHICS	DRAWING: EXCA_SOIL.AI	CHECKED: DMG	APPROVED:	DRAFTER: LMB



LEGEND

- ● PRE-REMEDIAL HAND AUGER BORING LOCATION
- (5') EXCAVATION SIDEWALL SAMPLE (DEPTH)
- (9') EXCAVATION BASE SAMPLE (DEPTH)
- [170] Tetrachloroethene (PCE) Soil Concentration (ug/kg)

No sidewall sample was collected from west sidewall of Excavation #1 because foundation wall extended to base of excavation.

- — — — INJECTION GALLERY

ARCADIS

EXCAVATION SAMPLE LOCATIONS AND POST-REMEDIAL PCE SOIL CONCENTRATIONS

NORMAN GETZ PROPERTY
6854 W. BELOIT ROAD
WEST ALLIS, WISCONSIN

FIGURE
1

DRAFTER: LMB | APPROVED: | CHECKED: DMG | DRAWING: MW_IW_0107.AI | FILE NO.: GRAPHICS | PN:REINHART\WI1027\GETZ | DWG DATE: 01FEB07

N

0 15 30

APPROXIMATE SCALE IN FEET

FILIPPO'S RESTAURANT
6915 W. LINCOLN AVE.

KRUETER'S
6900 W. LINCOLN AVE.

MW-7

SOUTH 69TH STREET

MW-8

MANHOLE

MANHOLE

MANHOLE

SOUTH 69TH STREET (60' R.O.W.)

MW-11

MANHOLE

COLLECTORS EDGE
6854 W. LINCOLN AVE.

MANHOLE

IW-7 IW-8 PZ-1

ROOF DRAIN

IW-4 IW-5 IW-6 MW-2 IW-3

CONC. RAMP

MW-10 CONCRETE WALK IW-9 IW-10 IW-11 IW-1

MW-9

TELE. PED

HA-3 HA-4 MW-3 IW-2

MANHOLE

WEST LINCOLN AVENUE (VAR. R.O.W.)

MW-4

HA-5

HA-6

SOUTH SECTION OF BUILDING REMOVED

MASONRY BUILDING

MW-1

ASPHALT

HA-1 HA-2

GAS METER

ROOF DRAIN

CONC.

MW-6

GP-1 MW-5

CONC. CURB

CONCRETE WALK

WEST BELOIT ROAD (110' R.O.W.)

LEGEND

- INJECTION WELL LOCATION
- MONITORING WELL LOCATION
- ABANDONED MONITORING WELL LOCATION
- GEOPROBE BORING LOCATION
- PIEZOMETER LOCATION
- HAND AUGER BORING LOCATION
- CATCH BASIN
- UNDERGROUND COMMUNICATION LINE
- OVERHEAD COMMUNICATION LINE
- UNDERGROUND COMBINED SANITARY/STORM SEWER LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND WATER LINE
- UNDERGROUND GAS LINE

ARCADIS

MONITORING AND INJECTION WELL LOCATIONS

NORMAN GETZ PROPERTY
6854 W. BELOIT ROAD
WEST ALLIS, WISCONSIN

FIGURE
2

DRAFTER: LMB | APPROVED: | CHECKED: DMG | DRAWING: VOC CON_1006.AI | FILE NO.: GRAPHICS | PN:REINHARTWI10027GETZ | DWG DATE: 07FEB07

MW-8

	2/2/04	1/12/06
PCE	<0.5	<0.5
TCE	<0.2	<0.2
cis-DCE	<0.5	<0.5
VC	<0.2	<0.2
Ethene	<0.005	<0.025

FILIPPO'S RESTAURANT
6915 W. LINCOLN AVE.

MW-7

	2/2/04	1/12/06
PCE	<0.5	<0.5
TCE	0.32	<0.2
cis-DCE	<0.5	<0.5
VC	<0.2	<0.2
Ethene	<0.005	<0.025

KRUETER'S
6900 W. LINCOLN AVE.

MW-7

SOUTH 69TH STREET

MW-8

MW-2

	2/3/04	3/22/04	4/21/04	5/18/04	8/16/04	11/17/04	3/2/05	1/12/06	4/25/06	7/26/06	10/25/06
PCE	30,000	7,100	970	160	28	<160	<250	<20	<20	<100	<100
TCE	7.7	<32	190	290	16	<64	<100	<8.0	12 J	<40	<40
cis-DCE	<100	<80	150	370	20,000	33,000	65,000	3,300	12,000	23,000	7,500
VC	<0.20	<32	<4.0	<2.0	350	3,800	3,000	1,500	1,300	8,100	3,200
Ethene	<0.005	0.18	0.12	1.1	78	500	NA	2,700	1,300	3,700	1,300

MW-11

	2/27/04	3/22/04	4/21/04	5/18/04	6/17/04	8/17/04	11/17/04	3/2/05	1/12/06	4/25/06	7/26/06	10/25/06
PCE	5,200	1,600	2,300	<50	<1,000	<200	<250	<100	14	12	21	15
TCE	170	110	350	280	<400	350	<100	<40	3.1	2.7	5.6	5.2
cis-DCE	1,600	740	6,100	87,000	86,000	28,000	110,000	8,300	18	97	32	31
VC	32	16	43	150	<400	100	20,000	11,000	5.2	220	14	12
Ethene	0.51	0.26	2.3	17	NA	33	1,200	NA	43	450	35	24

SOUTH

MANHOLE

MANHOLE

COLLECTORS EDGE
6854 W. LINCOLN AVE.

CONC. CURB

MW-9

	2/3/04	1/12/06
PCE	<0.5	<0.5
TCE	<0.2	<0.2
cis-DCE	<0.5	<0.5
VC	<0.2	<0.2
Ethene	<0.005	1.5

MW-9

MW-11

MANHOLE

PZ-1

ROOF DRAIN

MW-10 IW-5 MW-2

CONCRETE WALK

MW-3

MANHOLE

WEST LINC

IW-5

	8/17/04	11/18/04	3/2/05	1/12/06	4/25/06	7/26/06	10/25/06
PCE	65	4	75	93	91	130	150
TCE	12	1.3	3	8.2	3.8	3.7	4.2
cis-DCE	130	13	3.9	12	3	2.5	3.8
VC	<0.40	4.4	2.2	1.2	0.46 J	0.39 J	0.6 J
Ethene	0.065	2.7	NA	3.6	2.5	1	2.6

TELE. PED

MW-4

MW-1

ASPHALT

MASONRY BUILDING

MW-4

	2/4/04	3/23/04	5/19/04	6/21/04	8/17/04	11/18/04	1/12/06	4/25/06	7/26/06	10/25/06
PCE	2.1	1.8	6.4	<80	<25	<25	2.1 J	<1.0	3 J	1.1 J
TCE	2.7	0.44	24	<32	<10	<10	0.98 J	<0.40	2.2 J	1.4
cis-DCE	1.9	1.4	21,000	10,000	3,100	1,200	170	160	130	86
VC	1.2	<0.20	1	<32	77	42	34	95	45	45
Ethene	<0.005	0.097	0.24	NA	42	100	19	120	60	63

ROOF DRAIN

GAS METER

MW-6

MW-5

CONC. CURB

/AR. R.O.W.)

CONCRETE WALK

WEST BELOIT ROAD (110' R.O.W.)

MW-3

	9/4/03	12/3/03	2/3/04	3/22/04	4/21/04	5/19/04	8/17/04	11/17/04	3/11/05	1/12/06	4/25/06	7/26/06	10/25/06
PCE	13,000	2,900	4,800	5,900	8,600	6,700	<400	<400	960	3,200	2,700	3,100	9,000
TCE	100	2,200	750	1,000	620	650	<160	<160	350	280	490	350	730
cis-DCE	230	24,000	24,000	19,000	19,000	34,000	70,000	25,000	120,000	7,700	9,800	7,000	2,100
VC	<25	<64	640	1,200	780	380	17,000	36,000	36,000	6,000	3,300	2,000	620
Ethene	2.6	3.8	28	84	220	1,600	2,000	7,100	NA	5,900	7,100	7,600	3,000

Pilot Study Injection

Initial Injection

LEGEND

cis-DCE	cis-1,2-Dichloroethene
PCE	Tetrachloroethene
TCE	Trichloroethene
VC	Vinyl Chloride
NA	Not Analyzed

- MONITORING WELL LOCATION
- ABANDONED MONITORING WELL LOCATION
- INJECTION WELL LOCATION
- PIEZOMETER LOCATION
- CATCH BASIN
- UNDERGROUND COMMUNICATION LINE
- OVERHEAD COMMUNICATION LINE
- UNDERGROUND COMBINED SANITARY/STORM SEWER LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND WATER LINE
- UNDERGROUND GAS LINE
- 1,070 CONCENTRATION EXCEEDS NR 140 ES
- 1.25 CONCENTRATION EXCEEDS NR 140 PAL

ALL CONCENTRATIONS EXPRESSED IN MICROGRAMS PER LITER (ug/l).

Note: Pilot study injection near MW-3 occurred on November 7, 2003. Full scale injections were initiated on March 1, 2004. Baseline groundwater samples collected in February 2004.

N

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APPROXIMATE SCALE IN FEET

ARCADIS

CHLORINATED VOC AND ETHENE GROUNDWATER CONCENTRATIONS OVER TIME

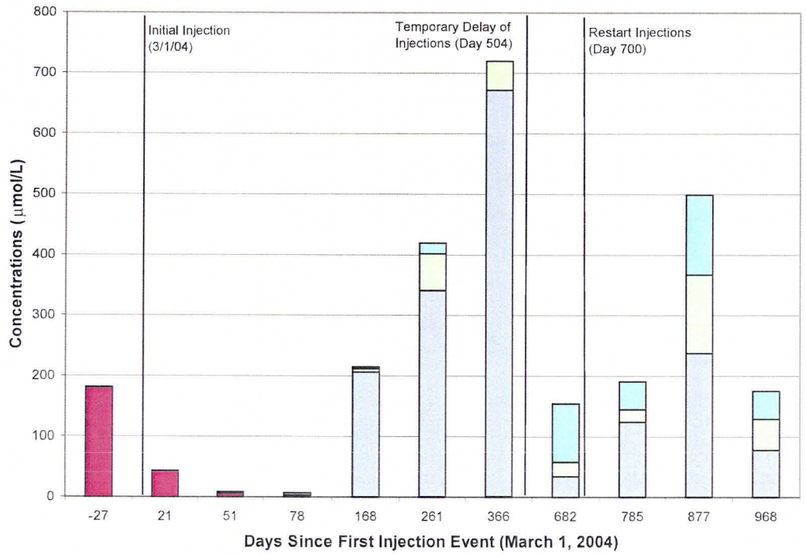
6854 W. BELOIT ROAD
WEST ALLIS, WISCONSIN

FIGURE 3

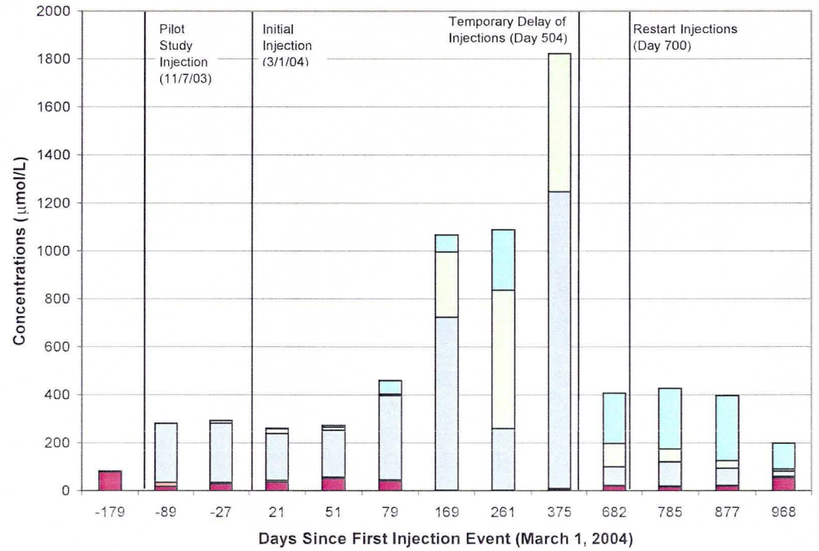
DRAWING: MONITOR_DATA_0107.AI | CHECKED: DMG | APPROVED: | DRAFTER: LMB

DWG DATE: 16JAN07 | PN: REINHARTWI1027\GETZ | FILE NO.: GRAPHICS

MW-2 Groundwater Concentrations

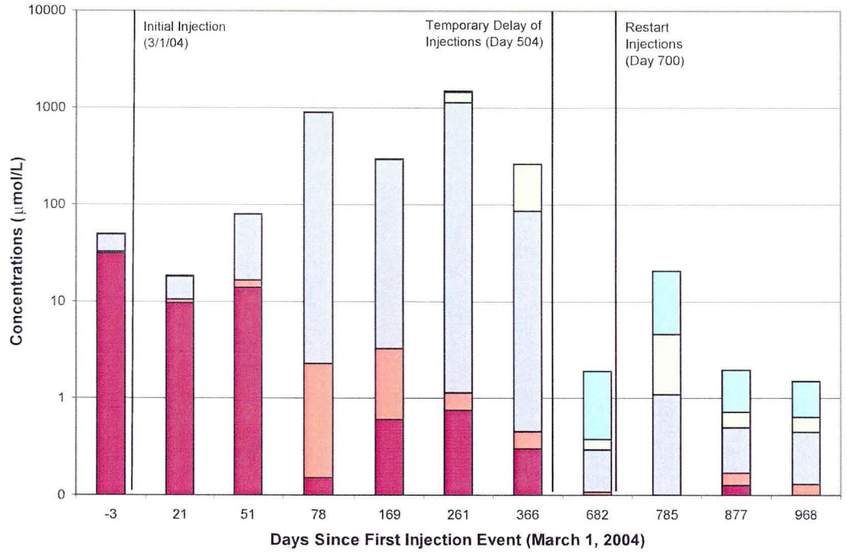


MW-3 Groundwater Concentrations



Ethene
VC
cis-1,2-DCE
TCE
PCE

MW-11 Groundwater Concentrations



Dechlorination Sequence
PCE → TCE → DCE → VC → Ethene

LEGEND

VC	Vinyl chloride
DCE	Dichloroethene
TCE	Trichloroethene
PCE	Perchlorothene
µmol/L	Micromoles per liter

Note: Ethene data was not collected from MW-2 and MW-11 on Day 366, nor from MW-3 on Day 375.

aproject/reinhart/wi1027/getz/working/gwmw_graphs_oct06

ARCADIS

GROUNDWATER REMEDIATION PERFORMANCE MONITORING DATA

6854 W. BELOIT ROAD
WEST ALLIS, WISCONSIN

FIGURE
4