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# GILES

## ENGINEERING ASSOCIATES, INC.

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

March 11, 2010

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Wisconsin Department of Natural Resources  
2300 North Dr. Martin Luther King Drive  
Milwaukee, WI 53212

Attention: Ms. Shanna Laube-Anderson

Subject: Site Investigation Results Summary  
Martinizing Dry Cleaning Site  
1730 State Street  
Racine, Wisconsin  
Project No. 1E-0909013

Dear Ms. Laube:

Giles Engineering Associates, Inc. (Giles) has prepared this Site Investigation (SI) Results Summary on behalf of Mr. Douglas Berry, owner of Martinizing Racine (herein referred to as the "Site"), located at 1730 State Street, in Racine, Wisconsin (Figure 1). This SI Summary was prepared to provide the Wisconsin Department of Natural Resources (WDNR) with a status update, and request for technical assistance for future work, prior to preparing the SI report.

The SI activities were performed in accordance with Giles SI Work Plan dated January 20, 2010 and in general accordance with the requirements of Wisconsin Admin. Code (WAC), Chapter NR 716 and Chapter NR 169.

### Site Location and Setting

The Site is located in the NE ¼ of the SE ¼ of Section 8, Township 3 North, Range 23 East of U.S. Public Land Survey, at 42.7337 degrees latitude and 87.8023 degrees longitude of the North American Datum (NAD83), in the City of Racine, Racine County, Wisconsin. The Site is located at 1730 State Street, Racine, Wisconsin. Figure 1 illustrates the general location of the Site.

### SI Scope of Services Completed

- Completed five soil borings (MW-1 through MW-4 and TW-1) to a common depth of 16 feet below ground surface (bgs) on January 21, 2010 (Figure 2). MW-1 was completed within the building to evaluate the magnitude and extent of soil impact beneath the building floor slab, proximate to the dry cleaning machine (DCM). Four additional exterior soil borings (MW-2 through MW-4 and TW-1) were completed to evaluate the lateral extent of soil impact.
- Collected soil samples continuously for visual evaluation, and field screening for the presence of volatile organic vapors utilizing a Photoionization detector (PID).
- Submitted eight soil samples from each soil boring to a Wisconsin Licensed Analytical Laboratory for analysis of VOCs by U.S. EPA Method 8260.
- Containerized investigative soil cuttings in 55-gallon DOT approved drums and staged them on-Site.
- Constructed Ch. NR 141-compliant to water table monitoring wells in soil borings MW-1 through MW-4; a temporary well was installed in soil boring TW-1. The monitoring well locations were established to assess the horizontal extent of groundwater impact, and to establish the direction of groundwater flow for the Site.
- Developed the monitoring wells in accordance with WAC, Chapter NR 141. Monitoring well development/purge water was containerized in 55-gallon DOT-approved drums, and staged on-Site.
- Completed an initial groundwater sampling event on February 8, 2010. Five groundwater samples were collected from the newly established monitoring wells using low-flow sampling techniques. Low-flow sampling will be performed with a positive displacement pump. The groundwater samples were submitted to a Wisconsin Licensed Analytical Laboratory for analysis of VOCs by U.S. EPA Method 8260.



## Results

### Soil Results

Volatile organic vapors were detected in soil samples ranging from no detection to 420 instrument units in soil samples collected from MW-1, MW-2, and TW-1. Volatile organic vapors were not detected in soil samples collected from borings MW-3 and MW-4.

Tetrachloroethene (PCE) and Trichloroethene (TCE) were reported in soil samples from boring MW-2 at a depth of 0 to 2 feet bgs at concentrations in exceeding the WDNR Landfill Non-Hazardous Disposal Limit. PCE was reported in soil samples from boring MW-2 at a depth of 6 to 8 feet bgs at a concentration in exceeding the WDNR Landfill Non-Hazardous Disposal Limit. PCE and TCE were reported in soil samples from MW-1 at 10 to 12 feet bgs at levels exceeding their respective U.S. EPA calculated soil screening levels. Additional VOCs were detected at levels below regulatory standards or with no established standard to compare to. Soil analytical results are summarized in the attached Table 1.

### Groundwater Results

PCE and TCE were detected in groundwater samples collected from MW-1 through MW-4 at levels exceeding their respective Ch. NR 140 Enforcement Standards (ES). Vinyl chloride was detected in groundwater samples collected from MW-1 through MW-3 and TW-1 at levels exceeding the NR 140 ES. Cis-1,2 dichloroethene (cis-1,2 DCE) was detected in groundwater samples collected from MW-1 and MW-2 at levels exceeding the NR 140 ES; cis-1,2 DCE was detected in samples from MW-3, MW-4, and TW-1 at concentrations exceeding the Ch. NR 140 preventive action limit (PAL). Trans-1,2-dichloroethene (Trans - 1,2 DCE) was also detected in the groundwater samples from MW-2 at a concentration exceeding the Ch. NR 140 PAL. Groundwater analytical results are summarized in the attached Table 2.

The direction of Groundwater flow is inferred to be south-southeast, toward the Root River. A groundwater elevation summary is included in the attached Table 3.



## Summary

VOCs-impacted soil is present at the five boring locations. The highest concentrations were observed in association with MW-2, located at the rear of the building.


Groundwater impacted with VOCs was also present at the five boring locations. The highest groundwater detections were associated with monitoring well MW-2.

Review of the attached Graph 1 illustrates the log of PCE concentration (for groundwater) versus distance for the source area (MW-2) and a down-gradient well (MW-3) suggests that the leading edge of the groundwater plume (at 5.0 ug/l) is approximately 180 feet from the source area.

Please contact the undersigned with any questions.

Very truly yours,

GILES ENGINEERING ASSOCIATES, INC.



Kevin T. Bugel, P.G., C.P.G.  
Environmental Division Manager

Attachments: Figure 1; Site Location Map  
Figure 2; Site Plan  
Table 1; Soil VOC Analytical Results  
Table 2; Groundwater Analytical Results  
Table 3; Groundwater Elevation summary  
Graph 1; Log of PCE concentration versus Distance

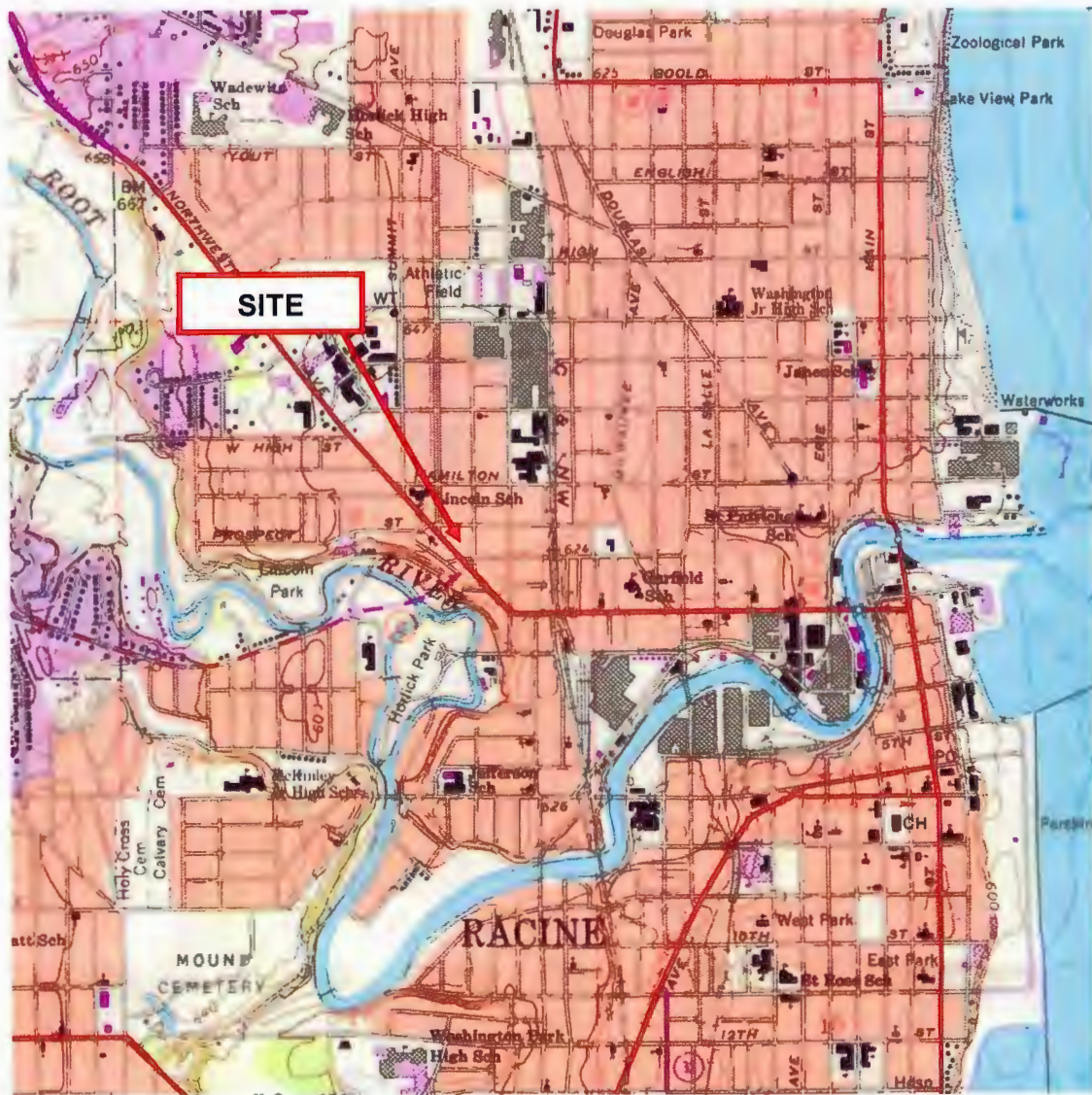
Distribution: Wisconsin Department of Natural Resources  
Attn: Ms. Shanna Laube-Anderson (1)

BMP Reality  
Attn: Mr. Douglas Berry (1)

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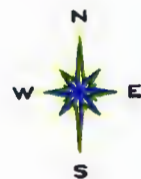
Martinizing Racine SI Summary





Source: USGS Racine South, Wisconsin 7.5-Minute Series (topographic) Quadrangle Map (1958; photorevised in 1971 and 1976)

Scale: 1:24,000  
 Contour Interval: 10 Feet



**FIGURE 1**  
**SITE LOCATION MAP**

**Martinizing Racine**  
 1730 State Street  
 Racine, Wisconsin  
 Project No. 1E-0909013



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**LEGEND:**

MW-1 	GROUNDWATER MONITORING WELL
TW-1 	SOIL BORING / TEMPORARY WELL

**NOTES:**  
1.) BASE MAP DEVELOPED FROM AERIAL PHOTOGRAPHY.


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 N8 W22350 JOHNSON DRIVE, SUITE A1  
 WAUKESHA, WI 53186 (262)544-0118

**FIGURE 2  
SITE PLAN  
MARTINIZING  
1730 STATE STREET  
RACINE, WISCONSIN**

DESIGNED	DRAWN	SCALE	DATE	REVISED
KTB	JSZ	approx. 1"=30'	03-11-10	-
PROJECT NO.: 1E-0909013			CAD No. 1E0909013B	

**TABLE 1**  
**SOIL ANALYTICAL RESULTS (TPH and VOCs)**

Martinizing Racine  
1730 State Street  
Racine, Wisconsin  
1E-0909013

Analyte	Sample Location								NR 720.09 RCLs	NR 746.06 Table 1 (Product Indicator)	Calculated EPA SSL	WDNR Landfill Disposal Limit Contaminated- Out Non- Hazardous
	TW-1	MW-1	MW-1	MW-2	MW-2	MW-3	MW-4	MW-4				
Sample Depth (feet)	6 - 8	0 - 2	10 - 12	0 - 2	6 - 8	2 - 4	2 - 4	10 - 12				
Sample Date	1/21/10	1/21/10	1/21/10	1/21/10	1/21/10	1/21/10	1/21/10	1/21/10				
PID	14	11	12	420	42	BDL	BDL	BDL				
<b>Detected VOCs (µg/kg)</b>												
sec-Butylbenzene	130	29	<58	<14000	<300	<27	<31	<29	6,000	8,500	NC	NS
cis-1,2-Dichloroethene	<29	7300	1900	19000	<300	<27	<31	34	NS	NS	156,000	NS
trans-1,2-Dichloroethene	<29	45	<58	<14000	<300	<27	<31	<29	NS	NS	NC	NS
Ethylbenzene	<29	41	<58	<14000	<300	<27	<31	<29	2,900	4,600	NC	NS
Isopropylbenzene	110	<28	<58	<14000	<300	<27	<31	<29	NS	NS	NC	NS
p-Isopropyltoluene	<29	61	<58	<14000	<300	<27	<31	<29	NS	NS	NC	NS
Naphthalene	<58	340	<120	<28000	<610	230	<63	<57	NS	2,700	NC	NS
n-Propylbenzene	62	41	<58	<14000	<300	<27	<31	<29	NS	NS	NC	NS
Tetrachloroethene	41	570	#10000#	{5200000}	{59000}	33	73	82	NS	NS	1,230	33,000
Toluene	<29	32	<58	<14000	<300	<27	<31	<29	1,500	36,000	NC	NS
Trichloroethene	<29	83	#2700#	{420000}	2200	<27	<31	<29	NS	NS	850	14,000
1,2,4-Trimethylbenzene	<29	320	<58	<14000	<300	<27	<31	<29	NS	NS	NC	NS
1,3,5-Trimethylbenzene	<29	110	<58	<14000	<300	<27	<31	<29	NS	NS	NC	NS
Vinyl chloride	<41	210	<82	<20000	<420	<38	<44	<40	NS	NS	NC	NS
total Xylenes	<99	220	<200	<47000	<1000	<93	<110	<98	4,100	42,000	NC	NS

**NOTES:**

PID: Photoionization Detector

BDL: Below Detection Limit

TPH: Total Petroleum Hydrocarbons (TX 1005 Method)

VOCs: Volatile organic compounds

ODEQ: Oklahoma Department of Environmental Quality

mg/kg: Milligrams per kilogram; equivalent to parts per million (ppm)

µg/kg: Micrograms per kilogram; equivalent to parts per billion (ppb)

J: Result is below the method quantitation limit (MQL)

Results indicated in red/underlined exceed the Tier 1 Generic Cleanup Level (Residential)

Results indicated in purple/{...} exceed the WDNR landfill standard for Contaminated-Out, Non-Hazardous Material

Results indicated in brown/#...# exceed the Calculated Soil Screening Level Using the US EPA Web-based Calculator

**TABLE 2  
GROUNDWATER ANALYTICAL RESULTS  
(Detected VOCs)**

Martinizing Racine  
1730 State Street  
Racine, Wisconsin  
Project No. 1E-0909013

Analyte	SAMPLE LOCATION					NR140 ES	NR 140 PAL
	MW-1	MW-2	MW-3	MW-4	TW-1		
Sample Date	02/08/10	02/08/10	02/08/10	02/08/10	02/08/10		
Benzene	<3.2	<2.0	<0.40	<1.0	(1.6)	5	0.5
n-Butylbenzene	<3.2	<2.0	<0.40	<1.0	1.1	NS	NS
sec-Butylbenzene	<4.0	<2.5	<0.50	<1.2	1.2	NS	NS
1,1-Dichloroethane	<8.0	11j	<1.0	<2.5	<0.5	850	85
cis-1,2-Dichloroethene	<u>1,000</u>	<u>2,600</u>	(20)	(13)	(17)	70	7
trans-1,2-Dichloroethene	12j	(20)	<1.0	<2.5	0.61j	100	20
Isopropylbenzene	<3.2	<2.0	<0.40	<1.0	3.7	NS	NS
Naphthalene	<4.0	<2.5	<0.50	<1.2	0.72j	40	8
n-Propylbenzene	<8.0	<5.0	<1.0	<2.5	4.1	NS	NS
Tetrachloroethene	<u>280</u>	<u>11,000</u>	<u>210</u>	<u>130</u>	(3.0)	5	0.5
Trichloroethene	<u>61</u>	<u>4,200</u>	<u>61</u>	<u>27</u>	<0.2	5	0.5
Vinyl chloride	<u>71</u>	<u>110</u>	<u>0.84j</u>	<1.0	<u>7.0</u>	0.2	0.02

**NOTES:**

VOCs: Volatile Organic Compounds

NS: No published NR 140 ES or PAL

Results presented in micrograms per liter (µg/L); equivalent to parts per billion (ppb)

j: Result detected between laboratory method detection limit and quantitation limit

NR: Natural Resources

ES: Enforcement Standard

PAL: Preventive Action Limit

Results indicated in red/underline exceed the Wisconsin Administrative Code NR 140 Enforcement Standard (ES)

Results indicated in blue/parenthesis are above the Wisconsin Administrative Code NR 140 Preventive Action Limits (PAL)



**Table 3  
Groundwater Elevation Summary**

Martinizing Cleaners  
1730 State Street  
Racine, Wisconsin  
Giles Project No. 1E-0909013

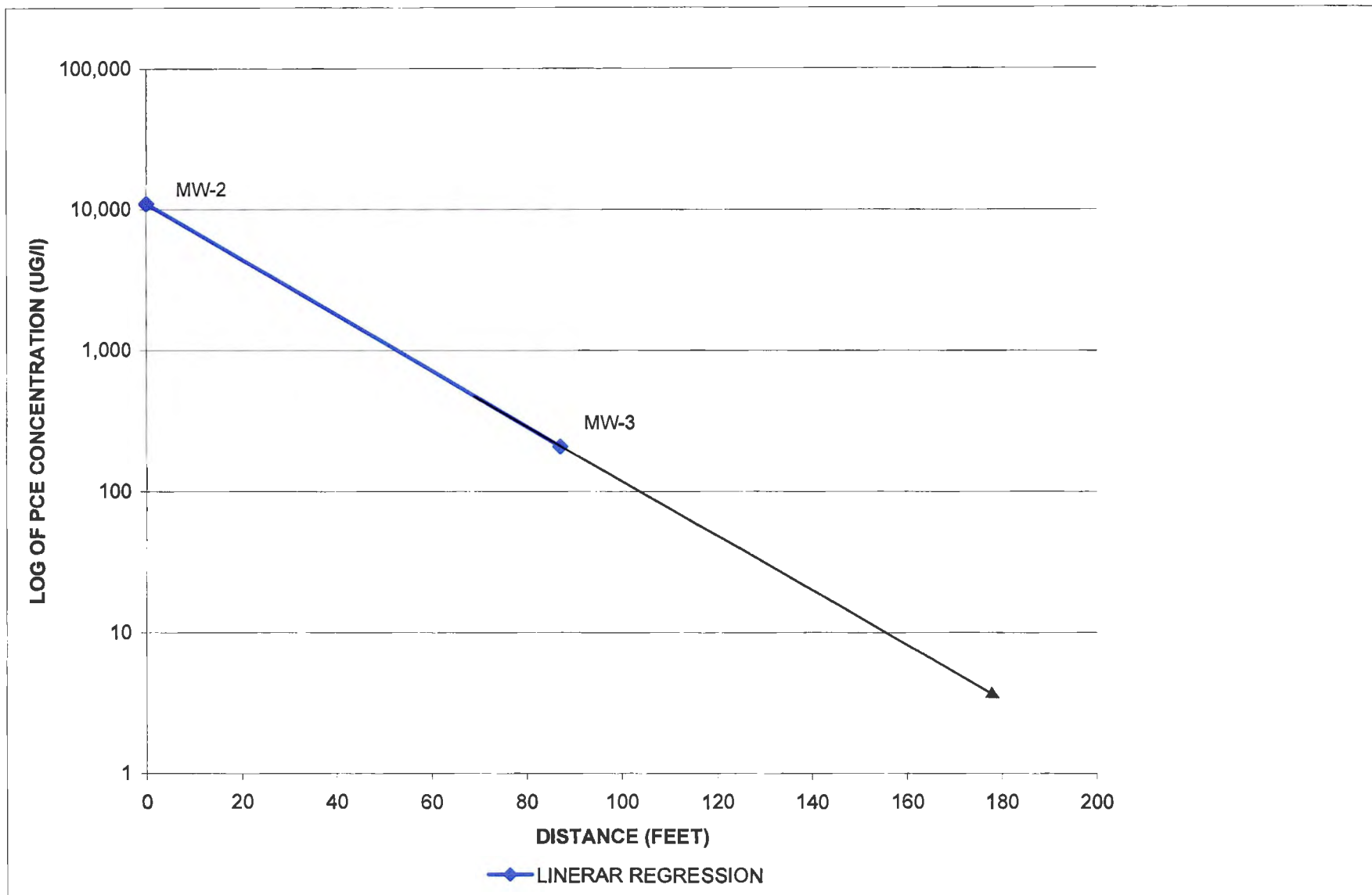
Well ID	Elevation (TOC)*	Elevation Ground Surface	Well Depth	Screen Length	Groundwater Depth (TOC)	Calculated Groundwater Elevation	Change in Elevation	Feet Water in Well	Date
MW-1	101.73	101.81	16.00	10.00	4.39	97.34		11.61	02/08/2010
					4.09	97.64	0.30	11.91	02/26/2010
MW-2	101.54	101.85	16.00	10.00	4.25	97.29		11.75	02/08/2010
					3.06	98.48	1.19	12.94	02/26/2010
MW-3	101.33	101.56	13.00	10.00	4.45	96.88		11.55	02/08/2010
					4.14	98.39	1.51	11.86	02/26/2010
MW-4	102.53	102.82	16.00	10.00	4.61	97.92		11.39	02/08/2010
					3.46	99.07	1.15	12.54	02/26/2010

Notes:

TOC: Top of Casing

\*\*\*: Temporary benchmark referenced to rim of a manhole located on the Centerline of Wisconsin Avenue, west of the Imperial Cleaners

GRAPH 1  
LOG OF PCE CONCENTRATION VERSUS DISTANCE  
MARTINIZING RACINE  
1730 STATE STREET  
RACINE, WI  
1E-0909013



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