A Department of Ecology Report

Lakewood Plaza Cleaners January and August 2000

Groundwater Monitoring Sampling Results

Abstract

This progress report is one in a series describing results of long-term groundwater sampling at Lakewood Plaza Cleaners in south Tacoma. Results of volatile organics of samples collected from two municipal wells and eight monitoring wells in January and August 2000 are included.

- Monitoring wells MW-20B and MW-16A, as well as municipal wells H1 and H2, continue to have tetrachloroethene (PERC) concentrations exceeding the Model Toxic Control Act (MTCA) cleanup standard of 5.0 ug/L. PERC concentrations in these wells during the past year of sampling were 184 ug/L and 648 ug/L (MW-20B), 22 ug/L and 40 ug/L (MW-16A), and 8.7 ug/L and 10 ug/L (H1 and H2).

- Trichloroethene (TCE) was detected in MW-20B in January at a concentration of 6 ug/L, which exceeds the MTCA cleanup standard for TCE of 5.0 ug/L. TCE was not detected in MW-20B in August, possibly due to a high quantitation limit (200 ug/L).

- Cis-1,2-dichloroethene (cis-1,2-DCE) was detected in wells MW-20B (13 ug/L) and MW-16A (0.7 ug/L and 1.9 ug/L).

Overall, concentrations are similar to those reported in previous sampling rounds.

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Background

In 1981 the U.S. Environmental Protection Agency (EPA) confirmed that the Lakewood Water District production wells H1 and H2 (Pierce County, Washington) were contaminated with tetrachloroethene, trichloroethene, and 1,2-dicloroethene. The source of the contamination was identified as the Lakewood Plaza Cleaners. In 1991 the Washington State Department of Ecology (Ecology) began semi-annual, long-term groundwater monitoring at the site.

The objective of this sampling is to collect groundwater quality data for Ecology's Toxics Cleanup Program in order to evaluate the effectiveness of Lakewood water supply wells H1 and H2 to contain and remove contaminated groundwater caused by Plaza Cleaners. In 1996 the monitoring program was evaluated. Based on data collected from 1986 to 1996, it was decided to decommission half of the remaining wells and also reduce the monitoring program to wells in the immediate vicinity of Plaza Cleaners. The next round of sampling for this program is scheduled for January 2001.

Methods

Groundwater Sampling

In January 2000, groundwater samples were collected from one municipal well, H2, as well as four monitoring wells, MW-16A, MW-20A, MW-20B, and MW-27. In August 2000, groundwater samples were collected from one municipal well, H1, as well as eight monitoring wells, MW-16A, MW-20A, MW-20B, MW-27, MW-32, MW-33, MW-40 and MW-41 (Figure 1). All but one of the wells is screened in the Advanced Outwash deposits, which is the primary aquifer for the area. Well MW-20B is screened in the Vashon Till, which forms an aquitard over most of the site.

Sampling methods were consistent with those previously used on this project. Static water levels were recorded prior to well purging. Wells were purged until pH, specific conductance, and temperature readings stabilized, and a minimum of three well volumes had been removed. All monitoring wells, except MW-20B, were purged and sampled using dedicated bladder pumps. Well MW-20B was purged and sampled with a decontaminated Teflon bailer. Municipal wells H1 and H2, which pump continuously, were sampled from taps nearest the well. Sampling procedures are discussed in detail in Appendix A.

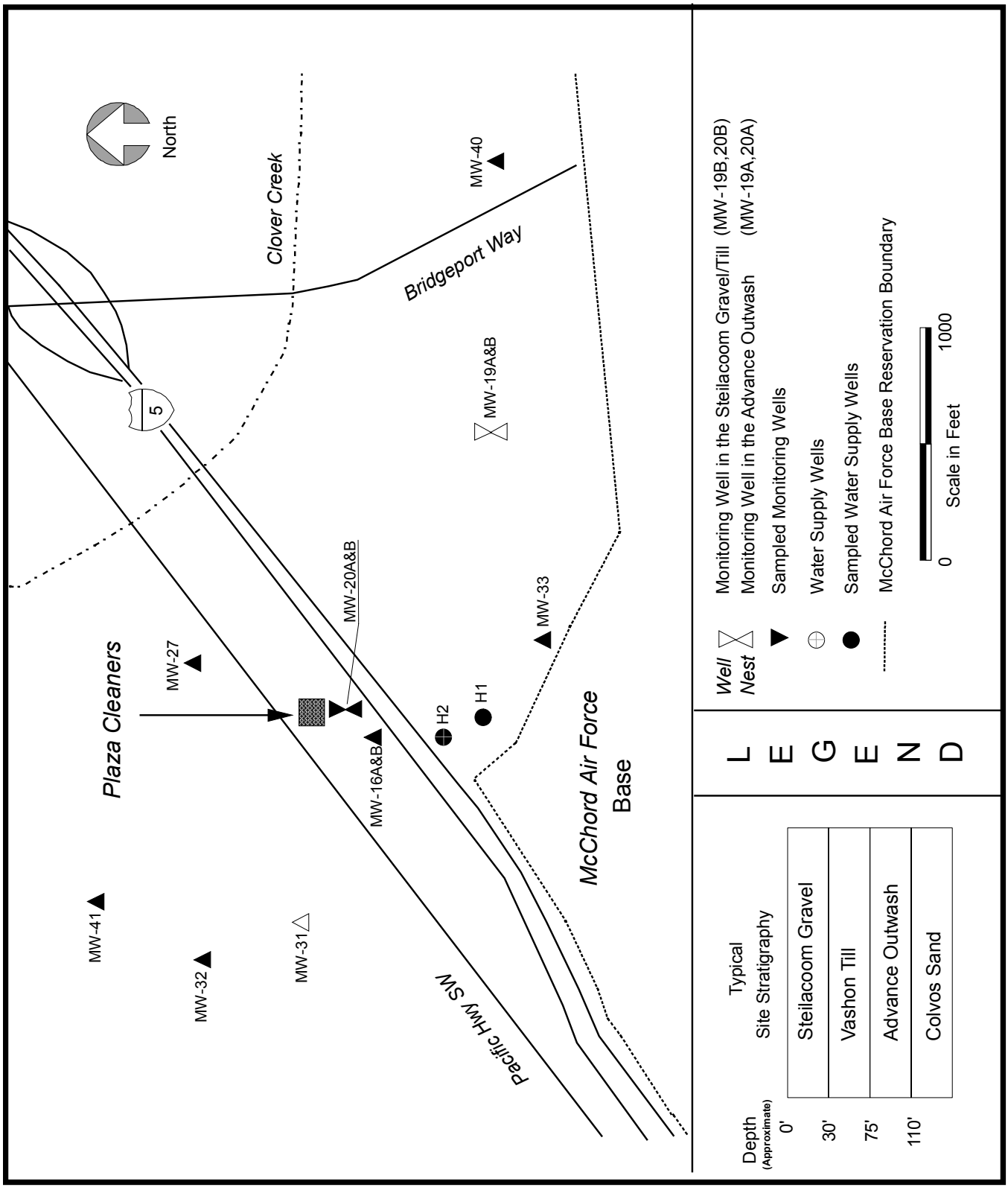


Figure 1. Well Location Map - Lakewood/Plaza Cleaners

Analysis

Analytes, analytical method and detection limits for both field and laboratory parameters are listed in Table 1. All groundwater samples were analyzed for volatile organics.

Table 1: Analytical Methods for January and August 2000 Samples

Analytes	Method	Reference	Detection Limit
Field			
Water Level	Solinst Well Probe	NA	0.01 feet
pH	Orion 25A Field Meter	NA	0.1 Std. Units
Temperature	Orion 25A Field Meter	NA	0.1 C
Specific Conductance	Beckman Conductivity Bridge	NA	10 umhos/cm
Laboratory			
VOAs	SW-846 Method 8260	U.S. EPA 1986	1-5 ug/L

In general, the quality of the data is acceptable. Quality control samples collected in the field consisted of blind field duplicate samples, which were obtained from well MW-16A. The numeric comparison of duplicate results is expressed as the relative percent difference (RPD). The RPD for PERC in January and August was 0% and 25%, respectively. In addition to field quality control samples, duplicate matrix spikes and surrogate compound recoveries were performed in the laboratory. Matrix spikes and surrogate recoveries were within acceptable limits for all samples. Further discussion of quality assurance is presented in Appendix B. Laboratory reporting sheets are available upon request.

Results

Field Observations

Depth-to-water measurements and purge volume, as well as pH, specific conductance, and temperature readings, at the time of sampling are listed in Table 2.

All field parameters were within expected ranges. Well MW-20A had pH readings of 7.9-8.1 standard units, which is relatively high but consistent with previous measurements. High pH readings can be related to well construction. In the case of MW-20A, it is most likely caused by bentonite inadvertently being placed within the screened interval during well construction. The specific conductance in well MW-20B (375-405 umhos/cm), which is screened in a fine-grained till unit, was approximately two times greater than the other wells. Specific conductance readings are typically higher for water from fine-grained units. The other wells are screened in an advanced outwash unit.

Table 2: Summary of Field Parameters Results for January 10 and August 1-2, 2000

Monitoring Well	Total Depth (feet)[1]	Depth to Water (feet)[2]	pH (standard units)	Specific Conductance (umhos/cm)	Temperature (°C)	Purge Volume (gallons)
January						
MW-16A	109	36.24	6.9	192	11.6	135
MW-20A	97.3	26.68	8.1	195	11.5	42
MW-20B	50.4	27.87	6.2	405	11.9	12
MW-27	96.4	++	6.2	163	11.0	30
H2	110	++	6.7	137	10.3	>1000
August						
MW-16A	109	45.06	7.3	225	14.7	125
MW-20A	97.3	36.53	7.9	229	13.0	33
MW-20B	50.4	38.39	7.1	375	13.7	11
MW-27	96.4	++	6.8	189	12.6	30
MW-32	114.4	63.08	7.0	201	12.6	15
MW-33	99.3	++	7.1	210	11.8	30
MW-40	75.1	37.82	7.0	270	12.1	21
MW-41	96.8	30.98	7.2	210	12.2	20
H1	110	++	6.2	171	12.1	>1000

[1] Measured from top of PVC casing.
[2] Measured from top of casing.
++ Dedicated pump obstructs water-level measurement.

Analytical Results

Analytical results for volatile organics (VOAs) are summarized in Table 3.

In January, tetrachloroethene (PERC), trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE) were detected in well MW-20B at concentrations of 184 ug/L, 6 ug/L, and 13 ug/L, respectively. PERC, TCE, and cis-1,2-DCE were also detected in MW-16A with concentrations of 40 ug/L, 0.65J ug/L, and 1.9 ug/L, respectively. Municipal well H2 had a PERC concentration of 10 ug/L.

In August, the PERC concentration in well MW-20B was 648 ug/L. TCE and cis-1,2-DCE were not detected in MW-20B in August due to a high quantitation limit (100-200 ug/L). TCE and cis-1,2-DCE are typically detected around 10 ug/L in MW-20B. PERC, TCE, and cis-1,2-DCE were detected in MW-16A with concentrations of 22 ug/L, 0.27J ug/L, and 0.68J ug/L, respectively. Municipal well H1 had a PERC concentration of 8.7 ug/L. PERC and TCE were detected below the practical quantitation limit of 1 ug/L in some of the wells as shown in Table 3.

Table 3: Summary of Analytical Results (ug/L) for January 10 and August 1-2, 2000

Monitoring Well	Tetrachloroethene	Trichloroethene	Cis-1,2-Dichloroethene
January			
MW-16A	40	0.65 J	1.9
MW-20A	0.2 NJ	2 U	1 U
MW-20B	184	6	13
MW-27	1 U	2 U	1 U
H2	10	2 U	1 U
August			
MW-16A	22	0.27 J	0.68 J
MW-20A	0.12 J	2 U	1 U
MW-20B	648	200 U	100 U
MW-27	1 U	2 U	1 U
MW-32	0.77 J	2 U	1 U
MW-33	1 U	2 U	1 U
MW-40	1 U	2 U	1 U
MW-41	1 U	2 U	1 U
H1	8.7	0.03 J	1 U

U : Analyte was not detected at or above the reported value.
J : Analyte was positively identified. The associated numerical result is an estimate.
NJ: There is evidence that the analyte is present. The associated numerical result is an estimate.

Table 4 summarizes PERC, TCE, and cis-1, 2-DCE concentrations for sampling events from January 1991 through August 2000. Table 5 shows PERC and TCE concentrations that have exceeded the MTCA cleanup standard of 5.0 ug/L for the same period.

PERC concentrations continue to be elevated in wells MW-20B and MW-16A. Municipal wells H1 and H2, which were added to the monitoring program in 1995, also have elevated PERC concentrations.

Figure 2 shows PERC concentrations for MW-20B and MW-16A between 1984 and 2000. Since 1984, PERC concentrations in both wells have varied substantially.

- PERC concentrations decreased initially in MW-20B from March 1985 (4800 ppb) to May 1985 (570 ppb). After May 1985, concentrations have ranged from 86 ppb to 1200 ppb. Overall, PERC concentrations have been gradually increasing the past few years.

- Over the monitoring period, PERC concentrations in MW-16A have varied. Since 1991, PERC concentrations in this well have ranged from 3 ppb to 55 ppb.

Table 4: Summary of Sample Results (ug/L) from January 1991 to August 2000

Well	January 1991			May 1991			November 1991			May 1992			December 1992		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	**28**	**1 J**	**2.4 J**	**26**	**0.6 J**	**2**	**2.7 J**	1 U	**0.6 J**	**7**	1 U	**1**	**9 J**	**0.3 J**	**0.8 J**
MW-20A	1 U	1 U	1 U	**0.4 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.5 J**	1 U	1 U	**0.8 J**	1 UJ	1 UJ
MW-20B	**1100 D**	**18**	**33**	**752**	**16**	**30**	**120**	**2.6 J**	**6.7**	**940**	**13**	**32**	**340 J**	**14 J**	**20 J**
MW-21	**2.1 J**	1 U	**1 J**	**2**	1 U	**0.7 J**	**2.2 J**	1 U	**1.0 J**	**2**	1 U	**0.6 J**	**2**	**0.2 J**	**0.3 J**
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-31	**1 J**	1 U	**1.9 J**	**0.6 J**	1 U	**2**	**0.9 J**	1 U	**2.2 J**	**0.8 J**	1 U	**1**	**0.5 J**	1 UJ	**0.9 J**
MW-32	**1 J**	1 U	**1.1 J**	**1**	1 U	**2**	**0.6 J**	1 U	**0.6 J**	**0.7 J**	1 U	**1**	**0.7 J**	1 UJ	**0.5 J**
MW-41	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
MW-19A	--	--	--	--	--	--	1 U	**0.5 J**	1 U	--	--	--	1 UJ	1 UJ	1 UJ
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-40	1 U	1 U	1 U	--	--	--	1 U	1 U	1 U	--	--	--	1 UJ	1 UJ	1 UJ
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Well	May 1993			December 1993			April 1994			November 1994			July 1995		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	**44**	10 U	**2 J**	**13**	**0.3 J**	**0.7 J**	**33**	**0.6**	**1.4**	**9.7**	**0.3 J**	**0.5 J**	**27**	**0.5 J**	**0.8 J**
MW-20A	10 U	10 U	10 U	**0.3 J**	1 U	1 U	**0.4**	0.2 U	0.2 U	**0.3 J**	1 U	1 U	**0.4 J**	1 U	1 U
MW-20B	**700 D**	**12**	**21**	**187**	50 U	**8.2 J**	**472**	**8.6 J**	**12.6**	**86**	50 U	**3 J**	**340 D**	**8.4**	**17**
MW-21	**1 J**	10 U	10 U	**1.6**	1 U	**0.4 J**	**1.5**	**0.2 J**	**0.3**	**1.8**	**0.2 J**	**0.3 J**	--	--	--
MW-27	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-28A	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-31	10 U	10 U	10 U	**0.8 J**	1 U	**1.2 J**	**0.7**	0.2 U	**1.0**	**0.8 J**	1 U	**1**	**0.6 J**	1 U	**0.5 J**
MW-32	10 U	10 U	10 U	**0.7 J**	1 U	**0.6 J**	**0.7**	0.2 U	**0.6**	**0.6 J**	1 U	**0.5 J**	**0.7 J**	1 U	**0.5 J**
MW-41	10 U	10 U	10 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-19A	--	--	--	1 U	**0.4**	1 U	0.2 U	**0.5**	0.2 U	--	--	--	1 U	**0.4 J**	1 U
MW-33	--	--	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U
MW-40	--	--	--	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	--	--	--	1 U	1 U	1 U
H1/H2	--	--	--	--	--	--	--	--	--	--	--	--	**9**	**0.3 J**	1 U

U = Analyte was not detected at or above the reported result.
J = Analyte was positively identified. The associated numerical result is an estimate.
UJ = Analyte was not detected at or above the reported estimated result.
D = Analysis performed at secondary dilution.
E = Concentration of the associated value exceeds the known calibration range.
-- = Not tested.
= Analyte was positively identified.

Table 4 continued: Summary of Sample Results (ug/L) from January 1991 to August 2000

Well	January 1996			July 1996			January 1997			July 1997			February 1998		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	**47 E**	**0.8 J**	**1.5**	**43**	**0.7 J**	**1.9**	**54**	**1.1**	**3.1**	**47**	**0.7 J**	**2.5**	**36**	**0.7 J**	**2 J**
MW-20A	**0.2 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.4 J**	1 U	1 U	**0.3 J**	1 U	2 U	**0.4 J**	1 U	1 U
MW-20B	**353**	**7.2**	**15**	**387**	**7.6**	**15**	**373**	100 U	**6.4 J**	**222**	**4**	**6.4**	**456**	**7 J**	**12**
MW-21	--	--	--	Well Decommissioned											
MW-27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U
MW-28A	1 U	1 U	1 U	Well Decommissioned											
MW-31	**0.6 J**	1 U	**0.7 J**	--	--	--	--	--	--	**0.9 J**	1 U	**0.9 J**	--	--	--
MW-32	**0.8 J**	1 U	**0.6 J**	--	--	--	--	--	--	--	--	--	--	--	--
MW-41	1 U	1 U	1 U	--	--	--	--	--	--	--	--	--	--	--	--
MW-19A	--	--	--	--	--	--	--	--	--	1 U	**0.3 J**	2 U	--	--	--
MW-33	--	--	--	1 U	1 U	1 U	--	--	--	1 U	1 U	2 U	--	--	--
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H1/H2	**8.4**	**0.2 J**	**0.2 J**	**0.1 J**	1 U	1 U	**18**	**0.4 J**	**0.4 J**	**8.8**	**0.3 J**	**0.6 J**	**11**	**0.4 J**	**0.3 J**

Well	July 1998			January 1999			August 1999			January 2000			August 2000		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	**30**	1 U	**1.5 J**	--	--	--	**22**	**0.4 J**	**1.1**	**40**	**0.7 J**	**1.9**	**22**	**0.3 J**	**0.68**
MW-20A	**0.6 J**	1 U	1 U	1 U	2 U	1 U	**0.8 J**	2 U	1 U	**0.2 J**	2 U	1 U	**0.1 J**	2 U	1 U
MW-20B	**575 D**	**10**	**23**	**708**	**5.2**	**12**	**722**	**8.4 J**	**16 J**	**184**	**6**	**13**	**648**	200 U	100 U
MW-27	**0.05 J**	1 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U	1 U	2 U	1 U
MW-31	--	--	--	--	--	--	**0.9 J**	2 U	**0.38 J**	--	--	--	--	--	--
MW-32	--	--	--	--	--	--	--	--	--	--	--	--	**0.8 J**	2 U	1 U
MW-41	--	--	--	--	--	--	--	--	--	--	--	--	1 U	2 U	1 U
MW-19A	--	--	--	--	--	--	1 U	**0.4 J**	1 U	--	--	--	--	--	--
MW-33	1 U	1 U	1 U	--	--	--	1 U	2 U	1 U	--	--	--	1 U	2 U	1 U
MW-40	--	--	--	--	--	--	--	--	--	--	--	--	1 U	2 U	1 U
H1/H2	**10**	1 U	**0.1 J**	**1.5**	1 U	1 U	**5.2**	**0.2 J**	1 U	**10**	1 U	1 U	**8.7**	**0 J**	1 U

U = Analyte was not detected at or above the reported result.
J = Analyte was positively identified. The associated numerical result is an estimate.
UJ = Analyte was not detected at or above the reported estimated result.
D = Analysis performed at secondary dilution.
E = Concentration of the associated value exceeds the known calibration range.
-- = Not tested.
= Analyte was positively identified.

Table 5: Summary of PERC and TCE Concentrations that Exceeded MTCA Method A Cleanup Standard of 5 ug/L

	1991	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*
MW-20B										
Tetrachloroethene	120-1100	340J-940	187-700	86-472	340	353-387	222-373	456-575	708-722	184-648
Trichloroethene	2.6J-18	13-14J	12	8.6J	8.4	7.2-7.6	4	7J-10	5.2-8.4J	6
MW-16A										
Tetrachloroethene	2.7J-28	7-9J	13-44	9.7-33	27	43-47	47-54	30-36	22	22-40
H1/H2										
Tetrachloroethene	---	---	---	---	9	0.14J-8.4	8.8-18	10-11	1.5-5.2	8.7-10

(Model Toxic Control Act Method A cleanup standard for PERC and TCE in groundwater is 5 ug/L)

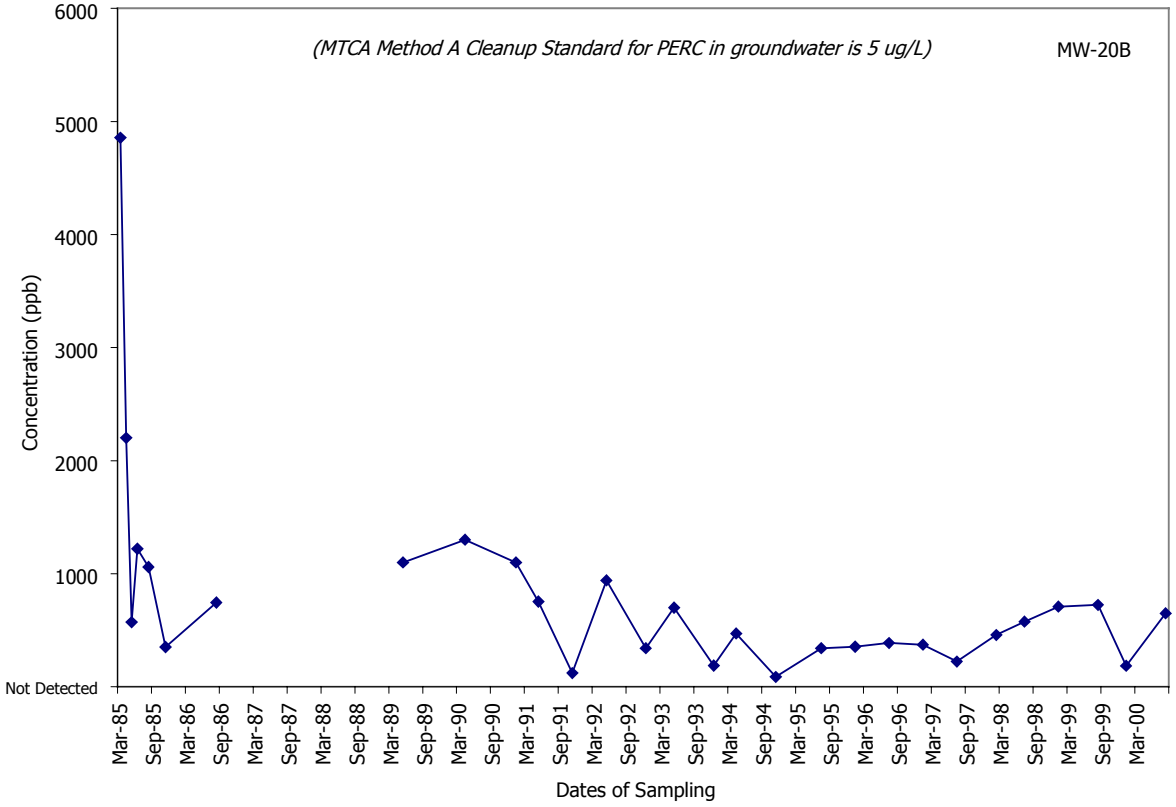
J = Analyte was positively identified. The associated numerical result is an estimate.
-- = Not tested.

Conclusions

Monitoring was conducted in January and August 2000 at two municipal wells and eight monitoring wells to evaluate volatile organics in groundwater at the Lakewood Plaza Cleaners site.

- Monitoring wells MW-20B and MW-16A, as well as municipal wells H1 and H2, continue to have PERC concentrations exceeding the MTCA cleanup standard of 5.0 ug/L.
- TCE continues to exceed the MTCA cleanup standard of 5.0 ug/L in MW-20B.

Overall, concentrations are similar to those reported in previous sampling conducted since 1991. The monitoring program should continue through 2001, after which there should be another five-year review of the need for future monitoring.



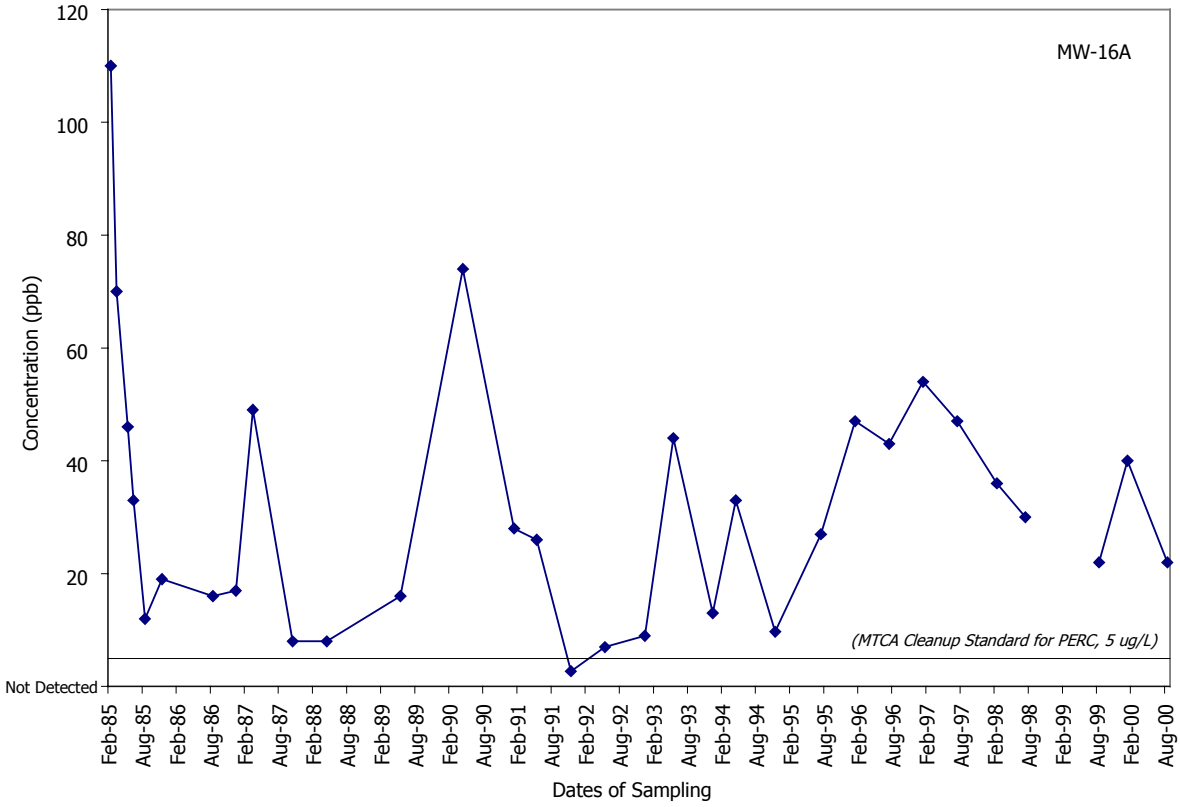


Figure 2

PERC Concentrations for Wells MW-20B and MW-16A from 1984 to 2000

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Appendix A

Groundwater Sampling

On January 10, samples were collected from municipal well H2 and monitoring wells MW-16A, MW-20A, MW-20B, and MW-27. On August 1-2, samples were collected from municipal well H1 and eight monitoring wells: MW-16A, MW-20A, MW-20B, MW-27, MW-32, MW-33, MW-40, and MW-41 (Figure 1).

Prior to sample collection, static water level measurements were obtained using an electronic water level probe. The probe was rinsed with deionized water after each use. All monitoring wells were purged a minimum of three well volumes and until pH, temperature, and specific conductance readings stabilized. Purge water was discharged to storm drains or to the ground near each well. All monitoring wells, except MW-20B, were purged and sampled using dedicated bladder pumps,. Well MW-20B was purged and sampled with a decontaminated teflon bailer. Municipal wells H1 and H2, which pump continuously, were sampled from taps nearest the wells. Samples collected for volatile organics were free of headspace and preserved with two drops of 1:1 hydrochloric acid.

The bailer was pre-cleaned with a Liquinox® wash and sequential rinses of hot tap water, 10% nitric acid, distilled/deionized water, and pesticide-grade acetone. After cleaning, the bailer was air-dried and wrapped in aluminum foil.

Chain-of-custody procedures were followed in accordance with Manchester Laboratory protocol (Ecology, 1994). Manchester Laboratory analyzed all samples.

Appendix B

Quality Assurance

Manchester Environmental Laboratory

7411 Beach Drive E, Port Orchard Washington 98366

November 7, 2000

Project: **Lakewood/Plaza Cleaners**

Samples: 00028020 through 00028023, 00028025, 00028026

Project ID: 114400

Project Officer: Pam Marti

By: Karin Feddersen

VOLATILE ORGANIC ANALYSIS

SUMMARY:

The data is usable as reported.

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using the Manchester Laboratory modification of the EPA Method 8260 purge-trap procedure and capillary Gas Chromatography with Mass Spectrometer (GC/MS) analysis. Routine QA/QC procedures were performed.

Sample 00028026 required a dilution to bring the value for Tetrachloroethene into the range of the calibration. Please use the dilution value for this analyte, and the original analysis results for all other analytes in this sample.

BLANKS:

Toluene was detected in the method blank at a concentration below the quantitation limit, but not in any of the samples.

SURROGATES:

Surrogate recoveries were within acceptable limits for all samples, with one exception. 1,2-Dichloroethane-d4 recoveries were slightly high in some samples. No analytes were detected in the same range of as this surrogate. No qualification of the data was warranted for this condition.

HOLDING TIMES:

The samples were analyzed within the recommended holding time of 14 days from collection.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Aliquots of sample 00028023 were analyzed with the samples as matrix spikes. All recoveries were within acceptable limits, with one exception. Acetone and Tetrahydrofuran recoveries were higher than expected. Neither analyte was detected in the samples. No qualification of the data is necessary for this condition.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	There is evidence the analyte is present in the sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range. The associated numerical result is an estimate.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compounds on report sheet.)

Manchester Environmental Laboratory

7411 Beach Dr E, Port Orchard Washington 98366

CASE NARRATIVE

November 7, 2000

Subject: Lakewood Plaza Cleaners
Samples: 00318040 - 049
Case No. 377000
Officer: Pam Marti
By: Greg Perez
Organics Analysis Unit

VOLATILE ORGANIC ANALYSIS

SUMMARY:

In addition to matrix spikes performed on sample 00318046, a duplicate of 318047 was analyzed and also a control sample spiked with an analyte mix different in origin than the matrix spike/calibration solution.

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA Method 8260 purge-trap procedure with capillary GC/MS analysis. Normal QA/QC procedures were performed on the samples.

BLANKS:

No target compounds were detected in the blanks.

SURROGATES:

Surrogate recoveries were within acceptable limits for the water samples.

HOLDING TIMES:

The water samples were analyzed within the recommended 14 day holding time.

QUALITY CONTROL:

Matrix spike recoveries and control sample recoveries were within acceptable limits for the water samples. The duplicate analyses also were within acceptable limits.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	For organic analytes there is evidence the analyte is present in this sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)