A Department of Ecology Report

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Lakewood/Plaza Cleaners Round IX, November 8-9, 1994

Introduction

This document is one in a series describing the results of ground water sampling at Lakewood/Plaza Cleaners. The sampling program was designed by U.S. Environmental Protection Agency's contractor, CH2M Hill, as part of the Lakewood Remedial Action (CH2M Hill 1990a, b). Ecology has conducted the semi-annual ground water sampling at the site since 1991. The objective of this sampling is to collect ground water quality data for the Toxics Cleanup Program to evaluate the effectiveness of Lakewood supply wells H1 and H2 (Figure 1) to contain and remove contaminated ground water caused by Plaza Cleaners. Samples were collected on November 8-9, 1994 from eight monitoring wells: MW-16A, MW-20A, MW-20B, MW-21, MW-27, MW-31, MW-32, and MW-41 (Figure 1). All samples were analyzed for volatile organics (VOAs). The quality assurance review and laboratory reporting sheets are presented in Appendix A.

Results

Field Observations

Table 1 lists field observation data for each of the sampled wells: static water level, pH, specific conductance, temperature, purged volume, well depth, and the geologic unit. Well MW-20A had a pH reading of 8.5 standard units, which is consistent with previous measurements. The high pH readings in MW-20A are most likely related to well construction. The specific conductance in well MW-20B (860 umhos/cm), which is screened in a fine-grained till unit, was four times greater than the other wells. Specific conductance readings are typically higher for water from fine-grained units.

Laboratory Results

Table 2 summarizes laboratory results. The highest concentrations of tetrachloroethylene (PERC) occurred in wells MW-20B and MW-16A with 86 ppb and 9.7 ppb, respectively.

by Pamela B. Marti
July 1995

Waterbody No. WA-12-1115GW
(Segment No. 05-12-GW)

Ecology Report #95-340

PERC and/or cis-1,2-dichloroethylene (cis-1,2-DCE) were detected in wells MW-20B, MW-16A, MW-20A, MW-21, MW-31, and MW-32 at concentrations near or below the practical quantitation limit of 1 ppb. Trichloroethylene (TCE) was detected in wells MW-16A and MW-21 near the quantitation limit of 1 ppb. 1,1,1-Trichloroethane was detected in wells MW-16A, MW-20A, MW-21, MW-31, MW-32 and MW-41 at concentrations below the quantitation limit of 1 ppb.

Table 3 shows PERC, TCE, and cis-1,2-DCE concentrations for January 1991 through November 1994. PERC and cis-1,2-DCE continue to be detected at or near the detection limit in most of the wells screened in the Advance Outwash (refer to Figure 1 for typical site stratigraphy). Well MW-20B, which is screened in the Vashon Till, continues to have the highest concentrations.

Figure 2 shows PERC concentrations at wells MW-20B and MW-16A between 1984 and 1994, respectively. 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 ranged between 86 ppb and 1200 ppb. Over the monitoring period PERC concentrations in MW-16A have varied between 3 ppb and 110 ppb.

Methods

Ground Water Sampling

Samples were collected on November 8-9, 1994 from MW-16A, MW-20A, MW-20B, MW-21, MW-27, MW-31, MW-32 and MW-41 (Figure 1). Prior to sample collection, static water level measurements were obtained using an electronic water level indicator. The meter 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 monitoring well. All wells were purged and sampled using dedicated bladder pumps, except for MW-20B. Well MW-20B was purged and sampled with a decontaminated teflon bailer.

Wells were sampled in order from the least to most contaminated. 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).

Quality Assurance Samples

Quality control samples collected in the field for the ground water monitoring consisted of a transfer blank, a blind duplicate, and a replicate sample. A transfer blank was collected by pouring organic-free water through a decontaminated bailer. A blind duplicate sample was collected from well MW-16A. Duplicate samples are two sets of samples collected from a well simultaneously and submitted to the laboratory with different identification. A replicate sample was collected from well MW-20A. Replicate samples are two sets of samples collected from a well at different times. In addition to quality control samples collected in the field, laboratory quality control samples consisted of matrix spikes, matrix spike duplicates and surrogate compound recoveries. Volatile organic samples were analyzed using EPA SW-846 Method 8260 (U.S. EPA, 1986).

In general the quality of the data is acceptable for use. Volatile organic analyses were performed by the Manchester Laboratory. Dickey Huntamer of the Manchester Laboratory conducted the quality assurance review. Low levels of common laboratory solvents such as acetone and methylene chloride were detected in the laboratory blanks. However, these analytes were not detected in the field samples.

Duplicate samples collected at MW-16A provide an estimate of combined sampling and laboratory precision. The numeric comparison of duplicate results is expressed as the relative percent difference or RPD. RPDs are the ratio of the difference and the mean of the duplicate results expressed as a percentage. The RPDs for tetrachloroethylene, trichloroethylene and cis-1,2-dichloroethylene were 3%, 0%, and 6%, respectively. Matrix spike and spike duplicate recoveries for volatile organics are within the QC limits of ±25% for water sample analysis.

References

CH2M HILL, 1990a. Sampling and Analysis Plan Remedial Action - Lakewood.

CH2M HILL, 1990b. Technical Memorandum from Lisa Dally Wilson to Ann Williamson RE: Groundwater Sampling at Lakewood (April 1990). Project No. SEA69018RA.FQ.

Marti, P., 1991. Lakewood/Plaza Cleaners Monitoring Round I - January, 1991. Department of Ecology - Environmental Investigations.

Marti, P., 1991. Lakewood/Plaza Cleaners Monitoring Round II - May, 1991. Department of Ecology - Environmental Investigations.

Marti, P., 1992. Lakewood/Plaza Cleaners Monitoring Round III - November, 1991. Department of Ecology - Environmental Investigations.

Marti, P., 1992. Lakewood/Plaza Cleaners Monitoring Round IV - May, 1992. Department of Ecology - Environmental Investigations.

Marti, P., 1993. Lakewood/Plaza Cleaners Monitoring Round V - December, 1992. Department of Ecology - Environmental Investigations.

Marti, P., 1993. Lakewood/Plaza Cleaners Monitoring Round VI - May, 1993. Department of Ecology - Environmental Investigations.

Marti, P., 1994. Lakewood/Plaza Cleaners Monitoring Round VII - December, 1993. Department of Ecology - Environmental Investigations.

Marti, P., 1994. Lakewood/Plaza Cleaners Monitoring Round VIII - April, 1994. Department of Ecology - Environmental Investigations.

U.S. Environmental Protection Agency, 1986. Test Methods for Evaluating Solid Waste, SW-846. Office of Emergency Response, Washington , D.C., 1986.

Washington State Department of Ecology, 1994. Manchester Environmental Laboratory - Laboratory Users Manual. Edited by D. Huntamer and J. Hyre.

Contacts

Pam Marti

Washington State Department of Ecology
Environmental Investigations and Laboratory Services
Toxics Investigations Section
(360) 407-6768

For additional copies of this publication, please contact Ecology's Publications Distribution Office at (360) 407-7472 and refer to publication number 95- 340

If you have special accommodation needs or require this document in alternative format, please contact Joan LeTourneau at (360) 407-6764 (voice) or (360) 407-6006 (TDD).

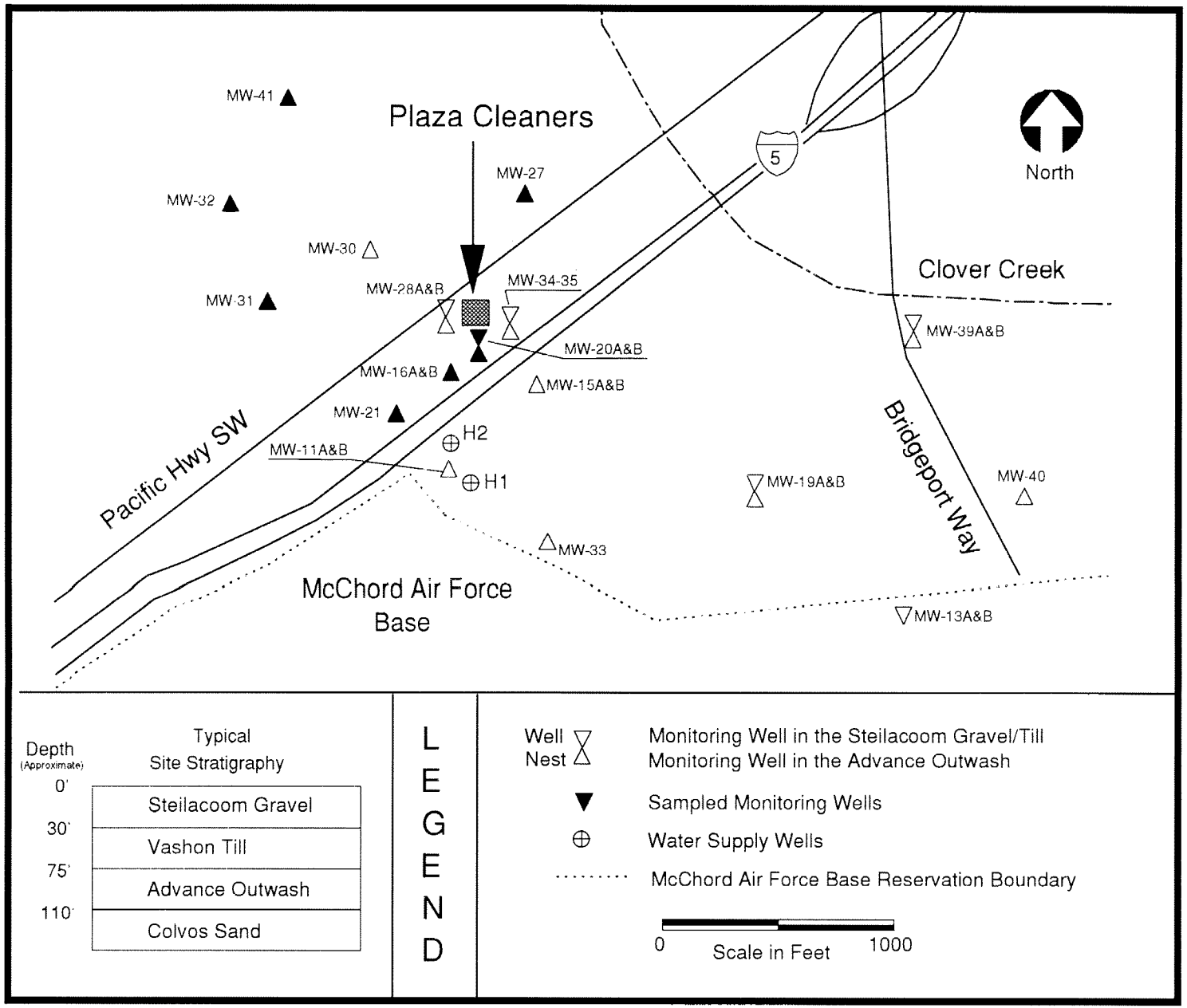


Figure 1: Well Location Map - Lakewood/Plaza Cleaners

Table 1: Field Parameter Results for November 8-9, 1994

Monitoring Well	Total Depth (Feet)	Geologic Unit Screened	Depth to Water (Feet)	pH (s.u.)	Specific Conductance (umhos/cm)	Temperature (°C)	Purge Volume (gallons)
MW-41	96.8	Advance Outwash	32.48	7.0	192	11.2	31
MW-27	96.4	Advance Outwash	++	6.7	186	12.2	30
MW-20A	97.3	Advance Outwash	38.30	8.5	215	12.4	30
MW-32	114.4	Advance Outwash	65.63	6.8	173	11.3	24
MW-31	91.5	Advance Outwash	++	6.8	183	11.2	30
MW-21	92.1	Advance Outwash	45.59	6.9	192	11.6	25
MW-16A	109	Advance Outwash	46.95	7.2	203	11.5	95
MW-20B	50.4	Vashon Till	41.12	6.2	860	12.9	6

++ = Dedicated pump obstructs water-level measurement.

Table 2: Summary of Analytes Detected in Samples Collected November 8-9, 1994

Geologic Unit Screened	Vashon Till	Advance Outwash									Upgradient Wells	
Monitoring Well	MW-20B	MW-16A	MW-16B (Duplicate)	MW-20A	MW-20A (Replicate)	MW-21	MW-27	MW-31	MW-32	MW-41	MW-19A	MW-40
Volatile Organics: (ug/L)												
Tetrachloroethylene (PERC)	86.3	9.8	9.5	0.33 J	0.25 J	1.8	1 U	0.8 J	0.55 J	1 U	--	--
Trichloroethylene (TCE)	50 U	0.26 J	0.26 J	1 U	1 U	0.18 J	1 U	1 U	1 U	1 U	--	--
cis-1,2-Dichloroethylene (cis-1,2-DCE)	3.0 J	0.54 J	0.51 J	1 U	1 U	0.32 J	1 U	1.0	0.52 J	1 U	--	--
1,1,1-Trichloroethane	50 U	1 U	0.13 J	0.18 J	0.2 J	0.14 J	1 U	0.22 J	0.13 J	0.16 J	--	--

U = The analyte was not detected at or above the reported value.
J = The analyte was positively identified. The associated numerical result is an estimate.
-- = Not Tested

Table 3: Summary of Sample Results (ug/L) from January 1991 to November 1994

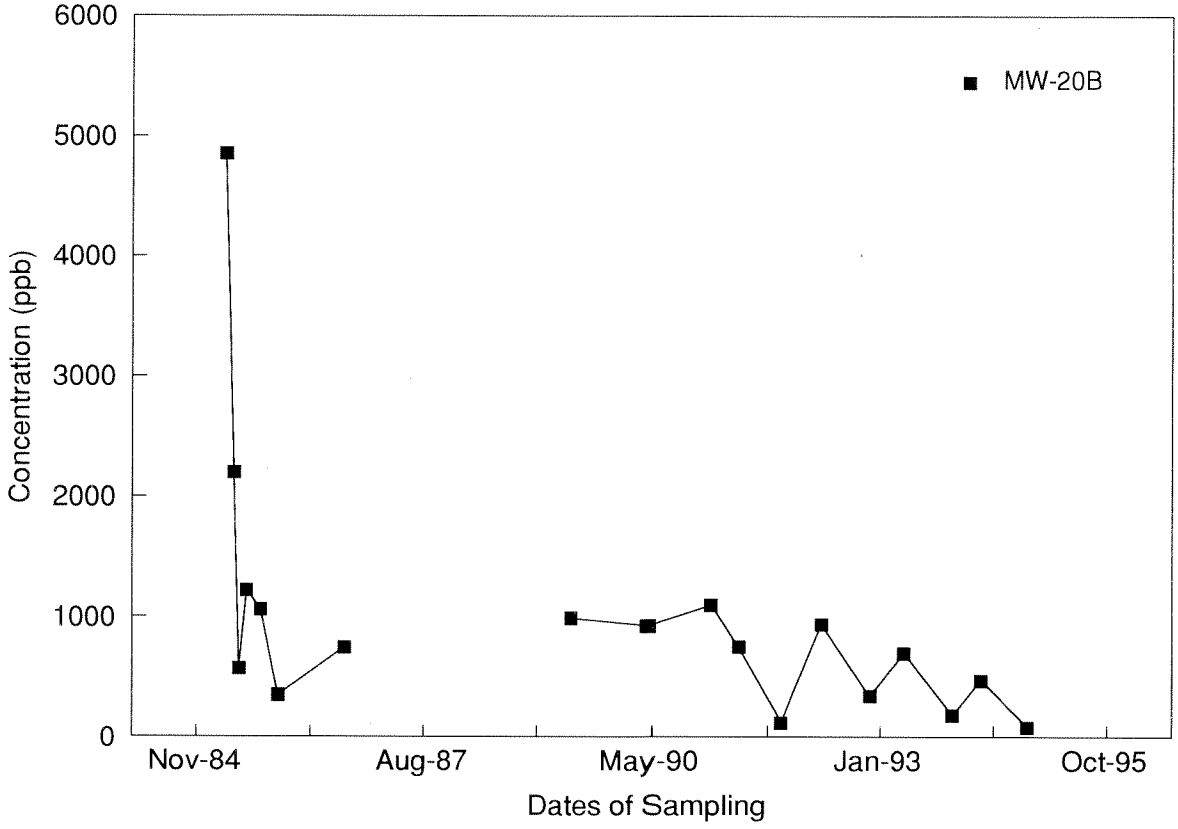
Well	January 1991			May 1991			November 1991			May 1992			December 1992		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	28	1 J	2.4 J	26	0.6 J	2	2.7 J	1 U	0.6 J	7	1 U	1	9 J	0.3 J	0.8 J
MW-20A	1 U	1 U	1 U	0.4 J	1 U	1 U	0.4 J	1 U	1 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 U	1 UJ	1 UJ
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 U	1 UJ	1 UJ
MW-19A	--	--	--	--	--	--	1 U	0.5 J	1 U	--	--	--	1 U	1 UJ	1 UJ
MW-40	1 U	1 U	1 U	--	--	--	1 U	1 U	1 U	--	--	--	1 U	1 UJ	1 UJ

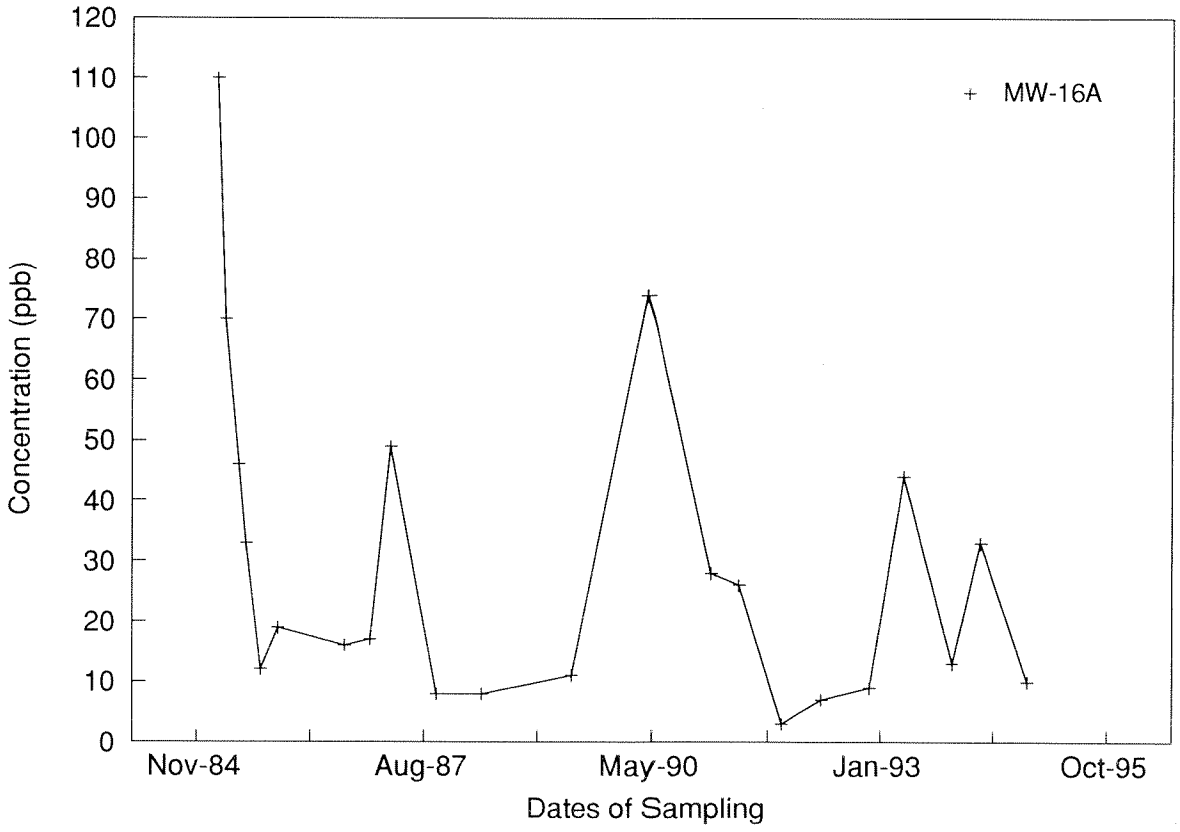
Well	May 1993			December 1993			April 1994			November 1994		
Number	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE	PERC	TCE	cis-1,2-DCE
MW-16A	44	10 U	2 J	13	0.3 J	0.7 J	33	0.6	1.4	9.7	0.3 J	0.5 J
MW-20A	10 U	10 U	10 U	0.3 J	1 U	1 U	0.4	0.2 U	0.2 U	0.3 J	1 U	1 U
MW-20B	700 D	12	21	187	50 U	8.2 J	472	8.6 J	12.6	86	50 U	3 J
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
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
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
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
MW-19A	--	--	--	1 U	0.4	1 U	0.2 U	0.5	0.2 U	--	--	--
MW-40	--	--	--	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	--	--	--

U = The analyte was not detected at or above the reported result.
J = The analyte was positively identified. The associated numerical result is an estimate.
UJ = The analyte was not detected at or above the reported estimated result.
D = Analysis performed at secondary dilution.
-- = Not Tested

Figure 2

PERC Concentrations for Wells MW-20B and MW-16A from 1984 to 1994





APPENDIX A

Analytical Results
Lakewood/Plaza Cleaners
November 8–9, 1994

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

January 5, 1995

Subject: Lakewood/Plaza Cleaners

Samples: 94 - 458085 to -458095

Case No. 1533-94

Officer: Pam Marti

By: Dickey D. Huntamer
Organics Analysis Unit

VOLATILE ORGANIC ANALYSIS

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA SW 846 Method 8260 purge-trap procedure with capillary GC/MS analysis. Normal QA/QC procedures were performed on the samples.

BLANKS:

Low levels of the common laboratory solvents acetone and methylene chloride were detected in the laboratory blanks The EPA five times rule was applied to all target compounds which were found in the blank. Compounds that were found in the sample and in the blank were considered real and not the result of contamination if the levels in the sample are greater than or equal to five times the amount of compounds in the associated method blank.

SURROGATES:

Surrogate recoveries were within acceptable limits for water samples.

HOLDING TIMES:

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

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Water matrix spikes were within acceptable QC limits for both percent recovery and RPD for all compounds except trichlorofluorobenzene, 1,2,3-trichlorbenzene, naphthalene and 1,2,3-trichlorobenzene. These three compounds had low recoveries and all results were qualified as estimates, "J".

ANALYTICAL COMMENTS:

No analytical problems were encountered in the analysis. The data is acceptable for use as qualified. Low levels of some chlorinated compounds were detected in some of the samples.

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.
EXP	-	The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6.
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.)

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458085 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-41 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	UJ	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	1.0	U	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	**0.16**	**J**	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	UJ	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**99**	**%**
Tetrachloroethene	1.0	U	**Fluorobenzene**	**100**	**%**
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**102**	**%**
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**94**	**%**
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**96**	**%**
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: D. Hanson Release Date: 11/5/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458086 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-27 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	1.0	U	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	1.0	U	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.0	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**101**	**%**
Tetrachloroethene	1.0	U	**Fluorobenzene**	**101**	**%**
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**102**	**%**
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**94**	**%**
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**98**	**%**
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 11/4/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458087 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-20A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	1.0	U	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	**0.18**	**J**	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**101**	%
Tetrachloroethene	**0.33**	**J**	**Fluorobenzene**	**100**	%
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**102**	%
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**94**	%
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**97**	%
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 11/4/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458088 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-32 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	1.0	U
Vinyl Chloride	1.0	U	o-Xylene	2.0	U
Bromomethane	1.0	U	Total Xylenes	1.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	3.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	**0.52**	**J**	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	**0.13**	**J**	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**101**	%
Tetrachloroethene	**0.55**	**J**	**Fluorobenzene**	**100**	%
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**101**	%
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**92**	%
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**97**	%
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 1/4/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458089 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-31 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	**1.0**		4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	**0.22**	**J**	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**101**	%
Tetrachloroethene	**0.8**	**J**	**Fluorobenzene**	**101**	%
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**101**	%
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**94**	%
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**96**	%
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 1/4/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458090 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-21 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	**0.32**	**J**	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	**0.14**	**J**	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	**0.18**	**J**	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**102**	**%**
Tetrachloroethene	**1.8**		**Fluorobenzene**	**100**	**%**
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**101**	**%**
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**92**	**%**
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**96**	**%**
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 11/4/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458091 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-16A **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	**0.54**	**J**	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	1.0	U	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	**0.26**	**J**	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**101**	**%**
Tetrachloroethene	**9.8**		**Fluorobenzene**	**100**	**%**
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**101**	**%**
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**94**	**%**
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**97**	**%**
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 11/9/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458092 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-16B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	**0.51**	**J**	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	**0.13**	**J**	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	**0.26**	**J**	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**102**	**%**
Tetrachloroethene	**9.5**		**Fluorobenzene**	**100**	**%**
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**101**	**%**
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**91**	**%**
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**96**	**%**
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 11/5/95

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458093 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	100	UJ	Ethylbenzene	50	U
Chloromethane	50	U	m & p-Xylene	100	U
Vinyl Chloride	50	U	o-Xylene	50	U
Bromomethane	50	U	Total Xylenes	150	U
Chloroethane	50	U	Benzene, Ethenyl-(Styrene)	50	U
Trichlorofluoromethane	250	UJ	Bromoform	50	U
1,1-Dichloroethene	50	UJ	Isopropylbenzene (Cumene)	50	U
Acetone	100	UJ	Ethane, 1,1,2,2-Tetrachloro-	50	U
Carbon Disulfide	50	U	Bromobenzene	50	U
Methylene Chloride	50	UJ	1,2,3-Trichloropropane	50	U
Trans-1,2-Dichloroethene	50	U	n-Propylbenzene	50	U
1,1-Dichloroethane	50	U	2-Chlorotoluene	50	U
2,2-Dichloropropane	50	U	1,3,5-Trimethylbenzene	50	U
Cis-1,2-Dichloroethene	**3.0**	**J**	4-Chlorotoluene	50	U
2-Butanone	50	UJ	Tert-Butylbenzene	50	U
Bromochloromethane	50	U	1,2,4-Trimethylbenzene	50	U
Chloroform	50	U	Sec-Butylbenzene	50	U
1,1,1-Trichloroethane	50	U	1,3-Dichlorobenzene	50	U
1,1-Dichloropropene	50	U	p-Isopropyltoluene	50	U
Carbon Tetrachloride	50	U	1,4-Dichlorobenzene	50	U
Benzene	50	U	1,2-Dichlorobenzene	50	U
1,2-Dichloroethane	50	U	Butylbenzene	50	U
Trichloroethene	50	U	1,2-Dibromo-3-Chloropropane	100	U
1,2-Dichloropropane	50	U	1,2,4-Trichlorobenzene	250	UJ
Dibromomethane	50	U	Hexachlorobutadiene	100	UJ
Bromodichloromethane	50	U	Naphthalene	500	UJ
Cis-1,3-Dichloropropene	53	U	1,2,3-Trichlorobenzene	500	UJ
4-Methyl-2-Pentanone	50	U			
Toluene	50	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	47	U			
1,1,2-Trichloroethane	50	U	**1,2-Dichloroethane-D4**	**102**	**%**
Tetrachloroethene	**86.3**		**Fluorobenzene**	**101**	**%**
1,3-Dichloropropane	50	U	**D8-Toluene**	**101**	**%**
2-Hexanone	50	UJ	**p-Bromofluorobenzene**	**93**	**%**
Dibromochloromethane	50	U	**D4-1,2-Dichlorobenzene**	**97**	**%**
1,2-Dibromoethane (EDB)	50	U			
Chlorobenzene	50	U			
Ethane, 1,1,1,2-Tetrachloro-	50	U			

Authorized By: D. Norton Release Date: 1/5/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458093 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Tentatively Identified Compounds

CAS Number	Analyte Description	Result	Qualifier
109999	*Tetrahydrofuran*	34.7	NJ

Authorized By: _____ Release Date: 11/5/95

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458093 (Matrix Spike - LMX1) **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** % Recovery

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	122		Ethylbenzene	104	
Chloromethane	113		m & p-Xylene	102	
Vinyl Chloride	128		o-Xylene	103	
Bromomethane	115		Total Xylenes	102	
Chloroethane	124		Benzene, Ethenyl-(Styrene)	98	
Trichlorofluoromethane	133		Bromoform	102	
1,1-Dichloroethene	137		Isopropylbenzene (Cumene)	107	
Acetone	71		Ethane, 1,1,2,2-Tetrachloro-	104	
Carbon Disulfide	106		Bromobenzene	104	
Methylene Chloride	138		1,2,3-Trichloropropane	105	
Trans-1,2-Dichloroethene	109		n-Propylbenzene	105	
1,1-Dichloroethane	106		2-Chlorotoluene	106	
2,2-Dichloropropane	86		1,3,5-Trimethylbenzene	106	
Cis-1,2-Dichloroethene	103		4-Chlorotoluene	109	
2-Butanone	64		Tert-Butylbenzene	103	
Bromochloromethane	104		1,2,4-Trimethylbenzene	101	
Chloroform	106		Sec-Butylbenzene	104	
1,1,1-Trichloroethane	114		1,3-Dichlorobenzene	104	
1,1-Dichloropropene	112		p-Isopropyltoluene	97	
Carbon Tetrachloride	117		1,4-Dichlorobenzene	104	
Benzene	110		1,2-Dichlorobenzene	105	
1,2-Dichloroethane	108		Butylbenzene	88	
Trichloroethene	107		1,2-Dibromo-3-Chloropropane	76	
1,2-Dichloropropane	104		1,2,4-Trichlorobenzene	35	
Dibromomethane	104		Hexachlorobutadiene	64	
Bromodichloromethane	105		Naphthalene	24	
Cis-1,3-Dichloropropene	91		1,2,3-Trichlorobenzene	23	
4-Methyl-2-Pentanone	94				
Toluene	106		Surrogate Recoveries		
Trans-1,3-Dichloropropene	85				
1,1,2-Trichloroethane	103		1,2-Dichloroethane-D4	105	%
Tetrachloroethene	111		Fluorobenzene	100	%
1,3-Dichloropropane	103		D8-Toluene	100	%
2-Hexanone	74		p-Bromofluorobenzene	100	%
Dibromochloromethane	98		D4-1,2-Dichlorobenzene	100	%
1,2-Dibromoethane (EDB)	100				
Chlorobenzene	106				
Ethane, 1,1,1,2-Tetrachloro-	104				

Authorized By: _____ Release Date: 12/5/95 Page: 3

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458093 (Matrix Spike - LMX2) **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-20B **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** % Recovery

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	115		Ethylbenzene	98	
Chloromethane	106		m & p-Xylene	99	
Vinyl Chloride	118		o-Xylene	97	
Bromomethane	95		Total Xylenes	99	
Chloroethane	110		Benzene, Ethenyl-(Styrene)	96	
Trichlorofluoromethane	159		Bromoform	100	
1,1-Dichloroethene	129		Isopropylbenzene (Cumene)	104	
Acetone	79		Ethane, 1,1,2,2-Tetrachloro-	103	
Carbon Disulfide	106		Bromobenzene	101	
Methylene Chloride	130		1,2,3-Trichloropropane	106	
Trans-1,2-Dichloroethene	104		n-Propylbenzene	100	
1,1-Dichloroethane	101		2-Chlorotoluene	102	
2,2-Dichloropropane	88		1,3,5-Trimethylbenzene	103	
Cis-1,2-Dichloroethene	98		4-Chlorotoluene	107	
2-Butanone	65		Tert-Butylbenzene	100	
Bromochloromethane	101		1,2,4-Trimethylbenzene	100	
Chloroform	102		Sec-Butylbenzene	102	
1,1,1-Trichloroethane	109		1,3-Dichlorobenzene	102	
1,1-Dichloropropene	106		p-Isopropyltoluene	99	
Carbon Tetrachloride	115		1,4-Dichlorobenzene	103	
Benzene	104		1,2-Dichlorobenzene	104	
1,2-Dichloroethane	106		Butylbenzene	92	
Trichloroethene	104		1,2-Dibromo-3-Chloropropane	80	
1,2-Dichloropropane	102		1,2,4-Trichlorobenzene	46	
Dibromomethane	103		Hexachlorobutadiene	78	
Bromodichloromethane	102		Naphthalene	35	
Cis-1,3-Dichloropropene	87		1,2,3-Trichlorobenzene	37	
4-Methyl-2-Pentanone	96				
Toluene	99		Surrogate Recoveries		
Trans-1,3-Dichloropropene	87				
1,1,2-Trichloroethane	101		1,2-Dichloroethane-D4	104	%
Tetrachloroethene	108		Fluorobenzene	99	%
1,3-Dichloropropane	99		D8-Toluene	100	%
2-Hexanone	75		p-Bromofluorobenzene	101	%
Dibromochloromethane	96		D4-1,2-Dichlorobenzene	100	%
1,2-Dibromoethane (EDB)	97				
Chlorobenzene	104				
Ethane, 1,1,1,2-Tetrachloro-	100				

Authorized By: _____ Release Date: 1/5/95

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458094 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: MW-20A** **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	2.0	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	1.0	U	4-Chlorotoluene	1.0	U
2-Butanone	1.0	UJ	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	**0.2**	**J**	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	1.0	U	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	1.0	U	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**103**	%
Tetrachloroethene	**0.25**	**J**	**Fluorobenzene**	**99**	%
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**102**	%
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**93**	%
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**97**	%
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: D. Hanson Release Date: 11/4/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458095 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: TRANSFER **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	6.5	UJ	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	2.0	U	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	1.0	U	4-Chlorotoluene	1.0	U
2-Butanone	**3.6**	**J**	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	1.0	U	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	1,4-Dichlorobenzene	1.0	U
Benzene	**0.36**	**J**	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	Naphthalene	10	UJ
Cis-1,3-Dichloropropene	1.1	U	1,2,3-Trichlorobenzene	10	UJ
4-Methyl-2-Pentanone	1.0	U			
Toluene	**0.55**	**J**	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**98**	**%**
Tetrachloroethene	1.0	U	**Fluorobenzene**	**101**	**%**
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**101**	**%**
2-Hexanone	**0.58**	**J**	**p-Bromofluorobenzene**	**95**	**%**
Dibromochloromethane	1.0	U	**D4-1,2-Dichlorobenzene**	**98**	**%**
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	1.0	U			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 1/5/95 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: 94458095 **Date Received:** 11/10/94 **Method:** SW8260
Field ID: TRANSFER **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Tentatively Identified Compounds

CAS Number	Analyte Description	Result	Qualifier
107879	*2-Pentanone*	0.25	NJ
106354	*3-Heptanone*	0.31	NJ
96220	*3-Pentanone*	0.22	NJ

Authorized By: _____ Release Date: 1/5/95

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: BLNK4812 **Method:** SW8260
Blank ID: KBW4322 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Dichlorodifluoromethane	2.0	UJ	Ethylbenzene	1.0	U
Chloromethane	1.0	U	m & p-Xylene	2.0	U
Vinyl Chloride	1.0	U	o-Xylene	1.0	U
Bromomethane	1.0	U	Total Xylenes	3.0	U
Chloroethane	1.0	U	Benzene, Ethenyl-(Styrene)	1.0	U
Trichlorofluoromethane	5.0	UJ	Bromoform	1.0	U
1,1-Dichloroethene	1.0	UJ	Isopropylbenzene (Cumene)	1.0	U
Acetone	**1.7**	**J**	Ethane, 1,1,2,2-Tetrachloro-	1.0	U
Carbon Disulfide	1.0	U	Bromobenzene	1.0	U
Methylene Chloride	**1.0**	**J**	1,2,3-Trichloropropane	1.0	U
Trans-1,2-Dichloroethene	1.0	U	n-Propylbenzene	1.0	U
1,1-Dichloroethane	1.0	U	2-Chlorotoluene	1.0	U
2,2-Dichloropropane	1.0	U	1,3,5-Trimethylbenzene	1.0	U
Cis-1,2-Dichloroethene	1.0	U	4-Chlorotoluene	1.0	U
2-Butanone	**0.19**	**J**	Tert-Butylbenzene	1.0	U
Bromochloromethane	1.0	U	1,2,4-Trimethylbenzene	1.0	U
Chloroform	1.0	U	Sec-Butylbenzene	1.0	U
1,1,1-Trichloroethane	1.0	U	1,3-Dichlorobenzene	1.0	U
1,1-Dichloropropene	1.0	U	p-Isopropyltoluene	1.0	U
Carbon Tetrachloride	1.0	U	**1,4-Dichlorobenzene**	**0.054**	**J**
Benzene	**0.05**	**J**	1,2-Dichlorobenzene	1.0	U
1,2-Dichloroethane	1.0	U	Butylbenzene	1.0	U
Trichloroethene	1.0	U	1,2-Dibromo-3-Chloropropane	2.0	U
1,2-Dichloropropane	1.0	U	1,2,4-Trichlorobenzene	5.0	UJ
Dibromomethane	1.0	U	Hexachlorobutadiene	2.0	UJ
Bromodichloromethane	1.0	U	**Naphthalene**	**0.22**	**J**
Cis-1,3-Dichloropropene	1.1	U	**1,2,3-Trichlorobenzene**	**0.1**	**J**
4-Methyl-2-Pentanone	1.0	U			
Toluene	**0.024**	**J**	**Surrogate Recoveries**		
Trans-1,3-Dichloropropene	0.94	U			
1,1,2-Trichloroethane	1.0	U	**1,2-Dichloroethane-D4**	**98**	**%**
Tetrachloroethene	1.0	U	**Fluorobenzene**	**100**	**%**
1,3-Dichloropropane	1.0	U	**D8-Toluene**	**100**	**%**
2-Hexanone	1.0	UJ	**p-Bromofluorobenzene**	**93**	**%**
Dibromochlorometnane	1.0	U	**D4-1,2-Dichlorobenzene**	**98**	**%**
1,2-Dibromoethane (EDB)	1.0	U			
Chlorobenzene	**0.098**	**J**			
Ethane, 1,1,1,2-Tetrachloro-	1.0	U			

Authorized By: _____ Release Date: 11/4/95 Page: 1

Manchester Environmental Laboratory
Department of Ecology
Analysis Report for
Volatile Organic Analysis

Project Name: Lakewood/Plaza Cleaners **LIMS Project ID:** 1533-94

Sample: BLNK4812 **Method:** SW8260
Blank ID: KBW4322 **Matrix:** Water
Project Officer: Pam Marti **Date Analyzed:** 11/18/94 **Units:** ug/L

Tentatively Identified Compounds

CAS Number	Analyte Description	Result	Qualifier
106887	*Oxirane, Ethyl-*	0.60	NJ

Authorized By: D. Wa Release Date: 1/4/95 Page: 2