STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

7171 Cleanwater Lane, Building 8, P.O. Box 47710 • Olympia, Washington 98504-7710

February 23, 1993

TO: Bruce Cochran, Project Manager
Toxics Cleanup Program

FROM: Pam Marti, Hydrogeologist PM
Environmental Investigations & Laboratory Services

SUBJECT: Lakewood/Plaza Cleaners Long-term Monitoring Round V

Attached are your copies of the technical document which summarizes the findings of Sample Round V for Lakewood/Plaza Cleaners, conducted December 1-3, 1992. Low levels of tetrachloroethylene (PERC), trichloroethylene (TCE) and 1,2-dichloroethylene (1,2-DCE) continue to be detected in most of the wells, with the exception of MW-20B. Concentrations of PERC decreased in well MW-20B from 940 ppb in May 1992 to 340 ppb in December 1992. Although PERC concentrations decreased since the most recent soil removal from Plaza Cleaners, at this time there is insufficient data to indicate if this removal contributed to the decrease. Overall, tetrachloroethylene, trichloroethylene, and 1,2-dichloroethylene concentrations are similar to those reported in previous sample rounds.

According to the Long Term Remedial Action Plan, upgradient wells MW-19A and MW-40 were to be sampled annually for the first three years of sampling. Sample Round V completed the third year of monitoring. If you would like me to continue sampling these wells, please contact me.

I will be conducting Sample Round VI in May 1992. If you have any questions or comments, please call me at 586-8138.

PM:krc

cc: Lynn Singleton
Bill Yake
Kathy Reed, TCP Library
Bob Kievit, EPA
Tim Nord, TCP Site Cleanup Section Supervisor
Bert Bowen, Water Quality

LAKEWOOD/PLAZA CLEANERS
LONG-TERM MONITORING ROUND V
DECEMBER 1-3, 1992

by
Pamela B. Marti

February 25, 1993

Washington State Department of Ecology
Environmental Investigations and Laboratory Services Program
Toxics, Compliance and Ground Water Investigations Section
Olympia, Washington 98504-7710

Water Body No. WA-PS-0300
(Segment No. 05-12-GW)

ABSTRACT

Routine monitoring was conducted at Lakewood/Plaza Cleaners on December 1-3, 1992 in compliance with the Record of Decision (ROD). Ground water samples were collected from ten monitoring wells. Low levels of tetrachloroethylene, trichloroethylene and 1,2-dichloroethylene continue to be detected in most of the monitoring wells, with the exception of MW-20B. Tetrachloroethylene concentrations decreased in well MW-20B from 940 ppb in May 1992 to 340 ppb in December 1992. Tetrachloroethylene concentrations are similar to those reported in previous sample rounds.

OBJECTIVES

The Toxics Cleanup Program (TCP) requested that the Toxics, Compliance and Ground Water Investigations Section conduct long-term monitoring of the ground water at the Lakewood/Plaza Cleaners Site on a semi-annual basis. Monitoring objectives are as follows:

1. Collect ground water quality data that can be used to evaluate the effectiveness of continued operation of wells H1 and H2 to contain and remove contaminated ground water from the aquifer.

2. Monitor ground water upgradient of the site annually to determine if contaminants are migrating toward H1 and H2 from McChord Air Force Base (MCAFB).

SITE BACKGROUND

In 1981, tetrachloroethylene (PERC), trichloroethylene (TCE), and 1,2-dichloroethylene (1,2-DCE) were detected in two Lakewood Water District supply wells (wells H1 and H2), as shown on Figure 1. On-site disposal of waste solvents and sludges at Plaza Cleaners, located 800 feet north of the wells, was identified as the source of contamination. Site remediation consisted of removal of contaminated sludge and soils, soil-vapor extraction and installation of two air-stripping towers for wells H1 and H2.

Results from on-site monitoring wells between 1985 to 1990 showed that the pump and treat system had contained and reduced the level of ground water contamination (CH2M Hill, 1990a). A 1986 concentration contour map showed a portion of the contaminated plume located northwest of the site was not being captured by remedial pumping (CH2M Hill, 1988). However, contaminant concentrations in the uncaptured plume were decreasing; possibly due to biodegradation, dispersion and/or dilution. Additional soil was excavated from Plaza Cleaners in the summer of 1992.

Upgradient monitoring wells were installed to detect possible contaminant migration from the adjacent McChord Air Force Base (MCAFB). Previous studies (EPA, 1985) indicated potential contamination sources from MCAFB are located within the long-term capture zone of wells H1 and H2. Possible contaminants from MCAFB include hydrocarbons, pesticides, and heavy metals. Upgradient monitoring wells MW-19A and MW-40 have been sampled annually. According to the Long Term Remedial Action Plan this is the last year these wells were to be sampled (CH2M HILL, 1990b).

Geology of the study area was defined in the Final Draft Remedial Investigation Report for Ponder's Corner, Washington (EPA, 1985) as consisting of four geologic units which are listed in order of increased depth; the Steilacoom Gravel, Vashon Till, Advance Outwash, and the Colvos Sands. The main units of interest are the Steilacoom Gravel, Vashon Till and Advance Outwash. The Steilacoom Gravel is found throughout most of the study area and ranges in thickness from 1 to 58 feet. This unit often contains perched water. At the site perched ground water flows to the northwest near wells H1 and H2, but to the south and southeast near the south end of Plaza Cleaners. The Vashon Till underlies the Steilacoom Gravel and ranges in thickness from 8 to 92 feet. Over most of the site the till (a mixture of clay, silt, sand and gravel) forms an aquitard separating the Steilacoom Gravel, above, from the Advance Outwash, below. The Advance Outwash is the primary aquifer for the area. The predominant horizontal flow in the Advance Outwash is west-northwest when production wells H1 and H2 are not in use. When in use, the wells create a large cone of depression. Previous studies showed that drawdowns occur in shallow monitoring wells drilled in the Steilacoom gravel when H1 and H2 are pumping (EPA, 1985). This indicates some hydraulic interconnection between the Steilacoom Gravel and the Advance Outwash.

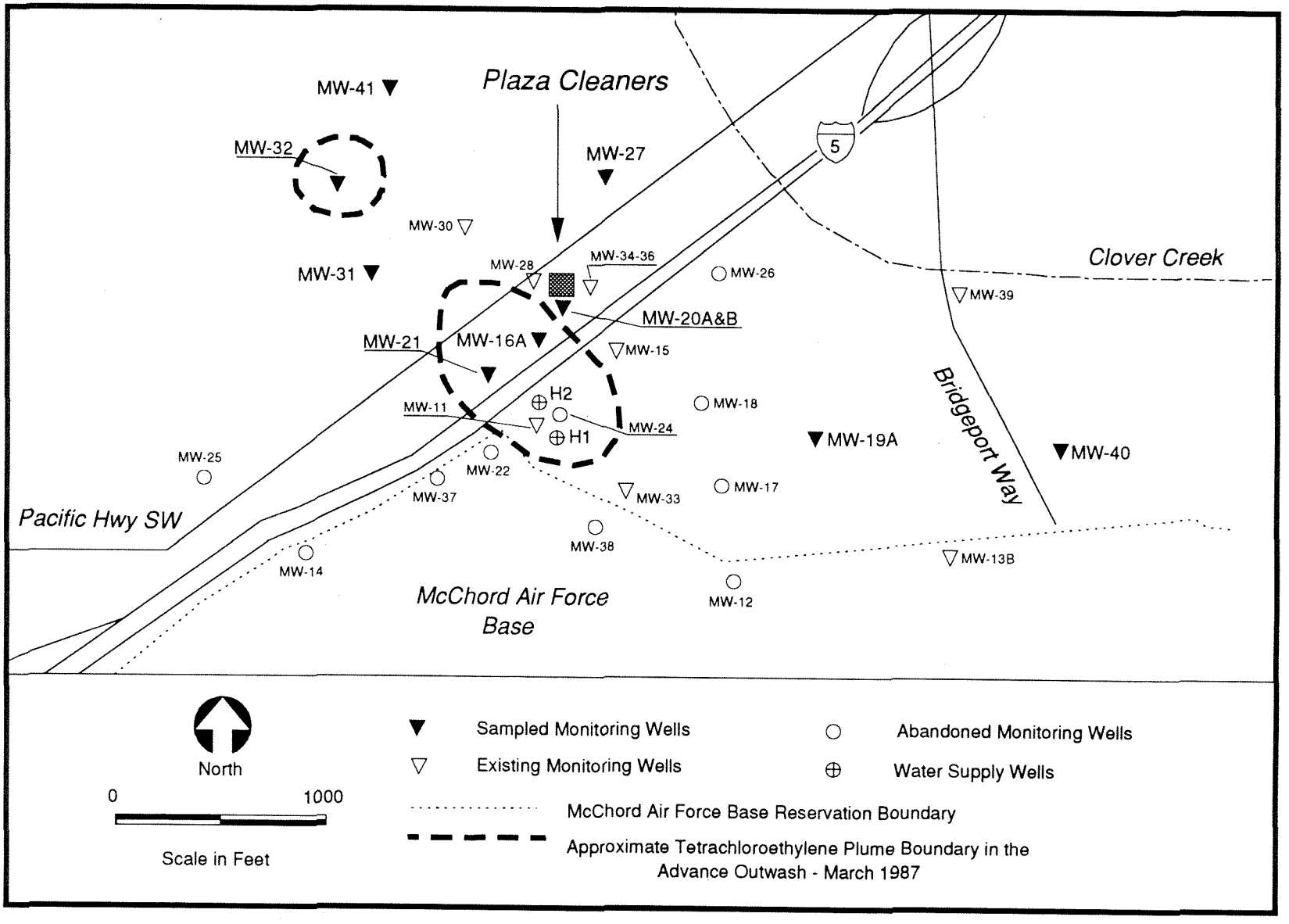

Figure 1: Well Location Map - Lakewood/Plaza Cleaners

METHODS

Ground Water Sampling

Samples were collected on December 1-3, 1992, from MW-16A, MW-19A, MW-20A, MW-20B, MW-21, MW-27, MW-31, MW-32, MW-40, and MW-41 (Figure 2). Prior to sample collection, static water level measurements were obtained using an electronic water level indicator which was rinsed with deionized water after each use. All monitoring wells were purged until a minimum of three well volumes had been removed and pH, temperature, and specific conductance readings stabilized. Purge water was discharged to storm drains or to the ground near each monitoring well. All wells but one (MW-20B) were purged and sampled using dedicated bladder pumps. Well MW-20B was purged and sampled with a decontaminated teflon bailer.

Wells were sampled 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. Volatile organic samples were analyzed using EPA SW 846 Method 8240 (EPA, 1986).

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, 1991).

Quality Assurance Samples

In general, the quality of the data is acceptable for use, although the samples were analyzed one week past the 14-day holding time. According to the quality assurance review, this should have no effect on the validity of the analysis since the volatile compounds detected have been shown to be stable for more than thirty days.

Quality control samples collected in the field consisted of transfer blank, transport blank, a blind duplicate, and a replicate sample. A transfer blank was collected by pouring organic-free water through a decontaminated bailer. A transport blank was carried unopened throughout the sampling event. A blind duplicate sample, labeled MW-16B, 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, labeled MW-20A**, 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 assurance samples consisted of matrix spikes, matrix spike duplicates and surrogate compound recoveries.

Volatile organic analyses were performed by Manchester Laboratory. Dick Huntamer of the Manchester Laboratory conducted the quality assurance review, which has been included in Appendix A. Since the samples were analyzed past the 14-day holding time, most results are

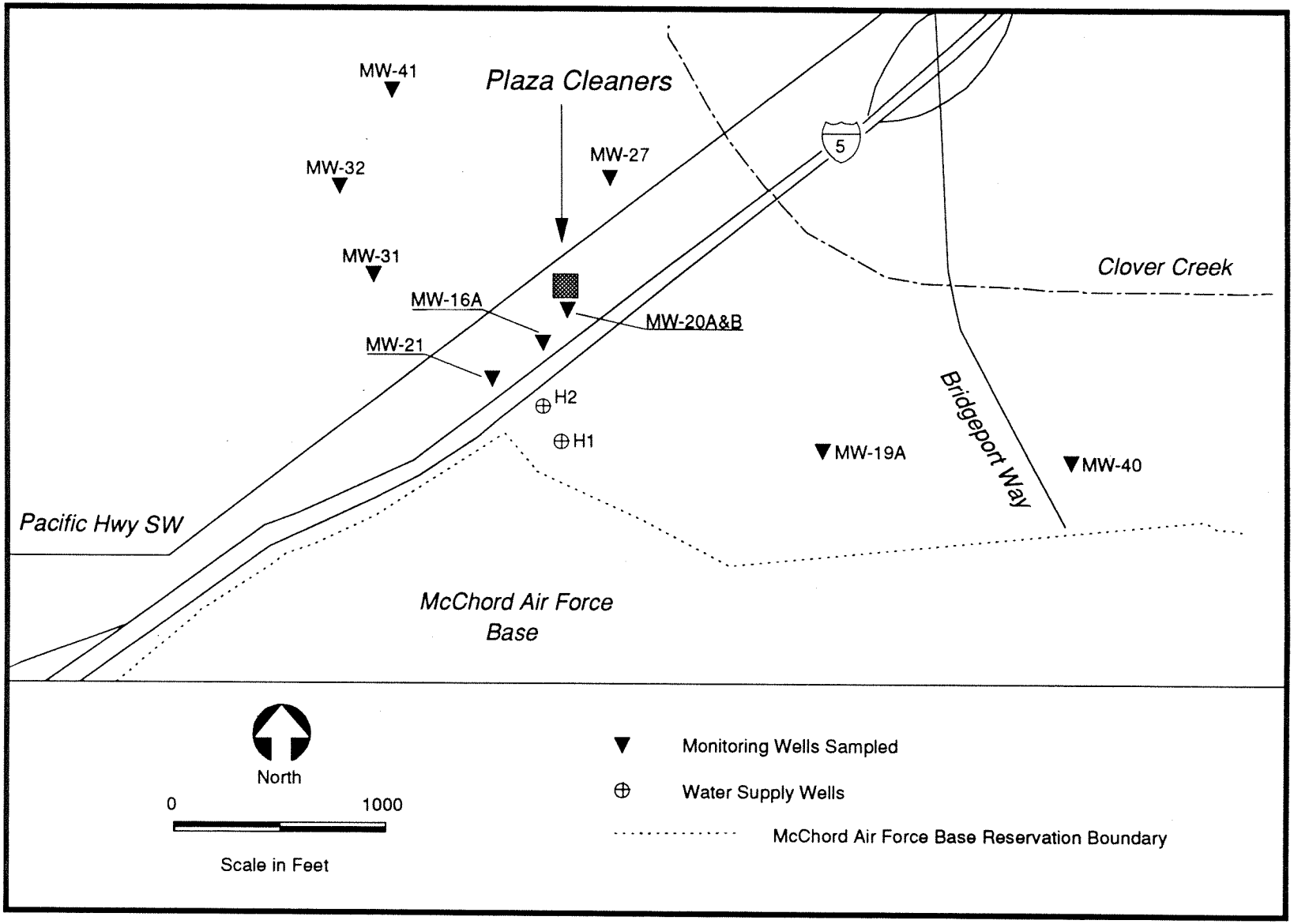

Figure 2: Lakewood/Plaza Cleaners Sample Locations for December 1992

qualified as estimates. Several volatile organics were detected in the method blanks at or below the detection limits. None of these compounds were detected in any of the field samples. Fluorobenzene was detected in all of the samples and method blanks.

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 (PERC) and 1,2-dichloroethylene were 0%, and trichloroethylene (TCE) was 28%. Because these percentages are based on values near the quantitation limit, they are probably not representative of precision at higher concentrations. Matrix spike and spike duplicate recoveries for volatile organics are within the QC limits of $\pm 25\%$ for water sample analysis.

RESULTS

Field Observations

Table 1 lists field observation data including well depth, geologic unit, static water level, pH, specific conductance, temperature, and purged volume in order the wells were sampled. Depth to water ranged from 31.49 to 64.67 feet. Stabilized field measurements for pH, specific conductance and temperature ranged as follows: pH from 6.3 to 7.4 standard units, specific conductance from 134 to 750 umhos/cm and temperature from 10.0 to 12.9°C. Well MW-20A had a pH reading of 9.0 standard units, which is consistent with previous measurements. High pH readings in MW-20A are most likely related to well construction. Well MW-20B had a higher specific conductance reading (750 umhos/cm) than other wells. A higher specific conductance is expected for samples from the Vashon Till compared to samples from the Advance Outwash.

Analytical Results

Table 2 summarizes analytical results for sample Round V conducted on December 1-3, 1992. Tetrachloroethylene (PERC) and 1,2-dichloroethylene (1,2-DCE) were detected in most of the wells screened in the Advance Outwash. These compounds were detected in wells MW-16A, MW-20A, MW-21, MW-31, and MW-32 at concentrations at or near the quantitation limit. Maximum PERC (340 ppb), 1,2-DCE (20 ppb), and trichloroethylene (TCE, 14 ppb) concentrations were detected in well MW-20B, which is screened in the Vashon Till. Since the samples were analyzed past the holding time these results are qualified as estimates. Fluorobenzene was detected in all of the samples, but was not reported since it was found in the laboratory blanks.

Laboratory reporting sheets are presented in Appendix A. Data were managed using the ENVIS database software package.

Table 1: Field Parameter Results for December 1-3, 1992

Monitoring Well	Total Depth From Top of PVC Casing As Measured	Geologic Unit Screened	Depth to Water	pH (st. units)	Specific Conductance (umhos/cm)	Temperature (°C)	Purge Volume (gallons)
MW-40	75.1	Advance Outwash	36.6	7.3	230	10.0	19
MW-19A	97.5	Advance Outwash	42.8	7.1	139	10.7	27
MW-41	96.8	Advance Outwash	31.49	7.4	149	10.7	33
MW-27	96.4	Advance Outwash	++	6.9	145	11.4	20
MW-20A	97.3	Advance Outwash	37.17	9.0	154	12.0	30
MW-32	114.4	Advance Outwash	64.67	7.2	138	10.9	25
MW-31	91.5	Advance Outwash	++	7.1	134	10.9	30
MW-21	92.1	Advance Outwash	45.64	7.0	145	11.3	23
MW-16A	109	Advance Outwash	--	7.2	149	11.5	125
MW-20B	50.4	Vashon Till	40.57	6.3	750	12.9	5

++ = Dedicated pump obstructs water-level measurement.
-- = Water level probe not working.

Table 2: Summary of Analytes Detected in Samples Collected During December 1-3, 1992

Geologic Unit Screened	Vashon Till	Advance Outwash										
											Upgradient Wells	
Monitoring Well	MW-20B	MW-16A	MW-16B*	MW-20A	MW-20A**	MW-21	MW-27	MW-31	MW-32	MW-41	MW-19A	MW-40
Volatile Organics: (ug/L)												
Tetrachloroethylene (PERC)	340 J	9	9 J	0.8 J	0.3 J	2	1 UJ	0.5 J	0.7 J	1 UJ	1 UJ	1 UJ
Trichloroethylene (TCE)	14 J	0.3 J	0.4 J	1 UJ	1 UJ	0.2 J	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
1,2-Dichloroethylene (1,2-DCE)	20 J	0.8 J	0.8 J	1 UJ	1 UJ	0.3 J	1 UJ	0.9 J	0.5 J	1 UJ	1 UJ	1 UJ

* = Duplicate

** = Replicate

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.

DISCUSSION AND CONCLUSIONS

Table 3 shows PERC, TCE, and 1,2-DCE concentrations for January 1991 through December 1992. Well MW-20B continues to have the highest concentrations of any of the wells sampled. Historical maximum concentrations for PERC and TCE recorded in well MW-20B occurred in March 1985 at 4,856 ppb and 103 ppb respectively. Well MW-20B is close to Plaza Cleaners, and is screened in the Vashon Till. PERC and TCE concentrations measured at the Lakewood site over the history of the project are presented in Appendix B. During this sample round concentrations of PERC, TCE and 1,2-DCE in MW-20B were 340 ppb, 14 ppb, and 20 ppb respectively. PERC concentration decreased substantially from the May 1992 measurement of 940 ppb. Although PERC concentrations decreased since the most recent soil removal (August, 1992), at this time there is insufficient data to indicate if this is a contributing factor. PERC concentrations measured previously have been as low as 120 ppb in November 1991.

Low concentrations of PERC, TCE and 1,2-DCE were also detected in MW-16A with concentrations of 9 ppb, 0.3 ppb, and 0.8 ppb respectively. Concentrations in MW-16A continue to be higher in this well than those measured in MW-20A. Both wells are screened in the Advance Outwash below the contaminated Vashon Till, however, MW-16A is further from the source (See Figure 2). Higher contaminant concentrations in MW-16A are evidence that more permeable materials (lenses) in the overlying contaminated Vashon Till may be allowing downward migration of contaminants to the Advance Outwash.

Upgradient monitoring wells MW-19A and MW-40 were sampled to assess the quality of ground water upgradient of the site. No contaminants were detected. According to the Long Term Remedial Action Plan this was the last year wells MW-19A and MW-40 were to be sampled (CH2M HILL, 1990b).

Table 3: Summary of Sampling Results from January 1991 to December 1992

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

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

REFERENCES

CH2M HILL, 1988. Final Aquifer Cleanup Assessment Report. Ponders Corner, Washington.

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

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

Washington State Department of Ecology, 1991. Manchester Environmental Laboratory - Laboratory Users Manual. Edited by D. Huntamer and J. Hyre.

U.S. Environmental Protection Agency, 1983. Methods for Chemical Analysis of Water and Wastes. Environmental Monitoring and Support Laboratory Cincinnati, Ohio, EPA 600/4-79-020.

U.S. Environmental Protection Agency, 1985. Final Draft Remedial Investigation Report - Ponder's Corner, Washington. EPA 112-0L22.

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

APPENDIX A

Analytical Results
Lakewood/Plaza Cleaners
December 1-3, 1992

MANCHESTER ENVIRONMENTAL LABORATORY

7411 Beach Drive E , Port Orchard Washington 98366

CASE NARRATIVE

February 11, 1993

Subject: Lakewood/Plaza Cleaners

Samples: 92 - 498080 to -498093

Case No. DOE-553Y

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 8240 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, 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 all of the recommended surrogate compounds. One surrogate, p-bromofluorobenzene in the lab blank ABW2356 was 1% below the limit. Since the other surrogates were acceptable no qualifiers were added to the sample data due to the one surrogate being low.

HOLDING TIMES:

A clerical error was made when preparing the VOA shoot log. The collection date for the samples was listed as February 8, 1992 instead of February 1, 1992. This resulted in the samples exceeding holding times by five to seven days. This should have no effect on the validity of the analysis since those volatile compounds detected have been shown to be stable for more than thirty days. However, following EPA quidelines the "J" data qualifier was added to all of the analytical results since the recommended fourteen day holding times were exceeded.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Matrix spikes recoveries were acceptable and Relative Percent Differences (RPD) for all compounds except cis-1,2-dichloroethene and 2,2-dichloropropane. Results for those compounds in the matrix spike sample -498083 were qualified with a "J".

SPECIAL ANALYTICAL PROBLEMS:

Other than the problem with holding times no other analytical problems were encountered. The data is acceptable for use as qualified..

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.
*	-	The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: MANCHESTER LAB Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Lab File ID: ABW2356 Lab Sample ID: BLANK

Date Analyzed: 12/21/92 Time Analyzed: 1505

Matrix: (soil/water) WATER Level:(low/med) _____

Instrument ID: 5100

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	ABW2356	BLANK	ABW2356	1505
02	A92498080	SAMPLE	A498080	1639
03	A92498081	SAMPLE	A498081	1720
04	A92498082	SAMPLE	A498082	1758
05	A92498083	SAMPLE	A498083	1833
06	A92498084	SAMPLE	A498084	1909
07	A92498085	SAMPLE	A498085	1944

COMMENTS: ABS2356 - 5ML BLANK - 12/21/92
DB-624,30M,0.32MM,1.8U,10C FOR 2MIN,10-102/8C,102-180/20C & HOL

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: MANCHESTER LAB Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Lab File ID: ABW2357 Lab Sample ID: BLANK

Date Analyzed: 12/22/92 Time Analyzed: 1217

Matrix: (soil/water) WATER Level: (low/med) _____

Instrument ID: 5100

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	A92498086	SAMPLE	A498086	1258
02	A92498087	SAMPLE	A498087	1332
03	A92498088	SAMPLE	A498088	1407
04	A92498089	SAMPLE	A498089	1439
05	A92498090	SAMPLE	A498090	1516
06	A92498091	SAMPLE	A498091	1549
07	ABW2357	BLANK	ABW2357	1217

COMMENTS: ABW2357 - 5MLS - BLANK - 12/22/92
DB-624,30M,0.32MM,1.8U,10C FOR 2MIN,10-102/8C,102-180/20C & HOL

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: MANCHESTER LAB Contract: _____

Lab Code: _____ Case No.: _____ SAS No.: _____ SDG No.: _____

Lab File ID: ABW2358 Lab Sample ID: BLANK

Date Analyzed: 12/23/92 Time Analyzed: 1219

Matrix: (soil/water) WATER Level:(low/med) _____

Instrument ID: 5100

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	A92498087Y	MATRIX_SPIKE	A498087Y	1405
02	A92498087Z	SPIKE_DUP	A498087Z	1443
03	A92498090A	DILUTION	A498090A	1523
04	A92498092	SAMPLE	A498092	1257
05	A92498093	SAMPLE	A498093	1329
06	ABW2358	BLANK	ABW2358	1219

COMMENTS: AVW2358 - 100NG STD - DAILY CALIBRATION - 12/23/92
DB-624,30M,0.32MM,1.8U,10C FOR 2MIN,10-102/8C,102-180/20C & HOL

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498080 Description: MW-40 Source: Well (Test/Observation)

Begin Date: 92/12/01 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	8UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	2UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1UJ	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	96 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	88	% Recov
D4-1,2-Dichlorobenzene	110	% Recov
d8-Toluene	107	% Recov
d4-1,2-Dichloroethane	111	% Recov

(Sample Complete)

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498081 Description: MW-19 Source: Well (Test/Observation)

Begin Date: 92/12/01

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	5UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	1UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1UJ	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	95 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	90	% Recov
D4-1,2-Dichlorobenzene	112	% Recov
d8-Toluene	104	% Recov
d4-1,2-Dichloroethane	112	% Recov

(Sample Complete)

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498082 Description: MW-41 Source: Well (Test/Observation)

Begin Date: 92/12/01 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	4UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	3UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1UJ	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	95 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	91	% Recov
D4-1,2-Dichlorobenzene	109	% Recov
d8-Toluene	104	% Recov
d4-1,2-Dichloroethane	109	% Recov

(Sample Complete)

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498083 Description: MW-27 Source: Well (Test/Observation)

Begin Date: 92/12/01 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	4UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	1UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1UJ	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	94 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	91	% Recov
D4-1,2-Dichlorobenzene	111	% Recov
d8-Toluene	105	% Recov
d4-1,2-Dichloroethane	109	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498084 Description: MW-20A Source: Well (Test/Observation)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	5UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	0.8J*	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	94 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	86	% Recov
D4-1,2-Dichlorobenzene	110	% Recov
d8-Toluene	101	% Recov
d4-1,2-Dichloroethane	109	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498085 Description: MW-32 Source: Well (Test/Observation)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	5UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	5UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	0.7J*	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	0.5J*	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	94 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	90	% Recov
D4-1,2-Dichlorobenzene	113	% Recov
d8-Toluene	104	% Recov
d4-1,2-Dichloroethane	110	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498086 Description: MW-31 Source: Well (Test/Observation)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	2UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	1UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	0.5J*	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	0.9J*	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	99 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	87	% Recov
D4-1,2-Dichlorobenzene	117	% Recov
d8-Toluene	102	% Recov
d4-1,2-Dichloroethane	97	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498087 Description: MW-21 Source: Well (Test/Observation)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	2UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	0.2J*	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	2 *	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	0.3J*	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	96 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	88	% Recov
D4-1,2-Dichlorobenzene	119	% Recov
d8-Toluene	102	% Recov
d4-1,2-Dichloroethane	98	% Recov

VOA - PP Scan (GCMS) Matrix Spike #1	Water-Total Result	Units
Carbon Tetrachloride	110J	% Recov
Acetone	95J	% Recov
Chloroform	103	% Recov
Benzene	110	% Recov
1,1,1-Trichloroethane	116	% Recov
Bromomethane	91J	% Recov
Chloromethane	92	% Recov
Dibromomethane	112	% Recov
Bromochloromethane	101	% Recov
Chloroethane	100J	% Recov
Vinyl Chloride	82J	% Recov
Methylene Chloride	92J	% Recov
Carbon Disulfide	78J	% Recov
Bromoform	124	% Recov
Bromodichloromethane	108	% Recov
1,1-Dichloroethane	90J	% Recov

VOA - PP Scan (GCMS) *** Continued *** Matrix Spike #1	Water-Total Result	Units
1,1-Dichloroethene	75J	% Recov
Trichlorofluoromethane	98J	% Recov
Methane, Dichlorodiflu+	96J	% Recov
1,2-Dichloropropane	114	% Recov
2-Butanone	123J	% Recov
1,1,2-Trichloroethane	94	% Recov
Ethene, trichloro-	114	% Recov
ETHANE, 1,1,2,2-TETRAC+	94	% Recov
1,2,3-Trichlorobenzene	94	% Recov
Hexachlorobutadiene	100	% Recov
Naphthalene	92J	% Recov
2-Chlorotoluene	110	% Recov
1,2-Dichlorobenzene	104	% Recov
1,2,4-Trimethylbenzene	100	% Recov
1,2-Dibromo-3-chloropr+	114J	% Recov
1,2,3-Trichloropropane	118	% Recov
Tert-Butylbenzene	90	% Recov
Isopropylbenzene (Cume+	106	% Recov
p-Isopropyltoluene	96	% Recov
Ethylbenzene	95	% Recov
BENZENE, ETHENYL-(STYR+	84	% Recov
BENZENE, PROPYL-	104	% Recov
Butylbenzene	92	% Recov
4-Chlorotoluene	107	% Recov
1,4-Dichlorobenzene	102	% Recov
1,2-Dibromoethane (EDB)	97	% Recov
1,2-Dichloroethane	101	% Recov
4-Methyl-2-Pentanone(M+	120	% Recov
1,3,5-Trimethylbenzene	101	% Recov
Bromobenzene	114	% Recov
Toluene	100	% Recov
Chlorobenzene	98	% Recov
1,2,4-Trichlorobenzene	94	% Recov
Dibromochloromethane	101J	% Recov
Tetrachloroethene	106J	% Recov
Sec-Butylbenzene	100	% Recov
1,3-Dichloropropane	108	% Recov
Cis-1,2-Dichloroethene	45J	% Recov
trans-1,2-Dichloroethe+	88J	% Recov
Fluorobenzene	101	% Recov
1,3-Dichlorobenzene	106	% Recov
1,1-Dichloropropene	108	% Recov
2-Hexanone	98	% Recov
2,2-Dichloropropane	48J	% Recov

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Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498087 Description: MW-21 Source: Well (Test/Observation)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS) *** Continued *** Matrix Spike #1	Water-Total Result	Units
Ethane, 1,1,1,2-Tetrac+	98	% Recov
Total Xylenes	88	% Recov
D4-1,2-Dichlorobenzene	107	% Recov
d8-Toluene	103	% Recov
cis-1,3-Dichloropropene	105	% Recov
trans-1,3-Dichloroprop+	96	% Recov
d4-1,2-Dichloroethane	101	% Recov
p-Bromofluorobenzene	97	% Recov

VOA - PP Scan (GCMS) Matrix Spike #2	Water-Total Result	Units
Carbon Tetrachloride	112J	% Recov
Acetone	79J	% Recov
Chloroform	105	% Recov
Benzene	108	% Recov
1,1,1-Trichloroethane	116	% Recov
Bromomethane	96J	% Recov
Chloromethane	98	% Recov
Dibromomethane	106	% Recov
Bromochloromethane	102	% Recov
Chloroethane	114J	% Recov
Vinyl Chloride	92J	% Recov
Methylene Chloride	101J	% Recov
Carbon Disulfide	79J	% Recov
Bromoform	122	% Recov
Bromodichloromethane	112	% Recov
1,1-Dichloroethane	100J	% Recov
1,1-Dichloroethene	82J	% Recov
Trichlorofluoromethane	100J	% Recov
Methane, Dichlorodiflu+	101J	% Recov
1,2-Dichloropropane	104	% Recov
2-Butanone	132	% Recov
1,1,2-Trichloroethane	102	% Recov
Ethene, trichloro-	114	% Recov
ETHANE, 1,1,2,2-TETRAC+	92	% Recov
1,2,3-Trichlorobenzene	99	% Recov
Hexachlorobutadiene	108	% Recov
Naphthalene	95J	% Recov
2-Chlorotoluene	108	% Recov
1,2-Dichlorobenzene	103	% Recov
1,2,4-Trimethylbenzene	100	% Recov
1,2-Dibromo-3-chloropr+	100J	% Recov

VOA - PP Scan (GCMS) *** Continued *** Matrix Spike #2	Water-Total Result	Units
1,2,3-Trichloropropane	116	% Recov
Tert-Butylbenzene	92	% Recov
Isopropylbenzene (Cume+	108	% Recov
p-Isopropyltoluene	95	% Recov
Ethylbenzene	98	% Recov
BENZENE, ETHENYL-(STYR+	86	% Recov
BENZENE, PROPYL-	105	% Recov
Butylbenzene	94	% Recov
4-Chlorotoluene	108	% Recov
1,4-Dichlorobenzene	105	% Recov
1,2-Dibromoethane (EDB)	96	% Recov
1,2-Dichloroethane	106	% Recov
4-Methyl-2-Pentanone(M+	115	% Recov
1,3,5-Trimethylbenzene	96	% Recov
Bromobenzene	115	% Recov
Toluene	100	% Recov
Chlorobenzene	104	% Recov
1,2,4-Trichlorobenzene	100	% Recov
Dibromochloromethane	99J	% Recov
Tetrachloroethene	102J	% Recov
Sec-Butylbenzene	98	% Recov
1,3-Dichloropropane	104	% Recov
Cis-1,2-Dichloroethene	44J	% Recov
trans-1,2-Dichloroethe+	94J	% Recov
Fluorobenzene	100	% Recov
1,3-Dichlorobenzene	103	% Recov
1,1-Dichloropropene	106	% Recov
2-Hexanone	96	% Recov
2,2-Dichloropropane	48J	% Recov
Ethane, 1,1,1,2-Tetrac+	101	% Recov
Total Xylenes	88	% Recov
D4-1,2-Dichlorobenzene	107	% Recov
d8-Toluene	101	% Recov
cis-1,3-Dichloropropene	104	% Recov
trans-1,3-Dichloroprop+	90	% Recov
d4-1,2-Dichloroethane	99	% Recov
p-Bromofluorobenzene	95	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498088 Description: MW-16A Source: Well (Test/Observation)

Begin Date: 92/12/03 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	4UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	0.3J*	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	9 *	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	0.8J*	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	98 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	86	% Recov
D4-1,2-Dichlorobenzene	121	% Recov
d8-Toluene	101	% Recov
d4-1,2-Dichloroethane	102	% Recov

(Sample Complete)

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498089 Description: MW-16B Source: Well (Test/Observation)

Begin Date: 92/12/03 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	2UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	0.4J*	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	9J*	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	0.8J*	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	98 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	90	% Recov
D4-1,2-Dichlorobenzene	115	% Recov
d8-Toluene	101	% Recov
d4-1,2-Dichloroethane	100	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498090 Description: MW-20B Source: Well (Test/Observation)

Begin Date: 92/12/03 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	5UJ	ug/l
Acetone	12UJ	ug/l
Chloroform	5UJ	ug/l
Benzene	5UJ	ug/l
1,1,1-Trichloroethane	5UJ	ug/l
Bromomethane	5UJ	ug/l
Chloromethane	5UJ	ug/l
Dibromomethane	5UJ	ug/l
Bromochloromethane	5UJ	ug/l
Chloroethane	5UJ	ug/l
Vinyl Chloride	5UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	25UJ	ug/l
Bromoform	5UJ	ug/l
Bromodichloromethane	5UJ	ug/l
1,1-Dichloroethane	5UJ	ug/l
1,1-Dichloroethene	5UJ	ug/l
Trichlorofluoromethane	5UJ	ug/l
Methane, Dichlorodiflu+	25UJ	ug/l
1,2-Dichloropropane	5UJ	ug/l
2-Butanone	3UJ	ug/l
1,1,2-Trichloroethane	5UJ	ug/l
Ethene, trichloro-	14J*	ug/l
ETHANE, 1,1,2,2-TETRAC+	5UJ	ug/l
1,2,3-Trichlorobenzene	5UJ	ug/l
Hexachlorobutadiene	5UJ	ug/l
Naphthalene	5UJ	ug/l
2-Chlorotoluene	5UJ	ug/l
1,2-Dichlorobenzene	5UJ	ug/l
1,2,4-Trimethylbenzene	5UJ	ug/l
1,2-Dibromo-3-chloropr+	25UJ	ug/l
1,2,3-Trichloropropane	5UJ	ug/l
Tert-Butylbenzene	5UJ	ug/l
Isopropylbenzene (Cume+	5UJ	ug/l
p-Isopropyltoluene	5UJ	ug/l
Ethylbenzene	5UJ	ug/l
BENZENE, ETHENYL-(STYR+	5UJ	ug/l
BENZENE, PROPYL-	5UJ	ug/l
Butylbenzene	5UJ	ug/l
4-Chlorotoluene	5UJ	ug/l
1,4-Dichlorobenzene	5UJ	ug/l
1,2-Dibromoethane (EDB)	5UJ	ug/l
1,2-Dichloroethane	5UJ	ug/l
4-Methyl-2-Pentanone(M+	5UJ	ug/l
1,3,5-Trimethylbenzene	5UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	5UJ	ug/l
Toluene	5UJ	ug/l
Chlorobenzene	5UJ	ug/l
1,2,4-Trichlorobenzene	5UJ	ug/l
Dibromochloromethane	5UJ	ug/l
Tetrachloroethene	340J*	ug/l
Sec-Butylbenzene	5UJ	ug/l
1,3-Dichloropropane	5UJ	ug/l
Cis-1,2-Dichloroethene	20J*	ug/l
trans-1,2-Dichloroethe+	5UJ	ug/l
Fluorobenzene	97 *	ug/l
1,3-Dichlorobenzene	5UJ	ug/l
1,1-Dichloropropene	5UJ	ug/l
2-Hexanone	5UJ	ug/l
2,2-Dichloropropane	5UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	5UJ	ug/l
Total Xylenes	5UJ	ug/l
cis-1,3-Dichloropropene	5UJ	ug/l
trans-1,3-Dichloroprop+	5UJ	ug/l
p-Bromofluorobenzene	86	% Recov
D4-1,2-Dichlorobenzene	118	% Recov
d8-Toluene	102	% Recov
d4-1,2-Dichloroethane	101	% Recov

VOA - PP Scan (GCMS) Duplicate #1	Water-Total Result	Units
Carbon Tetrachloride	NAR	ug/l
Acetone	NAR	ug/l
Chloroform	NAR	ug/l
Benzene	NAR	ug/l
1,1,1-Trichloroethane	NAR	ug/l
Bromomethane	NAR	ug/l
Chloromethane	NAR	ug/l
Dibromomethane	NAR	ug/l
Bromochloromethane	NAR	ug/l
Chloroethane	NAR	ug/l
Vinyl Chloride	NAR	ug/l
Methylene Chloride	NAR	ug/l
Carbon Disulfide	NAR	ug/l
Bromoform	NAR	ug/l
Bromodichloromethane	NAR	ug/l
1,1-Dichloroethane	NAR	ug/l

VOA - PP Scan (GCMS) *** Continued *** Duplicate #1	Water-Total Result	Units
1,1-Dichloroethene	NAR	ug/l
Trichlorofluoromethane	NAR	ug/l
Methane, Dichlorodiflu+	NAR	ug/l
1,2-Dichloropropane	NAR	ug/l
2-Butanone	NAR	ug/l
1,1,2-Trichloroethane	NAR	ug/l
Ethene, trichloro-	NAR	ug/l
ETHANE, 1,1,2,2-TETRAC+	NAR	ug/l
1,2,3-Trichlorobenzene	NAR	ug/l
Hexachlorobutadiene	NAR	ug/l
Naphthalene	NAR	ug/l
2-Chlorotoluene	NAR	ug/l
1,2-Dichlorobenzene	NAR	ug/l
1,2,4-Trimethylbenzene	NAR	ug/l
1,2-Dibromo-3-chloropr+	NAR	ug/l
1,2,3-Trichloropropane	NAR	ug/l
Tert-Butylbenzene	NAR	ug/l
Isopropylbenzene (Cume+	NAR	ug/l
p-Isopropyltoluene	NAR	ug/l
Ethylbenzene	NAR	ug/l
BENZENE, ETHENYL-(STYR+	NAR	ug/l
BENZENE, PROPYL-	NAR	ug/l
Butylbenzene	NAR	ug/l
4-Chlorotoluene	NAR	ug/l
1,4-Dichlorobenzene	NAR	ug/l
1,2-Dibromoethane (EDB)	NAR	ug/l
1,2-Dichloroethane	NAR	ug/l
4-Methyl-2-Pentanone(M+	NAR	ug/l
1,3,5-Trimethylbenzene	NAR	ug/l
Bromobenzene	NAR	ug/l
Toluene	NAR	ug/l
Chlorobenzene	NAR	ug/l
1,2,4-Trichlorobenzene	NAR	ug/l
Dibromochloromethane	NAR	ug/l
Tetrachloroethene	340J*	ug/l
Sec-Butylbenzene	NAR	ug/l
1,3-Dichloropropane	NAR	ug/l
Cis-1,2-Dichloroethene	NAR	ug/l
trans-1,2-Dichloroethe+	NAR	ug/l
Fluorobenzene	98 *	ug/l
1,3-Dichlorobenzene	NAR	ug/l
1,1-Dichloropropene	NAR	ug/l
2-Hexanone	NAR	ug/l
2,2-Dichloropropane	NAR	ug/l

(Continued on next page)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498090 Description: MW-20B Source: Well (Test/Observation)

Begin Date: 92/12/03 :

VOA - PP Scan (GCMS) *** Continued *** Duplicate #1	Water-Total Result	Units
Ethane, 1,1,1,2-Tetrac+	NAR	ug/l
Total Xylenes	NAR	ug/l
cis-1,3-Dichloropropene	NAR	ug/l
trans-1,3-Dichloroprop+	NAR	ug/l
p-Bromofluorobenzene	87	% Recov
D4-1,2-Dichlorobenzene	113	% Recov
d8-Toluene	100	% Recov
d4-1,2-Dichloroethane	99	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS

Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498091 Description: MW-20A** Source: Well (Test/Observation)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	2UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	5UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	0.3J*	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	96 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	86	% Recov
D4-1,2-Dichlorobenzene	117	% Recov
d8-Toluene	101	% Recov
d4-1,2-Dichloroethane	100	% Recov

(Sample Complete)

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498092 Description: TRANSFER Source: Water (General)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	7UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	1UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1UJ	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	97 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	89	% Recov
D4-1,2-Dichlorobenzene	115	% Recov
d8-Toluene	100	% Recov
d4-1,2-Dichloroethane	97	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 92 498093 Description: TRNASPOR Source: Water (General)

Begin Date: 92/12/02 :

VOA - PP Scan (GCMS)	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	3UJ	ug/l
Chloroform	1UJ	ug/l
Benzene	1UJ	ug/l
1,1,1-Trichloroethane	1UJ	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1UJ	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	1UJ	ug/l
Carbon Disulfide	5UJ	ug/l
Bromoform	1UJ	ug/l
Bromodichloromethane	1UJ	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5UJ	ug/l
1,2-Dichloropropane	1UJ	ug/l
2-Butanone	5UJ	ug/l
1,1,2-Trichloroethane	1UJ	ug/l
Ethene, trichloro-	1UJ	ug/l
ETHANE, 1,1,2,2-TETRAC+	1UJ	ug/l
1,2,3-Trichlorobenzene	1UJ	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1UJ	ug/l
1,2-Dichlorobenzene	1UJ	ug/l
1,2,4-Trimethylbenzene	1UJ	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1UJ	ug/l
Tert-Butylbenzene	1UJ	ug/l
Isopropylbenzene (Cume+	1UJ	ug/l
p-Isopropyltoluene	1UJ	ug/l
Ethylbenzene	1UJ	ug/l
BENZENE, ETHENYL-(STYR+	1UJ	ug/l
BENZENE, PROPYL-	1UJ	ug/l
Butylbenzene	1UJ	ug/l
4-Chlorotoluene	1UJ	ug/l
1,4-Dichlorobenzene	1UJ	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1UJ	ug/l
4-Methyl-2-Pentanone(M+	1UJ	ug/l
1,3,5-Trimethylbenzene	1UJ	ug/l

VOA - PP Scan (GCMS) *** Continued ***	Water-Total Result	Units
Bromobenzene	1UJ	ug/l
Toluene	1UJ	ug/l
Chlorobenzene	1UJ	ug/l
1,2,4-Trichlorobenzene	1UJ	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1UJ	ug/l
Sec-Butylbenzene	1UJ	ug/l
1,3-Dichloropropane	1UJ	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	97 *	ug/l
1,3-Dichlorobenzene	1UJ	ug/l
1,1-Dichloropropene	1UJ	ug/l
2-Hexanone	1UJ	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1UJ	ug/l
Total Xylenes	1UJ	ug/l
cis-1,3-Dichloropropene	1UJ	ug/l
trans-1,3-Dichloroprop+	1UJ	ug/l
p-Bromofluorobenzene	91	% Recov
D4-1,2-Dichlorobenzene	119	% Recov
d8-Toluene	101	% Recov
d4-1,2-Dichloroethane	97	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Blank ID: BW2356

VOA - PP Scan (GCMS) Blank #1	Water-Total Result	Units
Carbon Tetrachloride	1U	ug/l
Acetone	7 *	ug/l
Chloroform	1U	ug/l
Benzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l
Bromomethane	1U	ug/l
Chloromethane	1U	ug/l
Dibromomethane	1U	ug/l
Bromochloromethane	1U	ug/l
Chloroethane	1U	ug/l
Vinyl Chloride	1U	ug/l
Methylene Chloride	0.4J*	ug/l
Carbon Disulfide	5U	ug/l
Bromoform	1U	ug/l
Bromodichloromethane	1U	ug/l
1,1-Dichloroethane	1U	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1U	ug/l
Methane, Dichlorodiflu+	5U	ug/l
1,2-Dichloropropane	1U	ug/l
2-Butanone	2J*	ug/l
1,1,2-Trichloroethane	1U	ug/l
Ethene, trichloro-	1U	ug/l
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l
1,2,3-Trichlorobenzene	0.5J*	ug/l
Hexachlorobutadiene	1UJ	ug/l
Naphthalene	0.6J*	ug/l
2-Chlorotoluene	1U	ug/l
1,2-Dichlorobenzene	1U	ug/l
1,2,4-Trimethylbenzene	1U	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1U	ug/l
Tert-Butylbenzene	1U	ug/l
Isopropylbenzene (Cume+	0.2J*	ug/l
p-Isopropyltoluene	1U	ug/l
Ethylbenzene	0.2J*	ug/l
BENZENE, ETHENYL-(STYR+	1U	ug/l
BENZENE, PROPYL-	1U	ug/l
Butylbenzene	1U	ug/l
4-Chlorotoluene	1U	ug/l
1,4-Dichlorobenzene	1U	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1U	ug/l
4-Methyl-2-Pentanone(M+	1U	ug/l
1,3,5-Trimethylbenzene	1U	ug/l

VOA - PP Scan (GCMS) *** Continued *** Blank #1	Water-Total Result	Units
Bromobenzene	1U	ug/l
Toluene	0.2J*	ug/l
Chlorobenzene	1U	ug/l
1,2,4-Trichlorobenzene	0.4J*	ug/l
Dibromochloromethane	1U	ug/l
Tetrachloroethene	1U	ug/l
Sec-Butylbenzene	1U	ug/l
1,3-Dichloropropane	1U	ug/l
Cis-1,2-Dichloroethene	1U	ug/l
trans-1,2-Dichloroethe+	1U	ug/l
Fluorobenzene	97 *	ug/l
1,3-Dichlorobenzene	1U	ug/l
1,1-Dichloropropene	1U	ug/l
2-Hexanone	1U	ug/l
2,2-Dichloropropane	1U	ug/l
Ethane, 1,1,1,2-Tetrac+	1U	ug/l
Total Xylenes	0.3J*	ug/l
cis-1,3-Dichloropropene	1U	ug/l
trans-1,3-Dichloroprop+	1U	ug/l
p-Bromofluorobenzene	85	% Recov
D4-1,2-Dichlorobenzene	109	% Recov
d8-Toluene	106	% Recov
d4-1,2-Dichloroethane	104	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS

Officer: PZM Account: D3P11

Blank ID: BW2357

VOA - PP Scan (GCMS) Blank #2	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	3J*	ug/l
Chloroform	1U	ug/l
Benzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1UJ	ug/l
Dibromomethane	1UJ	ug/l
Bromochloromethane	1U	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	0.4J*	ug/l
Carbon Disulfide	5U	ug/l
Bromoform	1U	ug/l
Bromodichloromethane	1U	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5U	ug/l
1,2-Dichloropropane	1U	ug/l
2-Butanone	2J*	ug/l
1,1,2-Trichloroethane	1U	ug/l
Ethene, trichloro-	1U	ug/l
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l
1,2,3-Trichlorobenzene	1U	ug/l
Hexachlorobutadiene	1U	ug/l
Naphthalene	1U	ug/l
2-Chlorotoluene	1U	ug/l
1,2-Dichlorobenzene	1U	ug/l
1,2,4-Trimethylbenzene	1U	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1U	ug/l
Tert-Butylbenzene	1U	ug/l
Isopropylbenzene (Cume+	1U	ug/l
p-Isopropyltoluene	1U	ug/l
Ethylbenzene	1U	ug/l
BENZENE, ETHENYL-(STYR+	0.1J*	ug/l
BENZENE, PROPYL-	1U	ug/l
Butylbenzene	1U	ug/l
4-Chlorotoluene	1U	ug/l
1,4-Dichlorobenzene	1U	ug/l
1,2-Dibromoethane (EDB)	1UJ	ug/l
1,2-Dichloroethane	1U	ug/l
4-Methyl-2-Pentanone(M+	1U	ug/l
1,3,5-Trimethylbenzene	1U	ug/l

VOA - PP Scan (GCMS) *** Continued *** Blank #2	Water-Total Result	Units
Bromobenzene	1U	ug/l
Toluene	0.1J*	ug/l
Chlorobenzene	1U	ug/l
1,2,4-Trichlorobenzene	1U	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1U	ug/l
Sec-Butylbenzene	1U	ug/l
1,3-Dichloropropane	1U	ug/l
Cis-1,2-Dichloroethene	1U	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	97 *	ug/l
1,3-Dichlorobenzene	1U	ug/l
1,1-Dichloropropene	1U	ug/l
2-Hexanone	1U	ug/l
2,2-Dichloropropane	1UJ	ug/l
Ethane, 1,1,1,2-Tetrac+	1U	ug/l
Total Xylenes	1U	ug/l
cis-1,3-Dichloropropene	1U	ug/l
trans-1,3-Dichloroprop+	1U	ug/l
p-Bromofluorobenzene	89	% Recov
D4-1,2-Dichlorobenzene	118	% Recov
d8-Toluene	102	% Recov
d4-1,2-Dichloroethane	98	% Recov

(Sample Complete)

Project: DOE-553Y LAKEWOOD/PLAZA CLEANERS Officer: PZM Account: D3P11

Blank ID: BW2358

VOA - PP Scan (GCMS) Blank #3	Water-Total Result	Units
Carbon Tetrachloride	1UJ	ug/l
Acetone	3J*	ug/l
Chloroform	1U	ug/l
Benzene	1U	ug/l
1,1,1-Trichloroethane	1U	ug/l
Bromomethane	1UJ	ug/l
Chloromethane	1U	ug/l
Dibromomethane	1U	ug/l
Bromochloromethane	1U	ug/l
Chloroethane	1UJ	ug/l
Vinyl Chloride	1UJ	ug/l
Methylene Chloride	0.5J*	ug/l
Carbon Disulfide	5U	ug/l
Bromoform	1U	ug/l
Bromodichloromethane	1U	ug/l
1,1-Dichloroethane	1UJ	ug/l
1,1-Dichloroethene	1UJ	ug/l
Trichlorofluoromethane	1UJ	ug/l
Methane, Dichlorodiflu+	5U	ug/l
1,2-Dichloropropane	1U	ug/l
2-Butanone	5U	ug/l
1,1,2-Trichloroethane	1U	ug/l
Ethene, trichloro-	1U	ug/l
ETHANE, 1,1,2,2-TETRAC+	1U	ug/l
1,2,3-Trichlorobenzene	0.5J*	ug/l
Hexachlorobutadiene	1U	ug/l
Naphthalene	1UJ	ug/l
2-Chlorotoluene	1U	ug/l
1,2-Dichlorobenzene	1U	ug/l
1,2,4-Trimethylbenzene	1U	ug/l
1,2-Dibromo-3-chloropr+	5UJ	ug/l
1,2,3-Trichloropropane	1U	ug/l
Tert-Butylbenzene	1U	ug/l
Isopropylbenzene (Cume+	1U	ug/l
p-Isopropyltoluene	1U	ug/l
Ethylbenzene	1U	ug/l
BENZENE, ETHENYL-(STYR+	1U	ug/l
BENZENE, PROPYL-	1U	ug/l
Butylbenzene	1U	ug/l
4-Chlorotoluene	1U	ug/l
1,4-Dichlorobenzene	1U	ug/l
1,2-Dibromoethane (EDB)	1U	ug/l
1,2-Dichloroethane	1U	ug/l
4-Methyl-2-Pentanone(M+	1U	ug/l
1,3,5-Trimethylbenzene	1U	ug/l

VOA - PP Scan (GCMS) *** Continued *** Blank #3	Water-Total Result	Units
Bromobenzene	1U	ug/l
Toluene	0.1J*	ug/l
Chlorobenzene	1U	ug/l
1,2,4-Trichlorobenzene	0.3J*	ug/l
Dibromochloromethane	1UJ	ug/l
Tetrachloroethene	1UJ	ug/l
Sec-Butylbenzene	1U	ug/l
1,3-Dichloropropane	1U	ug/l
Cis-1,2-Dichloroethene	1UJ	ug/l
trans-1,2-Dichloroethe+	1UJ	ug/l
Fluorobenzene	98 *	ug/l
1,3-Dichlorobenzene	1U	ug/l
1,1-Dichloropropene	1U	ug/l
2-Hexanone	1U	ug/l
2,2-Dichloropropane	1U	ug/l
Ethane, 1,1,1,2-Tetrac+	1U	ug/l
Total Xylenes	1U	ug/l
cis-1,3-Dichloropropene	1U	ug/l
trans-1,3-Dichloroprop+	1U	ug/l
p-Bromofluorobenzene	90	% Recov
D4-1,2-Dichlorobenzene	116	% Recov
d8-Toluene	103	% Recov
d4-1,2-Dichloroethane	95	% Recov

(Sample Complete)

APPENDIX B

Historical TCE and PERC Data

Table B-1
TCE Concentrations Measured in Monitoring Wells
Ponders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85[a]	11/5/85 Through 11/7/85[a]	8/25/86 Through 8/28/87	12/16/86 Through 12/17/86	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/4/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
11A	ND	ND	NM	ND	ND	D	ND	ND	NM	NM		NM	NM	NM	NM	NM	
11B	NM	NM	NM	NM	NM	ND	NM	NM	NM	NM		NM	NM	NM	NM	NM	
12	ND	ND	ND	ND	ND	ND	ND	1[d]	ND	ND	ND	ND	ND	ND	NM	NM	
13A	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
13B	NM	NM	NM	NM	NM	D	ND	1[d]	1[d]	2	ND	D	J	ND	NM	NM	
14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
15A	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
15B	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
16A	6.3	3.9	NM	3.4	2.0	D/D[b]	2[d]	1[d]	1[d]	ND	NM	ND	NM	D	NM	ND	1
16B	NM	ND	NM	ND	ND	NM	NM	ND	NM	NM	NM	NM	NM	NM	NM	NM	
17A	ND	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
17B	NM	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
18	ND	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
19A	ND	ND	NM	ND	ND	ND	ND	ND	NM	ND	ND	ND	J	ND	ND	ND	ND
19B	NM	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
19C												NM	J	ND	NM	NM	
20A	NM	ND	NM	NM	ND	D	ND	ND	ND	ND	NM	ND	NM	D	NM	ND	ND
20B	NM	103	32	12	ND	D[c]	29	100	NM	NM	NM	ND	NM	NM	NM	29	24/23
21	1.5	ND	NM	ND	ND	D	6	1[d]	1[d]	1[d]	NM	ND	NM	D	NM	ND	0.2J
22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24A	ND	ND	NM	ND	ND	1.2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24B	NM	ND	NM	ND	ND	D	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
25	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
26	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
27	ND	NM	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
28A	ND	ND	NM	ND	ND	NM	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
29	ND	ND	NM	ND	ND	ND	ND	ND	1[d]	ND	NM	ND	NM	D	ND	ND	ND
30	1.6	ND	NM	ND	D	NM	ND	1[d]	ND	ND	NM	ND	NM	D	ND	NM	
31	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
32	ND	ND	ND	ND	ND	D	ND	1[d]	ND	ND	NM	ND	NM	ND	ND	ND	ND

Table B-1
TCE Concentrations Measured in Monitoring Wells
Ponders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85[a]	11/5/85 Through 11/7/85[a]	8/25/86 Through 8/28/87	12/16/86 Through 12/17/86	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/4/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
33	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
34	ND	NM	NM	NM	NM	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
35	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
36	42	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
37[c]										ND	ND	ND	J	ND	ND	ND	ND
38[c]										15	ND	NM	NM	NM	NM	NM	
39A[c]										1	ND	ND	ND	ND	ND	NM	
39B[c]										ND	ND	NM	ND	ND	ND	NM	
39C												NM	NM	ND	NM	NM	
40[c]										ND	ND	ND	ND	ND	ND	ND	ND
41[c]										ND		NM	NM	NM	NM	ND	ND

[a]Exceeded acceptable holding time.
[b]Duplicate analysis.
[c]Detection limit = 100 µg/l.
[d]Estimated value. Compound present but at less than the specified detection limit.
[e]Wells constructed 2/87 through 3/87.

Notes: Units in parts per billion.
NM = Not measured.
ND = Not detected.
D = Detected, not quantified.
J = Estimated value. Value not accurate.

Table B-2
PERC Concentrations Measured in Monitoring Wells
Ponders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85[a]	11/5/85 Through 11/7/85[a]	8/25/86 Through 8/28/86	12/16/86 Through 12/17/87	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/7/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
11A	6.2	5.6	NM	6.1	2.7	4.3	2	1.4	NM	NM	NM	NM	NM	NM	NM	NM	
11B	NM	NM	NM	NM	NM	2.4	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NM	NM	
13A	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
13B	NM	NM	NM	NM	NM	ND	ND	ND	ND	ND	ND	ND	J	ND	NM	NM	
14	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
15A	NM	0.5	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
15B	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
16A	110	70	NM	46	33	12/11[b]	19	16	17	49	NM	8	NM	7.3-8.0	NM	5(16)	74
16B	NM	15	NM	13	5	NM	4[c]	4.5	NM	NM	NM	NM	NM	NM	NM	NM	
17A	ND	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
17B	NM	ND	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	NM	
18	ND	ND	NM	ND	ND	D	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
19A	ND	ND	NM	ND	ND	ND	ND	ND	NM	ND	ND	ND	J	ND	ND	ND	ND
19B	NM	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
19C												NM	J	ND	NM	NM	
20A	NM	5.1	NM	NM	2.8	4.0	ND	2.1	1.5	ND	NM	ND	NM	1.2	NM	ND	0.6J
20B	NM	4,856	2,200	570	1,220	1,060	350	745	NM	NM	NM	ND	NM	NM	NM	1,100 (880)	550 (1,300)
21	27	2.2	NM	13	11	10	ND	ND	4.6	4	NM	6	NM	4.0	NM	2 J	3
22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24A	8.5	1.5	NM	7.2	4.4	16	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
24B	NM	9.5	NM	0.9	4.0	4.9	ND	2.9	NM	NM	NM	NM	NM	NM	NM	NM	
25	ND	ND	NM	ND	ND	ND	13	ND	NM	NM	NM	NM	NM	NM	NM	NM	
26	ND	ND	NM	NM	ND	ND	9	ND	NM	NM	NM	NM	NM	NM	NM	NM	
27	ND	NM	NM	NM	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
28A	ND	0.7	NM	ND	ND	NM	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
29	5.8	0.9	NM	5.4	1.1	3.4	ND	1.2	2.8	ND	NM	ND	NM	1.8	ND	1J	0.8J
30	38	24.1	NM	17.2	13	NM	10	5.3	2.2	ND	NM	5	NM	3.8-4.7	3J	NM	
31	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
32	ND	4.3	5	6.9	3.3	3.7	ND	2	1.5	2	NM	ND	NM	D	ND	1J	1

Table B-2
PERC Concentrations Measured in Monitoring Wells
Ponders Corner, Washington

Well No.	2/12/85 Through 2/14/85	3/18/85 Through 3/22/85	4/25/85	5/16/85 Through 5/20/85	6/17/85 Through 6/21/85	8/20/85 Through 8/23/85[a]	11/5/85 Through 11/7/85[a]	8/25/86 Through 8/28/86	12/16/86 Through 12/17/87	3/17/87 Through 3/20/87	7/7/87	10/5/87 Through 10/6/87	1/28/88 Through 1/29/88	4/25/88 Through 4/26/88	10/7/88 Through 11/28/88	5/22/89 Through 5/25/89	4/23/90 Through 4/24/90
33	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
34	83	NM	NM	NM	NM	1.2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
35	ND	ND	NM	ND	ND	ND	ND	ND	NM	NM	NM	NM	NM	NM	NM	NM	
36	139	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
37[d]										ND	ND	ND	J	ND	ND	ND	D
38[d]										ND	ND	NM	NM	NM	NM	NM	
39A[d]										ND	ND	ND	J	D	ND	NM	
39B[d]										ND	ND	NM	NM	J	ND	ND	
39C												NM	NM	ND	NM	NM	
40[d]										ND	ND	ND	J	ND	ND	ND	ND
41[d]										ND	ND	NM	NM	NM	NM	ND	ND

[a]Exceeded acceptable holding time.
[b]Duplicate analysis.
[c]Estimated value. Compound present but at less than the specified detection limit.
[d]Wells constructed 2/87 through 3/87.

Notes: Units in µg/l.
NM = Not measured.
ND = Not detected.
D = Detected, not quantified.
J = Estimated value. Value not accurate.