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Recd 6/9/95 BC

Quarterly Ground Water Monitoring Report
First Quarter, 1995

for

Young's Cleaners
Foothill Square Shopping Center
10700 MacArthur Boulevard
Oakland, California

June, 1995

Augeas Corporation
P.O. Box 940
780 Purissima Street
Half Moon Bay, CA 94019
Telephone: (415) 726-7700
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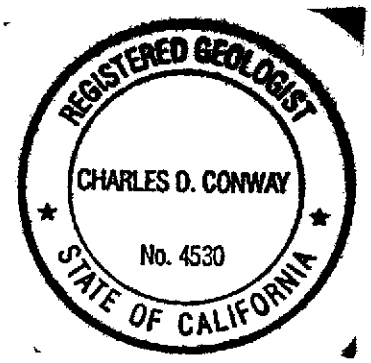
This report was prepared under the supervision of a registered geologist. All statements, conclusions and recommendations are based solely upon field observations and informational reviews related to work performed by Augeas Corporation.

Site conditions are subject to change with time; therefore, our conclusions result only from the interpretation of present conditions and available site information. This report was prepared in accordance with accepted professional standards and technical procedures as certified below.

Reviewed by:



Charles D. Conway

Charles D. Conway, R.G. 4530
Chief Project Geologist

June 9, 1995
Date

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TABLE OF CONTENTS

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1.0 INTRODUCTION

This report presents the results of ground water monitoring conducted by Augeas Corporation on March 23, 1995 at Young's Cleaners located at 10700 MacArthur Boulevard in Oakland, California. Analysis of ground water samples was performed by Augeas Corporation in accordance with the procedures described in Section 2.0 of this document.

This monitoring report provides an overview of the site background, summarizes past work at the site, describes the field work performed during the current monitoring event, provides current and cumulative ground water sampling analytical results and ground water gradient data, and presents our conclusions and recommendations regarding ground water conditions at the site.

1.1 Site Description and Background

The subject property is located at 10700 MacArthur Boulevard in Oakland, California. Figure 1, "Site Location Map", identifies the site with respect to regional features.

Aerial photographs and site use records indicate that historical use of the site included a former truck manufacturing plant. Development of the property as a shopping center began in 1960. Young's Cleaners has operated at the site since 1984. A coin operated dry cleaner, Norge Cleaners, operated at the location between 1962 and 1980. In July 1980 the current owners took over management of the property.

1.2 Previous Work

In January 1989, Western Geologic Resources (WGR) installed five monitoring wells on the shopping center property to characterize subsurface conditions and to collect soil and ground water samples. Ground water samples collected from

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well WGR MW-3, located near the ARCO station, have contained detectable concentrations of benzene and chlorinated solvents.

Further investigation at the ARCO station was conducted by RESNA Consultants between 1991 and 1993 to define the extent of gasoline contamination resulting from leakage of petroleum fuels. During their investigation, RESNA detected chlorinated solvents in several soil borings. On March 23, 1993, Alameda County Health Care Services Agency (ACHSA) requested that the vertical and lateral extent of perchloroethylene (PCE) contamination, discovered on the shopping center site by ARCO while investigating its release from adjacent underground tanks, be investigated by the shopping center owners.

In September through November of 1994, Augeas Corporation returned to the site in order to verify the source and extent of PCE in the soil and ground water originating from the dry cleaner. Augeas Corporation personnel collected soil samples from an excavation inside the facility, installed seven soil borings from 21 feet to 25 feet below the ground surface, installed one 2-inch diameter ground water monitoring well near the rear of the dry cleaners (AMW-1), and two 2-inch diameter monitoring wells near the front of the dry cleaners (AMW-2 and AMW-3). Augeas Corporation's "Report of Subsurface Investigation, Young's Cleaners", dated December, 1994, provides the details of this investigation.

In March, 1995, Augeas Corporation personnel returned to the site to install two additional wells, AMW-4 and AMW-5, to better access the extent of the subsurface contamination at the site. A report of this investigation is pending. The locations of site soil borings and monitoring wells are shown on Figure 2, "Site and Boring Location Plan". The field locations of the borings and wells with respect to the footprint of the buildings and the property line were established by a licensed land surveyor. The MSL elevations of the well casings were also established by a licensed land surveyor, and they were referenced to a local benchmark.

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2.0 GROUND WATER MONITORING--MARCH 1995

Augeas Corporation field personnel returned to the site on March 23, 1995 to measure total well depths and static ground water levels in site monitoring wells and to purge and collect ground water samples for laboratory analyses.

2.1 Ground Water Sampling

The Federal Environmental Protection Agency (EPA) and California Department of Health Services (DHS) have established standards which regulate substances that could affect human health or the aesthetic qualities of water. These primary standards regulate substances that may be harmful if ingested in large quantities over a short period of time or consumed in small amounts over a long period of time. Secondary standards specify limits for substances that may affect water qualities such as taste, color and odor.

Before purging each well, the total depth and water level of each well was measured with a resistivity-based Solinst™ water level indicator. Depths were measured to $\pm$ 0.01 ft. These data were used to calculate the volumes of water required to be purged from each well using a disposable bailer. Table 2, "Historical Ground Water Elevation Data", lists water depth information for all ground water monitoring events to date.

After the initial water level measurements were taken, three well casing volumes of water were purged from each well using a disposable bailer. The ground water in each well was allowed to recover to at least 80 per cent of it's approximate stable pre-purge level before sampling. Water samples were then collected using disposable bailers.

Augeas Corporation personnel monitored the water for the parameters pH, electrical conductivity, turbidity and temperature. The pH probe was calibrated in the field using pH 4 and pH 7 buffer solutions. These parameters stabilized during the purging of three well casing volumes of water. The water quality data were recorded for each well on Ground Water Sampling Field Logs which are included in Appendix A.

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To minimize the possibility of introducing contamination into the wells, a separate disposable bailer was used for each well. The bailing reel and the water level recorder were also decontaminated before use in each well by scrubbing with a detergent solution and rinsing twice in clean water.

Purged water removed from the wells was placed into Department of Transportation-approved 55-gallon liquid waste drums. The drums were labeled and stored on-site in a location away from public access pending disposal at an approved facility.

2.2 Ground Water Sample Analysis

The ground water samples were transferred into laboratory-supplied 40-milliliter Teflon-sealed glass volatile organic analysis vials and into one-liter glass bottles with Teflon-lined caps. Each sample was labeled with location, date and time, then promptly placed in a cooled ice-chest for transport under Chain-of-Custody protocol to Hull Development Labs, Inc., a California certified analytical laboratory based in San Jose, California. A chain of custody record for ground water samples accompanied each shipment to the laboratory.

In accordance with the Alameda County Health Care Services Agency (ACHSA) directives, ground water samples were analyzed for the presence of Purgeable Halocarbons by EPA method 8010. The analytical results provided by the laboratory were submitted to a Quality Assurance/Quality Control (QA/QC) review by Augeas Corporation staff. The review included holding times, blank results, matrix spikes, duplicates, elevated detection limits, and surrogates. The results of the QA/QC review indicate that the data have acceptable analytical accuracy and are of satisfactory quality. Copies of the certified analytical reports, including QA/QC results, and chain of custody are included in Appendix B.

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3.0 DISCUSSION OF ANALYTICAL RESULTS

Ground water analytical results from the March 23, 1995 quarterly monitoring event are listed in Table 1. Tetrachloroethene (PCE) was detected in monitoring wells AMW-2 and AMW-3 at concentrations of 13,000 micrograms per liter (µg/L) and 45 µg/L respectively. No PCE was detected in monitoring wells AMW-1 or WGR-MW-2.

Bromodichloromethane was detected in monitoring well AMW-1 at a concentration of 0.5 µg/L. However, this concentration was also reported for the trip blank. This result is consistent with laboratory error and is not likely to be an actual representation of ground water conditions at the site. Chloroform was also detected at a concentration of 9.9 ppb in the trip blank sample. This result is not uncommon for bottled water, and it is not reflected in the actual ground water samples collected from the site.

4.0 DISCUSSION OF GROUND WATER GRADIENT

As reported in Augeas Corporation's 1994 "Phase II Subsurface Investigation", monitoring wells AMW-2 and AMW-3 appear to be installed in a separate aquifer from monitoring wells AMW-1 and WGR-MW-2. For this reason, Augeas Corporation has not attempted to plot a ground water gradient map for this site.

5.0 CONCLUSIONS

Our conclusions based upon the results of this quarter of ground water monitoring are summarized as follows:

- The ground water beneath the site has been impacted with PCE at concentrations in excess of State action levels.

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- A ground water gradient can not be properly calculated for the site as a whole because monitoring wells AMW-2 and AMW-3 appear to be installed in a separate aquifer from monitoring wells AMW-1 and WGR-MW-2.

6.0 RECOMMENDATIONS

Augeas Corporation's recommendations as described in our "Phase II Subsurface Investigation Report" dated December, 1994, are summarized below as follows:

- Remove the shallow contaminated soil by excavation;

- Conduct confirmatory soil sampling while the excavation work is in progress to verify that the lateral and vertical extents of contamination have been defined;

- Destroy well AMW-2 and replace it after excavation is complete. The well should be replaced by drilling a new well west of the excavation limits, approximately where existing well AMW-2 is now located;

- Continue quarterly monitoring of the replacement well for AMW-2; quarterly monitoring of monitoring wells AMW-1, AMW-3, and WGR MW-2 and begin quarterly monitoring of new monitoring wells AMW-4 and AMW-5 for a period of at least one year. Ground water samples collected from these wells will document ground water conditions after the contaminated soils have been removed.

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Table 1, Historical Ground Water Analytical Results

EPA Method 8010
(all results expressed in micrograms per liter)

Young's Cleaners
Foothill Square Shopping Center
10700 MacArthur Boulevard
Oakland, CA

Well ID	Date	TPHs[1]	1,1-DCE[2]	c-1,2-DCE[3]	t-1,2-DCE[4]	TCE[5]	c-1,3-DCP[6]	1,1,2-TCA[7]	PCE[8]
WGR/MW-2	2/10/94	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/23/95	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AMW-1	10/04/94	<50.0	<0.3	<0.2	<0.2	<0.2	<0.4	<0.3	<0.2
	3/23/95	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
AMW-2	10/04/94	200	8	110	50	320	4.2	<0.3	28,000
	10/18/94	<50	<250	<250	<250	<250	<250	<250	18,000
	11/08/94	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	35,000
	3/23/95	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	13,000
AMW-3	11/28/94	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	22
	3/23/95	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	45

NA: Not analyzed for this parameter
(1) TPHs =Total Petroleum Hydrocarbons as stoddard solvent
(2) 1,1-Dichloroethene
(3) cis 1,2-Dichloroethene
(4) trans 1,2-Dichloroethene
(5) trichloroethene
(6) cis 1,3-Dichloropropene
(7) 1,1,2-Trichloroethane
(8) Tetrachloroethene

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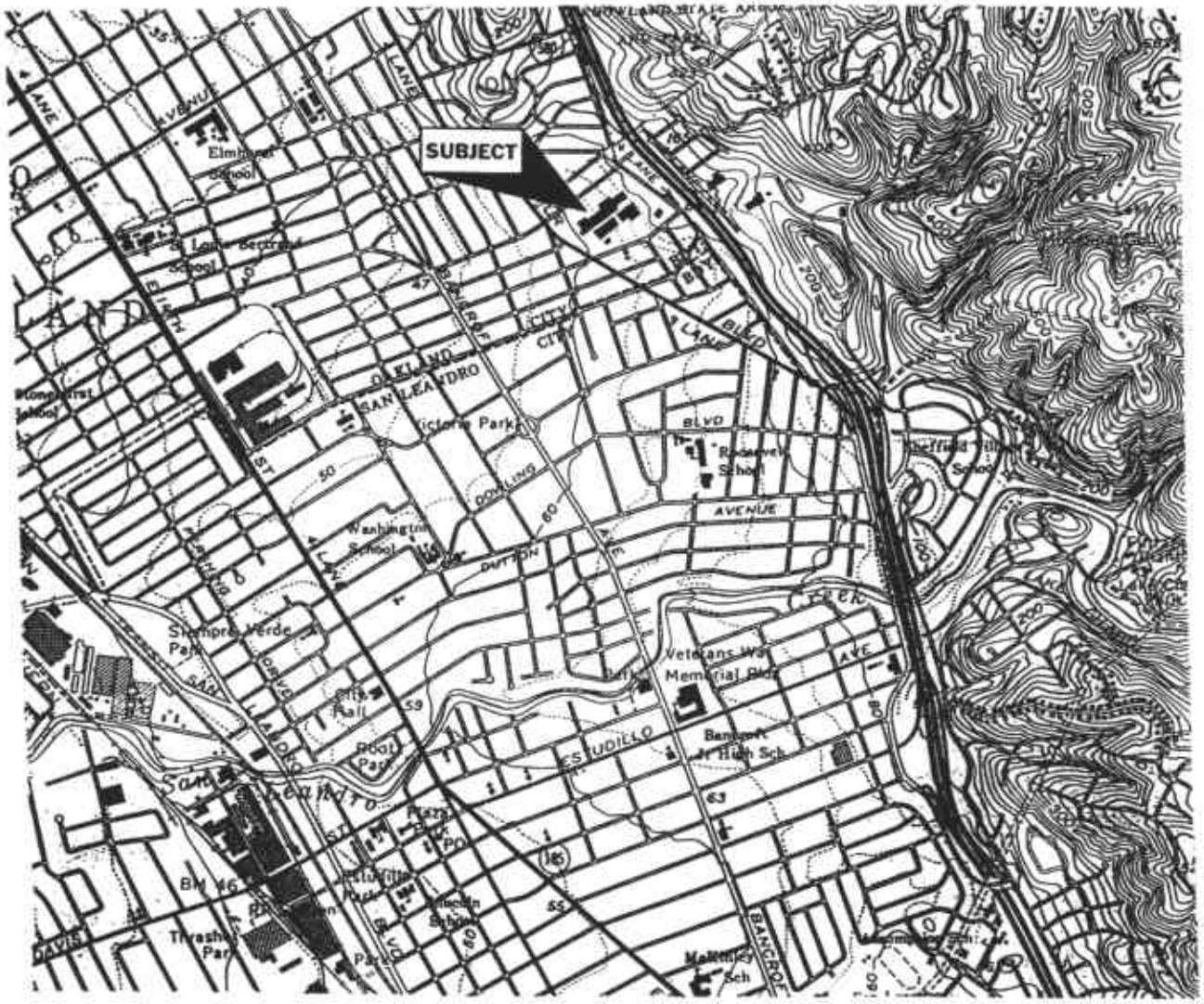
Table 2, Historical Depths to Ground Water
(all results expressed in feet below ground surface)

Youngs Cleaners
Foothill Square Shopping Center
10700 MacArthur Boulevard
Oakland, California

Monitoring Well	Date of Reading	Depth of Well	Top of Well Casing Elevation	Depth to Water	Water Table Elevation
WGR MW-2	11/03/94	28	63.18	25.70	37.48
	3/23/95	28.48	"	21.32	41.86
AMW-1	10/04/94	33.3	64.51	24.82	39.69
	11/03/94	34	"	25.08	39.43
	3/23/95	34.20	"	21.42	43.09
AMW-2	10/04/94	28.9	65.33	16.57	48.76
	10/18/94	28.75	"	16.70	48.63
	11/03/94	29	"	16.83	48.50
	3/23/95	29.20	"	13.12	52.21
AMW-3	11/28/94	29	65.09	14.84	50.25
	3/23/95	29.18	"	12.20	52.89

Note: Elevations are based on mean sea level.



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

GN MN

0°30' E 9 MILS

17° 302 MILS

SAN LEANDRO, CALIF.

NW/4 HAYWARD 15' QUADRANGLE

N3737.5—W12207.5/7.5

1959

PHOTOREVISED 1980

DMA 1559 II NW—SERIES V895

QUADRANGLE LOCATION

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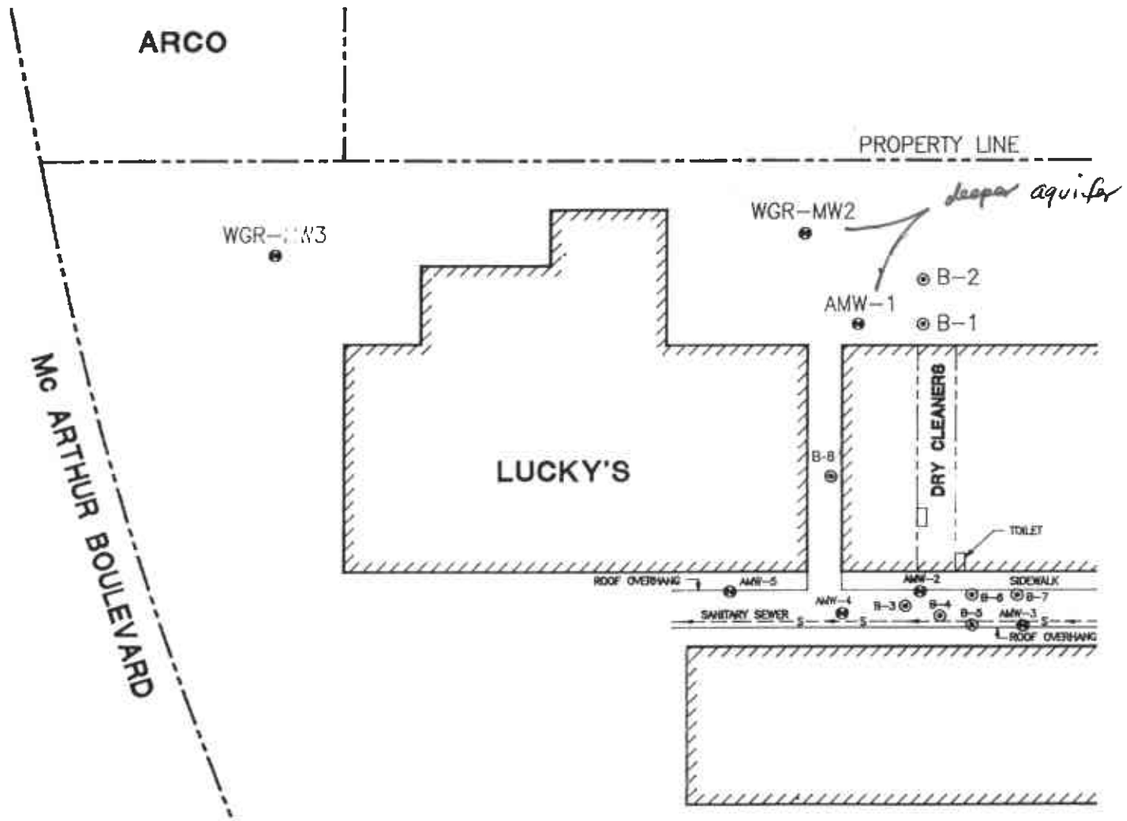
Figure 1 - Site Location Map

Site Address - 10700 MacArthur Boulevard, Oakland, California

BENCHMARK

CUT SQUARE IN CURB RETURN AT THE SOUTHEAST CORNER OF 107th AVE AND MaCARTHUR BLVD.

ELEV = 55.172' MSL (USGS 1929)
TO OBTAIN ELEVATION PER CITY DATUM.
SUBTRACT 300 FEET FROM USGS ELEVATION.



LEGEND

- ⊙ AUGEAS SOIL BORING
- ● AMW-2 AUGEAS MONITORING WELL
- ● WGR-MW2 WESTERN GEOLOGIC RESOURCES MONITORING WELL
- ● MW-3 APPLIED GEOSYSTEMS MONITORING WELL

SCALE IN FEET

0 80 100

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HALF MOON BAY

SITE AND BORING LOCATION PLAN

FOOTHILL SQUARE SHOPPING CENTER
OAKLAND ALAMEDA, CA

May 22, 1995

Figure 2

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Appendix A

Ground Water Sampling Field Logs

Augeas Corporation
Groundwater Sampling Field Log

Project Name/ No: Young's Cleaners
Client:
Project Manager: C. Conway
Sampler: W.J. Schrader
Casing Diameter: 2 inch X 3 inch ____ 4 inch ____ 6 inch ____ Other: ____
Sample Depth (feet): 23.97 = 80%
Depth of Well (feet): 34.20
Depth to Water (feet): 21.42
12.78
7.89 x 3

Lab I.D.: AMW-1
Date: 3-23-95
Sample Location I.D.:
Start TIme: 1:00
1:00
Calculated Purge Vol. (gal.) 23L
Actual Purge Vol. (gal.) 23L

80% floaters Ø sinkers Ø

Field Measurements

Time	Cum	Volume (gal.) L	pH (units)	E.C. (umhos/cm)	Temperature Degrees C	Color (visual)	Other
12:30	10	6	6.25	1.48	50.2	yell/brown	cloudy, no odors
12:37	12	6	6.18	6.99	50.8	"	"
12:46	18	6	6.51	0.36	48.4	"	"
12:50	23	5	6.51	12.20	50.4	"	"

Purge Method

____ 2" Bladder Pump X Bailer (Teflon) ____ Well Wizard ____ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump X Bailer (Teflon) ____ Well Wizard ____ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: Good
Remarks: purged 3 well volumes
Sampled at 100% ~~ff~~ recovery

Signature: WJSchrader

Volumes Per Unit Length Selected Well Casing Diameters
Volume Per Unit Length

Well Casing I.D. (inches)	Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet Gallons		7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

Augeas Corporation
Groundwater Sampling Field Log

Project Name/ No: Young's Cleaners
Client:
Project Manager: C. Conway
Sampler: W. Schrader
Casing Diameter: 2 inch ____ 3 inch ____ 4 inch ____ 6 inch ____ Other: ____
Sample Depth (feet): 22.75 = 80% (21.70)
Depth of Well (feet): 28.48
Depth to Water (feet): 21.32

Lab I.D.: WGR-MW-2
Date: 3-23-95
Sample Location I.D.:
Start TIme: 11:00

Calculated Purge Vol. (gal.) 53 L
Actual Purge Vol. (gal.) 53 L

7.16 × 2.4710 80% = 7.16 × .8 − 28.48 22.75
2.15 Column Vol. 17.69×3

Field Measurements

Time	Cum	Volume (gal.) L	pH (units)	E.C. (umhos/cm)	Temperature Degrees C	Color (visual)	Other
1:24	10	10	6.86	2.51	51.6	Sooty, clear	H_2S odor
1:30	20	10	6.73	3.99	51.8	clearer	"
1:38	30	10	6.79	3.93	54.8	" yellowish	"
1:51	40	10	6.93	10.98 ~~1.72~~ ~~0.70~~ ×100	53.9		
2:00	53	13	6.95	10.8 ×100	62		

Purge Method

____ 2" Bladder Pump ____ Bailer (Teflon) ____ Well Wizard ____ Dedicated
____ Submersible Pump ____ Cenetrifugal Pump ____ Dipper ____ Other
____ Pneumatic Displacement Pump

Sample Method

____ 2" Bladder Pump ____ Bailer (Teflon) ____ Well Wizard ____ Dedicated
____ Surface Sampler ____ Dipper ____ Fultz Pump ____ Other

Well Integrity: Okay, well was in standing H_2O, lid was not well
Remarks: sealed, Air Bubbles were escaping thru standing H_2O
chip on side of well casing allows surface run-off into well
sampled at 80% : 3 well volumes purged
Signature: W. Schrader

Volumes Per Unit Length Selected Well Casing Diameters
Volume Per Unit Length

Well Casing I.D. (inches)	Gal/Ft	Cubic Ft/Ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Mulitply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

Augeas Corporation
Groundwater Sampling Field Log

Project Name/ No: Young's Cleaners
Client:
Project Manager: C. Conway
Sampler: W. Schneider
Casing Diameter: 2 inch ____ 3 inch ____ 4 inch ____ 6 inch ____ Other: ____
Sample Depth (feet):
Depth of Well (feet): 29.20
Depth to Water (feet): 13.12

Lab I.D.: AMW-2
Date: 3-23-95
Sample Location I.D.:
Start TIme: 11:00

Calculated Purge Vol. (gal.) 30 L
Actual Purge Vol. (gal.) 30 L

16.08 x .6178 80% = 16.33ft. floaters 2 :40
9.93 x 3 sinkers 2 :40

Field Measurements

Time	Cum	Volume (gal.)	pH (units)	E.C. (umhos/cm)	Temperature Degrees C	Color (visual)	Other
3:23	6	6	7.16	17.09	51.1	yellow/Red	no odor
3:28	12	6	7.20	16.59	53.9	"	"
3:32	18	6	7.21	17.21	52.6	"	"
3:36	24	6	7.19	17.61	51.9	"	"
3:40	30	6	7.20	17.61	52.0	"	"

Purge Method

____ 2" Bladder Pump ____ Submersible Pump ____ Pneumatic Displacement Pump
X Bailer (Teflon) ____ Cenetrifugal Pump
____ Well Wizard ____ Dipper
____ Dedicated ____ Other

Sample Method

____ 2" Bladder Pump ____ Surface Sampler
X Bailer (Teflon) ____ Dipper
____ Well Wizard ____ Fultz Pump
____ Dedicated ____ Other

Well Integrity: Good
Remarks: purged 3 well volumes
sampled at 100% recovery

Signature: W. Schneider

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Multiply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

Augeas Corporation
Groundwater Sampling Field Log

Project Name/ No: Young's Cleaners
Client:
Project Manager: C. Conway
Sampler: W. Schrader
Casing Diameter: 2 inch ___ 3 inch X 4 inch ___ 6 inch ___ Other: ___
Sample Depth (feet): 15.60 = 80% 13.21
Depth of Well (feet): 29.18
Depth to Water (feet): 12.20
16.98 x .0178
10 x 3

3:20

Lab I.D.: AMW-3
Date: 3-23-95
Sample Location I.D.:
Start TIme: 11:00
Calculated Purge Vol. (gal.) 30 Liters
Actual Purge Vol. (gal.) 30 L

80% = 15.60 floaters & sinkers

Field Measurements

Time	Cum	Volume (gal.) L	pH (units)	E.C. (umhos/cm)	Temperature Degrees C	Color (visual)	Other
2:50	6	6	6.91 ~~5.76~~	16.74	~~0.95~~ 15.6	yellow/Br	no odor
2:53	12	6	~~5.41~~ 7.05	17.98	54.4	"	"
2:58	18	6	7.10	17.60	53.6	"	"
3:05	24	6	7.22	16.6	~~52.3~~ 52.3	"	"
3:11	30	6	7.19	16.06	53.4	"	"

Purge Method

___ 2" Bladder Pump
___ Submersible Pump
___ Pneumatic Displacement Pump
X Bailer (Teflon)
___ Centrifugal Pump
___ Well Wizard
___ Dipper
___ Dedicated
___ Other

Sample Method

___ 2" Bladder Pump
___ Surface Sampler
X Bailer (Teflon)
___ Dipper
___ Well Wizard
___ Fultz Pump
___ Dedicated
___ Other

Well Integrity: Good
Remarks: Sampled at 80% recovery
3 well volumes purged

Signature: W. Schrader

Volumes Per Unit Length Selected Well Casing Diameters

Well Casing I.D. (inches)	Volume Per Unit Length Gal/ft	Cubic Ft/ft	L/M	L/Ft
1.5	0.0918	0.0123	1.140	0.3475
2.0	0.1632	0.0218	2.027	0.6178
3.0	0.3672	0.0491	4.560	1.3900
4.0	0.6528	0.0873	8.107	2.4710
6.0	1.4690	0.1963	18.240	5.5600

Conversion Factors

To Convert	Into	Multiply
Ft. of Water	Lbs/sq.in.	0.4335
Lbs/Sq. inch	Ft. of Water	2.3070
Cubic feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.30048
Inches	Centimeters	2.5400

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Appendix B

Certified Analytical Reports and Chain of Custody

Hull Development Labs, Inc.

Attn: Charles Conway
Augeas Corporation
780 Purissima
Half Moon Bay, CA 94019

Date:	03/27/95
Date Received:	03/23/95
Date Analyzed:	03/24/95
Lab #:	See Table
Project Name:	Young's Cleaners
Sampled By:	Charles Conway

Certified Analytical Report

Waste Water Sample Analysis:

Sample ID	*Sample Date*	*Sample Time*	*Lab #*	**Purgeable Halocarbons**
Trip Blank	03/23/95	0830	B3533	**10.4**
AMW-1	03/23/95	1300	B3534	**0.5**
WGR-MW-2	03/23/95	1415	B3535	**ND**
AMW-3	03/23/95	1520	B3536	**45**
AMW-2	03/23/95	1540	B3537	**13,000**

1. Above values in µg/liter (ppb)
2. See Organic Analysis Work Sheets for individual compounds, detection limits and analysis dates.
3. Analysis performed by Hull Development Labs, Inc. (CAELAP # 1369).

Test Methods:

Test	*EPA Method #*	*Units*	*Method Detection Limit*
Purgeable Halocarbons	601	µg/liter	See Work Sheets

Michael N. Golden, Lab Director

DF=Dilution Factor
MDL=Method Detection Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above PQL

Hull Development Labs, Inc.

Organic Analysis Worksheet: EPA Method #8010

Client:	Augeas
Sample Matrix:	Water
Lab #:	B3534
Sample ID:	AMW-1

Date:	03/27/95
Date Received:	03/24/95
Date Analyzed	03/24/95
Dilution Factor	1

Compound	*Concentration Found*	*MDL*	*Compound*	*Concentration Found*	*MDL*
Bromodichloromethane	**0.5**	0.5 ppb	**trans-1,2-Dichloroethene**	**ND**	0.5 ppb
Bromoform	**ND**	1.0 ppb	**1,2-Dichloropropane**	**ND**	0.5 ppb
Bromomethane	**ND**	1.0 ppb	**cis-1,3-Dichloropropene**	**ND**	0.5 ppb
Carbon Tetrachloride	**ND**	0.5 ppb	**trans-1,3-Dichloropropene**	**ND**	0.5 ppb
Chlorobenzene	**ND**	0.5 ppb	**Methylene Chloride**	**ND**	0.5 ppb
Chloroethane	**ND**	1.0 ppb	**1,1,2,2-Tetrachloroethane**	**ND**	0.5 ppb
2-Chloroethyl Vinyl Ether	**ND**	0.5 ppb	**Tetrachloroethene**	**ND**	0.5 ppb
Chloroform	**ND**	0.5 ppb	**1,1,1-Trichloroethane**	**ND**	0.5 ppb
Chloromethane	**ND**	1.0 ppb	**1,1,2-Trichloroethane**	**ND**	0.5 ppb
Dibromochloromethane	**ND**	0.5 ppb	**Trichloroethene**	**ND**	0.5 ppb
Dichlorodifluoromethane	**ND**	0.5 ppb	**Trichlorofluoromethane**	**ND**	0.5 ppb
1:2 Dichlorobenzene	**ND**	0.5 ppb	**Vinyl Chloride**	**ND**	1.0 ppb
1:3 Dichlorobenzene	**ND**	0.5 ppb			
1:4 Dichlorobenzene	**ND**	0.5 ppb			
1,1-Dichloroethane	**ND**	0.5 ppb			
1,2-Dichloroethane	**ND**	0.5 ppb			
1,1-Dichloroethene (cis)	**ND**	0.5 ppb			

Surrogate	**Recovery (%)**
4-Bromofluorobenzene	100

1. PQL= Detection Limit x Dilution Factor
2. Analysis performed by Hull Development Labs, Inc. (CAELAP #1369)
3. This worksheet is an integral part of the Certified Analytical Report for Lab #B3534 and should not be reproduced except in full without the written consent of Hull Development Labs, Inc.

Michael N. Golden, Lab Director

DF=Dilution Factor
MDL=Method Detection Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above PQL

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Hull Development Labs, Inc.

Organic Analysis Worksheet: EPA Method #8010

Client:	Augeas
Sample Matrix:	Water
Lab #:	B3537
Sample ID:	AMW-2

Date:	03/27/95
Date Received:	03/24/95
Date Analyzed	03/27/95
Dilution Factor	500

Compound	*Concentration Found*	*MDL*	*Compound*	*Concentration Found*	*MDL*
Bromodichloromethane	**ND**	0.5 ppb	**trans-1,2-Dichloroethene**	**ND**	0.5 ppb
Bromoform	**ND**	1.0 ppb	**1,2-Dichloropropane**	**ND**	0.5 ppb
Bromomethane	**ND**	1.0 ppb	**cis-1,3-Dichloropropene**	**ND**	0.5 ppb
Carbon Tetrachloride	**ND**	0.5 ppb	**trans-1,3-Dichloropropene**	**ND**	0.5 ppb
Chlorobenzene	**ND**	0.5 ppb	**Methylene Chloride**	**ND**	0.5 ppb
Chloroethane	**ND**	1.0 ppb	**1,1,2,2-Tetrachloroethane**	**ND**	0.5 ppb
2-Chloroethyl Vinyl Ether	**ND**	0.5 ppb	**Tetrachloroethene**	**13,000**	0.5 ppb
Chloroform	**ND**	0.5 ppb	**1,1,1-Trichloroethane**	**ND**	0.5 ppb
Chloromethane	**ND**	1.0 ppb	**1,1,2-Trichloroethane**	**ND**	0.5 ppb
Dibromochloromethane	**ND**	0.5 ppb	**Trichloroethene**	**ND**	0.5 ppb
Dichlorodifluoromethane	**ND**	0.5 ppb	**Trichlorofluoromethane**	**ND**	0.5 ppb
1:2 Dichlorobenzene	**ND**	0.5 ppb	**Vinyl Chloride**	**ND**	1.0 ppb
1:3 Dichlorobenzene	**ND**	0.5 ppb			
1:4 Dichlorobenzene	**ND**	0.5 ppb			
1,1-Dichloroethane	**ND**	0.5 ppb			
1,2-Dichloroethane	**ND**	0.5 ppb			
1,1-Dichloroethene (cis)	**ND**	0.5 ppb			

Surrogate	**Recovery (%)**
4-Bromofluorobenzene	100

1. PQL= Detection Limit x Dilution Factor
2. Analysis performed by Hull Development Labs, Inc. (CAELAP #1369)
3. This worksheet is an integral part of the Certified Analytical Report for Lab #B3537 and should not be reproduced except in full without the written consent of Hull Development Labs, Inc.

Michael N. Golden, Lab Director

DF=Dilution Factor
MDL=Method Detection Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above PQL

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Hull Development Labs, Inc.

Organic Analysis Worksheet: EPA Method #8010

Client:	Augeas
Sample Matrix:	Water
Lab #:	B3535
Sample ID:	WGR-MW-2

Date:	03/27/95
Date Received:	03/24/95
Date Analyzed	03/24/95
Dilution Factor	1

Compound	*Concentration Found*	*MDL*	*Compound*	*Concentration Found*	*MDL*
Bromodichloromethane	**ND**	0.5 ppb	**trans-1,2-Dichloroethene**	**ND**	0.5 ppb
Bromoform	**ND**	1.0 ppb	**1,2-Dichloropropane**	**ND**	0.5 ppb
Bromomethane	**ND**	1.0 ppb	**cis-1,3-Dichloropropene**	**ND**	0.5 ppb
Carbon Tetrachloride	**ND**	0.5 ppb	**trans-1,3-Dichloropropene**	**ND**	0.5 ppb
Chlorobenzene	**ND**	0.5 ppb	**Methylene Chloride**	**ND**	0.5 ppb
Chloroethane	**ND**	1.0 ppb	**1,1,2,2-Tetrachloroethane**	**ND**	0.5 ppb
2-Chloroethyl Vinyl Ether	**ND**	0.5 ppb	**Tetrachloroethene**	**ND**	0.5 ppb
Chloroform	**ND**	0.5 ppb	**1,1,1-Trichloroethane**	**ND**	0.5 ppb
Chloromethane	**ND**	1.0 ppb	**1,1,2-Trichloroethane**	**ND**	0.5 ppb
Dibromochloromethane	**ND**	0.5 ppb	**Trichloroethene**	**ND**	0.5 ppb
Dichlorodifluoromethane	**ND**	0.5 ppb	**Trichlorofluoromethane**	**ND**	0.5 ppb
1:2 Dichlorobenzene	**ND**	0.5 ppb	**Vinyl Chloride**	**ND**	1.0 ppb
1:3 Dichlorobenzene	**ND**	0.5 ppb			
1:4 Dichlorobenzene	**ND**	0.5 ppb			
1,1-Dichloroethane	**ND**	0.5 ppb			
1,2-Dichloroethane	**ND**	0.5 ppb			
1,1-Dichloroethene (cis)	**ND**	0.5 ppb			

Surrogate	**Recovery (%)**
4-Bromofluorobenzene	92

1. PQL= Detection Limit x Dilution Factor
2. Analysis performed by Hull Development Labs, Inc. (CAELAP #1369)
3. This worksheet is an integral part of the Certified Analytical Report for Lab #B3535 and should not be reproduced except in full without the written consent of Hull Development Labs, Inc.

Michael N. Golden, Lab Director

DF=Dilution Factor
MDL=Method Detection Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above PQL

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Hull Development Labs, Inc.

Organic Analysis Worksheet: EPA Method #8010

Client:	Augeas
Sample Matrix:	Water
Lab #:	B3536
Sample ID:	AMW-3

Date:	03/27/95
Date Received:	03/24/95
Date Analyzed	03/24/95
Dilution Factor	10

Compound	*Concentration Found*	*MDL*	*Compound*	*Concentration Found*	*MDL*
Bromodichloromethane	**ND**	0.5 ppb	**trans-1,2-Dichloroethene**	**ND**	0.5 ppb
Bromoform	**ND**	1.0 ppb	**1,2-Dichloropropane**	**ND**	0.5 ppb
Bromomethane	**ND**	1.0 ppb	**cis-1,3-Dichloropropene**	**ND**	0.5 ppb
Carbon Tetrachloride	**ND**	0.5 ppb	**trans-1,3-Dichloropropene**	**ND**	0.5 ppb
Chlorobenzene	**ND**	0.5 ppb	**Methylene Chloride**	**ND**	0.5 ppb
Chloroethane	**ND**	1.0 ppb	**1,1,2,2-Tetrachloroethane**	**ND**	0.5 ppb
2-Chloroethyl Vinyl Ether	**ND**	0.5 ppb	**Tetrachloroethene**	**45**	0.5 ppb
Chloroform	**ND**	0.5 ppb	**1,1,1-Trichloroethane**	**ND**	0.5 ppb
Chloromethane	**ND**	1.0 ppb	**1,1,2-Trichloroethane**	**ND**	0.5 ppb
Dibromochloromethane	**ND**	0.5 ppb	**Trichloroethene**	**ND**	0.5 ppb
Dichlorodifluoromethane	**ND**	0.5 ppb	**Trichlorofluoromethane**	**ND**	0.5 ppb
1:2 Dichlorobenzene	**ND**	0.5 ppb	**Vinyl Chloride**	**ND**	1.0 ppb
1:3 Dichlorobenzene	**ND**	0.5 ppb			
1:4 Dichlorobenzene	**ND**	0.5 ppb			
1,1-Dichloroethane	**ND**	0.5 ppb			
1,2-Dichloroethane	**ND**	0.5 ppb			
1,1-Dichloroethene (cis)	**ND**	0.5 ppb			

Surrogate	**Recovery (%)**
4-Bromofluorobenzene	92

1. PQL= Detection Limit x Dilution Factor
2. Analysis performed by Hull Development Labs, Inc. (CAELAP #1369)
3. This worksheet is an integral part of the Certified Analytical Report for Lab #B3536 and should not be reproduced except in full without the written consent of Hull Development Labs, Inc.

Michael N. Golden, Lab Director

DF=Dilution Factor
MDL=Method Detection Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above PQL

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Hull Development Labs, Inc.

Organic Analysis Worksheet: EPA Method #8010

Client:	Augeas
Sample Matrix:	Water
Lab #:	B3533
Sample ID:	Trip Blank

Date:	03/27/95
Date Received:	03/24/95
Date Analyzed	03/24/95
Dilution Factor	1

Compound	*Concentration Found*	*MDL*	*Compound*	*Concentration Found*	*MDL*
Bromodichloromethane	**0.5**	0.5 ppb	**trans-1,2-Dichloroethene**	**ND**	0.5 ppb
Bromoform	**ND**	1.0 ppb	**1,2-Dichloropropane**	**ND**	0.5 ppb
Bromomethane	**ND**	1.0 ppb	**cis-1,3-Dichloropropene**	**ND**	0.5 ppb
Carbon Tetrachloride	**ND**	0.5 ppb	**trans-1,3-Dichloropropene**	**ND**	0.5 ppb
Chlorobenzene	**ND**	0.5 ppb	**Methylene Chloride**	**ND**	0.5 ppb
Chloroethane	**ND**	1.0 ppb	**1,1,2,2-Tetrachloroethane**	**ND**	0.5 ppb
2-Chloroethyl Vinyl Ether	**ND**	0.5 ppb	**Tetrachloroethene**	**ND**	0.5 ppb
Chloroform	**9.9**	0.5 ppb	**1,1,1-Trichloroethane**	**ND**	0.5 ppb
Chloromethane	**ND**	1.0 ppb	**1,1,2-Trichloroethane**	**ND**	0.5 ppb
Dibromochloromethane	**ND**	0.5 ppb	**Trichloroethene**	**ND**	0.5 ppb
Dichlorodifluoromethane	**ND**	0.5 ppb	**Trichlorofluoromethane**	**ND**	0.5 ppb
1:2 Dichlorobenzene	**ND**	0.5 ppb	**Vinyl Chloride**	**ND**	1.0 ppb
1:3 Dichlorobenzene	**ND**	0.5 ppb			
1:4 Dichlorobenzene	**ND**	0.5 ppb			
1,1-Dichloroethane	**ND**	0.5 ppb			
1,2-Dichloroethane	**ND**	0.5 ppb			
1,1-Dichloroethene (cis)	**ND**	0.5 ppb			

Surrogate	**Recovery (%)**
4-Bromofluorobenzene	94

1. PQL= Detection Limit x Dilution Factor
2. Analysis performed by Hull Development Labs, Inc. (CAELAP #1369)
3. This worksheet is an integral part of the Certified Analytical Report for Lab #B3533 and should not be reproduced except in full without the written consent of Hull Development Labs, Inc.

Michael N. Golden, Lab Director

DF=Dilution Factor
MDL=Method Detection Limit

PQL=Practical Quantitation Limit
ND=None Detected at or above PQL

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HULL DEVELOPMENT LABS INC.
1149 Minnesota ave
San Jose. CA 95125

QUALITY CONTROL RESULTS SUMMARY
VOLATILE ORGANICS ANALYSIS

QC sample No.: BLANK SPIKE & DUP Date analyzed: 03-24-94

Matrix: WATER

Units: ug/L Dilution factor: 1

COMPOUND	SA ug/L	SR ug/L	MS ug/L	MS PR	MSD ug/L	MSD PR	RPD	QC LIMITS (ADVISORY) RPD	QC LIMITS (ADVISORY) PR
BENZENE	20	0	20	100	18	90	11	25	50-150
CHLOROBENZENE	20	0	20	100	19	95	5	25	50-150
1,1-DCA	20	0	19	95	19	95	0	25	50-150
TOLUENE	20	0	20	100	18	90	11	25	50-150
TCE	20	0	20	100	18	90	11	25	50-150

MS = Spike sample
MSD = Spike sample duplicate
SR = Sample result
SA = Spike added

NC = Not calculated
** = Out of limits

RPD = 100 x (MS-MSD)/((MS+MSD)/2)

PR = 100 x ((MS or MSD) - SR)/SA

AUGEAS CORPORATION
780 PURISSIMA
HALF MOON BAY, CALIFORNIA 94019
(415) 726-7700
(415) 726-1217 (FAX)

Chain of Custody

• PLEASE PRINT IN PEN

Client Young's Cleaners	Contact	Phone # ( )	FAX # ( )
Address	City	State	Zip
Project Name/Number [redacted]			Project MGR
Bill (If different than above)	Address		Results Monday Afternoon
Sampler (Print and sign) D. Schrader	Due Date	Circle for RUSH*	Copies To: Auth. Init.

* Subject to Availability

Sample Description	Date/Time Coll'd	*Matrix	# of Containers	Pres.	Filt. y/n	Analysis	Remarks	Lab ID #
TRIP BLANK	3-23-95 8:30	W	2	HCl		EPA 8010		B3533
AMW-1	" 1:00	W	2	"		"		B3534
WGR-MW-2	" 2:15	W	2	"		"		B3535
AMW-3	" 3:20	W	2	"		"		B3536
AMW-2	" 3:40	W	2			↓		B3537

Relinquished By	Date/Time	Received By	Relinquished By	Date/Time	Received By
D. Schrader	3-23-95 1730	Phillie Weeks			

FOR LAB USE ONLY

Shipping Method	Shipping #	Received By	Date/Time	Condition (See Remarks) Cold	Sealed	Intact

REMARKS

* Matrix:
DW - Drinking Water
WW - Wastewater
GW - Groundwater
SW - Surface Water
IM - Impinger
FI - Filter
FP - Free Product
A/G - Air/Gas
SL - Sludge/Soil/Solid
OT - Other