



**grettler — ryan inc.**

**general contractors**

October 30, 1987

Proj. ACA 2160  
 Proj.  Rem.  Rpt.  Bill   
 1  2  3  4  5  6

~~Mr. Stan Roller  
 Shell Oil Company  
 Post Office Box 4023  
 Concord, California 94520~~

Reference: Shell Service Station  
 2160 Otis & Private  
 Alameda, California

Alameda County  
 JUL 27 2005  
 Environmental Health

Gentlemen:

Enclosed is the report from Pacific Environmental Group, Inc. presenting the results of the soil and groundwater investigation conducted adjacent to the waste oil tank at the referenced location.

This should be forwarded to:

Mr. Greg Zentner  
 San Francisco Bay Area Region  
 Regional Water Quality Control Board  
 1111 Jackson St. - Room 6040  
 Oakland, California 95064

Mr. Craig Mayfield  
 Alameda County Water District  
 5997 Parkside Drive  
 Pleasanton, California 94566

Should you have any questions or comments, please do not hesitate to call.

Christa Lopez

CL/ns

enclosure

cc: Mr. Ray Newsome, Shell Oil Company

**PACIFIC ENVIRONMENTAL GROUP, INC.**

Engineering • Hydrogeology • Chemistry

**RECEIVED**

OCT 28 1987

**GETTLER-RYAN INC.**

**GENERAL CONTRACTOR**

October 27, 1987

Project 100-85.02

Gettler-Ryan Inc.  
1992 National Avenue  
Hayward, CA 94545

Attn: Mr. Jeff Ryan

Re: Shell Service Station  
2160 Otis Drive  
Alameda, California

Gentlemen:

This letter presents the results of a soil and groundwater investigation conducted by Pacific Environmental Group, Inc. (PACIFIC) at the Shell service station located at 2160 Otis Drive in Alameda, California. The scope of work included installation of one groundwater monitoring well, laboratory soil analysis, and groundwater sampling and analysis as requested by Shell Oil Company.

PROCEDURES

One soil boring was drilled and converted to a monitoring well (S-1) on September 4, 1987. The well is located adjacent to the subsurface waste oil tank at the site, as shown on Figure 1.

The boring for the monitoring well was drilled using eight-inch diameter hollow-stem auger drilling equipment and was logged by a PACIFIC geologist using the Unified Soil Classification System. The boring log (including well construction details) is attached to this report. Soil samples for logging and analysis were collected at five-foot depth intervals by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the auger. The sampler was driven a maximum of 18 inches, using a 140-pound hammer with a 30-inch drop.

The boring was advanced approximately 15 feet (below static groundwater) into the water-bearing zone, to a depth of 20.5 feet. After completion, the boring was converted to a groundwater monitoring well with the installation of 3-inch diameter, schedule 40 PVC casing, and 0.020-inch factory slotted screen. The screen was placed from a depth of 4 to 19 feet, extending approximately 1 foot above the static water level. Graded sand pack was placed in the annular space across the screened interval, extending approximately one foot above the screen. A bentonite and concrete seal extends from the sand pack to the ground surface. A locking cap and protective vault box were installed on the top of the well.

Well S-1 was sampled by PACIFIC on September 7, 1987. The sampling procedure consisted of first checking the well for water level and presence of floating petroleum product using a clear teflon bailer. No floating product was detected. The well was then purged of approximately four casing volumes of water using a centrifugal pump, and then sampled with a teflon bailer. The groundwater samples were placed into appropriate EPA-approved containers, labeled, logged onto a chain-of-custody document, and transported on ice to the laboratory.

Soil samples from the approximate depths of 5, 10, 15, and 20 feet were analyzed for the presence of high boiling hydrocarbons (calculated as diesel, jet fuel, and oil) and oil and grease. One soil sample from the 9 to 10.5 foot depth interval (just below the base of the tank) was also analyzed for the presence of volatile halocarbons using EPA method 8240. The groundwater sample was analyzed for volatile halocarbons by EPA method 624. The analytical methods are presented on the attached Certified Analytical Reports, in addition all results are summarized on the attached Tables 1 and 2.

## RESULTS

### Hydrogeologic Conditions

The boring for the monitoring well encountered sand to a depth of 8 feet, underlain by silt and silty sand to the total depth explored of 20.5 feet. Faint product odor was noted in soil samples from the approximate depths of 5, 15, and 20 feet. Groundwater was first noted at an approximate depth of 8 feet, and stabilized at approximately 5 feet in depth.

Laboratory Analyses

High boiling hydrocarbons were detected in all soil samples at concentrations ranging from 10 parts per million (ppm) at 10 feet (which was calculated as jet fuel), to 360 ppm at 5 feet (which was calculated as oil). Oil and grease was detected at concentrations ranging from 70 ppm at a depth of 15 feet to 1,600 ppm at a depth of 5 feet.

The soil sample from 9 to 10.5 feet in depth which was analyzed for volatile halocarbons had no detectable concentrations of any compounds. Soil analytical results are summarized on the attached Table 1.

Groundwater analyses indicated the presence of acetone at a concentration of 270 parts per billion (ppb). In addition, an unidentified alcohol compound not on the EPA Hazardous Substance List (HSL) was detected at a concentration of 7 parts per billion (ppb). Groundwater analytical results are summarized on attached Table 2.

If you have any questions regarding the contents of this letter, please do not hesitate to call.

Very truly yours,

PACIFIC ENVIRONMENTAL GROUP, INC.



Susan Willhite  
Project Manager  
CEG 1272

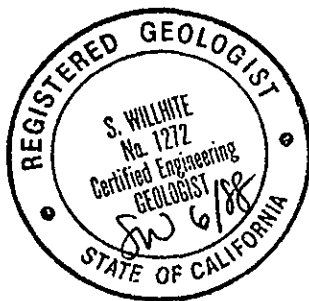


TABLE 1

Summary of Soil Analytical Results  
for Well S-1

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High Boiling Hydrocarbons and  
Oil and Grease

Depth Interval (feet)	High Boiling (calc. as oil) (ppm)	High Boiling (calc. as Jet Fuel) (ppm)	Oil and Grease (ppm)
3-1/2 - 5	360	25	1,600
9 - 10-1/2	98	10	460
14 - 15-1/2	16	ND	70
19 - 20-1/2	87	ND	320

---

Volatile Organic Compounds

9 - 10-1/2 feet - None detected

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Notes: ppm - parts per million  
ND - not detected, detection limits noted on  
attached Certified Analytical Reports

TABLE 2

Summary of Groundwater Analytical Results  
for Well S-1

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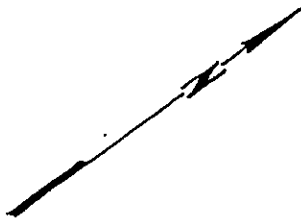
EPA Hazardous List Substances	
Compound	ppb
Acetone	270

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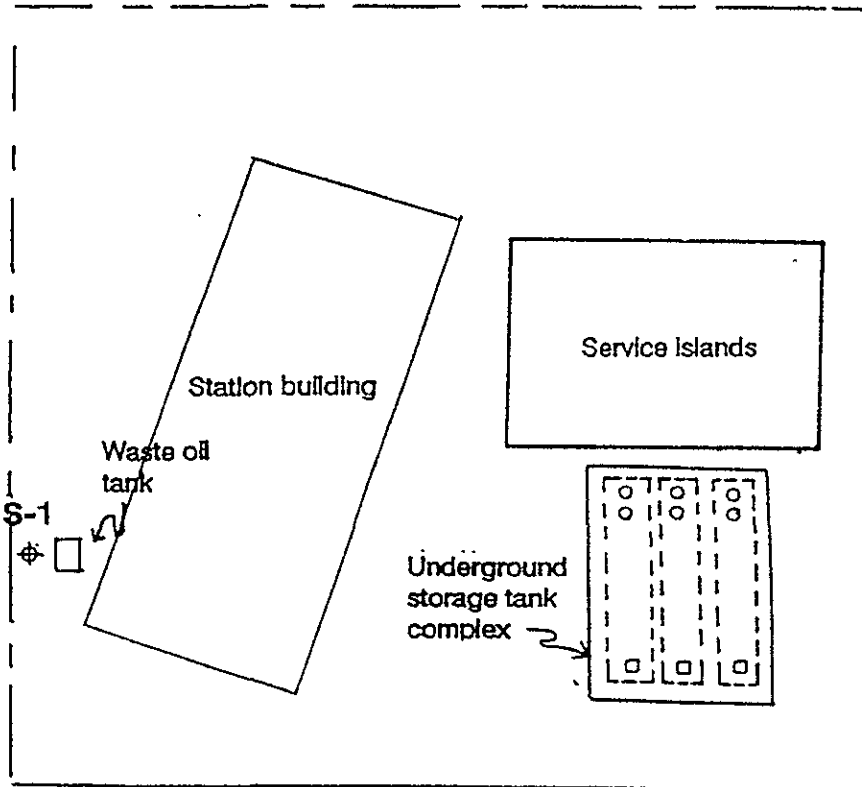
Non - EPA Hazardous Substances	
Compound	ppb
Unknown alcohol	7

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Note: ppb - part per billion



Approximate direction  
of groundwater flow



Shopping center driveway

Otis Drive

Parking lot

LEGEND

S-1 ⊕ GROUNDWATER MONITORING  
WELL LOCATION

Not to scale

PACIFIC  
ENVIRONMENTAL  
GROUP, INC.

Shell Service Station  
2160 Otis Drive  
Alameda, California

SITE PLAN

FIGURE  
1  
PROJECT NO.  
100-85.01

## UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS		GROUP SYMBOL	TYPICAL NAMES
<b>COARSE GRAINED SOILS</b>  more than half is larger than #200 sieve	<b>GRAVELS</b> half of coarse fraction larger than #4 sieve	<b>CLEAN GRAVELS</b> (less than 5% fines)	<b>GW</b> Well graded gravels, gravel-sand mixtures; little or no fines
			<b>GP</b> Poorly graded gravels or gravel-sand mixtures; little or no fines
		<b>GRAVEL WITH FINES</b>	<b>GM</b> Silty gravels, gravel-sand-silt mixtures
			<b>GC</b> Clayey gravels, gravel-sand-clay mixtures
	<b>SANDS</b> half of coarse fraction smaller than #4 sieve	<b>CLEAN SANDS</b> (less than 5% fines)	<b>SW</b> Well graded sands, gravelly sands, little or no fines
			<b>SP</b> Poorly graded sands or gravelly sands, little or no fines
		<b>SANDS WITH FINES</b>	<b>SM</b> Silty sands, sand-silt mixtures
			<b>SC</b> Clayey sands, sand-clay mixtures, plastic fines
<b>FINE GRAINED SOILS</b>  more than half is smaller than #200 sieve	<b>SILTS AND CLAYS</b> liquid limit less than 50%	<b>ML</b> Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts, with slight plasticity	
		<b>CL</b> Inorganic clays of low to medium plasticity, gravelly clays, sandy clays silty clays, lean clays	
		<b>OL</b> Organic silts and organic silty clays of low plasticity	
	<b>SILTS AND CLAYS</b> liquid limit more than 50%	<b>MH</b> Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		<b>CH</b> Inorganic clays of high plasticity, fat clays	
		<b>OH</b> Organic clays of medium to high plasticity, organic silts	
	<b>HIGHLY ORGANIC SOILS</b>		<b>Pt</b> Peat and other highly organic soils



WELL LOG  
KEY TO ABBREVIATIONS

Drilling Method

HSA - Hollow stem auger  
CFA - Continuous flight auger  
Air - Reverse air circulation

Gravel Pack

CA - Coarse aquarium sand

Sampling Method

Cal. Mod. - California modified split-spoon sampler (2" inner diameter) driven 18" by a 140-pound hammer having a 30" drop. Where penetration resistance is designated "P", sampler was instead pushed by drill rig.  
Disturbed - Sample taken from drill-return materials as they surfaced.  
n/a - Not applicable

Moisture Content

Dr - Dry  
Dp - Damp  
Mst - Moist  
Wt - Wet  
Sat - Saturated

Sorting

PS - Poorly sorted  
MS - Moderately sorted  
WS - Well sorted

Plasticity

L - Low  
M - Moderate  
H - High

H-NU (ppm)

ND - No detection

Density

Sands and gravels  
VL - Very loose  
L - Loose  
MD - Medium dense  
D - Dense  
VD - Very dense

Silts and clays  
VS - Very soft  
Sft - Soft  
MSt - Medium Stiff  
Stf - Stiff  
VSt - Very stiff  
Hd - Hard

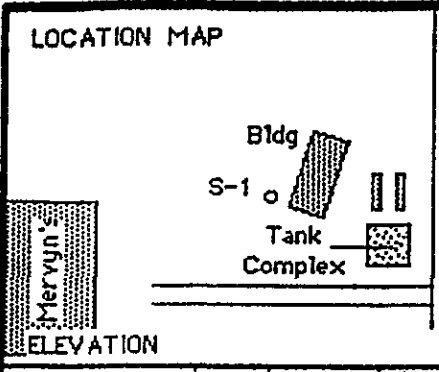
Symbols

▽ - First encountered ground water  
▽ - Static ground water level

sampled interval  sample recovery

GRAIN-SIZE SCALE

GRADE LIMITS		GRADE NAME
inches	U.S. Standard sieve size	
12.0		Boulders
3.0	3.0 in.	Cobbles
0.19	No. 4	Gravel
		coarse
0.08	No. 10	
		medium
	No. 40	Sand
		fine
	No. 200	Silt
		Clay Size



**PACIFIC ENVIRONMENTAL GROUP, INC.**

PROJECT NO. 100-85.01  
 LOGGED BY: MD  
 DRILLED BY: Bayland  
 DRILLING METHOD: HS  
 SAMPLING METHOD: Cal. Mod.  
 CASING TYPE: Sch 40 PVC  
 SLOT SIZE: 0.020  
 GRAVEL PACK: CA

WELL / BORING NO. **S-1**  
 PAGE 1 OF 1

CLIENT: G.R. SHELL  
 DATE DRILLED: 9-4-87  
 LOCATION: Otis St. Alameda  
 HOLE DIAMETER: 8"  
 HOLE DEPTH: 20-1/2"  
 WELL DEPTH: 19'  
 WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	PENETRATION RESISTANCE (BLOW/FT)	DEPTH (feet)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY/REMARKS
			2			SP	Asphalt; silty sand-fill; faint product odor.
		P	4				SAND; brown; 5% silty fines; poorly graded; fine to medium grained; faint product odor.
			6				Color change in grab at approximately 5': gray-green; shell fragments.
		2	10			ML	SILT; greenish gray; 20% fine sand; low plasticity; very soft; no product odor.
		9	14			SM	SILTY SAND; greenish gray; 20-30% fines; fine grained; shell fragments; loose; faint product odor.
		57	20				@ 19' brown mottling in thin horizons; very dense, faint product odor.
			22				
			24				
			26				
			28				
			30				
			32				
			34				
			36				
			38				
			40				

Bottom of boring at 20-1/2'  
 Cave to 3-1/2'



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

RECEIVED  
SEP 25 1987

PACIFIC ENVIRONMENTAL GROUP, INC.

Pacific Environmental Group, Inc.  
1601 Civic Center Drive  
Suite 202  
Santa Clara, CA 95050

September 24, 1987

ATTN: Erin Garner

Following are the results of analyses on the samples described below.

Project Number: 100-85.01  
Lab Numbers: S7-09-079-01 thru S7-09-079-04  
Number of Samples: 4  
Sample Type: soil  
Date Received: 9/10/87  
Analyses Requested: High Boiling Hydrocarbons,  
Oil and Grease, Volatile Organics

The method of analysis for high boiling hydrocarbons in soil involves extracting the sample with acetone. The mixture is partitioned with hexane and the resulting extract is examined by gas chromatography using a flame ionization detector.

The method of analysis for total oil and grease in soil is taken from E.P.A. Method 3550 and Standard Methods Section 503E. The sample is extracted with repeated portions of 50:50 methylene chloride:acetone using a horn-type sonicator. The extract is dried with sodium sulfate and treated with silica gel to remove polar compounds. Following evaporation, oil and grease is determined gravimetrically.

IT/Santa Clara to  
 Pacific Environmental Group, Inc.  
 ATTN: Erin Garner

September 24, 1987  
 Page 1 of 4

Lab Number: S7-09-079-01  
 Sample Identification: 100-85.01, S-1, 3.5-5'

nd = none detected

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis			
	Detected	Detection Limit	Identity	Calculated as
High Boiling Hydrocarbons	nd	35.	Diesel	—
High Boiling Hydrocarbons	25.	—	Unidentified Hydrocarbons	Jet Fuel
High Boiling Hydrocarbons	360.	—	Oil	Oil
Oil and Grease	1,600.	—	.....Not Applicable.....	

IT/Santa Clara to  
 Pacific Environmental Group, Inc.  
 ATTN: Erin Garner

September 24, 1987  
 Page 2 of 4

Lab Number: S7-09-079-02  
 Sample Identification: 100-85.01, S-1, 9-10.5'

nd = none detected

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis			
	Detected	Detection Limit	Identity	Calculated as
High Boiling Hydrocarbons	nd	10.	Diesel	—
High Boiling Hydrocarbons	10.	—	Unidentified Hydrocarbons	Jet Fuel
High Boiling Hydrocarbons	98.	—	Oil	Oil
Oil and Grease	460.	—	.....Not Applicable.....	

IT/Santa Clara to  
 Pacific Environmental Group, Inc.  
 ATTN: Erin Garner

September 24, 1987  
 Page 3 of 4

Lab Number: S7-09-079-03  
 Sample Identification: 100-85.01, S-1, 14-15.5'

nd = none detected

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis			
	Detected	Detection Limit	Identity	Calculated as
High Boiling Hydrocarbons	nd	10.	Diesel	—
High Boiling Hydrocarbons	nd	10.	Jet Fuel	—
High Boiling Hydrocarbons	16.	—	Oil	Oil
Oil and Grease	70.	—	.....Not Applicable.....	

IT/Santa Clara to  
 Pacific Environmental Group, Inc.  
 ATTN: Erin Garner

September 24, 1987  
 Page 4 of 4

Lab Number: S7-09-079-04  
 Sample Identification: 100-85.01, S-1, 19-20.5'

nd = none detected

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis			
	Detected	Detection Limit	Identity	Calculated as
High Boiling Hydrocarbons	nd	10.	Diesel	—
High Boiling Hydrocarbons	nd	10.	Jet Fuel	—
High Boiling Hydrocarbons	87.	—	Oil	Oil
Oil and Grease	320.	—	.....Not Applicable.....	



RECEIVED

SEP 28 1987

PACIFIC ENVIRONMENTAL GROUP, INC.

Pacific Environmental Group, Inc.  
1601 Civic Center Drive  
Suite 202  
Santa Clara, CA 95050

September 28, 1987

ATTN: Erin Garner

Enclosed is the ITAS analytical report for the presence of volatile organic contaminants in one soil sample received on September 10, 1987. Results for compounds on the E.P.A. Hazardous Substances List (HSL) are given on the enclosed summary sheet. The dichlorobenzene isomers were also not detected with a detection limit of 5 micrograms per kilogram (ppb).

The sample identification is as follows:

<u>ITT/Santa Clara Lab Number</u>	<u>Sample Identification</u>
S7-09-079-02B	100-85.01, S-1, 9-10.5'

Adeline I. Dreesmann

AID/ksr



GC/MS ORGANICS ANALYSIS DATA SHEET  
VOLATILE COMPOUNDS

SAMPLE IDENTIFICATION: S7-09-079-02B  
DATE ANALYZED: 09/18/87  
UNITS: UG/KG

CAS #	COMPOUND	CONC
=====	=====	=====
67-64-1	ACETONE	10. ND
107-02-8	ACROLEIN	20. ND
107-13-1	ACRYLONITRILE	5. ND
71-43-2	BENZENE	5. ND
75-27-4	BROMODICHLOROMETHANE	5. ND
75-25-2	BROMOFORM	5. ND
74-83-9	BROMOMETHANE	10. ND
78-93-3	2-BUTANONE	10. ND
75-15-0	CARBON DISULFIDE	5. ND
56-23-5	CARBON TETRACHLORIDE	5. ND
108-90-7	CHLOROBENZENE	5. ND
124-48-1	CHLORODIBROMOMETHANE	5. ND
75-00-3	CHLOROETHANE	10. ND
110-75-8	2-CHLOROETHYL VINYL ETHER	10. ND
67-66-3	CHLOROFORM	5. ND
74-87-3	CHLOROMETHANE	10. ND
75-34-3	1,1-DICHLOROETHANE	5. ND
107-06-2	1,2-DICHLOROETHANE	5. ND
75-35-4	1,1-DICHLOROETHENE	5. ND
156-60-5	TRANS-1,2-DICHLOROETHENE	5. ND
78-87-5	1,2-DICHLOROPROPANE	5. ND
10061-01-5	CIS-1,3-DICHLOROPROPENE	5. ND
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5. ND
100-41-4	ETHYLBENZENE	5. ND
591-78-6	2-HEXANONE	10. ND
75-09-2	METHYLENE CHLORIDE	5. ND
108-10-1	4-METHYL-2-PENTANONE	10. ND
100-42-5	STYRENE	5. ND
79-34-5	1,1,2,2-TETRACHLOROETHANE	5. ND
127-18-4	TETRACHLOROETHENE	5. ND
108-88-3	TOLUENE	5. ND
71-55-6	1,1,1-TRICHLOROETHANE	5. ND
79-00-5	1,1,2-TRICHLOROETHANE	5. ND
79-01-6	TRICHLOROETHENE	5. ND
108-05-4	VINYL ACETATE	10. ND
75-01-4	VINYL CHLORIDE	10. ND
95-47-6	XYLENES (TOTAL)	5. ND

ND - THIS COMPOUND WAS NOT DETECTED; THE LIMIT OF DETECTION FOR THIS COMPOUND IS STATED TO THE LEFT OF THE ND SPECIFIER.

TR - TRACE, THIS COMPOUND WAS PRESENT, BUT WAS BELOW THE LEVEL AT WHICH THE CONCENTRATION COULD ACCURATELY BE DETERMINED. THE APPROXIMATE CONCENTRATION IS REPORTED FOR YOUR REFERENCE.



Pacific Environmental Group, Inc.  
1601 Civic Center Drive  
Suite 202  
Santa Clara, CA 95050

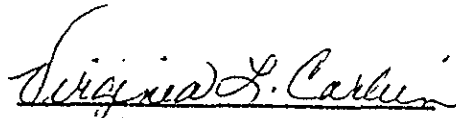
September 29, 1987

ATTN: Erin Garner

Enclosed is the ITAS analytical report for the presence of volatile organic contaminants in one water sample received on September 8, 1987.

The sample identification is as follows:

<u>IT/Santa Clara Lab Number</u>	<u>Sample Identification</u>
S7-09-058-01	100-85.01, S-1

  
Virginia L. Corbin

VLC/ksr



**INTERNATIONAL  
TECHNOLOGY  
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**ANALYTICAL  
SERVICES**

17605 Fabrica Way • Cerritos, California 90701 • 213-921-9831 / 714-523-9200



**CERTIFICATE OF ANALYSIS**

Prepared for: IT Corporation  
397 Mathew Drive  
Santa Clara, CA 95050

Date: September 20, 1987

Attn: Larry DeDionisio

Date Received: September 9, 1987

P.O. Number 189993/4631-27

Job Number 42752/dan

PEG Various Project

One (1) sample labeled: S7-09-058-01

The sample was analyzed for volatile organic contaminants using combined gas chromatography-mass spectrometry according to a modified EPA Method 624, purge and trap. Results for compounds on the EPA Hazardous Substances List (HSL) are given on the enclosed summary sheets. Additional non-HSL volatile organic compounds found are listed below.

<u>Sample</u>	<u>Compound</u>	<u>Micrograms Per Liter</u>
S7-09-058-01	Unknown alcohol	7

I certify that this report truly represents the finding of work performed by me or under my direct supervision.

*Sharareh N. Moaddel*  
Sharareh Nasser-Moaddeli  
Group Leader

Reviewed and Approved

*E. L. Merrell* FOR  
Richard L. Merrell  
Laboratory Director

Volatile Organic Compounds  
Micrograms Per Liter

<u>Compound</u>	<u>S-7-09-058-01</u>
Chloromethane	<u>ND&lt;10</u>
Bromomethane	<u>ND&lt;10</u>
Vinyl chloride	<u>ND&lt;10</u>
Chloroethane	<u>ND&lt;10</u>
Dichloromethane (methylene chloride)	<u>ND&lt;5</u>
Acetone	<u>270</u>
Carbon disulfide	<u>ND&lt;5</u>
1,1-Dichloroethylene	<u>ND&lt;5</u>
1,1-Dichloroethane	<u>ND&lt;5</u>
trans-1,2-Dichloroethene	<u>ND&lt;5</u>
Chloroform	<u>ND&lt;5</u>
1,2-Dichloroethane	<u>ND&lt;5</u>
Methyl ethyl ketone (2-Butanone)	<u>ND&lt;10</u>
1,1,1-Trichloroethane	<u>ND&lt;5</u>
Carbon tetrachloride	<u>ND&lt;5</u>
Vinyl acetate	<u>ND&lt;10</u>
Bromodichloromethane	<u>ND&lt;5</u>
1,2-Dichloropropane	<u>ND&lt;5</u>
trans-1,3-Dichloropropene	<u>ND&lt;5</u>
Trichloroethene	<u>ND&lt;5</u>
Chlorodibromomethane	<u>ND&lt;5</u>
1,1,2-Trichloroethane	<u>ND&lt;5</u>
Benzene	<u>ND&lt;5</u>
cis-1,3-Dichloropropene	<u>ND&lt;5</u>
2-Chloroethyl vinyl ether	<u>ND&lt;10</u>
Tribromomethane, (Bromoform)	<u>ND&lt;5</u>
2-Hexanone	<u>ND&lt;10</u>
4-Methyl-2-pentanone	<u>ND&lt;10</u>

IT-Santa Clara  
Larry DeDionisio

Job #42752  
Page 3

Volatile Organic Compounds  
Micrograms Per Liter

<u>Compound</u>	<u>S-7-09-058-01</u>
Tetrachloroethene	<u>ND&lt;5</u>
1,1,2,2-Tetrachloroethane	<u>ND&lt;5</u>
Toluene	<u>ND&lt;5</u>
Chlorobenzene	<u>ND&lt;5</u>
Ethyl benzene	<u>ND&lt;5</u>
Styrene	<u>ND&lt;5</u>
Xylene (Total)	<u>ND&lt;5</u>
Acrolein	<u>ND&lt;20</u>
Acrylonitrile	<u>ND&lt;5</u>
Dichlorobenzenes	<u>ND&lt;5</u>

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.