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**QUARTERLY GROUNDWATER MONITORING
AND
PRODUCT RECOVERY PROGRESS REPORT**

JUL 1993

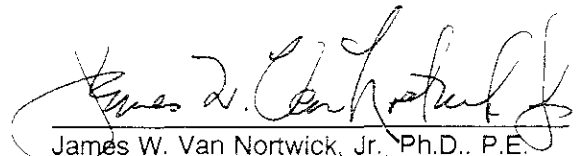
PREPARED FOR

**ARATEX SERVICES, INC.
OAKLAND, CALIFORNIA**

**PREPARED BY
RMT, INC.**

SANTA MONICA, CALIFORNIA

JULY 1993


James W. Van Nortwick, Jr., Ph.D., P.E.
Project Manager



93 JUL 27 AM 10:07

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692

July 26, 1993

Ms. Jennifer Eberle
Alameda County Health Care Services Agency
Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621

**Subject: Quarterly Groundwater Monitoring and Product Recovery Progress Report
Aratex Services, Inc., 330 Chestnut Street, Oakland, California**

Dear Ms. Eberle:

This letter transmits the results of the groundwater monitoring and remedial activities conducted on May 11, 1993, at the referenced facility.

If you or your staff have questions regarding our investigation or this report, please feel free to contact me at (310) 452-5078.

Sincerely,

James W. Van Nortwick, Jr., Ph.D., P.E.
Project Manager

enc: Quarterly Groundwater Monitoring Report

cc: Robert J. Robbins, C.P.G.
Phillip J. Krejci
File: 516/Tanks

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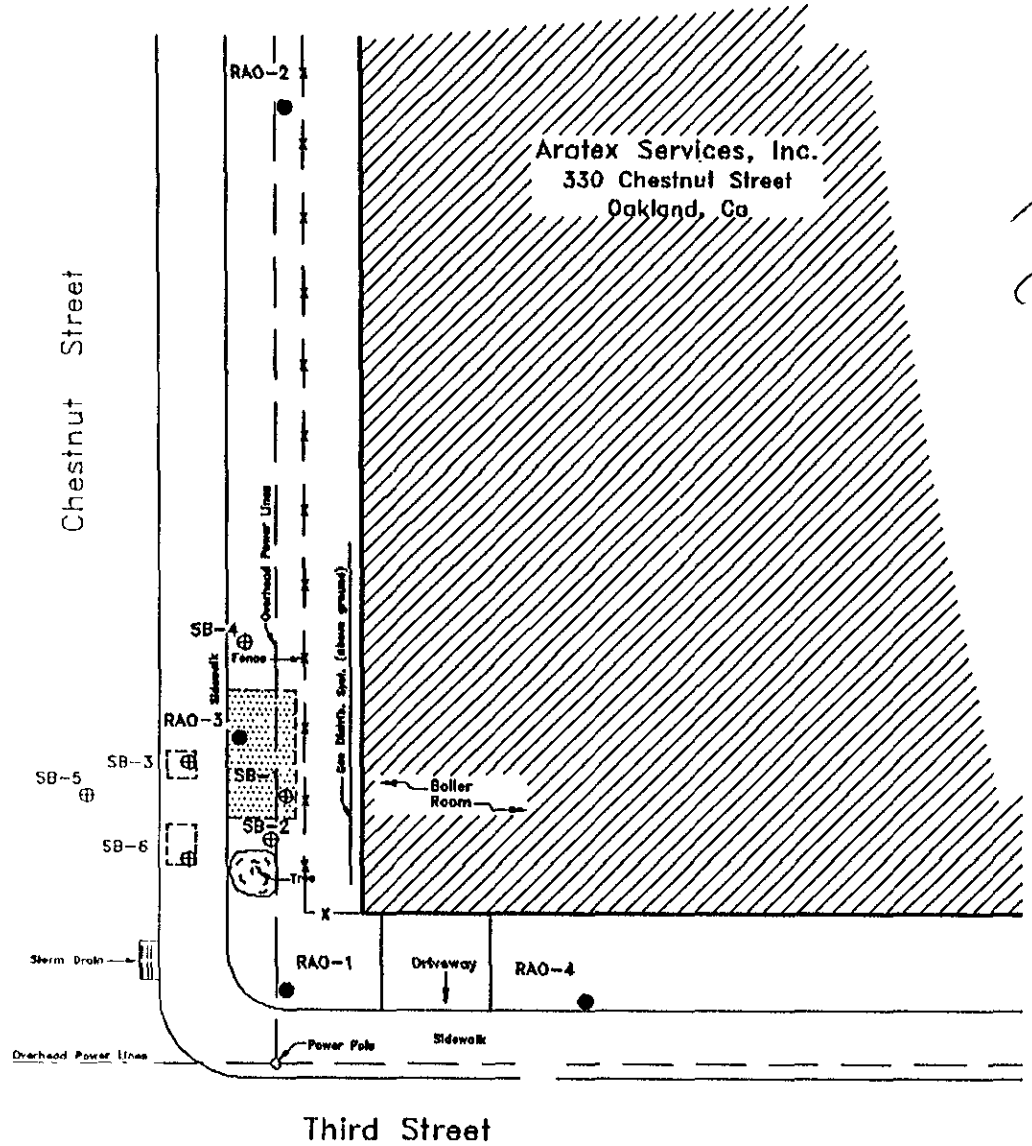
Section 1
BACKGROUND

Aratex Services, Inc., (ARATEX) owns and operates an industrial laundry facility located at 330 Chestnut Street in Oakland, California. A 2,000-gallon underground diesel fuel storage tank was formerly maintained at this facility to supply fuel for the operation of a back-up boiler. The diesel fuel storage tank was removed from the facility in December 1988, and a tank closure documentation report was submitted to the Alameda County Health Care Services Agency (ACHCSA). Based on the information presented in the tank documentation report, the ACHCSA requested that ARATEX conduct post-closure sampling activities to determine whether the soil and groundwater surrounding the underground storage tank had been impacted by petroleum hydrocarbons. In response to this request, ARATEX engaged the services of RMT, Inc., (RMT) to conduct a subsurface investigation

Soil and groundwater sampling activities were conducted by RMT during March 1989, and included the installation of four groundwater monitoring wells (RAO-1, RAO-2, RAO-3, and RAO-4). The results of chemical analyses performed on soil and groundwater samples collected from monitoring wells RAO-1, RAO-2, and RAO-4 did not identify the presence of petroleum hydrocarbons; however, the presence of total petroleum hydrocarbons as diesel (TPH-D), benzene, toluene, ethylbenzene, and xylenes (BTEX) was identified in soil and groundwater samples collected from monitoring well RAO-3, located within the former tank excavation area. In addition, during groundwater monitoring activities conducted in March 1990, the presence of a 0.5-ft layer of free-product was identified in monitoring well RAO-3. In response to these findings, ARATEX engaged the services the RMT to conduct a remedial investigation to determine the extent of petroleum product contamination and evaluate remediation alternatives.

Remedial investigation activities were conducted by RMT from September 1990, through November 1992, and included the advancement of six soil borings in the vicinity of the former excavation area and groundwater monitoring activities. The results of chemical analyses performed on groundwater samples collected from monitoring wells RAO-1, RAO-2, RAO-4, did not identify the presence of BTEX; however, approximately 1.6-ft of free-product was identified in monitoring well RAO-3. In addition, the presence of petroleum hydrocarbons was also identified in soil samples collected from soil borings located in close proximity to the former underground storage tank. Because the results of the

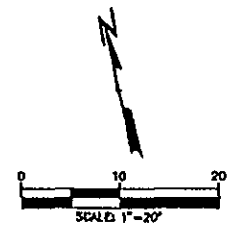
sampling activities indicated that the extent of petroleum hydrocarbon contamination was limited to the area immediately surrounding the former tank excavation and free-product was consistently observed in monitoring well RAO-3, a product bail-down test was conducted to determine the feasibility of implementing a product recovery system. The results of the product bail-down test indicated that product recovery was feasible, therefore, a product recovery canister was installed in monitoring well RAO-3 in December 1992. To date, the product recovery system has recovered approximately 0.7-gallons of free-product. In addition, groundwater sampling activities conducted in February 1993, did not identify the presence of petroleum hydrocarbon contamination in monitoring wells RAO-1, RAO-2, or RAO-4. A site plan showing the location of the monitoring wells is presented in Figure 1.



Legend :

- RAO-x ● Ground Water Monitoring Well ; RMT 6/89
- SB-x ⊕ Soil Boring ; RMT 9/90
- Bldg.
- [Hatched Box] Estimated limits of Dec.1988 Tank Removal and backfill
- x-x-x- Fence, 6-Foot high chain link

7/3
other
USTs
(removed 7-29-93)



SITE PLAN
 Aratex Services, Inc.
 330 Chestnut Street
 Oakland, Ca

RMT INC.	DWN. BY: RAS
	DATE: JUNE, 1993
	PROJ. # 12013.07
	FILE # 12013074

FIGURE 1

Section 2

THIRD QUARTER GROUNDWATER MONITORING ACTIVITIES

Groundwater sampling activities were conducted on ~~May 11, 1993~~ and included obtaining static water level measurements and groundwater samples from monitoring wells RAO-1, RAO-2, and RAO-4. Groundwater samples were not collected from monitoring well RAO-3 due to the presence of a free-product layer.

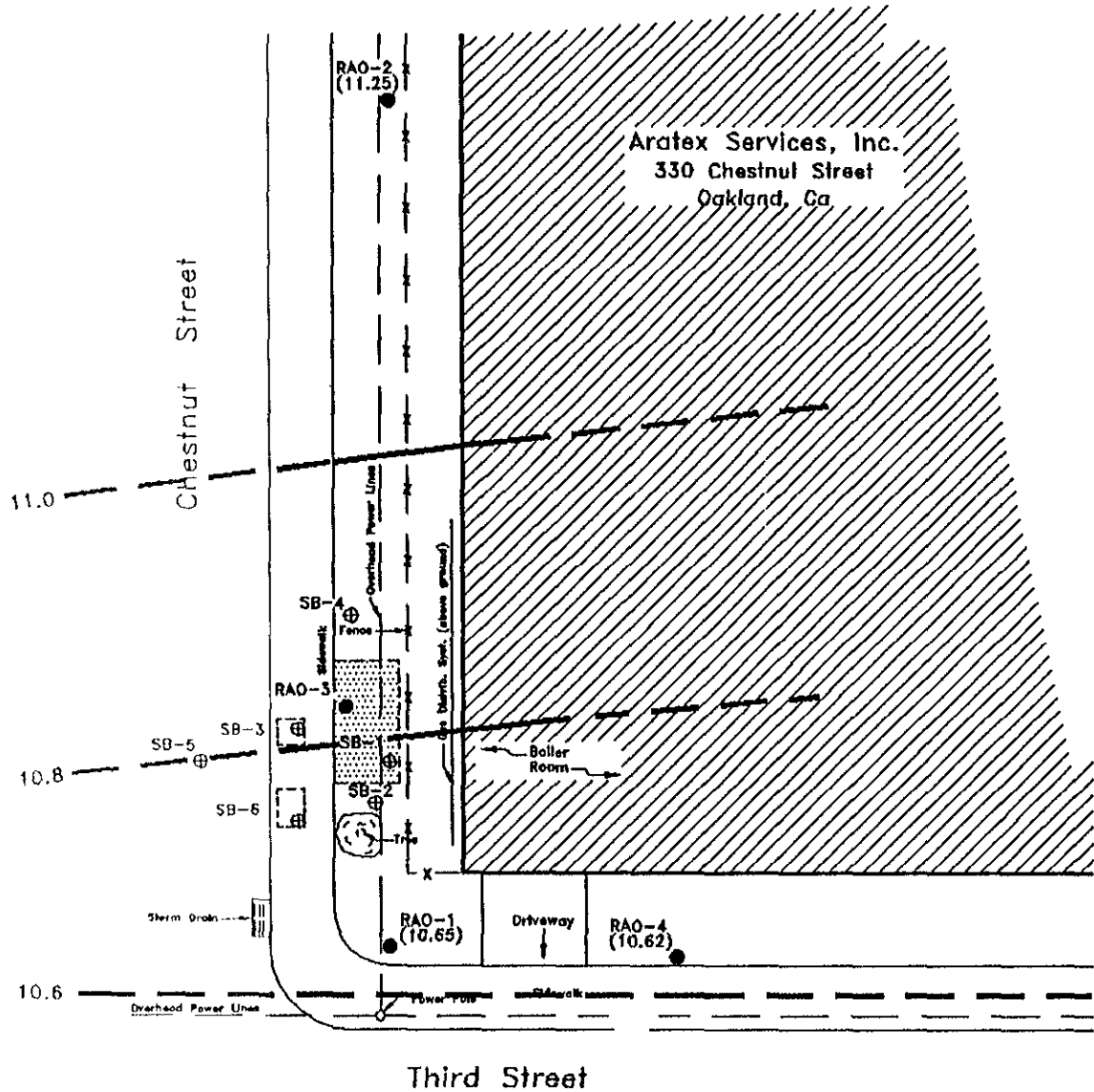
Static Water Level Measurements

Prior to collecting groundwater samples, the depth to groundwater or free-product was measured in each monitoring well using an electronic water level indicator. Three rounds of groundwater heights were taken to assess any variability in measurement. The details of the static water level measurements are presented in Appendix A and the potentiometric surface generated from the groundwater elevations is presented in Figure 2.

Groundwater Sample Collection

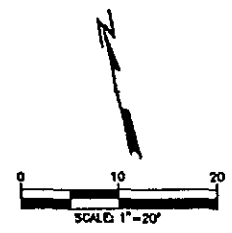
Groundwater samples were collected from monitoring wells RAO-1, RAO-2, and RAO-4. Prior to sampling, each monitoring well was purged using an electric submersible pump until groundwater characteristics stabilized (i.e., temperature, pH, conductivity, and turbidity). A minimum of three well casing volumes (casing and sand pack volume) were extracted from each well before collecting groundwater samples. The temperature, pH, conductivity, and turbidity of the extracted groundwater was measured and recorded at least once per well casing volume. The well casing volume was determined by measuring and recording the static water level and calculating the well volume. The purging pump was decontaminated between each sampling event by rinsing with tap water to remove particulates, washing with a tri-sodium phosphate solution, and rinsing with deionized water.

After each monitoring well had recharged to within 80 percent of its pre-purge volume (approximately 30-min) groundwater samples were collected utilizing a disposable Teflon bailer equipped with a teflon stopcock, and dispensed directly into 40-mL borosilicate vials with teflon septa and screw caps. All samples were preserved using hydrochloric acid and stored on ice pending transport to a commercial independent California-certified laboratory according to USEPA



Legend :

- RAO-x ● Ground Water Monitoring Well ; RMT 6/89
- SB-x ⊕ Soil Boring ; RMT 9/90
- ▭ Bldg.
- ▨ Estimated limits of Dec.1988 Tank Removal and backfill
- x-x-x- Fence, 6-Foot high chain link
- 10.6- Interpreted Water Table Elevation.
- (10.62) Water Table Elevation. MAY 11,1993
- ↑ Direction of Ground Water Flow.



GROUND WATER LEVELS
 Aratex Services, Inc.
 330 Chestnut Street
 Oakland, Ca



DWN. BY: RAS
 DATE: JUNE, 1993
 PROJ.# 12013.07
 FILE # 12013073

FIGURE 2

protocol, including chain-of-custody procedures. Details of the groundwater sampling procedures are presented in Appendix A, groundwater sampling field logs are presented in Appendix B, and chain-of-custody documents are included in Appendix C.

Chemical Analyses of Groundwater

Groundwater samples collected from each monitoring well were analyzed for the presence of BTEX using EPA SW-846 Method 8020 and TPH-D using EPA SW-846 Method 8015 modified to detect diesel fuel compounds (California LUFT method). The results of the laboratory analyses are presented in Table 1 and a copy of the laboratory report is included in Appendix D. All laboratory analyses were performed by GTEL Environmental Laboratory, Inc., of Concord, California.

Disposal of Purged Groundwater and Decontamination Water

Groundwater extracted during monitoring well purging activities and water generated during pump decontamination operations were contained in 55-gal DOT-approved drums, labeled with the date, generator's name, site location, source, and stored in a secured area pending characterization and disposal. ~~A copy of the disposal manifest will be submitted upon disposal.~~

TABLE 1
Chemical Analyses of Groundwater

5-11-93

Sample Location	Parameter (µg/L)				
	Benzene	Toluene	Ethylbenzene	Total Xylenes	TPH-D
RAO-1	0.4 ✓	0.5	<0.3	1.0	<10 ✓
RAO-2	0.4 ✓	1.0	<0.3	1.0	56 ✓
RAO-4	<0.3 ✓	<0.3	<0.3	<0.6	<10 ✓

TPH_g
<10
<10
<10

Section 3

PRODUCT RECOVERY ACTIVITIES

During groundwater monitoring activities conducted from March 1990, through November 1992, the presence of a free-product layer was identified in monitoring well RAO-3, located within the former underground storage tank excavation area. A product bail-down test was performed in monitoring well RAO-3 to determine the feasibility of implementing a product recovery system. The results of the product bail-down test indicated that product recovery was feasible, therefore, a removable floating product recovery canister was installed in the monitoring well RAO-3 on December 2, 1992. The canister consists of a buoy portion atop a product storage portion (the sump). The buoy is sheathed by a semi-permeable hydrophobic membrane which minimizes water infiltration into the product sump. The sump has a capacity of 500-mL and is emptied through a drain on the bottom of the canister.

~~The free-product canister has been emptied on a regular basis since December 1992.~~ Static water level and free-product level measurements indicate that the thickness of the free-product layer has ranged from approximately 0.01-ft to 0.40-ft during the remediation period. Product recovery logs also indicate that ~~approximately 0.7 gallons of free product have been recovered.~~ A summary of the product recovery operations is presented in Table 2.

TABLE 2
Product Recovery Observations

Date	Volume of Product Removed (mL)	Volume of Water Removed (mL)	Depth to Product (ft-bgs)	Depth to Water (ft-bgs)	Thickness of Product (ft)
12-3-92	trace	20	8.65	8.67	0.02
12-4-92	0	0	8.61	8.63	0.02
12-8-92	18	0	8.52	8.52	0.00
12-9-92	10	0	8.24	8.24	0.00
12-10-92	0	3	8.02	8.02	0.00
12-14-92	30	200	8.28	8.29	0.01
12-15-92	trace	0	8.32	8.32	0.00
12-16-92	trace	0	8.52	8.52	0.00
12-18-92	18	0	8.63	8.66	0.03
12-21-92	10	0	8.39	8.42	0.03
12-22-92	20	30	8.56	8.58	0.02
12-23-92	18	0	8.35	8.37	0.02
12-24-92	22	0	8.42	8.53	0.11
12-28-92	15	0	8.53	8.64	0.01
12-29-92	20	0	8.58	8.60	0.02
12-30-92	18	0	8.22	8.24	0.02
December Total	199	253			
1-4-93	23	18	8.45	8.47	0.02
1-5-93	12	0	8.28	8.30	0.02
1-6-93	10	0	8.05	8.48	0.43
1-7-93	8	0	8.64	8.66	0.02
1-8-93	3	10	8.36	8.37	0.01
1-11-93	8	0	8.02	8.16	0.14
1-12-93	13	8	7.68	8.06	0.38

TABLE 2 (Continued)
Product Recovery Observations

Date	Volume of Product Removed (mL)	Volume of Water Removed (mL)	Depth to Product (ft-bgs)	Depth to Water (ft-bgs)	Thickness of Product (ft)
1-13-93	45	0	7.64	8.04	0.40
1-14-93	40	0	8.00	8.32	0.32
1-15-93	40	0	7.98	8.30	0.32
1-18-93	48	0	8.00	8.11	0.11
1-19-93	50	0	8.00	8.22	0.22
1-20-93	44	0	8.00	8.02	0.02
1-21-93	5	40	7.84	8.00	0.16
1-22-93	450	42	7.74	7.98	0.24
January Total	799	118			
2-4-93	25	500*	7.99	8.45	0.46
February Total	25	500*			
3-25-93	380	70	8.11	8.20	0.09
March Total	380	70			
4-9-93	500	18	8.11	8.20	0.09
4-23-93	210	60	7.49	7.51	0.02
April Total	710	78			
5-3-93	560	90	8.54	8.58	0.04
5-11-93	38	114	8.35	8.45	0.10
5-20-93	1	0	8.39	8.42	0.03
May Total	599	204			
Quarterly Total	1,309	282			
Total to Date	2,712	1,223			
*Valve on bottom of canister left open					

APPENDIX A
STATIC WATER LEVEL MEASUREMENTS
AND
GROUNDWATER SAMPLING

APPENDIX A

WATER LEVEL MEASUREMENTS

Precise water level measurements are required to accurately characterize the groundwater flow direction in aquifers. The use of measuring devices that will yield quick and accurate results (to 0.01-ft) are required.

Direct water level measurement using steel tapes can provide accurate results, but the number of measurements that can be taken over a short period of time is limited. When using a steel tape, a heavy weight is attached to the end. The lower two or three feet are wiped dry and coated with carpenter's chalk before making a measurement. The tape is lowered down into the well until part of the chalked section is below water. After withdrawal, the wetted line can be read to the 0.01-ft fraction on the chalked section. The height of the riser pipe (if present) is compensated for as discussed below. The disadvantages of this method are that the time needed to take the three readings is greatly increased, and that the approximate depth of water must be known so that a portion of the chalked tape will be submerged to produce a wetted line.

RMT, Inc., typically uses an electrical measuring tape for water level measurements. This instrument sounds an alarm or light when the measuring probe touches the water surface thus closing an electrical circuit. The electric cable supporting the probe is usually graduated in feet and can be read at the well site directly. The remaining fraction is measured with a steel tape graduated to 0.01-ft. If the monitoring well is not constructed flush to the ground surface, the distance between the static water level and the top of the riser pipe is measured. The height of the riser pipe above ground surface is then subtracted from the total reading to give the depth to static water. To improve the accuracy of the readings, the probe and cable should be left in the well for series of three readings, and the readings averaged. This helps to eliminate any errors from kinks or bends in the wires which may change the length slightly when the device is pulled up and let down.

The electrical wire should be checked routinely against a steel measuring tape to insure that it has not stretched. If this is found to be the case, the wire should be replaced.

GROUNDWATER SAMPLING

If immiscibles are present, the following measurement activities should be undertaken first. These measurements are made by lowering an interface probe slowly to the surface of the liquid in the well. When the audible alarm sounds, record the depth. If the alarm is continuous, an immiscible layer has been detected. To determine the thickness of this layer, continue lowering the probe until the alarm changes to an oscillating signal. The oscillating signal indicates that the probe has detected an aqueous layer. Record this depth as the depth to water. Determine the thickness, and then the volume, of the immiscible layer as the difference in the two recorded depths. Continue lowering the probe into the well to determine if dense phase immiscibles (floaters) are present. If the alarm signal changes from oscillating to a continuous sound, a heavier immiscible layer has been detected; record this depth. Continue lowering the probe to the bottom of the well, record the depth, calculate the sinker thickness volume and total water volume in the well. A chart is provided in Table A-1 to assist in these calculations.

Determination of Purging Volume. If a determination of the presence of floaters or sinkers is not a requirement of the program, a sounder or similar device must be used to determine depth to water and total depth of the well. The operation of such a device must follow manufacturer's operating procedures and the device selected must meet the sensitivity requirements defined by the program objectives. In general, sounding devices must be constructed of inert materials, must be properly decontaminated between uses, and must be lowered into the well so as to give an accurate measurement. Be aware that some sounders are not designated to be submerged, therefore, they cannot be used to determine total depth. In these cases, a weighted steel tape or stainless steel cable should be used. Once these measurements have been made and recorded, use Table A-1 to calculate the total volume of water in the well. Multiply this volume by the purging factor to determine purging volume. The project-specific standard purging factor is three (three casing volumes), but may be superseded by site-specific program requirements and by individual well yield characteristics.

TABLE A-1
Liquid Volume in a One-Foot Section of Well Casing

Inside Casing Diameter	Volume $V=5.22(ID)^2$	Gallons $V=0.0408(ID)^2$	Milliliters $V=154.4(ID)^2$
1	5.22	0.04	154.4
1.5	11.74	0.09	347.3
2	20.88	0.16	617.5
3	46.98	0.37	1389.4
4	83.52	0.65	2470.0

PURGING THE WELL

Currently, project specific standards allow for six options for purging wells. They are:

- Teflon bailers
- Stainless steel bailers
- Teflon bladder pumps
- Stainless-steel submersible (non-oil bearing) pumps
- Existing dedicated equipment - Use of these devices must be approved by on-site client representatives (e.g., EPA on-site coordinator)
- Peristaltic pumps - Use of these devices are for shallow wells only and must be approved by the on-site client representative.

As previously stated, the project-specific purging volume standard is three casing volumes. The exception to this standard (other than program requirements) is in the case of low yield wells. When purging low yield wells, pump the well once to dryness. Samples should be collected as soon as the well recovers. When full recovery exceeds three hours, samples should be collected as soon as sufficient volume is available.

At no time during purging should the evacuation rate be high enough to cause the groundwater to cascade back into the well thus causing excessive aeration and potential stripping of volatile constituents.

The actual volume of purged water can be measured by several acceptable methods:

- When the bailers are used to purge, the actual volume of each bailer's contents can be measured using a calibrated bucket.
- An alternate method when using a bailer, is to use Table A-2 to determine the bailer volume and to count the number of times the bailer is emptied. In most instances, the second method is preferred.
- If a pump is used for purging, the pump rate can be determined by using a bucket and stopwatch, and the duration of pumping timed until the necessary volume is purged.

TABLE A-2
Bailer Sample Volumes Per One-Foot Section of Bailer

ID (Inches)	Volume $V=5.22(ID)^2$	Gallons $V=0.0408(ID)^2$	Milliliters $V=154.4(ID)^2$
0.5	1.31	0.01	38.6
0.75	2.95	0.02	86.9
1.0	5.22	0.04	154.4
1.25	8.16	0.06	241.3
1.5	11.74	0.09	347.3

SAMPLE COLLECTION

The technique used to withdraw a groundwater sample from a well should be selected based on a consideration of the parameters which will be analyzed. To ensure the groundwater samples are representative samples, it is important to avoid physically altering or chemically contaminating the sample during collection, withdrawal, and containerization.

The preferred sampling device for all parameters are double check valve stainless-steel or Teflon bailers. An acceptable alternative is a Teflon bladder pump.

In general, no sampling device constructed or containing neoprene, PVC, Tygon, silicone, polyethylene, or Viton will be used to collect groundwater samples.

In some cases, it may become necessary to use equipment already in the well to collect samples. This is particularly true of high volume, deep wells (>150-ft) where bladder pumps are ineffective, and bailing is impractical.

If existing equipment must be used, determine the make and model of the pump and check with the manufacturer concerning component construction materials. General project-specific sampling procedures include the following:

- Lower sampling equipment slowly into the well to avoid degassing of the water and damage to the equipment.
- Clean sampling equipment should not be placed directly on the ground. Use a drop cloth or feed line from clean reels. If reels are used, never place contaminated lines back on reels.
- Check the operation of bailer check valve assemblies to confirm free operation.

Collection of Volatile Organics Samples (VOA). VOA should be collected from the first bailer removed from the well after purging. The most effective means of controlled preparation of the sample is by employing two people. One person should retrieve the bailer from the well, and place the bottom over a 250-mL Pyrex beaker (Level 1 decontaminated) held by the second person. The second person should insert the Teflon bottom emptying device, and tilt the beaker to approximately 60° from the vertical.

Delivery of the sample from the bailer down the edge of the beaker is accomplished when the person holding the bailer slowly opens the top check valve with a Teflon insert. As the beaker is filled, the second person should return the beaker to the vertical position.

Pour the beaker contents into the appropriate number of VOA vials using the tilting technique described above until the vials are just overflowing. Cap the vial and invert. If a bubble exists, discard and repeat. Do not reopen the vial and add additional sample.

Always prepare VOA splits from a single beaker. If the beaker is refilled, samples are not duplicates.

APPENDIX B
GROUNDWATER SAMPLING FIELD LOGS

GROUNDWATER SAMPLING INFORMATION

Job Name	Oakland
Job Number	12013.07
Date	5-11-93
Pump Set @ __'BTOC	

MW- 20A -1

Notes:

DTW = 8.43

1120 removed = 990!

TIME	PURGE VOL.	TOTAL VOL.	TEMP. (C)	COND. (mmhos/cm)	pH	TURBIDITY (NTU)	DTW	COMMENTS
10:25	0	0	-	-	-	-	-	Pump On
10:26	3		18.8	1.14	7.09	767		
10:26	6		18.3	0.54	7.14	1000 ^r		
10:28	9		18.6	0.60	7.16	991		
								SAMPLE

GROUNDWATER SAMPLING INFORMATION

Job Name	Akland
Job Number	12013.07
Date	5-11-93
Pump Set @	'BTOC

MW- ROA -2

H₂O Pumped = 10 gals

Notes: DTW = 46.32'

TIME	PURGE VOL.	TOTAL VOL.	TEMP. (C)	COND. (mmhos/cm)	pH	TURBIDITY (NTU)	DTW	COMMENTS
9:54	0	0	-	-	-	-	-	Pump On
9:57	3		18.5	0.42	6.58	819		
9:56	4		18.8	0.45	6.62	1000+		
	9							
9:58	10		19.6	0.52	6.69	767		
								SAMPLE

GROUNDWATER SAMPLING INFORMATION

Job Name	OAKland
Job Number	17013.01
Date	5-11-93
Pump Set @	'BTOC

MW-ROA-4

Notes: DTW = 8.68'

TIME	PURGE VOL.	TOTAL VOL.	TEMP. (C)	COND. (mmhos/cm)	pH	TURBIDITY (NTU)	DTW	COMMENTS
10:42	0	0	-	-	-	-	-	Pump On
10:43	3		19.1	1.02	7.14	895		
10:44	4		20.1	1.04	7.24	995		
10:45	10		16.7	1.08	7.26	994		
11:25								SAMPLE

APPENDIX C
CHAIN-OF-CUSTODY DOCUMENTS / LABORATORY REPORT

GTEL

ENVIRONMENTAL
LABORATORIES, INC.

4080 Pike Lane
Concord, CA 94520
(510) 685-7852
(800) 544-3422 Inside CA
(800) 423-7143 Outside CA
(510) 825-0720 FAX

Client Number: RMT01RMT01
Consultant Project Number: 12013.07
Project ID: Not Given
Work Order Number: C3-05-0248

JUN 1 1993

May 28, 1993

Roger Herritz
RMT Laboratories, Inc.
3250 Ocean Park Blvd., #370
Santa Monica, CA 90405

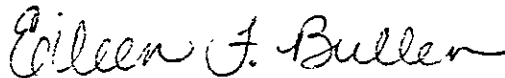
Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 05/14/93, under chain of custody record 045157.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services, Laboratory certificate numbers 194 and 1075, to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.



Eileen F. Bullen
Laboratory Director

Client Number: RMT01RMT01
 Consultant Project Number: 12013.07
 Project ID: Not Given
 Work Order Number: C3-05-0248

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Methods 8020 and Modified 8015^a

GTEL Sample Number		01	02	03	04
Client Identification		ROA-1	ROA-2	ROA-4	TRIP BLANK
Date Sampled		05/11/93	05/11/93	05/11/93	--
Date Analyzed		05/22/93	05/22/93	05/24/93	05/22/93
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	0.4 ✓	0.4 ✓	<0.3 ✓	<0.3
Toluene	0.3	0.5	1	<0.3	<0.3
Ethylbenzene	0.3	<0.3	<0.3	<0.3	<0.3
Xylene, total	0.5	1	1	<0.5	<0.5
BTEX, total	--	2	2	--	--
Gasoline	10	<10 ✓	<10 ✓	<10 ✓	<10
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		89.3	91.3	91.3	96.6

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Bromofluorobenzene surrogate recovery acceptability limits of 70-130% are derived from the 99% confidence interval of all samples during the previous quarter.

Client Number: RMT01RMT01
 Consultant Project Number: 12013.07
 Project ID: Not Given
 Work Order Number: C3-05-0248

ANALYTICAL RESULTS

TPH as Diesel in Water

Method: Modified EPA 8015^a

GTEL Sample Number		01	02	03	052093 GC-1
Client Identification		ROA-1	ROA-2	ROA-4	METHOD BLANK
Date Sampled		05/11/93	05/11/93	05/11/93	--
Date Analyzed		05/21/93	05/21/93	05/21/93	05/21/93
Analyte	Detection Limit, ug/L	Concentration, ug/L			
TPH as diesel	10	<10 ✓	56* ✓	<10 ✓	<10
Detection Limit Multiplier		1	1	1	1
OTP surrogate, % recovery		85.8	87.7	89.7	85.1

a. O-Terphenyl surrogate recovery acceptability limits are 50-150%. Test Methods for Evaluating Solid Waste, SW-846, 3rd edition, Rev. O, U.S. EPA, November, 1986.

* Hydrocarbon in the range of diesel.

Client Number: RMT01RMT01
 Consultant Project Number: 12013.07
 Project ID: Not Given
 Work Order Number: C3-05-0248

ANALYTICAL RESULTS

Volatile Organics in Water

EPA Methods 8020 and Modified 8015^a

GTEL Sample Number		A052293-1			
Client Identification		MEHTOD BLANK			
Date Sampled		--			
Date Analyzed		05/22/93			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3			
Toluene	0.3	<0.3			
Ethylbenzene	0.3	<0.3			
Xylene, total	0.5	<0.5			
BTEX, total	--	--			
Gasoline	10	<10			
Detection Limit Multiplier		1			
BFB surrogate, % recovery		92.7			

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Bromofluorobenzene surrogate recovery acceptability limits of 70-130% are derived from the 99% confidence interval of all samples during the previous quarter.

CHAIN OF CUSTODY RECORD

Bottles Prepared by: GTEL Date/Time: 5-11-93

Project No. 12013.07 Client: —

RMT Lab NO.	Yr <u>88</u> Date	Time	Sample Station ID	Total Number Of Containers
01	5-11-93	11:20	ROA - 1	3
02	"	11:45	ROA - 2	3
03	"	11:00	ROA - 4	3
04	"		TRIP Blank	1

Total Number Of Containers

Container Inventory TPH-G BTEX TPH-D EN MATRIX										Filtered (Yes/No)
										Preserved (Code)
										Code: A - None B - HNO3 C - H2SO4 D - NaOH E - HCl F - _____
										Comments:
										AQ
										Standard
										Turn Time
U. Williams 5/25/93										[Signature]

SAMPLER Relinquished by (Sig.) ① <u>[Signature]</u>	Date/Time	Received by (Sig.)	Date/Time
	<u>5-13-93</u>	② <u>John Weber</u> Shipper Name & # <u>John Weber GTEL</u>	<u>5-14 11:00 AM</u>
	Relinquished by (Sig.)	Date/Time	Received by (Sig.)
③ <u>John Weber</u>	<u>5-14 13:00</u>	④ _____ Shipper Name & #	_____
Relinquished by (Sig.)	Date/Time	Received by (Sig.)	Date/Time
⑤ _____	_____	⑥ <u>Quinn Belskey</u> Shipper Name & #	<u>5/14/93 1:00</u>

HAZARDS ASSOCIATED WITH SAMPLES

C3050 248

(For Lab Use Only)

Receipt Temp	Receipt pH
_____	_____
_____	_____