

Rec'd on 9/21/95 from M/M Price Renewed on 5/12/95

# BLAINE TECH SERVICES INC.

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August 19, 1994

Chester Clark  
537 Hidden Valley Road  
Grants Pass, OR 97527

Attn: Bob Price

SITE:  
Clark's Home and Garden  
23040 Clawiter Road  
Hayward, California

SAMPLING EVENT:  
Evacuate and sample one well

DATE:  
July 27, 1994

## GROUNDWATER SAMPLING REPORT 940727-E-3

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Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or become involved with the marketing or installation of remedial systems.

This report deals with the groundwater well sampling performed by our firm in response to your request. Data collected in the course of our work at the site is presented in the TABLE OF WELL MONITORING DATA. This data was collected during our inspection, well evacuation, and sample collection. Measurements include the total depth of the well and depth to water. Water surfaces were further inspected for the presence of immiscibles. A series of electrical conductivity, pH, and temperature readings were obtained during well evacuation and at the time of sample collection. Recharge performance can be evaluated by comparing the anticipated three, four, or five case volume evacuation gallonage with the volume which could actually be purged.

## TABLE OF WELL MONITORING DATA

Well I.D.	#1	#1	#1
Date Sampled	01/31/94	04/11/94	07/27/94
Well Diameter (in.)	2	2	2
Total Well Depth (ft.)	23.72	23.65	23.72
Depth To Water (ft.)	16.01	15.36	15.95
Free Product (in.)	NONE	NONE	NONE
Reason If Not Sampled	--	--	--
1 Case Volume (gal.)	1.25	1.32	1.2
Did Well Dewater?	NO	NO	NO
Gallons Actually Evacuated	4.0	4.0	4.5
Purging Device	BAILER	BAILER	BAILER
Sampling Device	BAILER	BAILER	BAILER
Time	12:57 13:02 13:06	15:20 15:26 15:28	13:13 13:15 13:18
Temperature (Fahrenheit)	63.0 62.8 65.0	65.0 61.8 61.8	64.4 64.2 64.0
pH	7.2 7.1 7.1	7.4 6.8 6.8	6.5 6.6 6.6
Conductivity (micromhos/cm)	3300 3300 3300	1200 1400 1400	2000 2000 2000
BTS Chain of Custody	940131-F-2	940411-V-3	940727-E-3
BTS Sample I.D.	#1	MW-1	#1
DHS HMTL Laboratory	CURTIS & TOMPKINS	CURTIS & TOMPKINS	CURTIS & TOMPKINS
Laboratory Sample I.D.	114206-1	115145-1	116603-1
Analysis	TPH (GAS), BTEX, TPH (DIESEL)	TPH (GAS), BTEX, TPH (DIESEL)	TPH (GAS), BTEX, TPH (DIESEL)

### SUMMARY OF CAR RESULTS in Parts Per Billion unless otherwise noted

DHS HMTL Laboratory	CURTIS & TOMPKINS	CURTIS & TOMPKINS	CURTIS & TOMPKINS
Laboratory Sample I.D.	114206-1	115145-1	116603-1
TPH Gasoline.....	3900	2200 *	6200
Benzene.....	1.9	1.2	ND
Toluene.....	4.2	4.6	ND
Ethyl Benzene.....	56	11	50
Xylene Isomers.....	49	11	74
TPH (Diesel).....	1900	3000 **	4400 **

\* Sample chromatogram does not match gasoline standard.

\*\* Diesel range not reported due to overlap of hydrocarbon ranges.

In the interest of clarity, an addendum has been appended to the TABLE which lists analytical results in such a way that our field observations are presented together with the analytical results. This addendum is entitled a **SUMMARY OF CAR RESULTS**. As indicated by the title, the source documents for these numbers are the laboratory's certified analytical reports. These certified analytical reports (CARs) are generated by the laboratory as the sole official documents in which they issue their findings. Any discrepancy between the CAR and a tabular or text presentation of analytical values must be decided in favor of the CAR on the grounds that the CAR is the authoritative legal document.

## **EQUIPMENT**

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### **Selection of Sampling Equipment**

The determination of what apparatus is to be used on particular wells may be made by the property owner, but is usually made by the professional consultant directing the performance of the monitoring on the property owner's behalf. When no specific requirement is made, our personnel will select equipment that will accomplish the work in the most efficient manner. Our personnel are equipped with a variety of sampling devices that include USGS/Middleburg pumps, down hole electric submersible pumps, air lift pumps, suction pumps, and bailers made of both Teflon and stainless steel.

Bailers were selected for the sample collection at this site.

**Bailers:** A bailer, in its simplest form, is a hollow tube which has been fitted with a check valve at the lower end. The device can be lowered into a well by means of a cord. When the bailer enters the water, the check valve opens and liquid flows into the interior of the bailer. The bottom check valve prevents water from escaping when the bailer is drawn up out of the well.

Two types of bailers are used in groundwater wells at sites where fuel hydrocarbons are of concern. The first type of bailer is made of a clear material such as acrylic plastic and is used to obtain a sample of the surface and the near surface liquids in order to detect the presence of visible or measurable fuel hydrocarbon floating on the surface. The second type of bailer is made of Teflon or stainless steel and is used as an evacuation and/or sampling device.

Bailers are inexpensive and relatively easy to clean. Because they are manually operated, variations in operator technique may have a greater influence than would be found with more automated sampling equipment. Also where fuel hydrocarbons are involved, the bailer may include near surface contaminants that are not representative of water deeper in the well.

## **STANDARD PRACTICES**

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### **Evacuation**

Groundwater well sampling protocols call for the evacuation of a sufficient volume of water from the well to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The protocol used on these wells called for a volumetric removal of three case volumes with stabilization of standard water parameters. There are situations where up to ten case volumes of evacuation may be

removed, especially when attempting to stabilize turbidity in undeveloped wells. Different professional consultants may specify different levels of evacuation prior to sampling or may request that specific parameters be used to determine when to collect the sample. Our personnel use several standard instruments to record the changes in parameters as the well is evacuated. These instruments are used regardless of whether or not a specific volumetric standard has been called for. As a result, the consultant will always be provided with a record of the pH, EC, and temperature changes that occurred during the evacuation process. Additional information obtained with different types of instruments (such as dissolved oxygen and turbidity meters) can also be collected if requested in advance.

## **Effluent Materials**

The evacuation of purge water creates a volume of effluent water which, in most cases, must be contained. Blaine Tech Services, Inc. will place this water in appropriate containers of the client's choice or bring new DOT 17 E drums to the site which are appropriate for the containment of the effluent materials. The determination of how to properly dispose of the effluent water must usually await the results of laboratory analyses of the sample collected from the groundwater well.

## **Observations and Measurements**

Included in the scope of work are routine measurements and investigative procedures which are intended to determine if the wells are suitable for evacuation and sampling. These include measurement (from the top of the well case) of the total depth of the well; the depth to water, and the thickness of any free product zone (FPZ) encountered. The presence of a significant free product zone may interfere with efforts to collect a water sample that accurately reflects the condition of groundwater lying below the FPZ. This interference is caused by adhesion of petroleum to any device being lowered through the FPZ and the likelihood that minute globules of petroleum may break free of the sampling device and be included in the sample. Accordingly, evaluation of analytical results from wells containing any amount of free petroleum should take into account the possibility that positive results have been skewed higher by such an inclusion. The decision to sample or not sample such wells is left to the discretion of our field personnel at the site and the consultant who establishes sampling guidelines based on the need for current information on groundwater conditions at the site.

## **Sampling Methodology**

Samples were obtained by standardized sampling procedures that follow an evacuation and sample collection protocol. The sampling methodology conforms with State and Regional Water Quality Control Board standards and specifically adheres to EPA requirements for apparatus, sample containers and sample handling as specified in publication SW 846 and the T.E.G.D. which is published separately.

## **Sample Containers**

Sample material is collected in specially prepared containers appropriate to the type of analyses intended. Our firm uses new sample containers of the type specified by either

EPA or the RWQCB. Often times analytical laboratories wish to supply the sample containers because checks performed on these bottles are often part of a comprehensive laboratory QC program. In cases where the laboratory does not supply sample containers our personnel collect water samples in new containers that are appropriate to the type of analytical procedure that the sample is to receive. For example, 40 ml volatile organic analysis vials (VOAs) are used when analysis for gasoline and similar light volatile compounds is intended. These containers are prepared according to EPA SW 846 and will usually contain a small amount of preservative when the analysis is for TPH as gasoline or EPA 602. Vials intended for EPA 601 analysis and EPA 624 GCMS procedures are not preserved. The closure of volatile organic analysis water sample containers is accomplished with an open headed (syringe accessible) plastic screw cap brought down on top of a Teflon faced septum which is used to seal the sample without headspace.

Water samples intended for semivolatile and nonvolatile analysis such as total oil and grease (TOG) and diesel (TPH HBF) are collected and transported in properly prepared new glass liter bottles. Dark amber glass is used in the manufacture of these bottles to reduce any adverse effect on the sample by sunlight. Antimicrobial preservative may be added to the sample liquid if a prolonged holding time is expected prior to analysis. Closure is accomplished with a heavy plastic screw cap.

Groundwater well samples intended for metals analysis are transported in new plastic bottles and preserved with nitric acid. Our personnel can field filter the sample liquid prior to placing it in the sample container if instructed to perform this procedure.

### **Sample Handling Procedures**

Water samples are collected in any of several appropriate devices such as bailers, Coliwassas, Middleburg sampling pumps etc. which are described in detail only as warranted by their employment at a given site. Sample liquid is decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA procedures for handling volatile organic and semi-volatile compounds.

Groundwater samples that are to receive metals analyses can be filtered prior to being placed in the plastic sample bottles that contain the nitric acid preservative. The filtration process employs new glass containers which are discarded and laboratory quality disposable filtering containers which are also discarded. A frequently used filtering procedure employs a vacuum pump to draw sample material through a 0.45 micron filter. The 0.45 micron pore size is standard, but the amount of filter available varies with the type of package selected. Filters are selected on the basis of the relative turbidity of the water sample. Samples which are relatively clean can be efficiently filtered with relatively inexpensive filters while very turbid water will require a very large filter with a high tolerance for sediments. One of several such filters our firm uses are the Nalgene Type A filters in which an upper and lower receptacle chamber are affixed to the filter. Sample material is poured into the upper chamber and a vacuum pump attached to the lower chamber. Simple actuation of the vacuum pump induces the flow of water through the filter and into the lower chamber. The sample is then decanted into the laboratory container and the filter assembly discarded. Cartridge type flow-through filters are more expensive but can be fitted directly to the discharge line of most sampling pumps (USGS/Middleburg pumps) and electric submersible pumps.

Following collection, samples are promptly placed in an ice chest containing prefrozen

blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

### **Sample Designations**

All sample containers are identified with both a sampling event number and a discrete sample identification number. Please note that the sampling event number is the number that appears on our chain of custody. It is roughly equivalent to a job number, but applies only to work done on a particular day of the year rather than spanning several days as jobs and projects often do.

### **Chain of Custody**

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under our standard chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

### **Hazardous Materials Testing Laboratory**

The samples obtained at this site were delivered to Curtis & Tompkins Ltd. in Berkeley, California. Curtis & Tompkins Ltd. is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #1459.

### **Laboratory Identification Numbers**

Following receipt of the samples and completion of the Chain of Custody form, the laboratory then assigns their own identification numbers to the samples. Different laboratories use different numbering systems and, according to their own internal conventions, may or may not assign sequential numbers to samples which are placed on temporary "hold", pending the results of other analyses. Laboratory identification numbers (if assigned and available) are included in our report. These are the number that appear on the certified analytical report by the analytical laboratory.

### **Certified Analytical Report**

The certified analytical report (CAR) generated by the laboratory is the official document in which they issue their findings. Any discrepancy between verbally communicated results and the analytical values issued in a certified analytical report should be decided in favor of the CAR, for while it may, itself, be in error with regard to a particular number, the CAR remains the recognized authoritative legal document until such time as it is amended with a corrected report.

## **Personnel**

All Blaine Tech Services, Inc. personnel receive 29 CFR 1910.120(e)(2) training as soon after being hired as is practical. In addition, many of our personnel have additional certifications that include specialized training in level B supplied air apparatus and the supervision of employees working on hazardous materials sites. Employees are not sent to a site unless we are confident they can adhere to any site safety provisions in force at the site and unless we know that they can follow the written provisions of an SSP and the verbal directions of an SSO.

In general, employees sent to a site to perform groundwater well sampling will assume an OSHA level D (wet) environment exists unless otherwise informed. The use of gloves and double glove protocols protects both our employees and the integrity of the samples being collected. Additional protective gear and procedures for higher OSHA levels of protection are available.

## **Decontamination**

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Decontamination procedures include complete disassembly of the device to a point where a jet of steam cleaner water can be directed onto all the internal surfaces. Blaine Tech Services, Inc. frequently modifies apparatus to allow complete disassembly and proper cleaning.

## **Reportage**

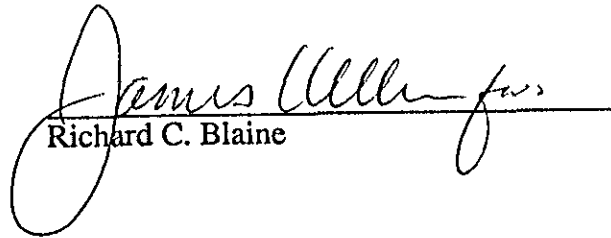
Submission to the Regional Water Quality Control Board and the local implementing agency should include copies of the sampling report, the chain of custody, and the certified analytical report issued by the Hazardous Materials Testing Laboratory. The property owner should attach a cover letter and submit all documents together in a package.

The following addresses have been listed here for your convenience:

Water Quality Control Board  
San Francisco Bay Region  
2101 Webster Street  
5th Floor  
Oakland, CA 94612  
ATTN: Dennis Mishek

Alameda Fire Dept.  
300 Park Street  
Alameda, CA 94501  
ATTN: Albert L. Smith

Please call if we can be of any further assistance.

  
Richard C. Blaine

RCB/dk

attachments: chain of custody  
certified analytical report







Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L   R E P O R T

Prepared for:

Clark's Home & Garden  
c/o 521 Triller Lane  
Grant's Pass, OR 97527

Date: 11-AUG-94  
Lab Job Number: 116603  
Project ID: 940727-E3  
Location: Clarks Home & Garden

Reviewed by:

Reviewed by:

This package may be reproduced only in its entirety.

LABORATORY NUMBER: 116603  
 CLIENT: CLARKS HOME & GARDEN  
 PROJECT ID: 940727-E3

DATE SAMPLED: 07/27/94  
 DATE RECEIVED: 07/28/94  
 DATE EXTRACTED: 08/09/94  
 DATE ANALYZED: 08/10/94  
 DATE REPORTED: 08/11/94  
 DATE REVISED: 08/18/94

Extractable Petroleum Hydrocarbons in Aqueous Solutions  
 California DOHS Method  
 LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT (ug/L)
116603-1	#1	4,400	***	50
METHOD BLANK		ND	ND	50

ND = Not detected at or above reporting limit. Reporting limit applies to all analytes.  
 \*\*\* Diesel range not reported due to overlap of hydrocarbon ranges.

QA/QC SUMMARY:

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 RPD, % 11  
 RECOVERY, % 106  
 =====

LABORATORY NUMBER: 116603  
 CLIENT: CLARKS HOME & GARDEN  
 PROJECT ID: 940727-E3

DATE SAMPLED: 07/27/94  
 DATE RECEIVED: 07/28/94  
 DATE ANALYZED: 08/03/94  
 DATE REPORTED: 08/11/94

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions  
 TVH by California DOHS Method/LUFT Manual October 1989  
 BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
116603-1	#1	6200	ND(1)	ND(1)	50	74
METHOD BLANK		ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit  
 indicated in parentheses.

QA/QC SUMMARY

RPD, % 4  
 RECOVERY, % 110