aqua science engineers inc.

March 24, 1999

QUARTERLY GROUNDWATER MONITORING REPORT
MARCH 4, 1999 GROUNDWATER SAMPLING
ASE JOB NO. 3412

at
Chan's Former Shell
726 Harrison St.
Oakland, CA 94602

Prepared by:
AQUA SCIENCE ENGINEERS, INC.
208 W. El Pintado
Danville, CA 94526
(925) 820-9391

1.0 INTRODUCTION

Site Location (Site), See Figure 1
Former Chan's Shell
726 Harrison St.
Oakland, CA 94602
(510) 444-6583

Responsible Party
Kin Chan
4328 Edgewood Ave.
Oakland, CA 94602

Environmental Consulting Firm
Aqua Science Engineers, Inc. (ASE)
208 W. El Pintado
Danville, CA 94526
Contact: Robert Kitay, Senior Geologist
(925) 820-9391

Agency Review
Larry Seto
Alameda County Health Care Services Agency (ACHCSA)
1131 Harbor Bay Pkwy., Suite 250
Alameda, CA 94502
(510) 567-6700

California Regional Water Quality Control Board (RWQCB)
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
Contact: Mr. Chuck Headlee
(510) 622-2433

The following is a report detailing the results of the March 4, 1999 quarterly groundwater sampling at the above-referenced site. This sampling was conducted as required by the ACHCSA and RWQCB. ASE has prepared this report on behalf of Kin Chan, property owner. This report is intended to supplement the ASE report: "Report of Soil and Groundwater Assesment" dated January 8, 1999.

2.0 GROUNDWATER FLOW DIRECTION AND GRADIENT

On March 4, 1999, ASE staff geologist Greg Schramm measured the depth to water in each site groundwater monitoring well using an electric water level sounder. The surface of the groundwater was also checked for the presence of free-floating hydrocarbons or sheen. No free-floating hydrocarbons or sheen were observed in any site monitoring well. Groundwater elevation data is presented as Table One.

TABLE ONE
Groundwater Elevation Data

Well I.D.	Date of Measurement	Top of Casing Elevation (relative to mean sea level)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	12-15-98	31.95	17.32	14.63
	3-4-99		**15.52**	**16.43**
MW-2	12-15-98	32.40	18.03	14.37
	3-4-99		**16.11**	**16.29**
MW-3	12-15-98	31.61	17.26	14.35
	3-4-99		**15.47**	**16.14**
MW-4	12-15-98	32.53	17.59	14.94
	3-4-99		**15.88**	**16.65**

A groundwater potentiometric surface map is presented as Figure 2. The groundwater flow direction is to the southwest with a gradient of approximately 0.009-feet/foot. This gradient and flow direction are generally consistent with nearby sites. The groundwater table has risen approximately 1.8 feet since December 1998.

3.0 GROUNDWATER SAMPLE COLLECTION AND ANALYSIS

Prior to sampling, monitoring wells MW-1, MW-3, and MW-4 were purged of four well casing volumes of groundwater using an electric pump. Monitoring well MW-2 was not sampled because a car parked over the well made it inaccessible for sampling. Petroleum hydrocarbon odors were present during the purging and sampling of groundwater monitoring well MW-1. No odors were present during the purging and sampling of monitoring wells MW-3 and MW-4. The parameters pH, temperature and conductivity were monitored during the well purging. Samples were not collected until these parameters stabilized. Groundwater samples were collected from each well using dedicated polyethylene bailers. The samples were decanted from the bailers into 40-ml volatile organic analysis (VOA) vials, pre-preserved with hydrochloric acid. The samples were capped without headspace, labeled and placed in coolers with wet ice for transport to Chromalab, Inc. of Pleasanton, California (ELAP #1094) under appropriate chain-of-custody documentation. Well sampling field logs are presented in Appendix A.

The well purge water was placed in 55-gallon steel drums, labeled, and left on-site for temporary storage.

The groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 5030/8015M, benzene, toluene, ethylbenzene and total xylenes (collectively known as BTEX) by EPA Method 8020 and methyl tertiary butyl ether (MTBE) by EPA Method 8020. The analytical results for this sampling period are presented in Table Two. The certified analytical report and chain-of-custody documentation are included as Appendix B.

TABLE TWO
Certified Analytical Results of **GROUNDWATER** Samples
All results are in **parts per billion**

Well ID & Dates Sampled	TPH-G	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-1						
7-3-97	18,000	2,700	350	450	900	7,400
12-5-98	18,000	1,500	270	260	560	14,000
3-4-99	**44,000**	**2,800**	**400**	**440**	**960**	**43,000**
MW-2						
12-5-98	<50	<0.5	<0.5	<0.5	<0.5	<5
3-4-99	**Inaccessable due to car parked over well**					
MW-3						
12-5-98	6,500	<50	50	60	50	3,900
3-4-99	**2,800**	**< 25**	**< 25**	**< 25**	**< 25**	**1,600**
MW-4						
12-5-98	880	3.4	<0.5	<0.5	<0.5	950
3-4-99	**3,800**	**< 25**	**< 25**	**< 25**	**< 25**	**3,700**
DTSC MCLs	NE	1	150	700	1,750	35*
EPA METHOD	5030/ 8015M	8020	8020	8020	8020	8020

Notes:
* = DTSC interim action level; MCL not established
NE = DTSC MCLs not established

DTSC MCLs = California Department of Toxic Substances Control maximum contaminant level for drinking water.

Non-detectable concentrations noted by the less than sign (<) followed by the laboratory detection limit.

4.0 CONCLUSIONS

Benzene and toluene concentrations in groundwater samples collected from monitoring well MW-1 exceeded California Departement of Toxic Substances Control (DTSC) maximum contamination levels (MCLs) for drinking water. MTBE concentrations detected in groundwater samples collected from all three monitoring wells sampled exceeded the DTSC interim action level for drinking water. **BTEX concentrations for monitoring wells MW-3 and MW-4 are reported as non-detectable because of elevated detection limits associated with the high concentrations of MTBE.** Hydrocarbon concentrations in groundwater samples collected from

monitoring wells MW-1 and MW-4 increased this quarter. Hydrocarbon concentrations in groundwater samples collected from monitoring well MW-3 decreased this quarter.

5.0 RECOMMENDATIONS

ASE recommends continued monitoring of the site on a quarterly basis. The next groundwater sampling is scheduled for June 1999.

6.0 REPORT LIMITATIONS

The results of this report represent the conditions at the time of the groundwater sampling, at the specific locations where the groundwater samples were collected, and for the specific parameters analyzed by the laboratory. It does not fully characterize the site for contamination resulting from sources other than the former underground storage tanks and associated plumbing at the site, or for parameters not analyzed by the laboratory. All of the laboratory work cited in this report was prepared under the direction of independent CAL-EPA certified laboratory. The independent laboratory is solely responsible for the contents and conclusions of the chemical analysis data.

Aqua Science Engineers appreciates the opportunity to provide environmental consulting services for this project, and trust that this report meets your needs. Please feel free to call us at (925) 820-9391 if you have any questions or comments.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

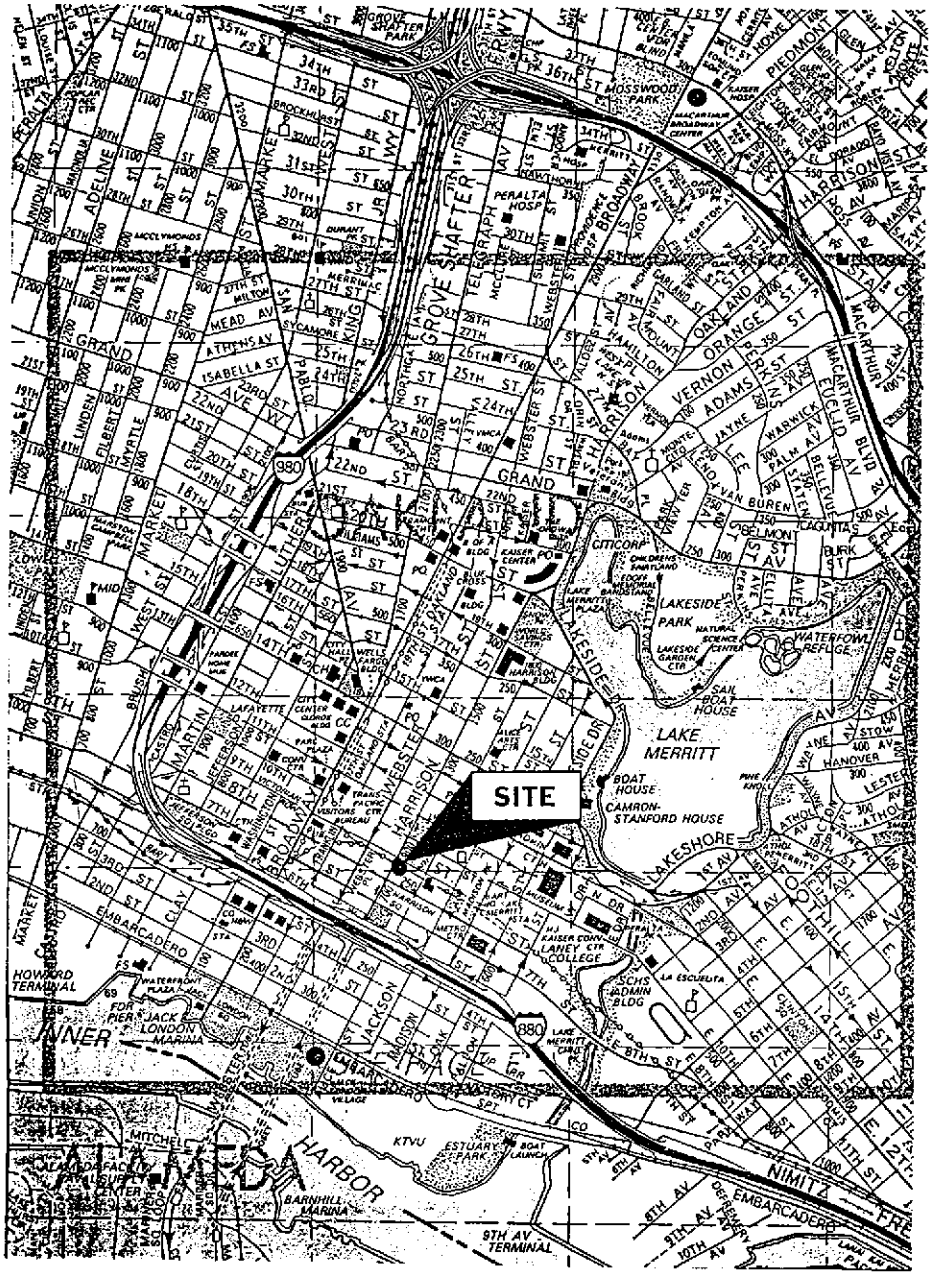
Greg Schramm
Staff Geologist

Robert E. Kitay, R.G., R.E.A.
Senior Geologist

REGISTERED GEOLOGIST
ROBERT E. KITAY
No. 6586
STATE OF CALIFORNIA

Attachments: Figures 1 and 2
Appendices A and B

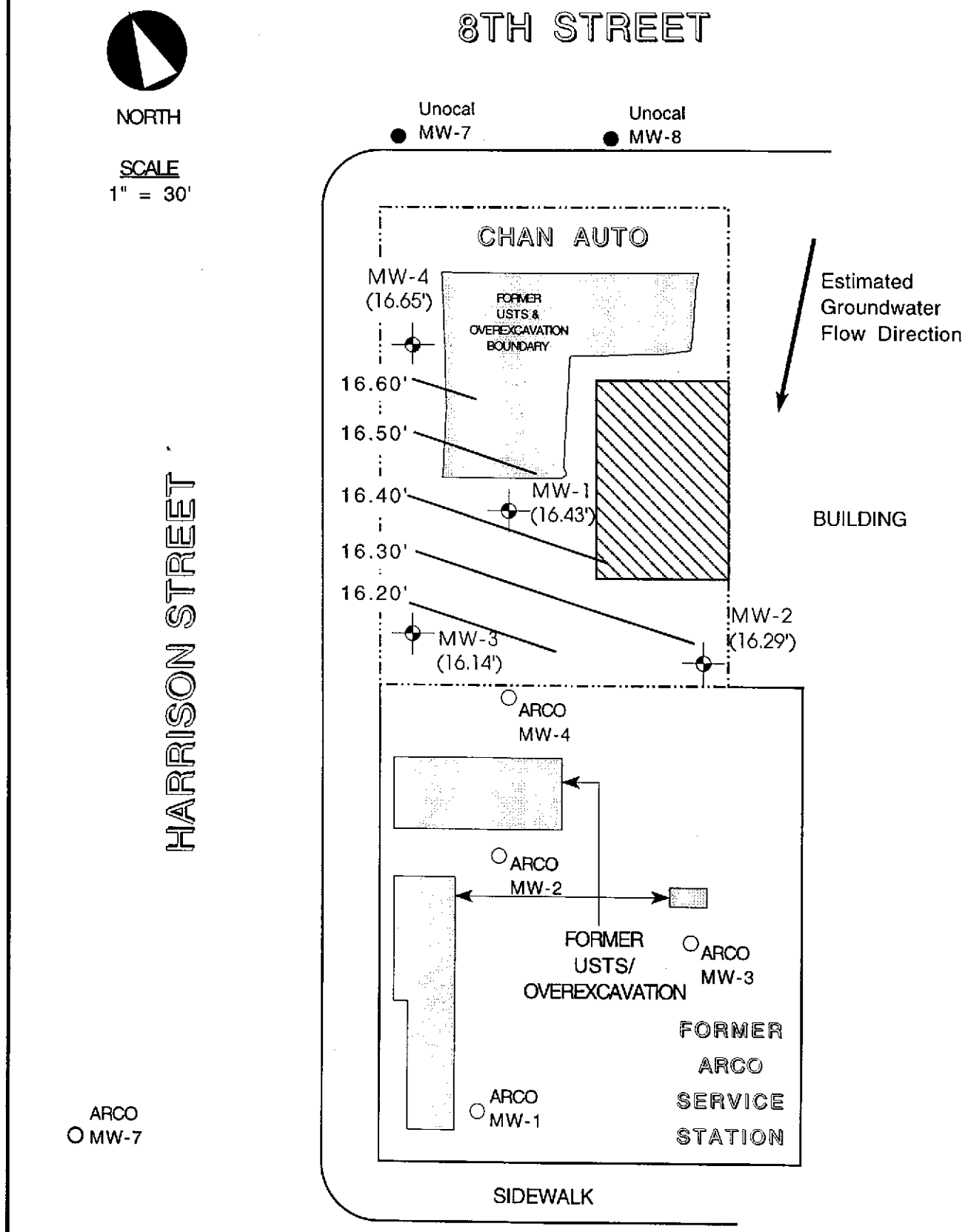
cc: Mr. Larry Seto, Alameda County Health Care Services Agency
Mr. Chuck Headlee, RWQCB, San Francisco Bay Region



SITE LOCATION MAP

726 HARRISON STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS, INC. | Figure 1



MW-1 **LEGEND**

ASE Monitoring Well

(16.43') Groundwater elevation, relative to MSL

Groundwater elevation contour

GROUNDWATER ELEVATION CONTOUR MAP - 3/4/99

726 HARRISON STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS | Figure 2

APPENDIX A

Well Sampling Field Logs

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WELL SAMPLING FIELD LOG

Project Name and Address: Chan
Job #: 3412 Date of sampling: 3/4
Well Name: MW-1 Sampled by: GS
Total depth of well (feet): 27.21 Well diameter (inches): 2
Depth to water before sampling (feet): 15.52
Thickness of floating product if any: —
Depth of well casing in water (feet): 11.69
Number of gallons per well casing volume (gallons): 1.87
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 7.48
Equipment used to purge the well: electric pump
Time Evacuation Began: 9:35 Time Evacuation Finished: 9:50
Approximate volume of groundwater purged: 10
Did the well go dry?: No After how many gallons: —
Time samples were collected: 10:00
Depth to water at time of sampling: —
Percent recovery at time of sampling: —
Samples collected with: dedicated bailer
Sample color: clear Odor: mild HC
Description of sediment in sample: black/grey

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	63.3	4.51	786
2	62.9	4.44	813
3	65.0	4.69	773
4	65.4	5.60	821
5	65.4	5.67	816

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-1	3	40 ml VOA	HCl	Y	TPHg/BTEX/MTBE

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WELL SAMPLING FIELD LOG

Project Name and Address: Chan
Job #: 3412 Date of sampling: 3/4
Well Name: MW-3 Sampled by: GS
Total depth of well (feet): 29.66 Well diameter (inches): 2
Depth to water before sampling (feet): 15.47
Thickness of floating product if any: —
Depth of well casing in water (feet): 14.19
Number of gallons per well casing volume (gallons): 2.27
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 9.08
Equipment used to purge the well: electric pump
Time Evacuation Began: 9:05 Time Evacuation Finished: 9:15
Approximate volume of groundwater purged: 10
Did the well go dry?: NO After how many gallons: —
Time samples were collected: 9:19
Depth to water at time of sampling: —
Percent recovery at time of sampling: —
Samples collected with: dedicated bailer
Sample color: clear Odor: none
Description of sediment in sample: yellow brown

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	62.5	4.90	853
2	64.8	4.75	894
3	66.2	5.00	795
4	66.9	5.06	703

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-3	3	40ml VOA	HCl	Y	TPHg / BTEX/MTBE

aqua science engineers inc.

WELL SAMPLING FIELD LOG

Project Name and Address: Chan
Job #: 3412 Date of sampling: 3/4
Well Name: MW-4 Sampled by: GS
Total depth of well (feet): 29.97 Well diameter (inches): 2
Depth to water before sampling (feet): 15.88
Thickness of floating product if any: —
Depth of well casing in water (feet): 14.09
Number of gallons per well casing volume (gallons): 2.25
Number of well casing volumes to be removed: 4
Req'd volume of groundwater to be purged before sampling (gallons): 9.0
Equipment used to purge the well: electric pump
Time Evacuation Began: 8:30 Time Evacuation Finished: 8:40
Approximate volume of groundwater purged: 10
Did the well go dry?: NO After how many gallons: —
Time samples were collected: 8:43
Depth to water at time of sampling: —
Percent recovery at time of sampling: —
Samples collected with: dedicated bailer
Sample color: Clear Odor: none
Description of sediment in sample: yellow brown

CHEMICAL DATA

Volume Purged	Temp	pH	Conductivity
1	59.6	5.0	1041
2	65.1	5.38	982
3	65.5	5.60	848
4	66.0	5.77	832

SAMPLES COLLECTED

Sample	# of containers	Volume & type container	Pres	Iced?	Analysis
MW-4	3	40ml VOA	HCl	~~HCl~~ Y	TPHg / BTEX / MTBE

APPENDIX B

Certified Analytical Report
and
Chain of Custody Documentation

CHROMALAB, INC.

Environmental Services (SDB)

March 16, 1999 *Submission #:* 9903086

AQUA SCIENCE ENGINEERS, INC

Atten: GREG SCHRAMM

Project: CHAN *Project#:* 3412
Received: March 5, 1999

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: MW-1
Spl#: 231381 *Matrix:* WATER
Sampled: March 4, 1999 *Run#:*17841 *Analyzed:* March 12, 1999

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	44000	12000	N.D.	97	250
MTBE	43000	1200	N.D.	89	250
BENZENE	2800	120	N.D.	99	250
TOLUENE	400	120	N.D.	96	250
ETHYL BENZENE	440	120	N.D.	99	250
XYLENES	960	120	N.D.	99	250

Vincent Vancil
Analyst

Michael Verona
Operations Manager

925-837-4853

1220 Quarry Lane • Pleasanton, California 94566-4756
(925) 484-1919 • Facsimile (925) 484-1096
Federal ID #68-0140157

PM V132 O:BTEXQC022
VINCE 15:

CHROMALAB, INC.

Environmental Services (SDB)

March 16, 1999 *Submission #:* 9903086

AQUA SCIENCE ENGINEERS, INC

Atten: GREG SCHRAMM

Project: CHAN *Project#:* 3412
Received: March 5, 1999

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: MW-3
Spl#: 231382 *Matrix:* WATER
Sampled: March 4, 1999 *Run#:*17841 *Analyzed:* March 12, 1999

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	2800	2500	N.D.	97	50
MTBE	1600	250	N.D.	89	50
BENZENE	N.D.	25	N.D.	99	50
TOLUENE	N.D.	25	N.D.	96	50
ETHYL BENZENE	N.D.	25	N.D.	99	50
XYLENES	N.D.	25	N.D.	99	50

Note: Hydrocarbon found in Gasoline Range is uncharacteristic of Gasoline Profile.

Vincent Vancil
Analyst

Michael Verona
Operations Manager

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Federal ID #68-0140157

PM V132 O:BTEXQC02
VINCE 15

CHROMALAB, INC.

Environmental Services (SDB)

March 16, 1999 *Submission #:* 9903086

AQUA SCIENCE ENGINEERS, INC

Atten: GREG SCHRAMM

Project: CHAN *Project#:* 3412
Received: March 5, 1999

re: One sample for Gasoline BTEX MTBE analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: **MW-4**
Spl#: 231383 *Matrix:* WATER
Sampled: March 4, 1999 *Run#:*17841 *Analyzed:* March 12, 1999

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
GASOLINE	3800	2500	N.D.	97	50
MTBE	3700	250	N.D.	89	50
BENZENE	N.D.	25	N.D.	99	50
TOLUENE	N.D.	25	N.D.	96	50
ETHYL BENZENE	N.D.	25	N.D.	99	50
XYLENES	N.D.	25	N.D.	99	50

Note: Hydrocarbon found in Gasoline Range is uncharacteristic of Gasoline Profile.

Vincent Vancil
Analyst

Michael Verona
Operations Manager

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Federal ID #68-0140157

PM V132 O:BTEXQC02
VINCE 15

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Danville, CA 94526
(925) 820-9391
FAX (925) 837-4853

Chain of Custody

44875

PAGE 1 OF 1

SAMPLER (SIGNATURE) (PHONE NO.) 820-9391

PROJECT NAME Chan JOB NO. 3412

ADDRESS 726 Harrison St. DATE 3/4

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

SAMPLE ID.	DATE	TIME	MATRIX	NO. OF SAMPLES	TPH-GAS / MTBE & BTEX (EPA 5030/8015-8020)	TPH-GASOLINE (EPA 5030/8015)	TPH-DIESEL (EPA 3510/8015)	PURGEABLE HALOCARBONS (EPA 601/8010)	PURGEABLE AROMATICS (EPA 602/8020)	VOLATILE ORGANICS (EPA 624/8240)	SEMI-VOLATILE ORGANICS (EPA 625/8270)	OIL & GREASE (EPA 5520) ____	LUFT METALS (5) (EPA 6010+7000)	CAM 17 METALS (EPA 6010+7000)	PCBs & PESTICIDES (EPA 608/8080)	ORGANOPHOSPHORUS PESTICIDES (EPA 8140)	ORGANOCHLORINE HERBICIDES (EPA 8150)	FUEL OXYGENATES (EPA 8260)				COMPOSITE
MW-1	3/4	10:00	water	3	X																	
MW-3	3/4	9:19	↓	↓	X																	
MW-4	3/4	8:43	↓	↓	X																	

SUB#: 9903000 REP: PM
CLIENT: ASE
DUE: 03/12/99
REF #:44875

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY LABORATORY:	COMMENTS:
(signature) (time)	(signature) 0931 (time)	(signature) 1746 (time)	(signature) 1752 (time)	5.6°C HD
Greg Schramm 3/5	B Morrow 3-5-99	B Morrow 3-5-99	N Paredes 3/5/99	9 VOAs
(printed name) (date)	(printed name) (date)	(printed name) (date)	(printed name) (date)	5 day T.A.T.
Company- ASE	Company- Chromalab	Company- Chromalab	Company- Chromalab	