ALLCAL ENVIRONMENTAL

4241

May 10, 2001

10314

MAY 22 2001

Mr. Ted Walbey
7402 Hillview Court
Pleasanton, CA 94588

RE: Application of Hydrogen Peroxide into Wells and Second Quarter 2001 Groundwater Monitoring Event, Former Fiesta Beverage, 966 89th Avenue, Oakland, CA 94621, StID#4241

Dear Mr. Walbey:

Thank you for contracting with ALLCAL Environmental (ALLCAL) to apply hydrogen peroxide into, and sample groundwater monitoring wells MW-1 through MW-3 at the above referenced property. The application of hydrogen peroxide into the wells was an attempt to remediate dissolved gasoline contamination as requested by the Alameda County Health Care Services Agency (ACHCSA) in their January 29, 2001, letter to you. The ACHCSA feels that the remediation, in combination with on-going groundwater monitoring may allow the site to be considered for closure as a "low risk" site. The application of hydrogen peroxide and the sampling event documented in this letter report were conducted according to a February 5, 2001, work plan submitted to the ACHCSA by ALLCAL and approved by the ACHCSA in a February 8, 2001, letter to you. Groundwater from all wells was analyzed for total petroleum hydrocarbons as gasoline (TPHG); benzene, toluene, ethylbenzene, and xylenes (BTEX); and Methyl tert-Butyl Ether (MTBE).

See Attachments A, B, C, and D for ALLCAL's protocol relative to groundwater sampling, sample handling, quality assurance and quality control, and waste handling and decontamination procedures.

DOCUMENTATION OF APPLICATION OF HYDROGEN PEROXIDE SOLUTION

Forty nine gallons of about 7% hydrogen peroxide solution were obtained by ALLCAL for application into the three onsite wells.

On March 7, 2001, prior to applying the hydrogen peroxide, depth to groundwater was measured in each well. Depth to groundwater was measured at 7.54 ft., 7.30 ft., and 7.52 ft. in wells MW-1, MW-2, and MW-3, respectively. The hydrogen peroxide solution was applied by filling each well's casing to the top. As the column of solution fell inside the casing, displacing the underlying water column, more solution was added until the 49 gallons were all used. Since well MW-1 has the highest historical concentration of gasoline contamination, the work plan

P. O. BOX 1652 • TWAIN HARTE, CA 95383 • (209) 586-6464
e-mail • mrakovich@earthlink.net

proposed to place 2/3rds of the solution into it, and the remainder of the solution about equally divided into wells MW-2 and MW-3. While applying the solution, it was observed that wells MW-2 and MW-3 exhibited less permeability than well MW-1 and accepted the solution very slowly. However, at the end of the application period, the proportion of solution applied to each well was about the same as proposed in the work plan. Thirty five gallons of solution were applied to well MW-1 and 14 gallons were equally divided among wells MW-2 and MW-3.

DOCUMENTATION AND RESULTS OF GROUNDWATER SAMPLING

Methodology

ALLCAL sampled wells MW-1 through MW-3 on April 25, 2001. Prior to sampling, the depth to groundwater and total well depth were measured in each well with an electronic water level meter. The measured depths are recorded on the attached **Records of Water Sampling**. The resultant groundwater elevations, relative to mean sea level, are recorded in attached Table 1. [redacted]

Before collecting water samples, each well was observed for floating product and purged of at least 3 well volumes with a clean, disposable, dedicated, bailer. Eight gallons of water were purged from each well; no floating product was observed in any of the wells. The purge water was monitored for temperature, pH, and electrical conductivity with a Hydac meter (see attached **Records of Water Sampling**). Initially, the purge water was clear in wells MW-1 and MW-3. As they were purged, the water became turbid. The purge water from well MW-2 was turbid, beginning with the first bailer. The purge water from well MW-1 had a slight sewage odor. The purge water from well MW-3 had a slight chemical/gasoline odor. No odor was detected in the purge water from well MW-2. All purge water was stored on site in a labeled, 55-gallon, steel drum.

After purging, a groundwater sample was collected from each well with its dedicated bailer and decanted into two, 40-milliliter, HCL-preserved, VOA bottles having Teflon-lined caps. All bottles were labeled to show site address, sample and sampler name, date and time sampled, and placed in an iced-cooler for delivery, under chain-of-custody (attached), to Department of Health Services certified McCampbell Analytical Inc. (McCampbell) laboratory located in Pacheco, California. A trip blank sample was also stored as above and delivered to McCampbell for analysis as a test for cross-contamination. The samples were analyzed for TPHG, BTEX, and MTBE by EPA methods 5030/8015 modified, 8020, and 8020, respectively.

Results of Groundwater Gradient Determination

For April 25, 2001, groundwater gradient was calculated to be about .0096 ft./ft. in the north-northwest direction (see attached GROUNDWATER GRADIENT MAP); this gradient and direction of groundwater flow is consistent with historical data accumulated for the site.

Results of Chemical Analyses

TPHG was detected in wells MW-1 and MW-3 at concentrations of 2100 parts per billion (ug/l) and 8300 ug/l, respectively. The laboratory noted that the TPH chromatogram indicated that unmodified or weakly modified gasoline was significant in the samples. No TPHG was detected in well MW-2.

Benzene was detected in wells MW-1, MW-2, and MW-3 at concentrations of 270 ug/l, 4.5 ug/l, and 300 ug/l, respectively.

MTBE was not detected in any of the wells. Well MW-3 had an elevated Reporting Limit of <20 ug/l for MTBE.

All analytes were non-detectable for the trip blank sample.

The above analytical results are summarized in attached Table 2 and documented in the attached certified analytical report. The reader is referred to Table 2 for analytical results of toluene, ethylbenzene, and xylenes.

COMMENTS

Application of the hydrogen peroxide solution has apparently caused a significant decrease in dissolved gasoline concentrations in wells MW-1 and MW-2. In these wells, since the last sampling event of January 18, 2001, TPHG concentrations have decreased from 11,000 ug/l to 2,100 ug/l in well MW-1, and from 300 ug/l to nondetectable in well MW-2. Similarly in these wells, benzene concentrations have decreased from 2,000 ug/l to 270 ug/l in well MW-1, and from 74 ug/l to 4.5 ug/l in well MW-2.

Unlike the above two wells, the TPHG concentration has significantly increased in well MW-3 since the last sampling event of January 18, 2001. In this well, TPHG has increased in concentration from 1,800 ug/l to 8,300 ug/l. However, the benzene concentration in this well remains about the same, having been detected at a concentration of 240 ug/l on January 18 and at a concentration of 300 ug/l for this event. A possible explanation for the increase in TPHG concentration may be the rise in water level documented for this event. TABLE 1 shows that the water level in well MW-3 has risen about .28 ft. This is the highest the groundwater has been since measured December 15, 1998. This shallower water level may be in contact with contaminated vadose zone soil.

RECOMMENDATION

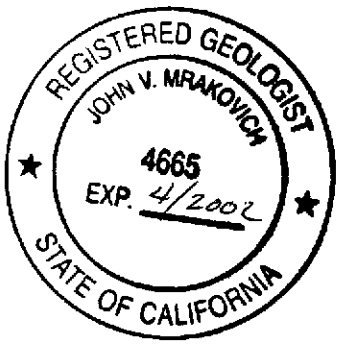
ALLCALL recommends that another quarterly event of groundwater sampling be conducted to further evaluate the apparent effectiveness and longer term stability of the hydrogen peroxide solution treatment.

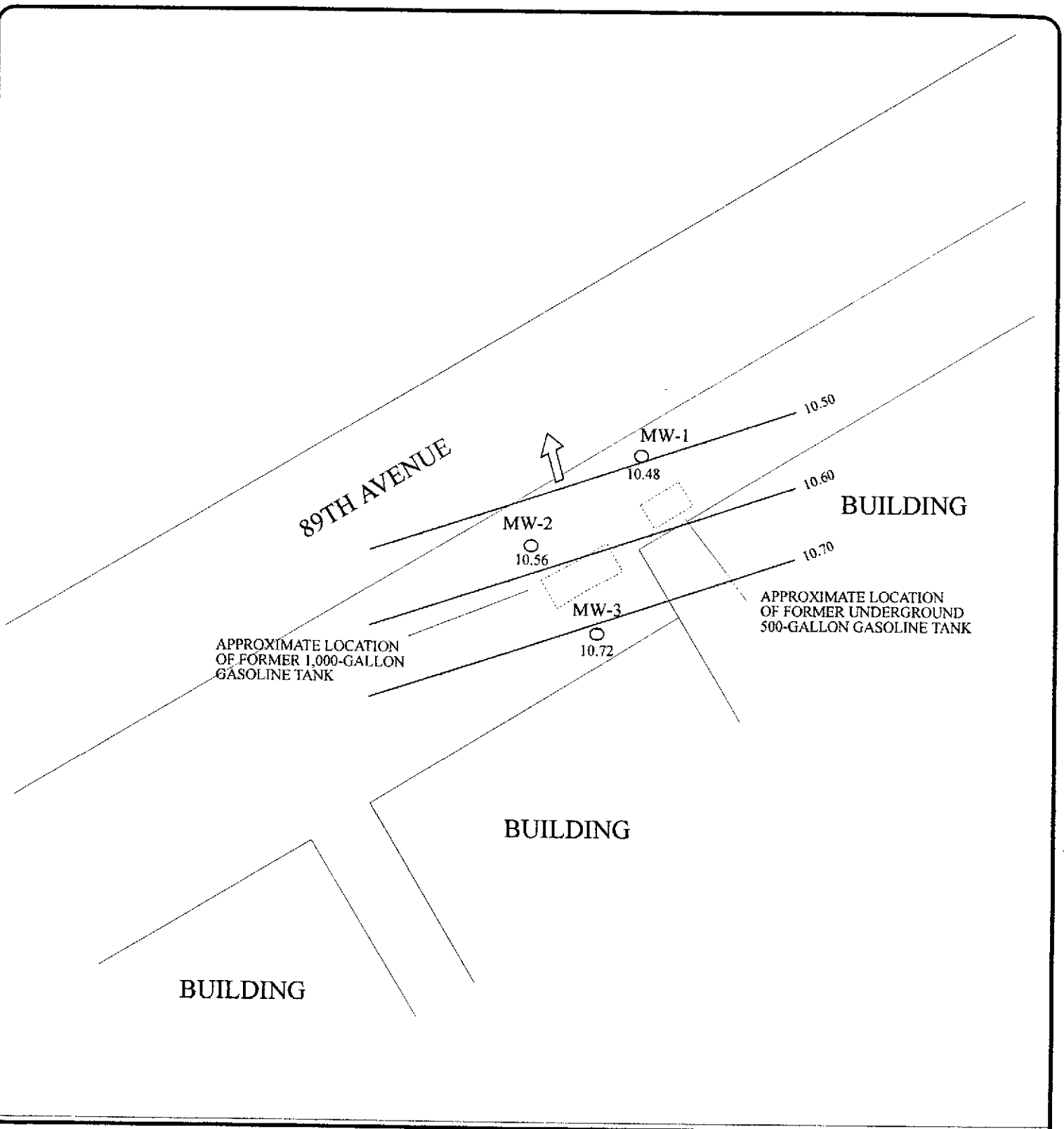
ALLCAL recommends you provide a copy of this report to the ACHCSA. If you have any questions, please call me at (209) 586-6464.

Sincerely,

John V. Mrakovich

John V. Mrakovich, Ph.D.
Registered Geologist No. 4665





Legend

MW-1 ○ Name and Location of Groundwater Monitoring Well

10.48 Potentiometric Elevation

10.60 Potentiometric Contour (04/25/01)

Groundwater Flow Direction

0 20

Approximate Scale (ft)

N

ALLCAL ENVIRONMENTAL

FIESTA BEVERAGE
GROUNDWATER GRADIENT MAP
04/25/01
966 89TH AVENUE
OAKLAND, CA 94621

RECORD OF WATER SAMPLING

PROJECT NO.: 133 DATE: 4/25/01

PROJECT NAME: FIESTA BEVERAGE

PROJECT LOCATION: 966 89th AVE, OAKLAND

SAMPLER: J. MRAKOVICH / ALLCAL

ANALYSES: TPHG, BTEX, MTBE

WELL DEPTH (from construction detail): 25'

WELL DEPTH (measured): 17.85 SOFT BOTTOM?: NO

DEPTH TO WATER: 8.24 TIME: 753

PRESSURE (circle one)?: YES OR (NO)

IF YES, WAS PRESSURE (circle one): POSITIVE OR NEGATIVE?

WATER VOLUME IN WELL: 1.54

[2-INCH CASING = 0.16 GAL/FT] [4-INCH CASING = 0.65 GAL/FT]

[6-INCH CASING = 1.47 GAL/FT] [1 GAL = 3.78 L]

WELL NO.: MW-1

WELL DIAMETER: 2"

TOC ELEV: 18.72

LOCK NO.:

LOCATION MAP

CALCULATED PURGE VOL. (GAL): 4.6 (L): ACTUAL PURGE VOL. (GAL): 8 (L):

PURGE METHOD: DISPOSABLE BAILER SAMPLE METHOD: DISPOSABLE BAILER

FIELD MEASUREMENTS

Time	Depth to Water (FT)	Vol (GAL)	Temp (Deg. F)	pH	EC x1000	Clarity	Turbidity (NTU)	Remarks
935		2	60.6	8.14	.75			CLEAR FIRST BAILER, THEN TURBID-BROWN
940		3	61.2	7.73	.72			SLIGHT SEWAGE ODOR
945		4	61.4	7.63	.71			
949		5	61.3	7.53	.71			
951		6	61.4	7.47	.69			
955		7	61.4	7.43	.68			
958		8	61.5	7.39	.68			
1010	Sample							

SIGNATURE: J. Mrakovich

WATER VOL. IN DRUM:

NEED NEW DRUM?:

RECORD OF WATER SAMPLING

PROJECT NO.: 133 DATE: 4/25/01

WELL NO.: MW-2

PROJECT NAME: FIESTA BEVERAGE

WELL DIAMETER: 2"

PROJECT LOCATION: 966 81ST AVE. OAKLAND

TOC ELEV: 18.44

SAMPLER: J. MRAKOVICH/ALLCAL

LOCK NO.:

ANALYSES: TPHG, BTEX, MTBE

WELL DEPTH (from construction detail): 25'

WELL DEPTH (measured): 24.67 SOFT BOTTOM?: NO

DEPTH TO WATER: 7.88 TIME: 750

PRESSURE (circle one)?: YES OR (NO)

IF YES, WAS PRESSURE (circle one): POSITIVE OR NEGATIVE?

WATER VOLUME IN WELL: 2.686

[2-INCH CASING = 0.16 GAL/FT] [4-INCH CASING = 0.65 GAL/FT]

[6-INCH CASING = 1.47 GAL/FT] [1 GAL = 3.78 L]

LOCATION MAP

CALCULATED PURGE VOL. (GAL): 8 (L): ACTUAL PURGE VOL. (GAL): 8 (L):

PURGE METHOD: DISPOSABLE BAILER SAMPLE METHOD: DISPOSABLE BAILER

FIELD MEASUREMENTS

Time	Depth to Water (FT)	Vol (L)	Temp (Deg. F)	pH	EC X1000	Clarity	Turbidity (NTU)	Remarks
857		2	60.6	8.81	1.34			TURBID - BROWN
900		3	61.3	8.34	1.30			
904		4	61.7	8.05	1.33			
907		5	62.0	7.91	1.33			
911		7	62.2	7.81	1.32			
915		8	62.2	7.76	1.32			
925	Sample							

SIGNATURE: J. Mrakovich

WATER VOL. IN DRUM:

NEED NEW DRUM?:

RECORD OF WATER SAMPLING

PROJECT NO.: 133 DATE: 4/25/01

PROJECT NAME: FIESTA BEVERAGE

PROJECT LOCATION: 966 81st AVE. OAKLAND

SAMPLER: J. MARSHALL / ALLOAC

ANALYSES: TPH-G, BTEX, MTBE

WELL DEPTH (from construction detail): 25'

WELL DEPTH (measured): 25 SOFT BOTTOM?: NO

DEPTH TO WATER: 8.29 TIME: 745

PRESSURE (circle one)?: YES OR (NO)

IF YES, WAS PRESSURE (circle one): POSITIVE OR NEGATIVE?

WELL NO.: MW-3

WELL DIAMETER: 2"

TOC ELEV: 19.01

LOCK NO.:

WATER VOLUME IN WELL: 2.67 G

[2-INCH CASING = 0.16 GAL/FT] [4-INCH CASING = 0.65 GAL/FT]

[6-INCH CASING = 1.47 GAL/FT] [1 GAL = 3.78 L]

LOCATION MAP

CALCULATED PURGE VOL. (GAL): 8 (L): ACTUAL PURGE VOL. (GAL): 8 (L):

PURGE METHOD: DISPOSABLE BAILER SAMPLE METHOD: DISPOSABLE BAILER

FIELD MEASUREMENTS

Time	Depth to Water (FT)	Vol (L)	Temp (Deg. F)	pH	EC X1000	Clarity	Turbidity (NTU)	Remarks
810		2	60.4	11.32	2.66			CLEAR FIRST BAILER TURBID GREY OTHERS
815		3	60.2	10.87	.91			SLIGHT CHEMICAL ODOR
819		4	60.2	10.52	.85			
822		5	60.2	10.25	.75			
826		6	60.3	9.99	.71			
830		7	60.4	9.80	.69			
833		8	60.4	9.65	.69			
845	Sample							

SIGNATURE: J. Marshall

WATER VOL. IN DRUM:

NEED NEW DRUM?:

TABLE I
GROUNDWATER ELEVATION

Well Name	Date	Elevation TOC[1] (feet MSL[2])	Depth to Water from TOC (feet)	Groundwater Elevation (feet MSL)
MW-1	12/15/98	18.72	8.38	10.34
	01/18/01		8.49	10.23
	04/25/01		8.24	10.48
MW-2	12/15/98	18.44	8.05	10.39
	01/18/01		8.24	10.20
	04/25/01		7.88	10.56
MW-3	12/15/98	19.01	8.45	10.56
	10/18/01		8.57	10.44
	04/25/01		8.29	10.72

[1] Top of Casing; [2] Mean Sea Level

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
GASOLINE RANGE VOLATILE HYDROCARBONS AS GASOLINE
WITH METHYL TERT-BUTYL ETHER AND BTEX
(all concentrations in ug/l)

Sample ID Name	Date	TPHG[1]	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE[2]
MW-1	08/06/93	17000	7.1	8.4	9.2	53	NA[3]
	01/12/96	12000	1900	840	370	1100	NA
	04/16/96	3500	700	55	100	180	NA
	07/15/96	11000	2300	450	350	910	NA
	10/16/96	21000	4200	2200	650	2600	NA
	12/15/98	10000	1800	520	270	1100	<350
	01/18/01	11000,a	2000	320	320	1100	<120
	04/25/01	2100,a	270	46	59	130	<5.0
MW-2	08/06/93	2700	1.3	1.7	2.0	8.1	NA
	01/12/96	2700	600	310	94	220	NA
	04/16/96	190	39	11	10	14	NA
	07/15/96	700	160	33	34	48	NA
	10/16/96	190	48	8.2	10	13	NA
	12/15/98	200	62	17	4.9	14	4.4[4]
	01/18/01	300,a	74	26	7.3	21	7.3
	04/25/01	<50	4.5	2.2	0.57	1.9	<5.0
MW-3	08/06/93	5200	2.1	2.9	3.6	17	NA
	01/12/96	4500	280	180	120	470	NA
	04/16/96	5400	370	340	160	580	NA
	07/15/96	1800	200	220	66	250	NA
	10/16/96	2000	340	140	100	300	NA
	12/15/98	1400	200	39	72	150	<22
	01/18/01	1800,a	240	41	86	120	<10
	04/25/01	8300,a	300	330	200	1100	<20

3/7/01
H_2O_2
application

[1] Total Petroleum Hydrocarbons as Gasoline; [2] Methyl tert-Butyl Ether; [3] Not Analyzed; [4] Confirmed by EPA Method 8260 Modified; a=The TPH chromatogram indicates unmodified or weakly modified gasoline is significant.

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

ALLCAL Environmental P.O. Box 1652 Twain Harte, CA 95383	Client Project ID: #3133; Fiesta Beverage	Date Sampled: 04/25/01
		Date Received: 04/25/01
	Client Contact: John Mrakovich	Date Extracted: 04/25/01
	Client P.O:	Date Analyzed: 04/25/01

05/02/2001

Dear John:

Enclosed are:

1). the results of 4 samples from your **#3133; Fiesta Beverage** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

ALLCAL Environmental	Client Project ID: #3133; Fiesta Beverage	Date Sampled: 04/25/01
P.O. Box 1652		Date Received: 04/25/01
Twain Harte, CA 95383	Client Contact: John Mrakovich	Date Extracted: 04/25-04/26/01
	Client P.O:	Date Analyzed: 04/25-04/26/01

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	MTBE	Benzene	Toluene	Ethyl-benzene	Xylenes	% Recovery Surrogate
66109	Trip Blank	W	ND	ND	ND	ND	ND	ND	105
66110	MW-1	W	2100,a	ND	270	46	59	130	105
66111	MW-2	W	ND	ND	4.5	2.2	0.57	1.9	103
66112	MW-3	W	8300,a	ND<20	300	330	200	1100	99
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	5.0	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Ave. South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

QC REPORT

Date: 04/25/01 Matrix: Water

Extraction: TTLC

Compound	Concentration: ug/L				%Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
SampleID: 41901					Instrument:		GC-7
Surrogate1	0.000	96.0	102.0	100.00	96	102	6.1
Xylenes	0.000	28.2	29.6	30.00	94	99	4.8
Ethyl Benzene	0.000	9.2	9.6	10.00	92	96	4.3
Toluene	0.000	9.2	9.7	10.00	92	97	5.3
Benzene	0.000	8.9	9.2	10.00	89	92	3.3
MTBE	0.000	9.1	9.6	10.00	91	96	5.3
GAS	0.000	98.3	93.1	100.00	98	93	5.5
SampleID: 43001					Instrument:		GC-11 B
Surrogate1	0.000	107.0	112.0	100.00	107	112	4.6
TPH (diesel)	0.000	7225.0	7850.0	7500.00	96	105	8.3

$$\%\,\text{Recovery} = \frac{(MS - Sample)}{AmountSpiked} \cdot 100$$

$$\text{RPD} = \frac{(MS - MSD)}{(MS + MSD)} \cdot 2 \cdot 100$$

RPD means Relative Percent Deviation

25586 ZAC40.

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553
Telephone: (510) 798-1620 Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HOUR ☐ 48 HOUR ☒ 5 DAY

Report To: JOHN MRAKOVICH Bill To: SAME

Company: ALLCAL ENVIRONMENTAL

P.O. BOX 1652

TWAIN HARTE, CA 95383

Tele: (209) 586 6464 Fax: (209) 5866464

Project #: 133 Project Name: FIESTA BEVERAGE

Project Location: 966 89th AVE., OAKLAND, CA

Sampler Signature: J. Medeiros

SAMPLE ID	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX: Water	Soil	Air	Sludge	Other	METHOD PRESERVED: Ice	HCl	HNO_3	Other
TRIP BLANK	—	4/25/01	800	1	40 ML	X					X			
+ MW-1	MW-1	↓	1010	2	↓	↓					↓	X		
+ MW-2	MW-2		925	2								↓		
+ MW-3	MW-3	↓	845	2	↓	↓					↓	↓		

Analysis Request

BTEX & TPH as Gas (602/8020 + 8015)/ MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI
X														
↓														
↓														

Other

Comments

66109
66110
66111
66112

Relinquished By:	Date:	Time:	Received By:
J. Medeiros	04/25/01	1218	Maria Venegas
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

Remarks:

ATTACHMENT A

GROUNDWATER SAMPLING PROCEDURES

Groundwater monitoring wells will not be sampled until at least 48 hours after well development. Groundwater samples will be obtained using either a bladder pump, clear Teflon bailer, or polyethylene bailer. Prior to sampling, sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well and to avoid cross-contamination. Monitoring wells will be sampled after three to five wetted casing volumes of groundwater have been evacuated and after the Allcal sampling team leader determines that water representative of the formation is being obtained. The well will be purged until conductivity has been stabilized (three consecutive conductivity reading within 15% of one another). If the well is emptied before four to ten well volumes are removed, the sample shall be taken when the water level in the well recovers to 80% of its initial water level or better.

ALLCAL will also measure the thickness of any floating product in the monitoring wells using a probe or clear Teflon bailer. The floating product will be measured after well development but prior to the collection of groundwater samples. If floating product is present in the well, ALLCAL will recommend to the client that product removal be commenced immediately and reported to the appropriate regulatory agency.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No.233, Page 69544, Table ll) for the type of analysis to be performed.

MEASUREMENTS

Purged Water Parameter: During purging, discharged water will be measured for the following parameters.

Parameter	Units of Measurement
pH	Units
Electrical conductivity	Umhos
Temperature	Degrees F or C
Depth to Water	Feet/Tenths
Volume of Water Discharged	Liters

Documentation: All parameter measurements shall be documented in writing on ALLCAL development logs.

ATTACHMENT B

SAMPLE HANDLING PROCEDURES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination and will be delivered to the laboratory in an iced-cooler. Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers.

Samples will be stored in iced-coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory. Ice, blue ice, or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) will be used to cool samples during transport to the laboratory. Water samples will be cooled with crushed ice. In the Alameda County Water District, water samples will be buried in the crushed ice with a thermometer, and the laboratory will be requested to record thermometer temperature at the time of receipt.

Each sample will be identified by affixing a label on the container(s). This label will contain the site identification, sample identification number, date and time of sample collection, and the collector's initials.

Soil samples collected in brass or stainless-steel tubes will be preserved by covering the ends with Teflon tape and capping with plastic end-caps. The tubes will be labeled, sealed in quart-size bags, and placed in an iced-cooler for transport to the laboratory.

All groundwater sample containers will be pre-cleaned and will be obtained from a State Department of Health Services certified analytical laboratory.

A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory. All sample transfers will be documented in the chain-of-custody. All field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be completed by the field technician or professional who has been designated as being responsible for sample shipment to the appropriate laboratory. The custody record will include the following information: site identification, name of person collecting the sample(s), date and time sample(s) were collected, type of sampling conducted (composite/grab), location of sampling station, number and type of containers used, and signature of the person relinquishing samples to another person with the date and time of transfer noted.

ATTACHMENT C

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. Additional sample quality control methods may include the use of background samples, equipment rinsate samples, and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

A quality assurance and quality control (QA/QC) program may be conducted in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples may be taken in the field to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples that may be collected are trip blanks, field blanks, and duplicate samples.

Trip blanks are a check for cross-contamination during sample collection, shipment, and laboratory analysis. They are water samples that remain with the collected samples during transportation and are analyzed along with the field samples to check for residual contamination. Analytically confirmed organic-free water will be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blanks will be numbered, packaged, and sealed in the same manner as the other samples. One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is not to be opened by either the sample collectors or the handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water sample is poured into appropriate containers to simulate actual sampling conditions. Contamination due to air exposure can vary considerably from site to site.

Duplicate samples are identical sample pairs (collected in the same place and at the same time), placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory's precision will be assessed without the laboratory's knowledge by labeling one of the duplicates with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC tests designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and the United States Environmental Protection Agency-certified standards), duplicates, replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and the observance of good laboratory practices.

ATTACHMENT D

WASTE HANDLING AND DECONTAMINATION PROCEDURES

Decontamination: Any drilling, sampling, or field equipment that comes into contact with soil or groundwater will be decontaminated prior to its use at the site and after each incident of contact with the soil or groundwater being investigated. Decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights, the drill bit, and all other soil boring devices will be steam-cleaned between the drilling of each boring.

All sample equipment, including the split-spoon sampler and brass or stainless-steel tubes, will be cleaned by washing with trisodium phosphate or Alconox detergent, followed by rinsing with tap water. Where required by specific regulatory guidelines, a nonphosphate detergent will be used.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include: excavated soil, drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting, and the appropriate disposal procedure will be determined by the site owner following receipt of the soil sample analytical results. Storage containers will be labeled to show material stored, known or suspected contaminant, date stored, expected removal date, company name, contact, and telephone number.