CHEVRON SITE STATUS REPORT

SITE NUMBER 91026	DATE March 14, 1990
CONSULTANT Weiss A	ssociates
This sheet must be attached to a information must be updated. The quarterly summary reports to the R	iny reports submitted to Chevron. All status e status information will be used in Chevron's WQCB.
1. Please indicate the status of dissolved hydrocarbon plumes.	f the definition of soil, liquid hydrocarbon and
INVESTIGATION STATUS: SOIL: LIQUID HYDRO DISSOLVED HYDROCARBON:	CARBON: I
Use the following letters to describ	
STATUS CODE/DESCRIPTION	EXPLANATION
I = In progressN = Not applicableX = Definition complete	We are still in the process of defining the plume There has been no contamination of this nature found - i.e., there is no liquid hydrocarbon found We have defined the plume - located the
	zero line. the remediation of soil, liquid hydrocarbon and
REMEDIATION STATUS:	
SOIL: N LIQUID HYDRODISSOLVED HYDROCARBONS:	OCARBON:
Use the following codes to describe	the status of the remediation:
STATUS CODE/DESCRIPTION	EXPLANATION
T = To be determined	This is the code used until it is determined
D = Design or permitting	whether or not remediation will be required. The system is being designed or we are waiting for permits.
! = In progress N = Not applicable	The remediation system is operating. Remediation is not required.
X = Remediation complete	Remediation has been completed.

Prepared by

CGH/mlc:Z133

Geologic and Environmental Services

Fax: 415-601-0112

Phone: 415-601-0111

5500 Shellmound Street, Emeryville, CA 94608

TRANSMITTAL LETTER

FROM: Mari	ette Shin	DATE: Ma	ay 3, 1990
Hazai 80 Sw	Vistar eda County Dept. of Health rdous Materials Division van Way, Suite 200 and, CA 94621	<u>VIA</u> :X	First Class Mail Fax pages UPS (Surface) Federal Express Courier
SUBJECT:	Former Chevron Service Statio 3701 Broadway Oakland, CA 94611	n #91026	JOB: 4-418-01
<u>AS</u> : <u>X</u>	We discussed on the telephon You requested We believe you may be inter- Is required		
WE ARE SE	NDING: X Enclosed Under Separate	Cover Via	
The lincludes the	st quarter ground water monitors sampling frequency recommendations.	oring report for the sold dations made by Weis	ubject site which s Associates.
	Your information Your use Your review & comments Return to you		eep this material eturn by knowledge receipt
MESSAGE:	Please call me back as soon as implementing our recommend but will discontinue sampling water intrusion.	ations for semi-annua	I sampling this quarter,
C:WP\			



Chevron U.S.A. Inc.

2410 Camino Ramon, San Ramon, California • Phone (415) 842-9500 Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

Marketing Operations

D Moller
Manager, Operations
S. L. Patterson
Area Manager, Operations
C. G. Trimbach
Manager, Engineering

March 13, 1990

Rafat Shahid Alameda County Environmental Health Department 80 Swan Way #200 Oakland, California 9462!

> Re: Former Chevron Facility #91026 3701 Broadway Oakland, California

Dear Mr. Shahid:

Enclosed are the results of the quarterly ground water sampling conducted by Weiss Associates (WA) at the subject site. All water samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and aromatic hydrocarbons (BETX). Ground water samples from monitoring wells A, B-1, B-2, B-4, B-6, and B-7 contained benzene above the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water. Ground water from monitoring wells B-2 and B-7 contained ethylbenzene and xylenes above the DHS MCL and samples from monitoring wells B-1, B-2, and B-7 contained toluene above the DHS recommended action level for drinking water. Monitoring wells B and B-3 were not sampled due to the large volume of evacuation water required and the presence of free-floating hydrocarbons, repectively. A remediation system is being designed for the site. If you have any questions or comments, please contact Lisa Marinaro at (415) 842-9527.

Please note that WA has evaluated the monitoring program at this site. Of the eleven monitoring wells currently being sampled quarterly, WA has determined that 4 wells should be sampled bi-annually and 3 wells should be destroyed because they are constructed of six to twelve inch diameter corrugated steel casing and cannot be sealed against surface water instruction as discussed in the report. The four remaining wells will continue to be sampled on a quarterly basis. Justification for these modifications is furnished in the WA report. In accordance with their recommendations, Chevron proposes to modify the sampling frequency of these 7 wells. WA will reevaluate their recommendations annually.

I declare under penalty of perjury that, to the best of my knowledge, the information contained in the attached report is true and correct and that any recommended actions are appropriate under the circumstances.

Sincerely, D. Moller

Lisa Marinaro Engineer

LAM/wa Enclosure

cc: Don Dalke

Regional Water Quality Control Board, 1800 Harrison Street, Oakland, California 94612

Geologic and Environmental Services

Fax: 415-547-5043

Phone: 415-547-5420

5500 Shellmound Street, Emeryville, CA 94608

March 13, 1990

Lisa Marinaro Chevron USA P.O. Box 5004 San Ramon, CA 94583-0804

> Re: Former Chevron Service Station #91026 3701 Broadway Oakland, California WA Job #4-418-01

Dear Ms. Marinaro:

Weiss Associates (WA) collected ground water samples from nine monitoring wells on February 8, 1990 as part of the quarterly ground water monitoring program at former Chevron Service Station #91026 in Oakland, California (Figure 1). Monitoring wells B and B-3 were not sampled. Ground water from monitoring wells A, B-1, B-2, B-4, B-6 and B-7 (Figure 2) contained benzene, ethylbenzene and/or xylenes above the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water. In addition, ground water samples from monitoring wells B-2, B-4 and B-7 contained toluene above the DHS recommended action level for drinking water.

GROUND WATER SAMPLING

Personnel: Eric Anderson and David Charles

WA Position: Staff Geologist and Environmental Technician, respectively

Date of sampling: February 8, 1990

Monitoring/other wells sampled: A, B-1, B-2, B-4, B-6, B-7, EA-1, EA-2, F

- Wells not sampled due to presence of free-floating hydrocarbons: B-3
- Other well not sampled: Monitoring well B did not contain free-floating hydrocarbons this quarter but was not sampled because of the large volume of evacuation water necessary.

QUARTERLY SUMMARY REPORT, SEPTEMBER 1990

Chevron Facility #9-1026, 3701 Broadway, Oakland, California

SITE HISTORY

- Prior to 1989, thirteen ground water monitoring wells were installed at the site by a consultant not identified by Chevron.
- In May 1989, WA began quarterly ground water monitoring at the site.
- In August 1989, WA collected ground water samples at the site. Monitoring wells B and B-3 contained floating hydrocarbons. The quarterly monitoring report was issued on September 14, 1989.
- In November 1989, WA collected ground water samples at the site. The quarterly monitoring report was issued on December 1989. Monthly bailing of floating hydrocarbons in monitoring wells B and B-3 began.
- In February 1990, WA collected ground water at the site. The quarterly monitoring report was issued on March 13, 1990. Monitoring well B-3 contained floating hydrocarbons, however, floating hydrocarbons were not detected in monitoring well B.
- In May 1990, WA collected ground water samples at the site. Monitoring well B-3 contained floating hydrocarbons. The quarterly monitoring report was issued on June 25, 1990.

WORK DONE THIS QUARTER

• WA collected ground water samples on August 9, 1990.

GROUND WATER MONITORING

• On august 9, 1990, monitoring wells B and B-3 contained floating hydrocarbons. Dissolved hydrocarbon concentrations in the other site wells ranged from <50 to 100,000 ppb TPH-G. Ground water was between about 14 and 19 ft below grade and flowed southwestward to westward. This report is being prepared for submittal.

Quarterly Summary Report Chevron SS# 9-1026 Oakland, California September 1990

PLANNED SITE ACTIVITIES

- WA will continue quarterly ground water monitoring at the site.
- WA determined that monitoring wells B, B-6 and B-7 are poorly constructed. These wells will be repaired or properly destroyed.
- A ground water remediation system is being planned by others.

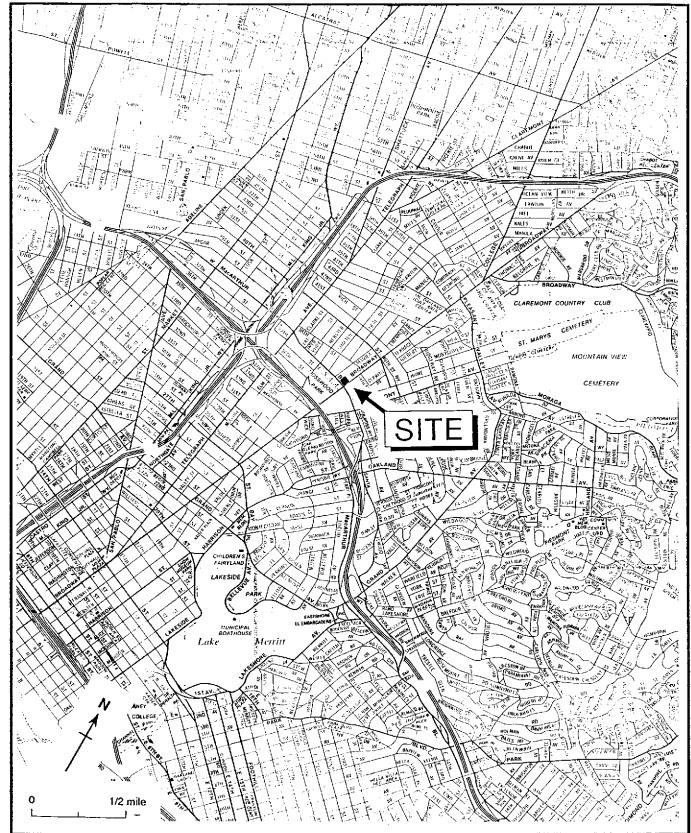


Figure 1. Site Location Map -Former Chevron Service Station #91026, 3701 Broadway, Oakland, California

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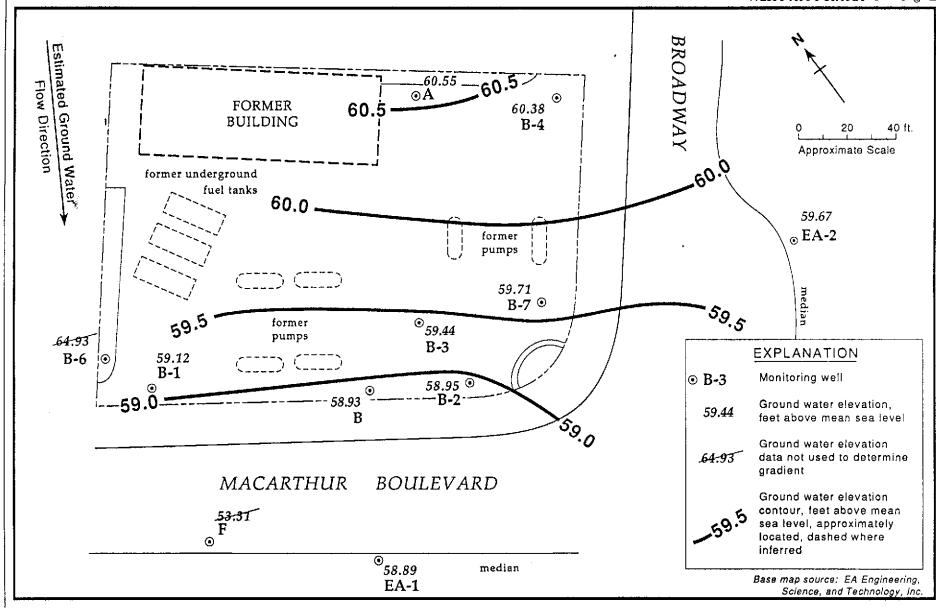


Figure 2. Monitoring Well Locations and Ground Water Contours - February 8, 1990 - Former Chevron Service Station #91026, 3701 Broadway, Oakland, California

Ms. Lisa Marinaro March 13, 1990



Method of purging wells:

• Steam-cleaned PVC bailer: A, B-2, B-6, B-7, EA-1, EA-2

Steam-cleaned Teflon bailer: B-4, F

· Dedicated Teflon bailer: B-1

Volume of water purged prior to sampling:

- Wells that were purged of about three well-casing volumes, approximately 26 to 30 gallons: EA-1, EA-2
- Wells that were purged dry; water level was allowed to recover to within 80 percent of static water level or for at least two hours prior to sampling: A, B-1, B-2, B-4, B-6, B-7, F

Method of ground water sample collection:

- Decanted from steam-cleaned Teflon bailer: A, B-2, B-4, B-6, EA-1, EA-2, F
- Decanted from end of dedicated Teflon bailer: B-1, B-7

Method of containing ground water samples:

• 40 ml glass, volatile organic analysis (VOA) vials, preserved with hydrochloric acid and sealed in plastic guard bottles containing activated carbon pellets

All samples were refrigerated and transported under chain-of-custody to the analytical laboratory.

Water samples transported to:

GTEL Environmental Laboratories, Inc., Concord, California

Samples were received by laboratory on February 9, 1990

Quality assurance/quality control:

- A bailer blank was submitted for analysis.
- A travel blank was submitted for analysis.

Ms. Lisa Marinaro March 13, 1990

Water sample collection records and chain-of-custody forms are included as Attachments A and B, respectively.

GROUND WATER ELEVATIONS

Water levels were measured in: all wells

Water levels were measured on February 8, 1990.

Direction of ground water flow: Southwestward

Water levels and ground water elevations are presented in Table 1. Ground water elevation contours are plotted on Figure 2. Ground water elevations have risen approximately 1 ft since the previous quarter. Ground water elevation data from monitoring well B-6 was not used to determine gradient because of the large discrepancy between the ground water elevation this quarter and historical ground water elevations at B-6. Data from monitoring well F was not used to determine gradient because of the large inconsistency of the ground water elevation at F relative to ground water elevations measured in other wells during this and previous quarters.

CHEMICAL ANALYSES

All ground water samples were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015
- Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020

Samples were analyzed by laboratory on February 14, 1990. The results of the water analyses are presented in Table 2 and the laboratory analytical reports are included as Attachment C. The detection limit for TPH-G has been lowered from 500 parts per billion (ppb) to 50 ppb as advised by the Regional Water Quality Control Board.

Table 1. Ground Water Elevation Data, Former Chevron Service Station #91026, 3701 Broadway, Oakland, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)	Thickness of Floating Hydrocarbons in well (ft)
Α	5/10/89	75.28ª	13.92	61.36	
	8/9/89		15.62	59.66	
	11/9/89		15.95	59.33	
	2/8/90		14.73	60.55	
В	5/10/89	73.39 ^a	13.97	59.58 ^b	.20
	8/9/89		15.69	57.86 ^b	.20
	11/9/89		15.29	58.16 ^b	.08
	2/8/90		14.46	58.93	
B-1	5/10/89	71.77 ^a	12.58	59.19	
	8/9/89		14.09	57.68	
	11/9/89		14.06	57.71	
	2/8/90		12.65	59.12	
B-2	5/10/89	74.51 ^a	14.58	59.93	
	8/9/89		16.06	58.45	
	11/9/89		16.95	57.56	
	2/8/90		15.56	58.95	
B-3	5/10/89	74.12 ^a	13.92	60.20	
	8/9/89		15.38	58.74	
	11/9/89		15.55	58.61 ^b	.05
	2/8/90		14.68	59.44 ^b	.003
B-4	5/10/89	76.43 ^a	14.93	61.50	
	8/9/89		16.65	59.78	
	11/9/89		16.99	59.44	
	2/8/90		16.05	60.38	
B-6	5/10/89	72.66 ^a	12.11	60.55	
	8/9/89		14.72	57.94	
	11/9/89		13.85	58.81	
	2/8/90		7.73	64.93	
B-7	5/10/89	75.40 ^a	14.73	60.67	
	8/9/89		16.36	59.04	
	11/9/89		16.64	58.76	
	2/8/90		15.69	5 9.71	

⁻⁻ Table I continues on next page --

Ms. Lisa Marinaro March 13, 1990



Table 1. Ground Water Elevation Data, Former Chevron Service Station #91026, 3701 Broadway, Oakland, California (continued)

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)	Thickness of Floating Hydrocarbons in well (ft)
EA-1	5/10/89	73.94 ^a	14.56	59.38	•
	8/9/89	•	16.09	57.85	
	11/9/89		15.84	58.10	
	2/8/90		15.05	58.89	
EA-2	5/10/89	76,24 ^a	15.95	60.29	•
•	8/9/89		17.45	58.79	
	11/9/89		17,41	58.83	
	2/8/90		16.57	59.67	
F	5/10/89	72,01ª	18.70	53.31	
	8/9/89		19.03	52.98	
	11/9/89		19.02	52.99	
	2/8/90		18.70	53.31	

^a = Top-of-Casing surveyed on 2/8/90

Isoconcentration maps of TPH-G and benzene are included as Figures 3 and 4, respectively.

Discussion of analytic results for ground water for this quarter:

- Hydrocarbon concentrations in monitoring wells A, B-2, B-4 and F are consistent with historical results.
- Hydrocarbon concentrations in monitoring wells B-1, B-6 and B-7 are decreasing and are at historical lows.
- Hydrocarbons have not been detected for the last four quarters in monitoring well
- BETX were not detected in monitoring well EA-2, which is consistent with previous results.

b = Ground water elevation adjusted for free-floating hydrocarbons in the well by the relation: Corrected ground water elevation = top-of-casing - depth to water + (0.8 x hydrocarbon thickness)

TABLE 2. Analytic Results for Ground Water - Former Chevron Service Station #91026, 3701 Broadway, Oakland, California

Well ID	Date Sampled	Analytical Lab	Analytic Method	TPH-G ≺	В	E parts per billi	Τ on (μg/L)	x
A	5-09-89	SAL	8015/8020	TEPH 1,000	260	94	<2	230
	8-09-89	SAL	8015/8020	TEPH 12,000	370	100	<1.5	240
	11-09-89	SAL	8015/8020	1888 16,000	690	180	10	350
	2-08-90	GTEL	8015/8020	14,000	600	120	7	270
B	5-09-89 a 8-09-89 a 11-09-89 a 2-08-90 b	•••						
8-1	5-10-89	SAL	8015/8020	16,000	2,300	81	260	740
	8-09-89	SAL	8015/8020	12,000	2,600	100	340	870
	11-09-89	SAL	8015/8020	17,000	340	110	140	760
	2-08-90	GTEL	8015/8020	5,500	70	17	19	150
8-2	5-09-89	SAL	8015/8020	170,000	30,000	2,300	8,400	12,000
	8-10-89	SAL	8015/8020	60,000	29,000	2,400	8,700	12,000
	11-09-89	SAL	8015/8020	110,000	32,000	2,800	5,500	12,000
	2-08-90	GTEL	8015/8020	67,000	28,000	2,300	5,900	11,000
3-3	5-10-89 5-10-89 ^a 11-09-89 ^a 2-08-90 ^a	SAL	8015/8020 	70,000 	12,000	1,400	9,500 	8,900
3-4	5-10-89	SAL	8015/8020	3,600	840	120	34	200
	8-09-89	SAL	8015/8020	<500	4,200	370	130	260
	8-09-89 (dup)	SAL	8015/8020	5,000	4,200	400	83	250
	11-09-89	SAL	8015/8020	14,000	6,000	530	70	300
	2-08-90	GTEL	8015/8020	12,000	5,400	460	130	320
3-6	5-09-89	SAL	8015/8020	26,000	120	250	110	1,300
	5-10-89	SAL	8015/8020	19,000	470	440	150	1,400
	11-09-89	SAL	8015/8020	13,000	70	36	36	440
	2-08-90	GTEL	8015/8020	2,900	16	10	5	58
3•7	5-10-89	SAL	8015/8020	210,000	13,000	2,000	19,000	20,000
	8-09-89	SAL	8015/8020	672,000	8,700	2,700	17,000	30,000
	11-09-89	SAL	8015/8020	150,000	7,000	1,800	12,000	16,000
	2-08-90	GTEL	8015/8020	41,000	2,500	1,100	6,900	11,000

⁻⁻ Table 2 continues next page--

TABLE 2. Analytic Results for Ground Water - Former Chevron Service Station #91026, 3701 Broadway, Oakland, California (continued)

ell ID	Date Sampled	Analytical Lab	Analytic Method	TPH-G <	B part	E s per billion (#	g/L)	X
A-1	5-09-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0,5
	8-09-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	11-09-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
1	2-08-90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6
A-2	5-09-89	SAL	8015/8020	760	<0.5	1.1	<0.5	<0.5
	8-09-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	11-09-89	SAL	8015/8020	<500	<0.5	<0.5	1	<0.5
	2-08-90	GTEL	8015/8020	190	<0.3	<0.3	<0.3	<0.6
	5-09-89	SAL	8015/8020	<500	<0.5	<0.5	0.6	1.0
	8-09-89 C					•••		
	11-09-89 C			***				
	2-08-90	GTEL	8015/8020	<50	0.4	<0.3 ·	0.3	<0.6
avel	5-10-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
.ank	8-09-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	11-09-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	2-08-90	GTEL	8015/8020	<50	<0.3	<0.3	<0.3	<0.6
ailer	5-10-89	SAL	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
lank	2-08-90	GTEL	8015/8020	<50	<0.3	<0.3	0.3	<0.6
HS MCLs				NE	1	680	100 ^d	1,750

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline

B = Benzene

E = Ethylbenzene

T = Toluene

X = Xylenes

DHS MCLs = Department of Health Services

Maximum Contaminant Level for Drinking Water

<n = Not detected at detection limit of n parts per billion</pre>

dup = Duplicate analysis

NE = Not established by DHS

a = Not sampled due to presence of free-floating hydrocarbons

b = Not sampled due to large volume of evacuation water necessary

c = Not sampled because of insufficient water in the well

d = DHS Recommended Action Level for Drinking Water, MCL not established

Analytical Laboratory:

GTEL = GTEL Environmental Laboratories, Inc. of Concord, California SAL = Superior Analytical Laboratories of San Francisco and Martinez, California

Analytic Methods

8015 = Modified EPA Method 8015 for TPH-G

8020 = EPA Method 8020 for BETX



SAMPLING FREQUENCY MODIFICATION

WA has developed criteria to determine when the ground water sampling frequency should be modified for ground monitoring programs (Attachment D). Based on these criteria, the historical ground water analytic results and the specific monitoring well location, WA recommends modifying the sampling frequency of the site wells as shown in Table 3.

Table 3. Modifications to Ground Water Sampling Schedule, Former Chevron Service Station #91026, 3701 Broadway, Oakland, California Current Sampling Recommended Future Rationale for Recommended Well ID Frequency Sampling Frequency Sampling Frequency Α Quarterly Semi-annually Stable hydrocarbon concentrations; (1st & 3rd Quarters) upgradient well R-FP Ouarterly Recommend this well be abandoned, corrugated steel well casing not sealable against surface water intrusion B-1 Quarterly Semi-annually Stable hydrocarbon concentrations; (1st & 3rd Quarters) source area to intermediate well B-2 Quarterly Semi-annually Stable hydrocarbon concentrations: (1st & 3rd Quarters) source area to intermediate well B-3 Free-floating hydrocarbons; source area Quarterly Quarterly well B-4 Quarterly Quarterly Hydrocarbons increasing; upgradient well B-6 Quarterly NA Recommend this well be abandoned, corrugated steel well casing not sealable against surface water intrusion B-7 Quarterly Recommend this well be abandoned, NA corrugated steel well casing not sealable against surface water intrusion Quarterly Hydrocarbons not detected last 4 quarters; downgradient well

⁻⁻ Table 3 continues on next page--



Table 3. Modifications to Ground Water Sampling Schedule, Former Chevron Service Station #91026, 3701 Broadway, Oakland, California (continued)

Well ID	Current Sampling Frequency	Recommended Future Sampling Frequency	Rationale for Recommended Sampling Frequency
EA-2	Quarterly	Semi-annually	Stable hydrocarbon concentration; gradient well
F	Quarterly	Quarterly	Hydrocarbons stable; downgradient well

Subject to approval by the primary regulatory agency, WA will initiate this program on the next sampling episode scheduled for the second quarter 1990.

Monitoring wells B, B-6 and B-7 are constructed of six to twelve inch diameter corrugated steel casing. Steel plates held in place by overlying steel cables currently cover these wells, but cannot prevent surface water intrusion or vandalism. Therefore, WA recommends these wells be destroyed.

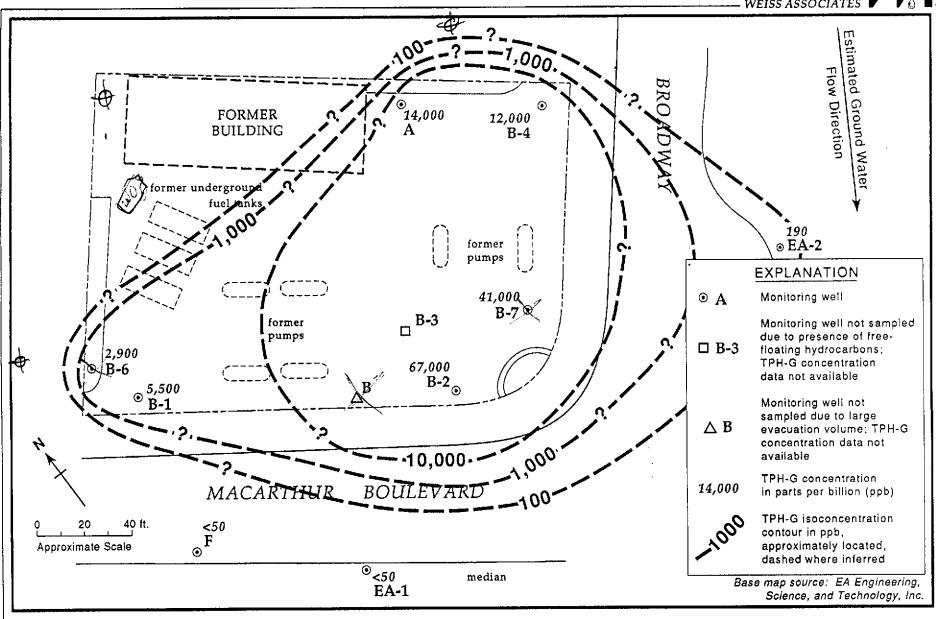


Figure 3. Total Petroleum Hydrocarbons as Gasoline (TPH-G) Isoconcentration Contours - February 8, 1990 - Former Chevron Service Station #91026, 3701 Broadway, Oakland, California

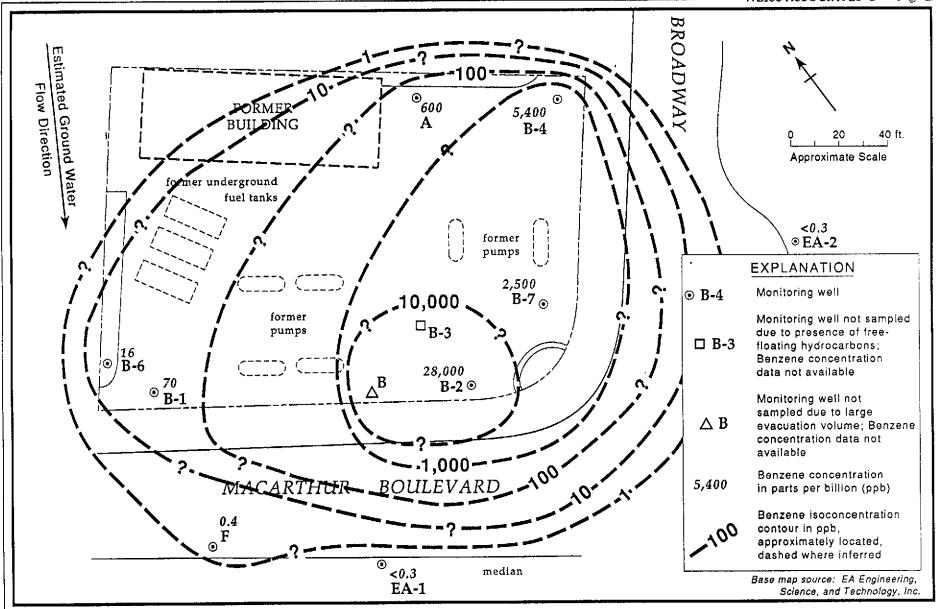


Figure 4. Benzene Isoconcentration Contours - February 8, 1990 - Former Chevron Service Station #91026, 3701 Broadway, Oakland, California

We appreciate the opportunity to provide hydrogeologic consulting services to Chevron and trust that this report meets your needs. If you have any questions, please call Eric Anderson or Jim Carmody.



Sincerely,

Weiss Associates

Eric W. Anderson Staff Geologist

Eric M. Nichols

Senior Water Resources Engineer

EWA/EMN:kw

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Attachments:

- A Water Sample Collection Records
- B Chain-of-Custody Forms
- C Analytic Reports
- D Sampling Frequency Modification Criteria

ATTACHMENT A WATER SAMPLE COLLECTION RECORDS



WATER SAMPLING DATA				
Well Name A	Datc <u>4/8/</u>	90 Time	of Sampling 14	
Job Name <u>← Oakled 7</u> Sample Point Description	T Job Namper	4-418-01	initial:	FWA
Sample Point Description			(0	1 = Monitoring Well)
Location Ver	+vaile	3Hg)		
WELL DATA: Depth to W	ater 311.17 11 (star	ic) pumping)	Depth to	Product It.
Product Thickness				
				. 87 gal.
EVACUATION ACTUOD.	_ Casing volumes to	oc Evacuated.	Total to be evact	nated <u>2.6</u> gal.
EVACUATION METHOD: Bailer# a		montes.	Hose # and tyl	
Other	A A A A A A A A A A A A A A A A A A A	Dedicated		
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Total Eve	cation Time*********		Service of the community	
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Depth to Water during Evac	uation • ft	time	7.48 ml/ft	==1 ² h
Depth to Water at Sampling	16.39 ft	14:21 time		= 0.163 gal/fg at
Evacuated Dry? A			entre for the Control of the Control	= 0.367, gal/ft 4:58
000/ D	Y A VANOV K			= 0.653 gal/ft
% Recovery at Sample Time	69 % Time	rec. Nate = 0.00	2 gpm V4 5" casi	ng = 0.826 gal/ft 2.6 %
	The Allenda			= 1.47 gal/ft
CHEMICAL DATA: Meter	Brand/Number		V8 casing	= 2.61 gal/ft
Calibration: 4.0		0.01		
Measured: SC/μm	hos /pH	Γ°C Time	∛Volume Evacua	ted (gal.)
	-/ $ -$			
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Description of matter in san	nole: Verine pl.	October 1865	or anomerical	lines
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Cont. ID Type	;1	(specify)	Method	
3 020-A W/	V 40 N	HCI	8015,8020	N GTEL
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	``` `\ ````` \\	ANGEL A MAN ATAN ANGEL		
그는 그는 그 그를 잃었다면서				

¹ Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined:
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]
ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

led

WEIS:

S ASS	CIATES	<i>"</i>	0	ł

WATER SAMPLING DATA Well Name B Date 2890	Time 816
Job Name/Number C- Oaklas (4) 14-418-01	Initials 6WA
Hell - Spring Surface Other	
Well Spring Surface Other	
Location Along Macartles on site WELL DATA: Well type on the M (Describe;	M = monitoring well)
Denth to Hotor II Ile ft (num letet) Maximum Drawdown I.	mit (MDI.) — ft
Depth to Water 14.46 ft (pump/Stat) Maximum Drawdown Li Well depth 34.35 ft (sounded) Well depth Well diameter 12 in. TOC height above ground ft W	ft (enec)
Well depth 24.55 It (sounded) well depth	leter elevent fr
Volume Evacuated: Pumped Pumped Bailed	acer erevr
	17 / 17
Time: Stop	Formulas/Conversions r = well redius in ft
	h = ht of water col in ft
Total hrs/min Total Evacuated gal.	vol. in cyl. =#r2h
	7.48 gal/ft ³ V ₂ " casing = 0.163 gal/ft
Evacuation Rate gpm	V3" casing = 0.367 gal/ft
D #3 A	V4" casing = 0.653 gal/ft
Pump # and type Bailer # and type	V _{4.5} " casing = 0.826 gal/ V ₆ " casing = 1.47 gal/ft
Hose # and type	V _B " casing = 2.61 gal/ft
0 16 Parts With State William William Co.	; -
Sampling Port: Rate gpm Volume gal.	V12" = 5.87 gul/G
Location/description	
* * * * * * * * * * * * * * * * * * *	221
Initial height of water in casing ft; volume -	gal.
Evacuation at drawdown limit - 3 x initial volume -	
Evacuation at sampling point - 1 x initial volume -	gar.
Total to be evacuated -	gar.
Water Color: Qdor:	
Description of sediment and/or foreign matter in water:	
Point of collection:	
Depth to water during pumping ft Sampling Pumped dry? After gal Recovery rate	ft
Depth to water during pumping re sampling	
Pumped dry? After gal. Recovery rate ADDITIONAL COMMENTS, LOCATION SKETCH, ENVIRONMENTAL CONDI	
van running nearby, problems with equipment or sampling,	etc numn on/of
van running hearby, problems with equipment of sampling,	, ecc., pump on/or
times etc. (over).	
CHEMICAL DATA Temperature OC Thermometer # Specific Conduct	rongo umbos
pH Calibration 4.0, 7.0, 10.0 Calibrati	ion TempOC
SAMPLES COLLECTED:	
Bottle Filtered Preservative	
Sample Cap (size, u) (specify)	
ID No. (Specify) (N = No) (R = Refrigerated) Analysis Lab
ml	
ml	
ml	
ml	
ml —	
m1	
Bottles: P - Polyethylene; Pp - Polypropylene; C or B	- Clear/Brown Glass
0 - Other (describe)	Jivily Diomit Olds
Additional Cap Codes: Py - Polyseal; V - VOA/Teflon septa	: M - Metal
	·,



Well J		R 24 595500	Date	o i 🚗 limbilio Ecoli				in in Magazini
Tob N	Name	O 1 1000 - 1	7	2 8 90	Time	of Sampling	/3 <i>≤</i>	70 (A. 1848)
יו טטר	Vame <u>- ⊸ °C</u> ~-	- Oakland	(-44- Job I	Numbel: <u>⊸</u>	4-418-	<u> </u>	nitials El	JA Barrier
Samp	le Point Desci	ription 🔄		M				onitoring Well)
	tion						(:	,, wen,
WELI	L DATA:	enth to Wa	ter 12 .KC	ft lefation	pumping)	Den	th to Produc	A E ob
Produ	uct Thickness	w w	ell Denth	tt (cna	c) Well Depth!	C C 64/60UD	dad) Wall in	71.
4	A Silver and the sec	Initial Hai	ale of W	11 (spe	e, wen beping	7: 25 1 1(20411	nea) Meii D	lameterin
	1 1 1 2 3 3 V		Carina M	ater in Casing	2.9(ime	₹ / gal.
TILA			Casing v	olumes to be	Evacuated.	lotal to be	evacuated	7.4 gal.
EVAL	CUATION MI	THOD:	1 解录数 2	'ump#and t	уре	Hosc # a	nd type 🚈 💳	Application of the second of t
					Dedicated		N)	Acres de
_							7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -	Strongador,
Evact	uation Time:	Stop <u>*** 14</u>	14 14		Party Salah	100 C 10		free on pury
	10 Mg.	Start 19:3	7	7	1000 1000 1000		rmulas/Conversi	ons on the
ing dan in Timbo		Total Evac	ation Tin	ne 4	A TON THE SECOND STATE OF THE SECOND	er di Britania di Cartania di Trans	well radius in f	Annual Company of the
100	No.	Total Evac	uated Pri	ior to Sampli	ng 🚧 l. O 🖖 🦟	gal	ht of water col	
		Evacuati on	Rate	.25	⊮ ∦gal. per	minute	. in cyl. = πr²b	A STATE OF THE PARTY OF THE PAR
Deptl	to Water du	ing Evacu	ation	- 7,5	time		8 gal/ft ³	and the state of the state of the state of the
Dentl	to Water at	Sampling	13.D	8 fr -	/32/ time			
Evacı	nated Dry? V	AFZ	10	021	Rec Rote =	$OO2 = \frac{\sqrt{2}}{2}$	casing = 0.163	The state of the s
RNOG K	Recovery =	132	2.2 '	_ Bar _ WTune	The the		casing = 0.367	the state of the s
K Da	cocovery =	ele Time	5-00		1231		casing $= 0.653$	
N IÇCI	covery at Sam	bie 11me –	<u> </u>	💆 🦰 I IMC 🔼	134		5" casing = 0.8	
U4 8 8 4 4 4	MOAT TARK				, = = +	v ₆	casing = 1.47 g	gal/ft
	MICAL DATA					V8	casing = 2.61 gr	al/ft
	ration:	400						
Measu	ured: 🍻 👾	. SC/µmh	os / pH	T°C	Time	Volume E	vacuated (ga	al) 🗼 🗼
100		, <u> </u>	L					
and the		Section 1	0.31/21/10/12/51	e estable	articles and the	A PAR I LINGTÉ I	(张海)(1)春秋 十二	r filmelija iz jagan it mi, kijan je je gazi i štalija
	a kapar di a	7 X 76 \		V			The Agree Co. Co.	
		*X	6.25				* A**	

			_					
			<u> </u>					- * 44 / 44 / 44 / 44 / 44 / 44 / 44 / 4
SAMP	PLE: Color		- FPŸŊT.	Beow N		dor Maga		- - - 700N6
Descr	PLE: Color iption of mat	ter in samp	le: WAT	URAL SEDIM	ENT AND FORE	dor MODE	RATELY S	• ·
Descr Sampl	iption of mat ling Method:	ter in samp DECANT o	le: NATENO	OF TER S	ENT AND FORE	6N MATERIAL	RATELY S	L7 - 5 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6
Descr Sampl	iption of mat ling Method: le Port: Rate	ter in samp DECANT o gpm	le: NATENO	OF TER S	ENT AND FORE	EVIDE	RATELY S - NOM SI NT SHEE	N ON SAMP
Descr Sampl	iption of mat ling Method:	ter in samp DECANT o gpm	le: NATENO	OF TER S	ENT AND FORE	6N MATERIAL	RATELY S - NOM SI NT SHEE	N ON SAMP
Descr Sampl Sampl	iption of mat ling Method: le Port: Rate Time	ter in samp DECANT of gpm	le: MATI UT END Totalizer	OF TER S	ENT AND FORE AMPLER gal,	en fateinal Evioe ÷ Water	×ATELY S -NON SI NT SHEE SURFACE	LT N ON SAMP
Descr Sampl Sampl # of	iption of mat ling Method: le Port: Rate Time Sample	ter in samp DECANT of gpm Cont.	le: NATENO	OF TER S	EHT AND FORE AMPLER gal, Preservative	EN FATEMAL EVIOE WATER Analyi	₹ATELY S - NON SI NT SHEE SURFACE ic Tu	N ON SAMP
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	ter in samp DECANT of gpm	le: MATI UT END Totalizer	Fil ³ Ref ⁴	Preservative (specify)	EN MATERALL EVIOE WATER Analyt Metho	RATELY S - NOM SI NT SHEE SURFACE ic Tu d	LT N ON SAMP
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample	ter in samp DECANT of gpm Cont.	le: MATI UT END Totalizer	OF TER S	EHT AND FORE AMPLER gal, Preservative	EN MATERALL EVIOE WATER Analyt Metho	₹ATELY S - NON SI NT SHEE SURFACE ic Tu	N ON SAMP
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	ter in samp DECANT of gpm Cont.	ole: MATO JUTOSENO Totalizer Vol ²	Fil ³ Ref ⁴	Preservative (specify)	EN ENTERNAL ENTOE WATER Analyt Metho	RATELY S - NOM SI NT SHEE SURFACE ic Tu d	UT ON SAMP
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	ter in samp DECANT of gpm Cont.	ele: MATI OTZENO Totalizer Vol ²	Fil ³ Ref ⁴	Preservative (specify)	EN ENTERNAL ENTOE WATER Analyt Metho	RATELY S - NOM SI NT SHEE SURFACE ic Tu d	UT ON SAMP
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	ter in samp DECANT of gpm Cont.	ole: MATO JUTOSENO Totalizer Vol ²	Fil ³ Ref ⁴	Preservative (Specify)	EVIDE EVIDE WATER Analyt Metho	RATELY S - NOM SI NT SHEE SURFACE ic Tu d	UT ON SAMP
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	ter in samp DECANT of gpm Cont.	ole: MATO	Fil ³ Ref ⁴	Preservative (specify)	EMENIOE FUIDE WATER Analyt Metho	RATELY S - NOW SI DT SHEE SURFACE ic Tu d	LT N ON SAMP LAB CTEL
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	ter in samp DECANT of gpm Cont.	ole: MATO JUTOSENO Totalizer Vol ²	Fil ³ Ref ⁴	Preservative (Specify)	EN ENTERNAL EVIDE WATER Analyt Metho	RATELY S - NOM SI NT SHEE SURFACE ic Tu d	UT ON SAMP
Descr Sampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	Cont.	le: MATO	Fil ³ Ref ⁴	Preservative (Specify)	EMERITERAL EVIDE WATER Analyt Metho	ZATELY S - NON SI OT SHEE SURFACE ic Tu d	UTAS LAB
Descr Sampl	iption of mat ling Method: le Port: Rate Time Sample ID	Cont.	le: MATI ut ENO Totalizer Vol ²	Fil ³ Ref ⁴	Preservative (specify)	EVIDE EVIDE WATER Analyt Metho	RATELY S - NOW SI DT SHEE SURFACE ic Tu d	UTON SAMP
Descrisampl Sampl # of Cont.	iption of mat ling Method: le Port: Rate Time Sample ID	Cont.	le: MATI 1070ENO Totalizer Vol ²	Fil ³ Ref ⁴	Preservative (specify)	EVIDE WATER Analyi Metho	XATELY S - NON SI NT SHEE SORFACE IC Tu d g°20 Å	UTAS LAB

Container Type Codes: V = VOA/Tellon Septa, P = Plastic, C or B = Clear
Cap Codes: PT = Plastic, Teflon lined;

2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)

5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

F:\ALL\ADMIN\FORMS\WATSAMP.WP

WATER SAMPLING					145.4	
Well NameB	<u>-2</u>	Date $\frac{2}{9}$	/ 70	Time of Sa	impling	1238
Job Name A CHEV	-ONK. III	Job Number	4-418	6/	Initials	
Sample Point Descri				(gg		Monitoring Well)
Location South	CORNER OF	CAR LOT_	BY PLAN	TEP AND	IDEWALK	The state of the s
WELL DATA: De	oth to Water /	5.56 ft (6ta	tic. bumping	Y		duct ft.
Product Thickness _	Well D	epth /9.011	(spec) Well I	Denth 19.05	ft(sounded) Wel	l Diameter 7 in
	nitial Height o	f Water in C	asing	3 49 (1	= volume	56 col
	3 Casin	ng Volumes to	o be Evacuate	ed Tot	al to be evacuat	56 gal. ed 1.7 1.80 gal.
EVACUATION ME	ГНОD:	Pump #_a	nd type	E H	ose # and type	
	ailer# and typ	2 n/	Nove Dedicate	d## N	(Y/N)	
	ther					
Evacuation Time: S	top 1015					
	tart 0757			n en en de la companya de la company	Formulas/Con	versions
and the second of the second o	otal Evacation	Time 16	MIN.	April 1	r = well radiu	
	otal Evacuate			1.5	h = ht of water	一 一 一 一 一 一 一 一 二 二 二 二 二 二 二 二 二 二 二 二
E	vacuation Rat	e		al ner minut	c vol. in cyl.	· · · · · · · · · · · · · · · · · · ·
Depth to Water duri	ng Evacuation	~ fr	- B	_ time	7.48 gal/ft ³	4.
Depth to Water at Sa					V_2 casing = (163 ml/6
Evacuated Dry?	ES After	l gal T	ime 101	5 Pullit = 1	V_2 casing = V_3 " casing = V_3 "	
80% Recovery = T		5**** *		9/1	V_4 " casing = (
% Recovery at Samp		9 % Time	1228	.	V _{4.5} " casing =	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
				 	V_{6} " casing = 1	•
CHEMICAL DATA:	Meter Brand	Number /			$V_6 \text{ casing} = 2$	
Calibration:	4/0	7.6	0.01		Vo Cashig = 2.	or garine
Measured:	SC/μmhos	pH	T°C Tim	/	Jume Evacuated	1 (61)
	7				Pulle Lvacuatet	/ gai.j
	/ 					
						
			<u> </u>	— /		
T		··	-/- -			
			/			
SAMPLE: Color		NONE	<u>e</u>	Odor	LIGHT	Gac
Description of matte	r in sample: _	NATURAL S	EDIMENT - FI	BROUS SUSA	ENDED MATE	- A
Sampling Method:	ECANT OUTEN	P OF TEF. S	AMPLER I			
Sample Port: Rate	gpm 10ta	lizer <u>—</u>	<u>Carlor</u>	gal.	The second secon	
	443					
# of Sample	Cont. Vo	l ² Fil ³ R	ef4 Presei	rvative	Analytic	Turn ⁵ LAB
Cont. ID	Type ¹	Y.,	(spec	cify)	Method	
3 020-B-2	w/cV 40	mL N	Y He	, - fir	HEPA MOD.	N GTEL
	<u> </u>	<u> </u>		<u> </u>	89.5	N GTEL
2.5				→ 800	5/8020	
-					1 8.a.	
		1 (15) 1 (15)	-			
					<u></u> -	
						1 Test 1
The second of th	for the state of t					

¹ Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = I week, R = 24 hour, HOLD (spell)]
ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS;

Ob Name/Number C-Oalland IA / 4-4(8-0)	Time 8100
ob Name/Number (-Daklad III / 4-418-0)	Initials (BW
Vell V Spring Surface Other	
ocation on 4 te	
Depth to Water 1968 ft (pump/stat) Maximum Drawdown	e; M - monitoring well
epth to Water 14.6% ft (pump/stat) Maximum Drawdown	Limit (MDL) f
Well depth 12.87 ft (sounded) Well depth	it (spec)
Tell diameter 2 in. TOC height above ground ft	Water elev f
Volume Evacuated: Pumped Pumped Bailed	
11me: Scop	Formulas/Conversions
Start Annual Start	r = well radius in ft
Total hrs/min	h = ht of water col in i wol. in cyl, = #r2h
Total hrs/min gal. otal Evacuated gal. vacuation Rate gpm	7.48 gal/£t ³
vacuation Rate gpm	V2" casing = 0.163 gal/s
	V ₃ " casing = 0.367 gal/s V ₄ " casing = 0.653 gal/s
Cump # and type Bailer # and type	V _{4 5} " casing = 0.826 gal
lose # and type	V_c " casing = 1.47 gal/s
	V ₈ " casing = 2.61 gal/s
ampling Port: Rate gpm Volume ga	al.
ocation/description	<u> </u>
nitial height of water in casing $ ft$; volume	e = gal.
vacuation at drawdown limit - 3 x initial volume -	
vacuation at sampling point - 1 x initial volume -	
Total to be evacuated =	
Vater Color: Odor:	
Point of collection:	
epth to water during pumping ft Sampling	g ft
Point of collection: Depth to water during pumping ft Sampling Pumped dry? After gal. Recovery rate	
ADDITIONAL COMMENTS / LOCATION SKETCH, ENVIRONMENTAL CO	UNDITIONS, e.g., weathe
van running nearby problems with equipment or sample	ing, etc., pump on/o
imes, etc. (over).	
HEMICAL DATA	
Cemperature OC Thermometer # Specific Cond	ductance umhos
	ration Temp
H Calibration 4.0, 7.0, 10.0 Calibr	racion lemp.
SAMPLES COLLECTED:	
Bottle/ Filtered Preservative	
Sample Cap (size, u) (specify)	
ID No. (Specify) (N - No) (R - Refrigera	ted) Analysis Lab
ml (Specify) (a - No) (k - Refrigera	ceu, marysrs Lab
	
$\frac{m_1}{m_1}$	
$ \frac{m1}{m1}$ $ -$	
m1	
	
ml	
	B - Clear/Brown Gla

I 132" of Free-product

WATER SAMPLING DATA Well Name B-4 Date Z/8	/		
Well Name B-4 Date Z/8 Job Name CHEVOAK. III Job Number	1/90 Time of 4-418-01	Sampling /	425
Sample Point Description	72718201		
Location E. CORNER OF LOT		(IMI = I	Monitoring Well)
WELL DATA: Depth to Water 16.05 ft static,	\numning)	Denth to Brod	mat Share Car
Product Thickness Well Depth	ec) Well Denth 19.65	Dopth to Flou fi(sounded) Well	uct
Initial Height of Water in Casir	18 3,47 f	$t_{\cdot} = volume$	
Casing Volumes to be	e Evacuated. To	otal to be evacuated	1 /- 7 gal
EVACUATION METHOD: Pump # and	type	Hose # and type	
Bailer# and type 2 TEF # AM	Dedicated MV	(Y/N)	the state of the s
Other	<u> </u>		
Evacuation Time: Stop	- %V.,		
Start /207	_	Formulas/Conve	
Total Evacation Time 1777			n ft.
Total Evacuated Prior to Sampl	ing <u>**/-5</u> g	$al{\infty}$ h = ht of water	[1] (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Evacuation Rate Depth to Water during Evacuation ft	gal. per min	utc vol. in cyl. = πr^2	h · · · · · · · · · · · · · · · · · · ·
Depth to Water at Sampling	1419 time	7.48 gal/ft ³	
Evacuated Dry? 125 After 1.5 gal. Time		003 V_2^{γ} casing = 0.1 V_3^{γ} casing = 0.3	
80% Recovery = 16.74	<u> </u>	V_3 casing = 0.6	- •
% Recovery at Sample Time	1419	$V_{4.5}$ casing = (The second secon
~ &:		V ₆ " casing = 1.4	
CHEMICAL DATA: Meter Brand/Number		V8 casing = 2.61	
*Calibration:	10.0 /		
Measured: SC/μmhos pH T°(C Tipne V	Volume Evacuated (gal.)
	— <i>—</i> —		
\ 	— /—— »——	1 2000	<u> </u>
*/			
/—/——/———	$+ \vee$		
	/		· ·
SAMPLE: Color NONE	Odor	VERY LIGHT	7 (i)
Description of matter in sample: FOREIGN SURF	OF MATERIAL HOUR	VERY SMALL AMTS.	OF SUSPENDED SILT
Sampling Method: DECANTOUT END OF TER. Sample Port: Rategpm Totalizer	SAMPLED TO 19		
Time ~	gal.		
# of Nample Cont. Vol2 Fil3 Ref4			
# of Sample Cont. Vol ² Fil ³ Ref ⁴ Cont. ID Type ¹	Preservative (specify)	Analytic Method	Turn ⁵ LAB
	(apecin y) 60		
3 020-B4 W/CV 40mL N 4	HCL)	7-1015	N GTEL
		3015 /8020 (C.A.)	
		3013 7 8000 V ERNO _	
			
<u> </u>		· · · · · · · · · · · · · · · · · · ·	
	<u> </u>	e de la composition della comp	<u> </u>
			2 CVEA

¹ Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]
ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

- CLAMBO GAVOTTICO DAMA (T. 11 II - 11 / P. 17 18 18 18 18 18 18 18 18 18 18 18 18 18
WATER SAMPLING DATA Well Name B-6 Date 2890 Time 13:47
Job Name/Number C-Oakland Tit 4-4(8-b) Initials EWA
Well Spring Surface Other
Location W. side of let it permete
WELL DATA: Well type (Describe; M - monitoring well)
Depth to Water 773 ft (pump stat) Maximum Drawdown Limit (MDL) ft
Well depth 19.61 ft (sounded) Well depth ft (spec)
Well diameter 8 in. TOC height above ground — ft Water elev. — ft Volume Evacuated: Sumped Bailed
Time: Ch- state 1
Total hrs/min 300 405
With a line of the state of the
Evacuation Rate gpm V2" casing = 0.163 sal/ft water
70.367 gal/ft V ₂ " casing = 0.367 gal/ft
Pump # and type Bailer # and type 3"x 48" PVC # U V4.5" casing = 0.653 gal/ft
Hose # and type A
V8" casing = 2.61 gal/ft
Sampling Port: Rate gpm Volume Wgal.
Location/description
Initial height of water in casing = $\frac{11.08}{10.08}$ ft; volume = $\frac{31.0}{10.08}$ gal. $\frac{1}{10.08}$
Evacuation at drawdown limit - 3 x initial volume - gal.
Evacuation at sampling point = 1 x initial volume = gal.
Total to be evacuated = 93 gal.
Water Color: None - sheen on ourface Odor: state Gooding - like odor
Description of sediment, and/or foreign matter in sample: Shift amont
of anoperde particulates
Point of collection: End of Tellan bulls # AL.
Depth to water during pumping ft time Sampling 17.25 ft 13:44 time = 20
Pumped dry? Y After 48 gal. Recovery rate . 0 4 4 pm. This ADDITIONAL COMMENTS, LOCATION SKETCH, ENVIRONMENTAL CONDITIONS, e.g., weather,
van running nearby, problems with equipment or sampling, etc., pump on/off
times, etc. (over).
CHEMICAL DATA
TemperatureOC Thermometer # Specific Conductance umhos
劉 1. [1] 1.
pHCalibration4.0,7.0,10.0 Calibration TempC
프로 이번 보다 있을 수입하는 사람이 되고 있다. 사람은 이 사람은 사람들이 가장 없었다. 그 사람들은 사람들이 되었다.
SAMPLES COLLECTED:
Bottle/ Filtered Preservative
Sample Cap (size, u) (specify)
Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) Analysis Lab
Sample Cap (size, u) (specify) ID No. (Specify) (N - No) (R - Refrigerated) Analysis Lab O20-86 40 ml C/v A) HCI R 805,8020 678L
Sample Cap (size, u) (specify) ID No. (Specify) (N - No) (R - Refrigerated) Analysis Lab 020-86 40 ml C/v A) HCI R 805,8020 678L
Sample Cap
Sample Cap
Sample Cap
Sample Cap
Sample Cap (size, u) (specify) ID No. (Specify) (N - No) (R - Refrigerated) Analysis Lab O20-B6 40 ml C/v A) HCI R 805,8020 6781 ml ml ml ml ml
Sample Cap
Sample Cap
Sample
Sample Cap
Sample Cap
Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) Analysis Lab O20-B6 F60 ml C/V A) He1 R 205,8020 6764 ml ml ml ml ml ml ml ml ml ml

WATER SAMPLING DATA Well Name 6-7 Date 28 90	Time 14:15
Job Name/Number C-Ookland III / 4-418-01	Initials Suf
Well Spring Surface Other	
Location on sie near force corner of plac - B-way	
WELL DATA: Well type (Describe; M	- monitoring well)
Death to Hater 1540 ft / nume (STAN) Marriage Broadern Limit	- (MDI) fr
Depth to Water 15.69 ft (pump/state) Maximum Drawdown Limit Well depth 19.41 ft (sounded) Well depth	ft (appa)
well depth [7.4] It (sounded) well depth	ic (spec)
Well diameter 6 in. TOC height above ground ft Water	er elev it
Volume Evacuated: Pumped Bailed	
Time: Stop 12:15	Formulas/Conversions
	r = well radius in ft h = ht of water col in ft
Total His/min	vol. in cyl. = #r²h
Total Evacuated gal.	7.48 gal/ft ³
Evacuation Rate gpm	V2" casing = 0.163 gal/ft
	V3" casing = 0.367 gal/ft
Pump # and type Bailer # and type 3 PNC #XX	V4" casing = 0.653 gal/ft V4 " casing = 0.826 gal/ft
Hose # and type	Vercasine = 1.47 gal/ft
	V8 Casing - 2.61 gal/ft
Sampling Port: Rate gpm Volumegal.	
Location/description	
Locacion/ description	
Initial height of water in casing - 3.72 ft; volume - 3	747 man 231
Execution of drawform limit 2 winitial realization	gal.
Evacuation at drawdown limit - 3 x initial volume -	
Evacuation at sampling point = 1 x initial volume =	gal.
Total to be evacuated = 16.4	gal.
Water Color: And grey Odor: Hydrondon o	do - like gossine
Description of sediment and/or foreign matter in sample:	it of amount
of oursended from	
Point of collection: End of Teston buile ded. to B-6 (Yes)	
Depth to water during pumpingft time Sampling f	7.23 ft <u>14:10</u> time = \$7% .
Pumped dry? Y After 7.3 gal. Recovery rate 0.03	april
ADDITIONAL COMMENTS, LOCATION SKETCH, ENVIRONMENTAL CONDITION	S, e.g., weather,
van running nearby, problems with equipment or sampling, etc.	
times, etc. (over).	
CHEMICAL DATA	
Temperature °C Thermometer # Specific Conductan	ce jumbos and the
pHCalibration4.0,7.0,10.0 Calibration	
pHCalibration4.0,7.0,10.0 Calibration	
SAMPLES COLLECTED:	
SAMPLES COLLECTED: Bottle/ Filtered Preservative	
SAMPLES COLLECTED: Bottle/ Filtered Preservative Sample Cap (size, u) (specify)	Temp. — OC
SAMPLES COLLECTED: Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated)	Temp. — OC Analysis Lab
SAMPLES COLLECTED: Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 40 ml c/y N HCl R	Temp. — OC
SAMPLES COLLECTED: Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) OZO-87 40 ml C/V N HC(R	Temp. ——OC Analysis Lab SOLS /8020 GTEL
SAMPLES COLLECTED: Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 U0 ml ml ml	Temp. ——OC Analysis Lab SOLS /8020 GTEL
SAMPLES COLLECTED: Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 40 ml C/V N HC(R	Temp. ——OC Analysis Lab SOLS /8020 GTEL
SAMPLES COLLECTED: Bottle/ Filtered Preservative (sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) OZO-87 UO ml C/V N HCI R ml ml ml ml	Temp. — OC Analysis Lab ANS /8020 GTEL
SAMPLES COLLECTED: Bottle/ Filtered Preservative (sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 40 ml C/V N HC/ R ml ml ml ml ml ml	Analysis Lab
SAMPLES COLLECTED: Bottle/ Filtered Preservative (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 40 ml	Temp. — OC Analysis Lab ANS /8020 GTEL
SAMPLES COLLECTED: Bottle/ Filtered Preservative (sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 40 ml C/V N HC/ R ml ml ml ml ml ml	Analysis Lab
SAMPLES COLLECTED: Bottle/ Filtered Preservative (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 40 ml	Analysis Lab
SAMPLES COLLECTED: Bottle/ Filtered Preservative (sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 U0 ml C/V N HC(R ml ml ml ml ml ml ml ml ml	Temp. ——OC Analysis Lab AND 5 /8020 GTEL
SAMPLES COLLECTED: Bottle	Analysis Lab
SAMPLES COLLECTED: Bottle/ Filtered Preservative (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) OZO-87 U0 ml C/V N HCI R ml ml ml ml ml ml ml ml ml m	Temp. ——OC Analysis Lab AND 5 /8020 GTEL
SAMPLES COLLECTED: Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) O20-87 U0 ml C/V N HC(R ml ml ml ml ml ml ml ml ml m	Analysis Lab ANALYSIS CATEL
SAMPLES COLLECTED: Bottle/ Filtered Preservative (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) OZO-87 U0 ml C/V N HCI R ml ml ml ml ml ml ml ml ml m	Analysis Lab Analysis Car School GTEC Clear/Brown Glass;



WATER SAMPLING DATA
Well Name <u>EA-1</u> Date $2/8/90$ Time of Sampling // 28
Job Name CHEU. OAK. III Job Number 4-418-01 Initials OC
Sample Point Description (M = Monitoring Well)
Location IN MERIDIAN STRIP ON MACARTHUR
WELL DATA: Depth to Water 15.05 ft (statis, pumping) Depth to Product ft.
Product Thickness Well Depth 30-2 ft (spec) Well Depth 30-49 ft (sounded) Well Diameter 4 in
- 11 1 m 1 1 1 m 1 1 1 m 1 1 1 m 1 1 m
Bendid Article Control Contr
Other
Evacuation Time: Stop 1056 106 1/20
Start 1049 1100 1114 Formulas/Conversions
Total Evacation Time MIN MIN Well radius in ft.
Total Evacuated Prior to Sampling 30 is / gal. h = ht of water col in ft.
Evacuation Rate /25 gal sper minute volum cyl = 472h 3 24 3
Depth to Water during Evacuation ft. time 7.48 gal/ft ³
o — Service
그는 그는 그는 그는 그를 가는 그를 가는 그를 가는 그를 가는 것이 되었다. 그는 그를 가는 그
V ₆ " casing = 1.47 gal/ft
CHEMICAL DATA: Meter Brand/Number / y8 casing = 2.61 gal/ft
Calibration:4,010.0
Calibration:4,010.0
Calibration:4,010.0
Calibration:4,010.0
Calibration:4,010.0
Calibration: 4.6 7.0 10.0 Measured: SC/amhos pH T°C Time Volume Evacuated (ga/.)
Calibration: 4.6 7.0 10.0 Measured: SC/amhos pH T°C Time Volume Evacuated (gal.)
Calibration: 4.6 7.0 10.0 Measured: SC/amhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color MED. BROWN Odor NONE
Calibration: 4.6 7.0 10.0 Measured: SC/amhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color ROWN SOdor NONE Description of matter in sample: 170 NERY FINE MEP. BRYSUT
Calibration: 4.6 7.0 10.0 Measured: SC/amhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color MED. BROWN Odor NONE Description of matter in sample: 70 VERY FINE MEP.BR. SCL.7 Sampling Method: DECPUT OUT END OF TEF. SAMPLE: SAMPLE SAMPLE NN
Calibration: SC/amhos PH T°C Time Volume Evacuated (gal.) SAMPLE: Color MED. BROWN Odor NONE
Calibration: 4.6 7.0 10.0 Measured: SC/amhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color MED. BROWN Odor NONE Description of matter in sample: 70 VERY FINE MEP.BR. SCL.7 Sampling Method: DECPUT OUT END OF TEF. SAMPLE: SAMPLE SAMPLE NN
Calibration: 48 7.0 100 Measured: SC/umhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color MED. BROWN Odor NONE Description of matter in sample: 170 NERY FINE MEP. BRISICT Sampling Method: DECENT OFT END OF TEF. CAMPLE. SATTLEFT NN Sample Port: Rate — gpm Totalizer — 1981.
Calibration: 4.6 7.0 10.0 Measured: SC/mhos pH T°C time Volume Evacuated (gal.) SAMPLE: Color MED BROWN Odor NONE Description of matter in sample: 170 VERY FINE MEP.BR. SULT Sampling Method: DECANT OUT END OF TEF. CAPPLES. SATTLES NN Sample Port: Rate = gpm Totalizer 1931. Time Time Total Ref Preservative Analytic Turn LAB
Calibration: Measured: SC/amhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color Description of matter in sample: 170 VERY FINE MEP.BENSUT Sampling Method: DECANT OFT END OF TEF. SAMPLE SAMPLE Analytic Time # of Sample Cont. Vol2 Fil3 Ref* Preservative. Analytic Turn5 LAB Cont. ID Type1 (specify) Method
Calibration: Measured: SC/amhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color Description of matter in sample: 10 NEY FINE MED. BROWN Sampling Method: DECANT OUT END OF TEF. CAMPLES CANTLES NN Sample Port: Rate — gpm Totalizer Time # of Sample Cont. Vol ² Fil ³ Ref ⁴ Preservative. Analytic Turn ⁵ LAB Cont. ID Type ¹ (specify) Method
Calibration: Measured: SC/mhos pH T°C Time Volyme Evacuated (gal.) SAMPLE: Color Description of matter in sample: 1 To VERY FINE MER. BR. SSL. T Sampling Method: DECENT OF END OF TEF. Sample: SARTEE NN Sample Port: Rate — gpm Totalizers Time # of Sample Cont. Vol2 Fil3 Ref* Preservative. Analytic Turn5 LAB Cont. ID Type1 (specify) Method 3 D20-EA-1 W/CV 40~L N Y HCL SCTEL
Calibration: Measured: SC/mhos pH T°C Time Volyme Evacuated (gal.) SAMPLE: Color Description of matter in sample: 170 VFEY FINE MEP.BR. SU.T Sampling Method: DECONT OF END OF TEF. Campies: Sarries INN Sample Port: Rate — gpm Totalizer # of Sample Cont. Vol2 Fil3 Ref Preservative Analytic Turn5 LAB Cont. ID Type1 \$ 02.0 - EA-1 WCV 40~L N Y HCL \$ 50/5/8020 EA.
Calibration: Measured: SC/mhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color Description of matter in sample: 170 **VEFY FINE MEP.BR**SU-7 Sampling Method: DECENT OFT END OF TEF. Camples Samples Sample Port: Rate — gpm Totalizer Time # of Sample Cont. Vol2 Fil3 Ref* Preservative. Analytic Turn LAB Cont. ID Type1 (specify) Method 3 020-EA-1 w/cV 40~L N Y HCL \$60.7 EA-1 w/cV 40
Calibration: Measured: SC/mhos pH T°C Time Volyme Evacuated (gal.) SAMPLE: Color MED. BROWN Odor Description of matter in sample: 170 WEY FINE MEP.BR. SILT Sampling Method: DECANT OUT END OF TEF. CAMPLES SALT Sample Port: Rate:gpm Totalizer
Calibration: Measured: SC/mhos pH T°C Time Volume Evacuated (gal.) SAMPLE: Color MED BROWN Odor MONE Description of matter in sample: 170 20 SEY FINE MED. BR. SULT Sampling Method: DECENT OFT END OF TEF. CAPPLES CONTEST NN Sample Port: Rate — gpm Totalizers — Time # of Sample Cont. Vol ² Fil ³ Ref Preservative. Analytic Turn ⁵ LAB (specify) Method Type ¹ Type ¹ Method
Calibration: Measured: SC/umhos pH T°C Time Volyme Evacuated (gal.) SAMPLE: Color ALED BROWN Description of matter in sample: To VERY FINE MEP. BR. SULT Sampling Method: DECANT OUT END OF TEF SAMPLES Sample Port: Rate: gpm Totalizer Time # of Sample Cont. Vol ² Fil ³ Ref Preservative. Analytic Turn LAB Cont. ID Type ¹ SOJO-EA-I W/C V HONL N Y HCL SOJO-EA-I W/C V HONL N Y HC

¹ Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass,
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N);
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)];
ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

E:\ALL\ADMIN\FORMS\WATSAMP wplants.

ATTACHMENT D
SAMPLING FREQUENCY MODIFICATION CRITERIA

V

WEISS ASSOCIATES

ATTACHMENT D

SAMPLING FREQUENCY MODIFICATION CRITERIA

Chevron typically samples ground water on a quarterly basis at their operating or former service stations. The California Water Quality Control Board's ground water monitoring guidelines state that: "Quarterly (ground water) monitoring is the maximum sampling interval typically allowed when ground water contamination is present unless other arrangements are made with Regional Water Quality Control Board staff". California Regional Water Quality Control Board - San Francisco Bay Region (RWQCB-SFBR) personnel have indicated that the board will allow reduction of the sampling frequency on a site-specific basis if the frequency modification is justified by site conditions? Therefore, WA has developed generalized criteria for determining when sampling frequency should be modified.

The recommended sampling frequency for specific monitoring wells is based upon the following factors:

- The reliability of the ground water quality analytic data,
- · The trend of the dissolved hydrocarbon concentration in the well, and
- The location of the well in relation to the hydrocarbon source.

Each of these factors is discussed below.

Reliability of Ground Water Quality Analytic Data

Since the reproducibility of ground water analytic data is highly sensitive to hydrogeologic conditions as well as field sampling and laboratory analytic procedures, ground water analytic data often shows variability between sampling episodes. Seasonal ground water fluctuation can also affect hydrocarbon concentrations in ground water. Therefore, WA will reduce the sampling frequency only for wells which:

- · Have been sampled on a quarterly basis for at least one year, and
- Have consistent historical analytic results allowing a reliable assessment of the
 representative hydrocarbon concentration in the well. If the variability of the
 analytic data prevents a reliable assessment of concentration, then we will
 continue to sample the well(s) quarterly until a reliable assessment can be made.

Trend of Hydrocarbon Concentration

Sampling frequency will be reduced only for wells showing stable or decreasing concentrations. Wells showing increasing trends will be sampled quarterly to monitor the trends and determine whether the hydrocarbon concentration in a particular well is approaching a threshold concentration such as the saturation concentration, maximum contaminant level (MCL) or a California Department of Health Services action level.

North Coast, San Francisco Bay, Central Valley Regional Water Quality Control Boards, June 2, 1988 (revised May 18, 1989), "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks; pg.12.

Personal communication between Joseph Theisen, WA Project Geologist and Diane White, RWQCB-SFBR, November 29, 1989.

WATER SAMPLING DATE Job Name/Number		Date 2890 Time 19.52	£
	_	4-418-04 Initials EWA	face
Well J Spring	Surface Other		
	T A	ac,	
WELL DATA: Well ty		(Describe; M - monitoring well)	
		eximum Drawdown Limit (MDL) ft	•
Well depth 31.	(5 ft (sounded) We	ell depth ft (spec)	
Well diameter 4	in. TOC height above gr	ound ft Water elev ft	
Volume Evacuated:	Pumped Pumped	Bailed	
Time: Stop	12:52	Formulas/Conversions	4
Start	12:34	r = well radius in ft	\$ ·
Total hrs/min	:18	h = ht of water col in ft vol. in cyl, = #r²h	
Total Evacuated		7.48 gal/ft ³	
Evacuation Rate	_1.5 → gpm	V2" casing = 0.163 gal/ft	
		V3" casing = 0.367 gal/ft	
Pump # and type	Bailer # and ty	pe 3 PVC # 71 Casing = 0.826 gal/ft	
Hose # and type 🤯		V ₆ casing = 1.47 gal/ft V ₈ casing = 2.51 gal/ft	
	ate gpm Volume	gal.	STATE OF THE STATE
Location/descript	ion		
		ft; volume = 8.87 gal. 43	A 4
Initial height of	water in casing - 13.59	<u></u>)
	wdown limit = 3 x initial		
Evacuation at sam	pling point = 1 x initial		
77 6 4.1		vacuated = 26.6 gal.	
Water Color:	home	Odor:	
Description of sec	diment and/or foreign mad	ter in sample:	
Defen afficially and	on: Recented from and of	· ·	
FOIR OF MCOTTECTION	Uli. LOCALIDE TOM ENG OF		
Danth towater du	ring spumping — ft	time Sampling 1207 ft 14.40 time S	. 9 6 %
Depth togwater du	ring pumping ft	time Sampling <u>1707</u> ft 14:40 time >	% %
Depth to water du الروسالم Pumped dry?	ring pumping ft After 26.6 gal Recove	time Sampling 1707 ft 14:40 time = cry rate 07.07.00	% % infial v
Depth to water du Pumped dry? <u> </u>	ring pumping ft After <u>26.6</u> gal. Recove IS, LOCATION SKETCH, ENV	time Sampling 1707 ft 14:40 time sery rate .07 40 ms in IRONMENTAL CONDITIONS, e.g., weather,	% % infial v
Depth to water du Pumped dry? Albert ADDITIONAL COMMEN van running nearb	ring pumping ft After <u>26.6</u> gal. Recove TS, LOCATION SKETCH, ENV y, problems with equipmen	time Sampling 1707 ft 14:40 time = cry rate 07.07.00	% % indial v
Depth to water du Pumped dry? (September 2015) ADDITIONAL COMMEN van running nearby times, etc. (over	ring pumping ft After <u>26.6</u> gal. Recove TS, LOCATION SKETCH, ENV y, problems with equipmen	time Sampling 1707 ft 14:40 time sery rate .07 40 ms in IRONMENTAL CONDITIONS, e.g., weather,	% % infial v
Depth to water du Pumped dry? ADDITIONAL COMMEN van running nearb times, etc. (over CHEMICAL DATA	ring pumping ft ft After <u>26.6</u> gal Recove IS, LOCATION SKETCH, ENV y, problems with equipmen	time Sampling 1707 ft 14:40 time sery rate .07 ,0 m sery rate .07 ,0 m sery rate weather, nt or sampling, etc., pump on/off	% % indial v
Depth to water du Pumped dry? ADDITIONAL COMMEN van running nearby times, etc. (over CHEMICAL DATA Temperature	ring pumping ft ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for the company of the	time Sampling 1707 ft 14:40 time sery rate .07 10 ms IRONMENTAL CONDITIONS, e.g., weather, nt or sampling, etc., pump on/off Specific Conductance umhos	% % rafial v
Depth to water du Pumped dry? ADDITIONAL COMMEN van running nearb times, etc. (over CHEMICAL DATA Temperature	ring pumping ft ft After <u>26.6</u> gal Recove IS, LOCATION SKETCH, ENV y, problems with equipmen	time Sampling 1707 ft 14:40 time sery rate .07 ,0 m sery rate .07 ,0 m sery rate weather, nt or sampling, etc., pump on/off	% % hefic(v
Depth to water du Pumped dry? ADDITIONAL COMMEN van running nearby times, etc. (over CHEMICAL DATA Temperature	ring pumping ft ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for the company of the	time Sampling 1707 ft 14:40 time sery rate .07 10 ms IRONMENTAL CONDITIONS, e.g., weather, nt or sampling, etc., pump on/off Specific Conductance umhos	96 % rafia (v
Depth to water du Pumped dry? ADDITIONAL COMMEN van running nearby times, etc. (over CHEMICAL DATA Temperature	ring pumping ft ft After 26.6 gal. Recovers, LOCATION SKETCH, ENViy, problems with equipment for	time Sampling 1707 ft 14:40 time sery rate .07 10 ms IRONMENTAL CONDITIONS, e.g., weather, nt or sampling, etc., pump on/off Specific Conductance umhos	% % notice v
Depth to water du Pumped dry?	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENViy, problems with equipmen). Continuous for the filtered	time Sampling 1707 ft 19:40 time rery rate .07.0 IRONMENTAL CONDITIONS, e.g., weather, nt or sampling, etc., pump on/off Specific Conductance umhos umhos to C Preservative	% % rafial v
Depth to water du Pumped dry? Alwo? ADDITIONAL COMMEN van running nearb times, etc. (over CHEMICAL DATA Temperature pH Calibrat SAMPLES COLLECTI Sample	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for from 4.0, from 5.0, from	time Sampling 1707 ft 19:40 time rery rate .07.0 km IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductanceumhos	%% rafia(v
Depth to water du Pumped dry? Alwo? ADDITIONAL COMMEN van running nearby times, etc. (over CHEMICAL DATA Temperature pH Calibrat SAMPLES COLLECT! Sample ID No.	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENViy, problems with equipmen). Continuous for the filtered	time Sampling 1707 ft 19:40 time rery rate .07 10 ms IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration Temp. OC Preservative (specify) (R = Refrigerated) Analysis Lab	infiel v
Depth to water du Pumped dry?	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for from 4.0, from 5.0, from	time Sampling 1707 ft 19:40 time ery rate .07 pp. IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration TempOC Preservative (specify) (R - Refrigerated) Analysis Lab HC(R - Gastbatt > GTa	infiel v
Depth to water du Pumped dry?	ring pumping ft After 26.6 gal. Recover IS, LOCATION SKETCH, ENV. y, problems with equipment). Continuous for the continuous for t	time Sampling 1707 ft 19:40 time ery rate .07 40 me IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration Temp C Preservative (specify) (R - Refrigerated) Analysis Lab HC(R Sol5 8020	infiel v
Depth to water du Pumped dry?	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for 4.0, 7.0, for a constant for a constan	time Sampling 1707 ft 19:40 time ery rate .07 pp. IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration TempOC Preservative (specify) (R - Refrigerated) Analysis Lab HC(R - Gastbatt > GTa	infiel v
Depth to water du Pumped dry? Alwost ADDITIONAL COMMENT van running nearb times, etc. (over CHEMICAL DATA Temperature pH Calibrat SAMPLES COLLECTI Sample ID No. 220-EA2 40	ring pumping ftAfter 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for the following for the filtered for the fi	time Sampling 1707 ft 19:40 time ery rate .07 40 me IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration Temp C Preservative (specify) (R - Refrigerated) Analysis Lab HC(R Sol5 8020	infiel v
Depth to water du Pumped dry? Alwost ADDITIONAL COMMENT van running nearby times, etc. (over CHEMICAL DATA Temperature pH Calibrat SAMPLES COLLECTI Sample ID No	ring pumping ftAfter 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for the following for the following for the filtered for the	time Sampling 1707 ft 19:40 time rery rate .07 pp. IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration Temp. OC Preservative (specify) (R = Refrigerated) Analysis Lab HC(R Sol5 8020 C.O.	infiel v
Depth to water du Pumped dry?	ring pumping ftAfter <u>26.6</u> gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment Continuous formula f	time Sampling 1707 ft 19:40 time rery rate .07 pp. IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration Temp. OC Preservative (specify) (R = Refrigerated) Analysis Lab HC(R Sol5 6020 6.6.	infiel v
Depth to water du Pumped dry?	ring pumping ft After <u>26.6</u> gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment to the problems with eq	time Sampling 1707 ft 19:40 time ery rate .07 pp. IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration TempOC Preservative (specify) (R - Refrigerated) Analysis Lab HC(infiel v
Depth to water du Pumped dry?	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for 4.0, 7.0, Continuous for a continuous for	time Sampling 1707 ft 19:40 time ery rate .07 40 m IRONMENTAL CONDITIONS, e.g., weather, ont or sampling, etc., pump on/off Specific Conductance umhos umhos 10.0 Calibration Temp CC Preservative (specify) (R - Refrigerated) Analysis Lab Lab CATE Sol5 8020	infiel v
Depth to water du Pumped dry?	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for 4.0,	time Sampling 1707 ft 19:40 time ery rate .07 40 time rery rate .0	infiel v
Depth to water du Pumped dry?	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for 4.0, 7.0, Continuous for a continuous for	time Sampling 1707 ft 19:40 time ery rate .07 40 m IRONMENTAL CONDITIONS, e.g., weather, ont or sampling, etc., pump on/off Specific Conductance umhos umhos 10.0 Calibration Temp CC Preservative (specify) (R - Refrigerated) Analysis Lab Lab CATE Sol5 8020	infiel v
Depth to water du Pumped dry? / was in a pumped dry? / was in a pumper de la pumper	ring pumping ft After 26.6 gal. Recovers, LOCATION SKETCH, ENV. y, problems with equipment for 4.0,	time Sampling 1707 ft 19:40 time ery rate .07 pp. IRONMENTAL CONDITIONS, e.g., weather, not or sampling, etc., pump on/off Specific Conductance umhos 10.0 Calibration Temp. OC Preservative (specify) (R = Refrigerated) Analysis Lab HC(R Sol5 8020 6.0.	intial v

O = Other (describe)

Additional Cap Codes: Py = Polyseal; V = VOA/Teflon septa; M = Metal

WATER SAMPLING DATA	
Well Name F Date 2/8/40 Time	e of Sampling /307
Job Name CHEV DAK. JUL Job Number 4-418-01	Initials/\
Sample Point Description	(M = Monitoring Well)
Location LEFT LANE ON W BOUND BROWN OF MACAN	THUR
WELL DATA: Depth to Water 19.70 ft (static) pumping)	Depth to Product ft
Product Thickness Well Depth 19.63 ft (spec) Well Depth/	1.79 ft(sounded) Well Diameter 2 in
Initial Height of Water in Casing	ft. = volumegal.
Casing Volumes to be Evacuated.	
EVACUATION METHOD: Pump # and type	Hose # and type
Bailer# and type 2 TEF. # JJ Dedicated N	(Y/N)
Other	
Evacuation Time: Stop 1044	
Start 1042	Formulas/Conversions
Total Evacation Time 100/100	St. See See See See See See See See See Se
Total Evacuated Prior to Sampling	
Evacuation Rate W/A gal net	minute vol. in cyl. = sr ² h
Evacuation Rate NA gal. per Depth to Water during Evacuation 50.0 (t time	7.48 gal/ft ³
Depth to Water at Sampling 18.95 1252 ft. 1252 time	0.1- V2" casing = 0.163 gal/ft
Evacuated Dry? F5 After 05 gal. Time 1044 Re	c. Rte = \(\frac{12}{\gamma_3} \casing = 0.367 \text{ gal/ft}
80% Recovery = 17.91	.001 gr V ₄ " casing = 0.653 gal/ft
% Recovery at Sample Time 76% Time 1252	$V_{4.5}^{**}$ casing = 0.826 gal/ft
	V_{6} casing = 0.020 ga/ t V_{6} casing = 1.47 gal/ t
CHEMICAL DATA: Meter Brand/Number	V8 casing = 2.61 gal/ft
Calibration: 4.0	vo casing = 2.01 gai/it
Measured: SC/\u03c4mhos \u03c4H \u2212 T*C \u2212 Time	Volume Evacuated (gal.)
John Time	Volume Evacuated (gai.)
	/
**	
/ 	
SAMPLE: Color GREY	dor NONE
Description of matter in sample: GREY/BLACK SEDIME NTS	401
Sampling Method: DECANT OUT BOTOM OF TEF. SAMPLER	
Sample Port: Rategpm Totalizer gal. Time	
Time -	
# of Sample Cont. Vol ² Fil ³ Ref ⁴ Preservative	Analytic Turn ⁵ LAB
Cont. ID Type ¹ (specify)	Method
3 020-F W/CV 40ML N Y HCL -	CONTETATION
3 020-F W/CV 40ML N Y HCL -	GOZT SOIS N GTEL
	78015 /8020
	£.d.
	H 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

¹ Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N);
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]
ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

Trip Blanks

WEISS ASSOCIATES

WATER SAMPLING DATA				Time	
Job Name/Number	C- Oabland		Date 28 90 4-418-01	/Initials	
Well Spring			1-409-01		
Location \					
WELL DATA: Well type	<u> </u>		(Describé	: M - monitorin	g well)
Depth to Water	ft (pur	mp/stat) Ma	ximum Drawdown	Limit (MDL)	ft
Well depth	ft (so	ounded) We	ell depth /	ft (spe	c)
Well diameter in	a. TOC heig	tht above gr	round ft	Water elev.	ft
Volume Evacuated:	Pumped	Pumped	Bailed		
Time: Stop	<u></u>	<u></u>	<u> </u>	Formulas/Conver	clone
Start		· January and January and Angelia	TO THE SHARWAY CO.	r = well radius	in ft
Total hrs/min			3 2 3 4	h = ht of water	col in ft
Total Evacuated	gal	ı. —		vol. in cyl. =7	Yr'h
Evacuation Rate	gpr		e de la companya del companya de la companya del companya de la co	V ₂ " casing = 0.	163 gel/ft -
	· 1	/		$V_{\bullet}^{-\alpha}$ casing = 0.	367 #al/ft
Pump # and type	\ Bail	ler # and to	me Astro Archegalis	V ₄ " casing = 0.1	653 gal/ft
Hose # and type			and the second second	V ₄ 5 casing - 1.	0.020 gal/lt 47 gal/ft
	\/		成的 (A) (A) (B) (B) (B) (B) (B)	V ₈ " casing = 2.	61 gal/ft
Sampling Port: Rate	, X,	zom Volume	ga]		2.5.2%(\$P\$)
Location/description		\ \	b		
	·· -/	\		.	
Initial height of wa	ater in casi	ing =	ft. volume	= gal	
Evacuation at drawdo	own limit =	3 x initial	volume =	gal.	•
Evacuation at sample	ne point =	1 x initial	volume =	gal.	•
	Tot	tal to be as	vacuated =	gal.	
Water Color:		•	Qdor:	8	
Description of sedin	ment and/or				
	,	Br. mar.	2002 Z		
D-1					
roint of collection:	•				
Point of collection: Depth to water during	:	ft	time Sampli	ng ft	time
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Depth to water during Pumped dry? And	ng pumping _ fter{	gal. Recove	ery rate	Service of the servic	
Depth to water during Pumped dry? Af ADDITIONAL COMMENTS.	ng pumping _ fter { LOCATION S	gal. Recove SKETCH, ENV	ry rate [RONMENTAL COND]	TIONS, e.g., we	 ather,
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Depth to water during Pumped dry? ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature CALIBRATION SAMPLES COLLECTED: Sample	Thermometer Bottle/ Cap	gal. Recover SKETCH, ENVI	Ery Tate IRONMENTAL CONDITATION OF SAMPLING, Specific Conductor 10.0 Calibrative (specify)	etc., pump on/o	ather, ff hos
Depth to water during Pumped dry? All ADDITIONAL COMMENTS of running nearby, times, etc. (over). CHEMICAL DATA Temperature CAlibration SAMPLES COLLECTED: Sample ID No.	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? All ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature PH Calibration SAMPLES COLLECTED: Sample ID No. OZO-Z! 40 ml	Thermometer Bottle/ Cap	gal. Recover SKETCH, ENVI	Ery Tate IRONMENTAL CONDITATION OF SAMPLING, Specific Conductor 10.0 Calibrative (specify)	etc., pump on/o	ather, ff oc Lab
Depth to water during Pumped dry? ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature PH Calibration SAMPLES COLLECTED: Sample ID No. OZO-21 40 ml ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature CALIBRATION SAMPLES COLLECTED: Sample ID No. O20-21 40 ml ml ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature PH Calibration SAMPLES COLLECTED: Sample ID No. OZO-21 40 ml ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature COULECTED: Sample ID No. OZO-21 40 ml ml ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
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Depth to water during Pumped dry? All ADDITIONAL COMMENTS of van running nearby, times, etc. (over). CHEMICAL DATA Temperature CAlibration SAMPLES COLLECTED: Sample ID No. OZO-21 40 ml ml ml ml ml ml ml ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? All ADDITIONAL COMMENTS of van running nearby, times, etc. (over). CHEMICAL DATA Temperature Calibration SAMPLES COLLECTED: Sample ID No. OZO-21 40 ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature CAlibration SAMPLES COLLECTED: Sample ID No. OZO-21 40 ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? All ADDITIONAL COMMENTS of running nearby, times, etc. (over). CHEMICAL DATA Temperature CHEMICAL DATA Temperature COULECTED: Sample ID No. OZO-21 40 ml ml ml ml ml ml ml ml ml ml	Thermomete Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff oc Lab
Depth to water during Pumped dry? All ADDITIONAL COMMENTS, van running nearby, times, etc. (over). CHEMICAL DATA Temperature CALIBRATION SAMPLES COLLECTED: Sample ID No. OZO-2 1 40 ml	Thermometer Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Specific Conductor Sampling, Specific Conductor Conducto	TIONS, e.g., we etc., pump on/o ctanceum	ather, ff hos oc Lab ETEL
Depth to water during Pumped dry? All ADDITIONAL COMMENTS of van running nearby, times, etc. (over). CHEMICAL DATA Temperature CAlibration SAMPLES COLLECTED: Sample ID No. OZO-21 40 ml	Thermometer Bottle/ Cap (Specify)	gal. Recover SKETCH, ENVI	Specific Conductor Calibrative (specify) (R - Refrigers	tion Temp. Analysis R BD15/802	ather, ff hos oc Lab ETEL

5

Bula Blank	WEISS ASSOCIATES
WATER SAMPLING DATA Well Name EA 2 Date 2000	Time 14:45
Job Name/Number (- Outland TO / 4-418-61	Initials BWA
Well Spring Surface Other	<u> </u>
Location	
WELL DATA: Well type (Describe; M =	monitoring well)
Depth to Waterft (pump/stat) Maximum Drawdown Limit	(MDL) ft
Well depthft (sounded) Well depth	ft (spec)
Well diameter in. TOC height above ground ft Wate	r elev ft
Volume Evacuated: Pumped Pumped Bailed	
Time: Stop	ormulas/Conversions
Start	= well radius in ft
10 502 1125/ Milit	= ht of water col in ft ol. in cyl. = \pir^2h
rotal Evacuated gal.	.48 gal/ft ³
Evacuation Rate gpm v	2" casing = 0.163 gal/ft
	3" casing = 0.367 gal/ft
Pump # and type Bailer # and type	" casing = 0.653 gal/ft start casing = 0.826 gal/ft
Hose # and type	6" casing = 1.47 gal/ft
	8" casing = 2.61 gal/ft
Sampling Port: Rate gpm Volume gal.	
Location/description	
Initial height of water in casing =ft; volume =	gal.
Evacuation at drawdown limit - 3 x initial volume -	gal.
Evacuation at sampling point = 1 x initial volume =	gal.
Total to be evacuated =	
Water Color: is me Odor.	
Description of sediment and/or foreign matter in sample: now	? _
Arrowhed D.I. water NO 6+ #	
Point of collection: Deanted from end of tefler bouler	# /2
Depth to water during pumping U ft time Sampling	ft time
Pumped dry? After gal. Recovery rate	BO STORE SERVICES TO SERVICE SERVICES
ADDITIONAL COMMENTS, LOCATION SKETCH, ENVIRONMENTAL CONDITIONS	e.g. weather.
van running nearby, problems with equipment or sampling, etc.	pump on/off
times, etc. (over).	
CHEMICAL DATA	
Temperature Thermometer # Specific Conductance	e unhes
oH Calibration	Тешр°С
그는 사람들이 많은 이번 마음이를 가면 생활을 보고 있다. 그는 사람들이 나를 하고 생활을 하는 것은 사람들이 모든 사람들이 되었다.	[제품] 1 m - 1
SAMPLES COLLECTED:	
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Bottle/ Filtered Preservative	
Bottle/ Filtered Preservative Sample Cap (size, u) (specify)	Analysis Iah
Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R - Refrigerated)	Analysis Lab
Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N = No) (R = Refrigerated) OZO - ZZ 46 ml C/U N HC R	Analysis Lab
Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N - No) (R - Refrigerated) OCO-27 46 ml C/U N HC R	Analysis Lab
Bottle/ Filtered Preservative Sample Cap (size, u) (specify) ID No. (Specify) (N - No) (R - Refrigerated) Moderated No. (Specify) ml ml	1015 820 SOTEL
Bottle	Analysis Lab
Bottle	1015 820 STEL
Bottle	1015 820 SOTEL
Bottle	1015 820 SOTEL
Bottle	1015 820 SOTEL
Bottle	1015 820 STEL
Bottle	1015 820 STEL
Bottle	1015 820
Bottle	1015 820 - 57 GT BL

ATTACHMENT B CHAIN-OF-CUSTODY FORMS

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Chevron U.S.A. Inc. P.O. Box 5004 San Ramon, CA 94583	Ϋ́		Pr	roject C	onta	ct (Na	me} _	(41:	4)	54	7	_ <	504	<u>ነ</u>		Signatu	re	un C	8/96 endes	<u>~~</u>					
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				iners	;	Ş Ğ	site	'	ĵ.				Modified EPA 8015 Total Petro, Hydrocarb, as Gasoline	Modified EPA 8015 Total Petro, Hydrocarb. as Gasoline + Diesel	Se Se	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wir.: 624		603						
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020-B7								14:15					1			1							<u> </u>		
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Projes in USA



Western Region 4080-C Pike Ln., Concord, CA 94520 (415) 685-7852 In CA: (800) 544-3422 Outside CA: (800) 423-7143 Project Number: SFB-175-0204.72 Consultant Project Number: 4-418-01 Contract Number: N46CWC0244-9-X Facility Number: 91026 Work Order Number: D002243

Report Issue Date: February 22, 1990

MARIETTE SHIN
WEISS ASSOCIATES
5500 SHELLMOUND ST.
EMERYVILLE, CA 94608

DEAR MS. SHIN:

Attached please find the analytical results for the samples received by GTEL on February 9, 1990.

GTEL maintains a formal quality assurance program to ensure the integrity of the analytical results. All quality assurance criteria were achieved during the analysis unless otherwise noted in the footnotes to the analytical report.

The specific analytical methods used and cited in this report are approved by state and federal regulatory agencies. GTEL is certified for the analysis reported herein by the California State Department of Health Services under certificate number 194.

If you have any questions regarding this analysis, or if we may service any additional analytical needs, please give us a call.

Sincerely,

GTEL Environmental Laboratories, Inc.

Emma P. Popek

Laboratory Director

Report Issue Date: February 22, 1990

Table 1 **ANALYTICAL RESULTS**

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015¹

	GTEL Sample Number	01	02	03	. 04
	Client Identification	020-A	020-B1	020-B2	020-в4
•	Date Sampled	02/08/90	02/08/90	02/08/90	02/08/90
	Date Analyzed	02/14/90	02/14/90	02/14/90	02/14/90
Analyte	Detection Limit, ug/L		Concentratio	n, ug/L	
Benzene	0.3	600	70	28000	5400
Toluene	0.3	7	19	5900	130
Ethylbenzene	0.3	120	17	2300	460
Xylene (total)	0.6	270	150	11000	320
TPH as Gasoline	50	14000	5500	67000	12000

	GTEL Sample Number	05	06	07	08
	Client Identification	020-B6	020-в7	020-EA1	020-EA2
	02/08/90	02/08/90	02/08/90	02/08/90	
	02/14/90	02/14/90	02/14/90	02/14/90	
Analyte	Detection Limit, ug/L		Concentratio	on, ug/L	
Benzene	0.3	16	2500	<0.3	<0.3
Toluene	0.3	5	6900	<0.3	<0.3
Ethylbenzene	0.3	10	1100	<0.3	<0.3
Xylene (total)	0.6	58	11000	<0.6	<0.6
TPH as Gasoline	50	2900	41000	<50	190

1 = Extraction by EPA Method 5030



Report Issue Date: February 22, 1990

Table 1 (Continued)

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015¹

	GTEL Sample Number	09	10	11	
	Client Identification	020-F	020-21	020-22	
	Date Sampled	02/08/90	02/08/90	02/08/90	
	Date Analyzed	02/14/90	02/14/90	02/14/90	
Analyte	Detection Limit, ug/L		Concentratio	n, ug/L	
Benzene	0.3	0.4	<0.3	<0.3	
Toluene	0.3	0.3	<0.3	0.3	
Ethylbenzene	0.3	<0.3	<0.3	<0.3	
Xylene (total)	0.6	<0.6	<0.6	<0.6	
TPH as Gasoline	50	<50	<50	<50	

^{1 =} Extraction by EPA Method 5030



Project Number: SFB-175-0204.72

Consultant Project Number: 4-418-01 Contract Number: N46CWC0244-9-X

Facility Number: 91026 Work Order Number: D002243

Report Issue Date: February 22, 1990

QA Conformance Summary

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015

1.0 <u>Blanks</u>

Five of 5 target compounds were below detection limits in the reagent blank as shown in Table

2.0 Independent QC Check Sample

The control limits were met for 4 out of 4 QC check compounds as shown in Table 3.

3.0 Surrogate Compound Recoveries

Percent recovery limits were met for the surrogate compound (naphthalene) for all samples as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

Percent recovery limits were met for 4 of 4 compounds in the MS as shown in Table 5.

Reagent Water Spike (WS) and Reagent Water Spike (WSD) Duplicate Precision 5.0

Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the WS and WSD as shown in Table 6.

6.0 Sample Handling

- 6.1 Sample handling and holding time criteria were met for all samples.
- 6.2 There were exceptional conditions requiring dilution of samples.



Report Issue Date: February 22, 1990

Table 2

REAGENT BLANK DATA

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water • EPA Method 8020/8015

Date of Analysis: 02/14/90

Analyte	Concentration, ug/L
Benzene	<0.3
Toluene	<0.3
Ethylbenzene	<0.3
Xylene (total)	<0.6
Gasoline	<50



Project Number: SFB-175-0204.72
Consultant Project Number: 4-418-01
 Contract Number: N46CWC0244-9-X
 Facility Number: 91026
 Work Order Number: D002243
 Report Issue Date: February 22, 1990

Table 3

INDEPENDENT OF CHECK SAMPLE RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water : EPA Method 8020/8015

Date of Analysis:

02/06/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	50	100	85 - 115
Toluene	50	52	104	85 - 115
Ethylbenzene	50	49	98	85 - 115
Xylene (total)	150	152	101	85 - 115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015

Analyte	Lot Number	Source	
Benzene	LA18104	SUPELCO	
Toluene	LA18104	SUPELCO	
Ethylbenzene	LA18104	SUPELCO	
Xylene (total)	LA18104	SUPELCO	



Project Number: SFB-175-0204.72 Consultant Project Number: 4-418-01 Contract Number: N46CWC0244-9-X

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Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water - EPA Method 8020/8015

Acceptability Limits 1: 73 - 129 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	200	168	84
01	200	190	95
02	200	157	78
03	200	168	84
04	200	170	85
05	200	197	98
06	200	171	86
07	200	178	89
08	200	162	81
09	200	159	80
10	200	146	73
11	200	160	80
MS	200	178	89
WS	200	153	76
WSD	200	157	78

Matrīx Spike

WS WSD

Reagent Water Spike
Reagent Water Spike Duplicate
Acceptability limits are derived from the 99% confidence interval

of all samples during the previous quarter.



Report Issue Date: February 22, 1990

Table 5

MATRIX SPIKE (MS) RECOVERY REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015

Date of Analysis: Sample Spiked:

02/14/90

Client ID: Units:

020-EA1 ug/L

Analyte	Sample Result	Concentration Added	Concentration Recovered	MS Result	MS, % Recovery	Acceptability Limits ¹ , %
Benzene	<0.3	25	25.9	25 .9	104	73 - 119
Toluene	<0.3	25	24.9	24.9	100	72 - 118
Ethylbenzene	<0.3	25	25.1	25.1	100	78 - 115
Xylene (total)	<0.6	75	74.6	74.6	99	84 - 116

Not detected at the indicated detection limit. Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.



Report Issue Date: February 22, 1990

Table 6

REAGENT WATER SPIKE (WS) AND REAGENT WATER SPIKE DUPLICATE (WSD) RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015

Date of Analysis:

02/14/90

Units:

ug/L

- Analyte	Concentration Added	WS Result	WS, % Recovery	WSD Result	WSD, % Recovery
Benzene	25	24.1	96	23.7	95
Toluene	25	23.6	94	23.2	93
Ethylbenzene	25	23.9	96	22.8	91
Xylene (total)	75	72.5	97	71.7	96

		Acceptability Limits ¹		
Analyte	RPD, %	Maximum RPD, %	% Recovery	
Benzene	1	30	85 - 131	
Toluene	1	30	82 - 124	
Ethylbenzene	5	30	81 - 121	
Xylene (total)	1	30	87 - 125	

Acceptability limits are derived from the 99% confidence interval of all samples during the - 1 previous quarter.





Ground water monitoring wells generally fall into one of following classifications relative to the suspected hydrocarbon source:

- 1) Clean up- and cross-gradient wells,
- 2) Clean down-gradient wells,
- 3) High concentration source-area wells, and
- 4) Low to high concentration intermediate wells.

WA's recommended sampling frequency for each of these classifications as follows:

- 1) If no offsite source is indicated by the initial sampling of the up-gradient and cross-gradient site wells and the subject wells are clean, WA recommends sampling these wells annually.
- 2) Since clean down-gradient wells define the "leading edge" of dissolved hydrocarbons in ground water, and hence are used to determine hydrocarbon breakthrough and the need for additional wells and/or remediation, WA recommends sampling these wells quarterly.
- 3) High concentration source-area wells are used to monitor stable or increasing source-area concentrations and the effectiveness of natural biodegradation. WA recommends sampling these wells semi-annually unless the hydrocarbon concentrations are found to be increasing, in which case, the wells will be sampled quarterly. High concentration source wells with a history of floating hydrocarbons will be inspected quarterly, and sampled if possible.
- 4) Intermediate wells, located at a distance from the source area, may contain low to high dissolved hydrocarbon concentrations, depending on their distance from the source and hydrogeologic factors. Although these wells are not used to track the migration of the dissolved-hydrocarbon front, they can be used to track the migration of the dissolved hydrocarbon plume and the rates of natural biodegradation. Therefore, WA recommends sampling these wells semi-annually.