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

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Marketing Operations

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

November 8, 1990

Mr. Paul Smith
Alameda County Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Re: Former Chevron Station #9-4816
301 14th Street
Oakland, California

Dear Mr. Smith:

Enclosed we are forwarding a letter report dated November 7, 1990, prepared by our consultant GeoStrategies, Inc. for the above referenced site. The report discusses the rationale for the frequency of separate-phase well monitoring per our conversation and your request of October 29, 1990.

If you have any questions or comments please do not hesitate to contact Nancy Vukelich at (415) 842-9581.

Very truly yours,
C.G. Trimbach

By Nancy Vukelich

NLV/jmr
Enclosures

cc: Mr. Lester Feldman
RWQCB-Bay AREa
1800 Harrison Street
Suite 700
Oakland, CA 94612

Mr. W.T. Scudder
Property Management Specialist

GeoStrategies Inc.

FREQUENCY OF SEPARATE-PHASE WELL MONITORING

Chevron Service Station No. 4816
301 14th Street
Oakland, California

Report No. 7270-3

November 7, 1990

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(415) 352-4800

November 7, 1990

Gettler-Ryan Inc.
2150 Winton Avenue
Hayward, California 94545

Re: FREQUENCY OF SEPARATE-PHASE WELL MONITORING
Chevron Service Station No. 4816
301 14th Street
Oakland, California

Gentlemen:

This letter report addresses the frequency of bailing separate-phase product from monitoring wells for the above referenced site. The purpose of this report is to review the historical data, current separate-phase contaminant distribution, and rationale for frequency of monitoring and bailing.

SITE BACKGROUND

In April and May 1988, tank tests performed and underground storage tanks indicate that the 10,000 gallon supreme unleaded tank failed. In August, a pipe joint leading to the service islands was repaired.

In June, 1990, GeoStrategies Inc. (GSI) drilled eight exploratory borings on site, four of which were converted to groundwater wells (C-1, C-2, C-3 and C-4) (Plates 1 and 2). A report summarizing that phase of investigation was prepared by GSI, dated August 9, 1990. A recovery well, CR-1, was installed in October, 1990.

HISTORIC MONITORING DATA

Monitoring wells C-1 through C-4 are inspected on a weekly schedule by Gettler-Ryan Inc. (G-R) using an oil-water interface probe. A clean, clear acrylic bailer is used to confirm interface probe results.

Only one monitoring well, C-3, has historically revealed presence of separate-phase product. The product is bailed by G-R during the weekly visit, and to date, approximately 127 gallons have been removed. The other wells, positioned in the surmised up- and down-gradient direction from Well C-3 have not revealed separate-phase product.

Recovery Well CR-1, was installed adjacent to Well C-3 for future remediation and has been monitored weekly since installation. Up to 2.54 feet in measured thickness of separate-phase product has been observed. A copy of the historical monitoring data is attached.

DISCUSSION

Site hydrogeologic conditions have been described in the GSI report dated August 9, 1990. Additional subsurface delineation work is in progress.

The calculated groundwater gradient beneath the site is 0.001 which may be considered relatively flat. According to observed groundwater elevation data, the gradient flows west-southwest. However, an anomalous northeasterly flow component may exist, although this flow direction has not yet been verified. Monitoring Well C-3, which has revealed the separate-phase product is near the geographic center of the site. Exploratory boring log data revealed a sand which contained disseminated silty and clay. Sampling blow count data indicates a relatively dense and packed aquifer strata. These tend to decrease the hydraulic conductivity of the sandy sediment, and its ability to transmit fluids in general.

This would also tend to limit the migration of separate-phase product within the unsaturated and saturated zones. Thus, monitoring wells lie in both surmised down-gradient flow directions. Since separate-phase product has not been observed beyond Well C-3, the product is considered to be localized in the vicinity of Well C-3. In addition, the observed separate-phase product in recovery Well CR-1, adjacent to Well C-3, support this interpretation.

CONCLUSIONS

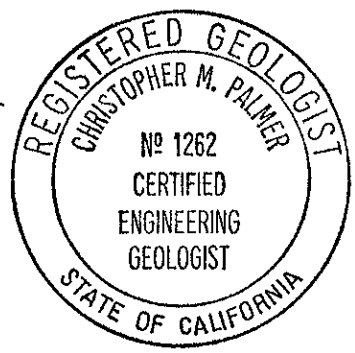
The existing monitoring well array has revealed a separate-phase plume in the vicinity of Wells C-3 and CR-1. The site flow gradient is currently toward the southwest, and a northeastern flow component is not yet verified. Historic monitoring data of Wells C-1, C-2 and C-4 have not revealed separate-phase product. Slow groundwater movement is surmised from the relatively flat groundwater gradient.

In our opinion, the separate-phase product is not currently migrating from the vicinity of Wells C-3 and CR-1. Weekly monitoring and bailing is indicated for this site based upon the data, and we do not feel increasing the frequency is warranted at this time.

If you have any questions, please call.

GeoStrategies Inc. by,

Christopher M. Palmer
Senior Geologist
C.E.G. 1262, R.E.A. 285



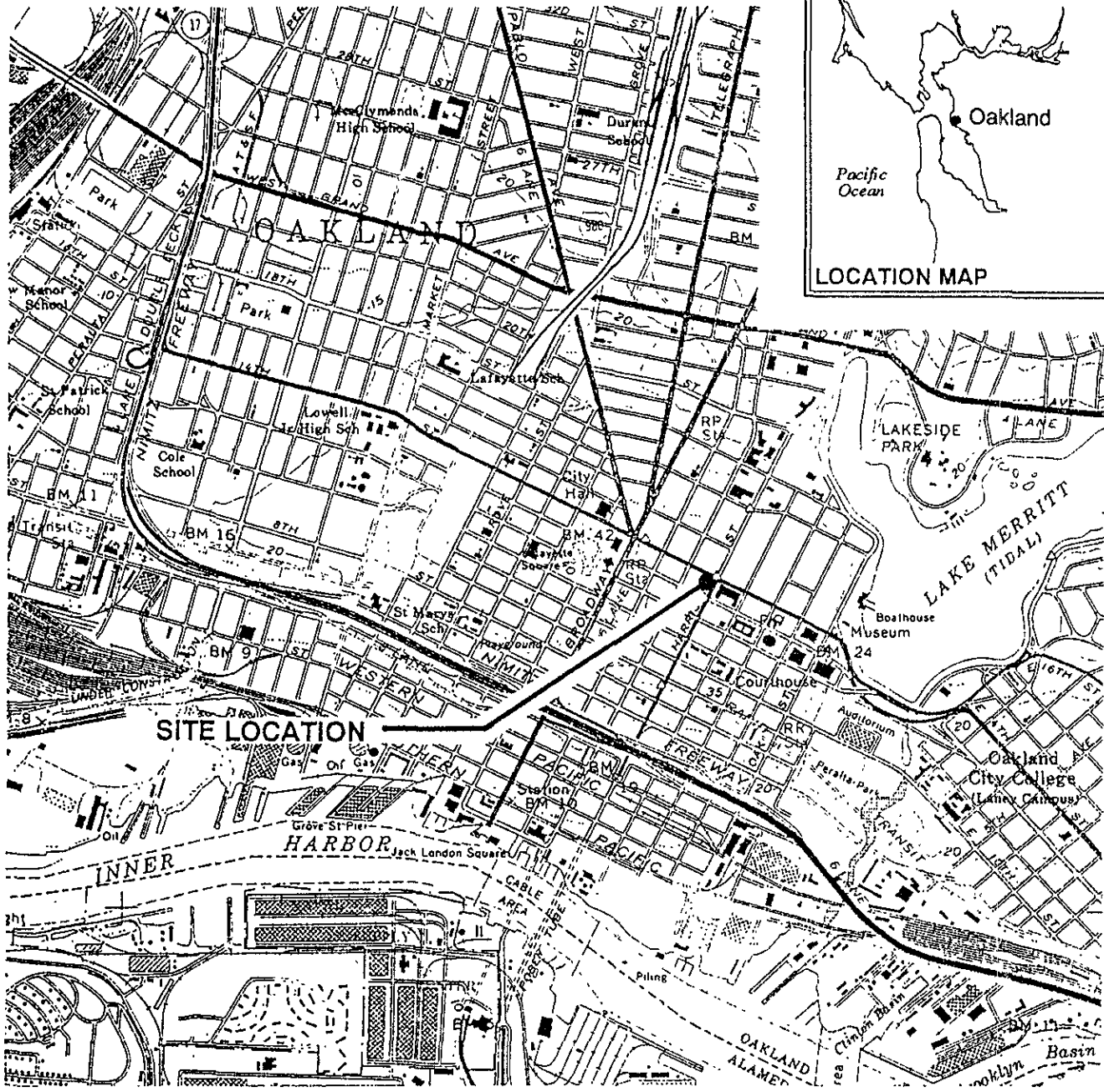
CMP/mlg

Plate 1. Vicinity Map
Plate 2. Site Plan

Attachments: G-R Historic Monitoring Data

QC Review:_____

ILLUSTRATIONS



Base Map: USGS Topographic Map

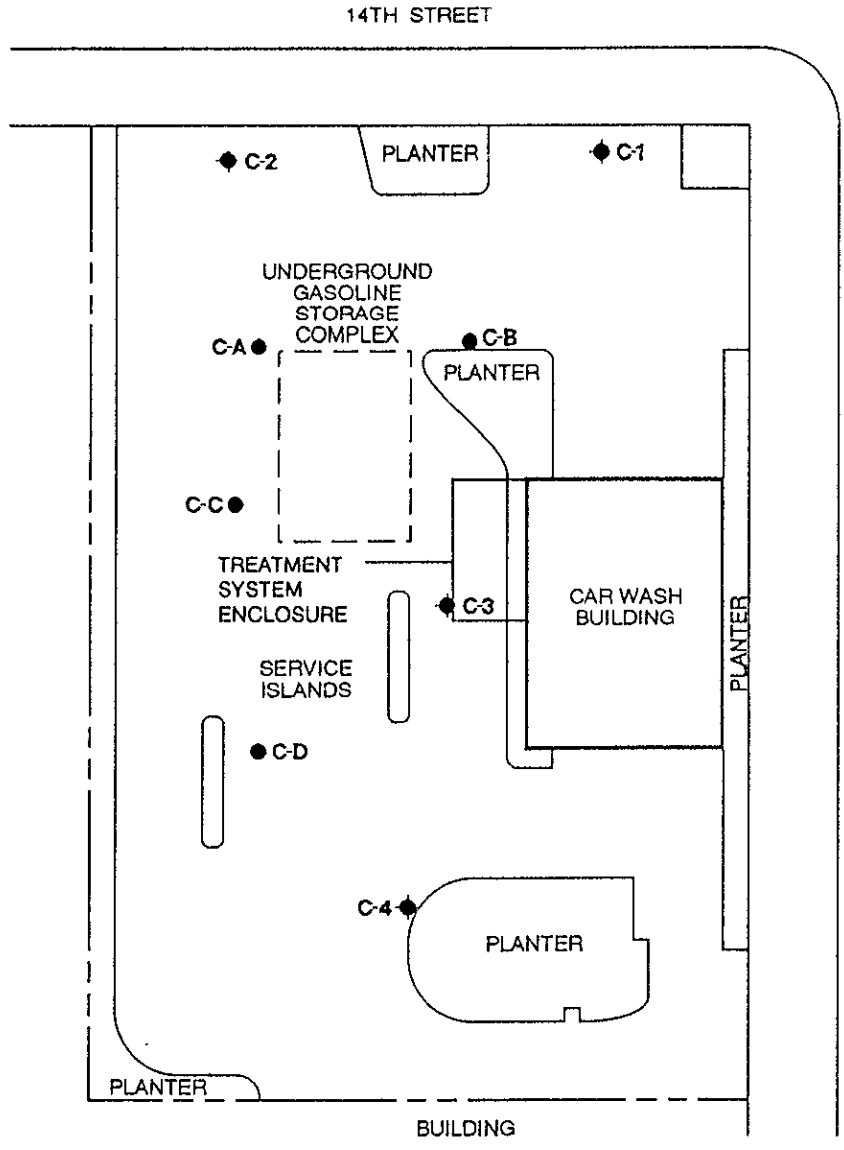
Approximate Scale : 1" = 2000'

GeoStrategies Inc.

Vicinity Map
Chevron Service Station #4816
301 14th Street
Oakland, California

PLATE
1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7270		5/90		



EXPLANATION

- C-1 — Ground-water monitoring well location
- C-A — Soil boring location

N

0 30 60

Scale in Feet

GeoStrategies Inc.

Site Plan
Chevron Service Station #4816
301 14th Street
Oakland, California

PLATE
2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7270	CEG 12/92	8/90		

ATTACHMENTS

CHEVRON USA 4816 OAKLAND - 301 14TH/HARRISON JOB 5270

DATE	WELL	DTH	DTW	HT	BAILED	PPM	LEL	NORM	DTB	EMP	C.ELEV
12-Jun-90	C1		22.05	0.00						JZ	
13-Jun-90	C1		21.97	0.00						JZ	
14-Jun-90	C1		22.03	0.00						SM	
18-Jun-90	C1		22.02	0.00						TL	
20-Jun-90	C1		21.93	0.00						TL	
22-Jun-90	C1		22.11	0.00						TL	
25-Jun-90	C1		21.96	0.00						RA	
27-Jun-90	C1		21.94	0.00						RA	
29-Jun-90	C1		22.08	0.00						RA	
02-Jul-90	C1		21.98	0.00						SM	
06-Jul-90	C1		21.94	0.00						SM	
09-Jul-90	C1		21.94	0.00						TL	
11-Jul-90	C1		21.94	0.00						TL	
13-Jul-90	C1		21.94	0.00						TL	
16-Jul-90	C1		21.90	0.00						RA	
18-Jul-90	C1		21.94	0.00						RA	
20-Jul-90	C1		21.89	0.00						RA	
23-Jul-90	C1		21.88	0.00						SM	
25-Jul-90	C1		21.92	0.00						SM	
27-Jul-90	C1		21.92	0.00						SM	
30-Jul-90	C1		21.91	0.00						TL	
03-Aug-90	C1		21.89	0.00						TL	
10-Aug-90	C1		21.90	0.00						RA	
17-Aug-90	C1		21.86	0.00						SM	
24-Aug-90	C1		21.85	0.00						SM	
31-Aug-90	C1		21.82	0.00						RA	
07-Sep-90	C1		21.85	0.00						SM	
14-Sep-90	C1		21.83	0.00						RA	
21-Sep-90	C1		21.81	0.00						SM	
28-Sep-90	C1		21.71	0.00						RA	
05-Oct-90	C1		21.64	0.00						SM	
12-Oct-90	C1		21.61	0.00						RA	
19-Oct-90	C1		21.54	0.00						SM	
26-Oct-90	C1		21.55	0.00						RA	
02-Nov-90	C1		21.71	0.00						SM	
12-Jun-90	C2		22.16	0.00							
13-Jun-90	C2		22.08	0.00							
14-Jun-90	C2		22.15	0.00							
18-Jun-90	C2		22.13	0.00							
20-Jun-90	C2		22.05	0.00							
22-Jun-90	C2		21.99	0.00							
25-Jun-90	C2		22.09	0.00							
27-Jun-90	C2		22.09	0.00							
29-Jun-90	C2		21.94	0.00							
02-Jul-90	C2		22.09	0.00							
06-Jul-90	C2		22.07	0.00							
09-Jul-90	C2		22.09	0.00							
11-Jul-90	C2		22.10	0.00							

gettler — ryan inc. (415) 783-7500
general and environmental contractors

DATE	WELL	DTH	DTW	HT	BAILED	PPM	LEL	NORM	DTB	EMP	C.ELEV
13-Jul-90	C2		22.04	0.00							
16-Jul-90	C2		22.00	0.00							
18-Jul-90	C2		22.06	0.00							
20-Jul-90	C2		22.00	0.00							
23-Jul-90	C2		22.04	0.00							
25-Jul-90	C2		22.03	0.00							
27-Jul-90	C2		22.06	0.00							
30-Jul-90	C2		22.04	0.00							
03-Aug-90	C2		22.05	0.00							
10-Aug-90	C2	22.01	(1.00)	0.00							
17-Aug-90	C2		21.99	0.00							
24-Aug-90	C2		21.98	0.00							
31-Aug-90	C2		21.93	0.00							
07-Sep-90	C2		21.94	0.00							
14-Sep-90	C2		21.93	0.00							
21-Sep-90	C2		21.91	0.00							
28-Sep-90	C2		21.83	0.00							
05-Oct-90	C2		21.77	0.00							
12-Oct-90	C2		21.80	0.00							
19-Oct-90	C2		21.77	0.00							
26-Oct-90	C2		21.76	0.00							
02-Nov-90	C2		21.82	0.00							
12-Jun-90	C3	21.75	24.75	3.00+							
13-Jun-90	C3	21.75	24.75	3.00+							
14-Jun-90	C3	21.65	24.40	2.75	4.0						
18-Jun-90	C3	21.64	24.24	2.60	2.0						
20-Jun-90	C3	21.59	24.28	2.69	2.5						
22-Jun-90	C3	21.64	24.32	2.68	2.5						
25-Jun-90	C3	21.63	24.16	2.53	4.0						
27-Jun-90	C3	21.61	24.26	2.65	4.0						
29-Jun-90	C3	21.60	24.12	2.52	4.0						
02-Jul-90	C3	21.60	24.18	2.58	5.0						
06-Jul-90	C3	21.57	24.20	2.63	5.0						
09-Jul-90	C3	21.59	24.24	2.65	2.5						
11-Jul-90	C3	21.57	24.26	2.69	2.5						
13-Jul-90	C3	21.57	24.20	2.63	2.5						
16-Jul-90	C3	21.58	24.15	2.57	4.0						
18-Jul-90	C3	21.58	23.99	2.41	4.0						
20-Jul-90	C3	21.55	24.00	2.45	4.0						
23-Jul-90	C3	21.52	24.07	2.55	5.0						
25-Jul-90	C3	21.54	24.20	2.66	5.0						
27-Jul-90	C3	21.56	24.19	2.63	3.5						
30-Jul-90	C3	21.54	24.14	2.60	2.5						
03-Aug-90	C3	21.52	24.18	2.66	2.5						
10-Aug-90	C3	21.55	24.22	2.67	4.0						
17-Aug-90	C3	21.50	24.10	2.60	5.0						
24-Aug-90	C3	21.49	24.30	2.81	5.0						
31-Aug-90	C3	21.45	24.10	2.65	4.0						

DATE	WELL	DTH	DTW	HT	BAILED	PPM	LEL	NORM	DTB	EMP	C.ELEV
07-Sep-90	C3	21.46	24.07	2.61	5.0						
14-Sep-90	C3	21.48	24.10	2.62	5.0						
21-Sep-90	C3	21.44	24.08	2.64	5.0						
28-Sep-90	C3	21.39	23.98	2.59	5.0						
05-Oct-90	C3	21.37	23.88	2.51	5.0						
12-Oct-90	C3	21.38	23.95	2.57	4.0						
19-Oct-90	C3	21.37	23.81	2.44	4.0						
26-Oct-90	C3	21.36	23.84	2.48	0.0						
02-Nov-90	C3	21.40	23.89	2.49	0.0						
12-Jun-90	C4		22.82	0.00							
13-Jun-90	C4		22.73	0.00							
14-Jun-90	C4		22.81	0.00							
18-Jun-90	C4		22.88	0.00							
20-Jun-90	C4		22.72	0.00							
22-Jun-90	C4		22.76	0.00							
25-Jun-90	C4		22.71	0.00							
27-Jun-90	C4		22.73	0.00							
29-Jun-90	C4		22.72	0.00							
02-Jul-90	C4		22.74	0.00							
06-Jul-90	C4		22.71	0.00							
09-Jul-90	C4		22.81	0.00							
11-Jul-90	C4		22.72	0.00							
13-Jul-90	C4		22.70	0.00							
16-Jul-90	C4		22.69	0.00							
18-Jul-90	C4		22.69	0.00							
20-Jul-90	C4		22.65	0.00							
23-Jul-90	C4		22.65	0.00							
25-Jul-90	C4		22.67	0.00							
27-Jul-90	C4		22.67	0.00							
30-Jul-90	C4		22.64	0.00							
03-Aug-90	C4		22.64	0.00							
10-Aug-90	C4		22.66	0.00							
17-Aug-90	C4		22.59	0.00							
24-Aug-90	C4		22.58	0.00							
31-Aug-90	C4		22.55	0.00							
07-Sep-90	C4		22.59	0.00							
14-Sep-90	C4		22.57	0.00							
21-Sep-90	C4		22.53	0.00							
28-Sep-90	C4		22.47	0.00							
05-Oct-90	C4		22.45	0.00							
12-Oct-90	C4		22.51	0.00							
19-Oct-90	C4		22.45	0.00							
26-Oct-90	C4		22.44	0.00							
02-Nov-90	C4		22.51	0.00							
19-Oct-90	C5		22.17	0.00							
26-Oct-90	C5		22.16	0.00							
02-Nov-90	C5		22.20	0.00							

DATE	WELL	DTH	DTW	HT	BAILED	PPM	LEL	NORM	DTB	EMP	C.ELEV
19-Oct-90	CR1	21.50	23.08	1.58	0.0						
26-Oct-90	CR1	21.29	23.68	2.39	0.0						
02-Nov-90	CR1	21.30	23.84	2.54	0.0						

gettler — ryan inc. (415) 783-7500
general and environmental contractors