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Manager, Operations
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Manager, Engineering

January 2, 1991

Mr. Rafat Shahid
Alameda County Environmental Health Department
80 Swan Way, Room 200
Oakland, CA 94621

RE: Chevron Service Station #9-0076
4625 Foothill Blvd.
Oakland, CA

Dear Mr. Shahid:

Enclosed we are forwarding the Subsurface Investigation Report dated December 18, 1990, conducted by our consultant Weiss Associates at the above referenced site. As indicated in the report, four (4) borings were advanced and completed into groundwater monitoring wells designated C-5 through C-8. Analytical results of the soil samples collected showed no detectable hydrocarbon contaminants with the exception of borings C-5 and C-6 which detected TPH-gasoline at concentrations of 54 ppm and 42 ppm, respectively. Groundwater analysis from these wells detected Benzene at concentrations ranging from ND to 2,100 ppb.

Groundwater samples were also collected from the existing groundwater monitoring wells at this time. Analytical results of the groundwater remain consistent with previous sampling results. Phase-separated hydrocarbons were observed in Monitoring Well C-2 at a measured thickness of .17 feet. Weiss Associates has been instructed to implement bailing of the phase-separated hydrocarbons from this well until a dedicated recovery system can be designed and installed.

Chevron will continue to monitor this site and report findings on a quarterly basis.

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
Chevron Property Management Specialist

WEISS ASSOCIATES
Geologic and Environmental Services
Fax: 415-547-5043 Phone: 415-547-5420
5500 Shellmound Street, Emeryville, CA 94608

SUBSURFACE INVESTIGATION

at

Chevron Service Station #9-0076
4265 Foothill Boulevard
Oakland, California

prepared for

Chevron USA
P.O. Box 5004
San Ramon, CA 94583-0804
WA Job #4-417-02

December 18, 1990

WEISS ASSOCIATES

SUBSURFACE INVESTIGATION

at

Chevron Service Station #9-0076
4265 Foothill Boulevard
Oakland, California

prepared by

Weiss Associates
5500 Shellmound Street
Emeryville, California

Robert E. Kitay
Staff Geologist

I certify that Weiss Associates' work on Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California, was conducted under my supervision. To the best of my knowledge, the data contained herein are true and correct and satisfy the specified scope of work for this project.

REGISTERED GEOLOGIST
JAMES W. CARMODY
No. 4872
STATE OF CALIFORNIA

James W. Carmody, R.G. — Date 12-18-90
Senior Project Hydrogeologist

CONTENTS

	Page
Summary	v
1. Introduction	1
1.1 Scope of Work	1
1.2 Site Setting and Local Geology	4
1.3 Background	4
1.4 Area Surveys	5
1.4.1 Business and Property Survey	6
1.4.2 Area Well Survey	6
2. Subsurface Investigation	10
2.1 Soil Borings and Sampling	10
2.2 Analytic Results for Soil	11
2.3 Monitoring Well Installation, Development and Sampling	11
2.4 Analytic Results for Ground Water	13
2.5 Ground Water Elevations	14
3. Conclusions	23
References Cited	24

TABLES

		Page
1.	Wells Within One-half Mile of Site	9
2.	Analytic Results for Soil	12
3.	Analytic Results for Ground Water	15
4.	Ground Water Elevation Data	17

FIGURES

1.	Site Location Map	2
2.	Monitoring well locations	3
3.	Businesses and Properties in the Site Vicinity	7
4.	Wells Within Approximately 1/2 Mile of the Site	8
5.	TPH-G Isoconcentration Contours	19
6.	Benzene Isoconcentration Contours	20
7.	Cross-Section Location and Ground Water Elevations	21
8.	Geologic Cross-Section	22

APPENDICES

A. Boring Logs

B. Analytic Reports and Chain-of-Custody Forms for Soil

C. Analytic Reports and Chain-of-Custody Forms for Water

SUMMARY

Between July 31 and November 1, 1990, Weiss Associates (WA) drilled four soil borings and installed ground water monitoring wells in each boring for a subsurface investigation at Chevron Service Station #9-0076, located at 4265 Foothill Boulevard, Oakland, California.

TPH-G was only detected in the soil at 11 ft depth in boring BH-E and 31 ft depth in boring BH-F at 54 ppm and 42 ppm, respectively. Low concentrations of BETX were detected in soil samples from borings BH-E, BH-F, and BH-G.

Ground water samples were collected from pre-existing monitoring wells C-1, C-3 and C-4, and newly installed wells C-5 through C-8. Monitoring well C-2 contained 0.17 ft of floating hydrocarbons on August 27, 1990, and was not sampled. Samples from wells C-4 and C-6 contained TPH-G and benzene in concentrations over 1,000 ppb. Samples from wells C-1 and C-7 contained TPH-G over 100 ppb and benzene over 10 ppb. No hydrocarbons were detected in water samples from monitoring wells C-3, C-5 and C-8.

Ground water appears to be in a shallower perched zone beneath the site, and in a deeper water-bearing zone off-site.

Although forty wells are located within about one-half mile of the site, none of the wells are used either for domestic or municipal water supplies.

A BP Service Station that appears to have hydrocarbon contamination in soil is located across Foothill Boulevard, directly upgradient of this site.

1. INTRODUCTION

This report presents the results of Weiss Associates' (WA) subsurface investigation at Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California (Figures 1 and 2). The objective of this investigation was to further assess the extent of hydrocarbons in soil and ground water downgradient of the site vicinity.

1.1 SCOPE OF WORK

The scope of work for this investigation was limited to:

1) Reviewing the site history,

2) Preparing a site safety plan,

3) Identifying wells within one-half mile of the site and preparing a map showing their locations relative to the site,

4) Obtaining all permits and drilling one on-site and two off-site soil borings. Collecting soil samples for subsurface hydrogeologic description and for possible chemical analysis,

5) Completing the borings as 2-inch-diameter ground water monitoring wells,

6) Developing and sampling the monitoring wells, and analyzing the samples for hydrocarbons,

7) Surveying top-of-casing elevations of the wells and estimating the ground water flow direction beneath the site,

8) Reviewing the analytic results for soil and ground water, and based on these results and the ground water flow direction, drill an additional boring and install an additional well, if necessary, to assess the horizontal and vertical extent of hydrocarbons in soil and ground water downgradient of the site.

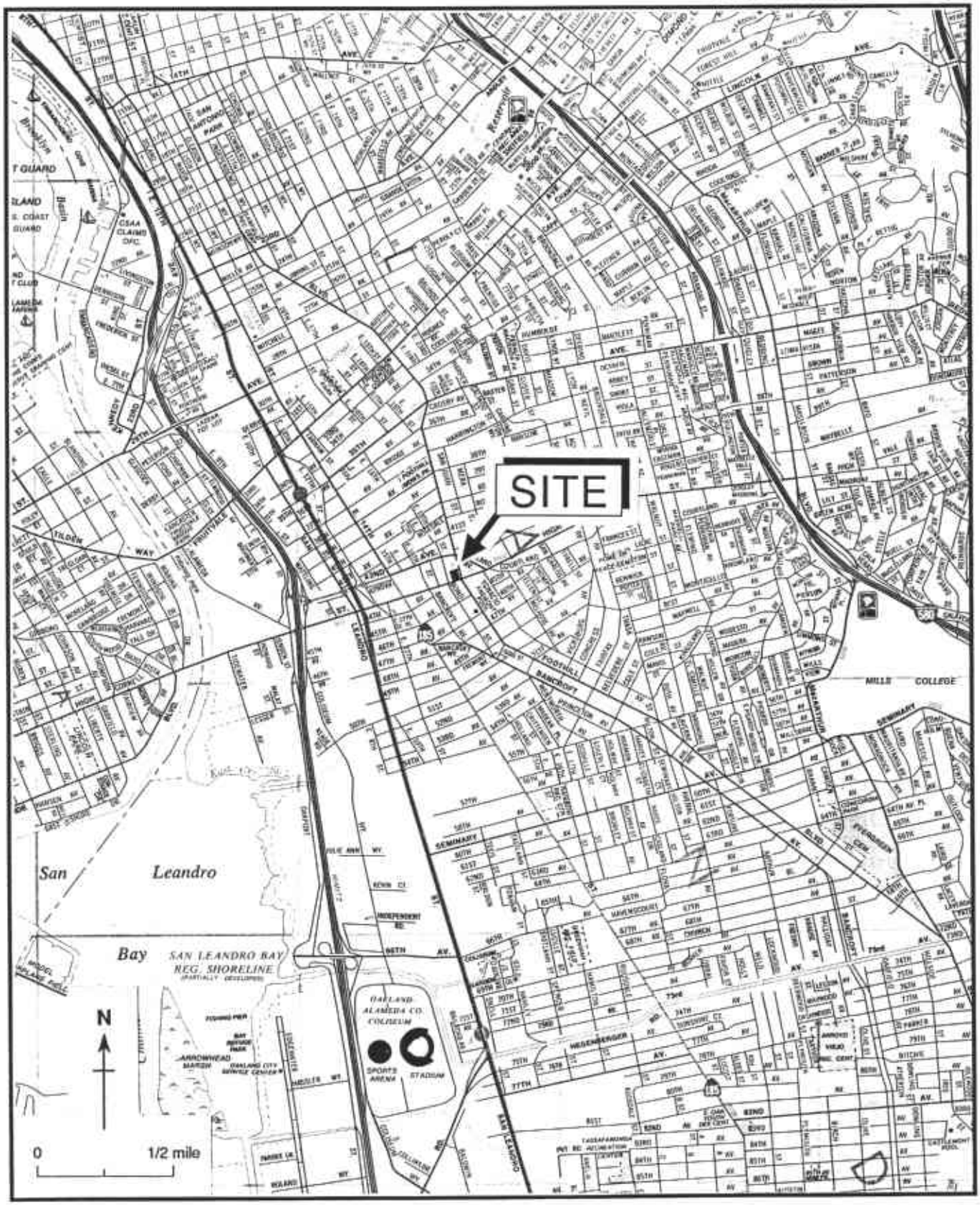

Figure 1. Site Location Map - Chevron Service Station #90076, Oakland, California

3/12/90

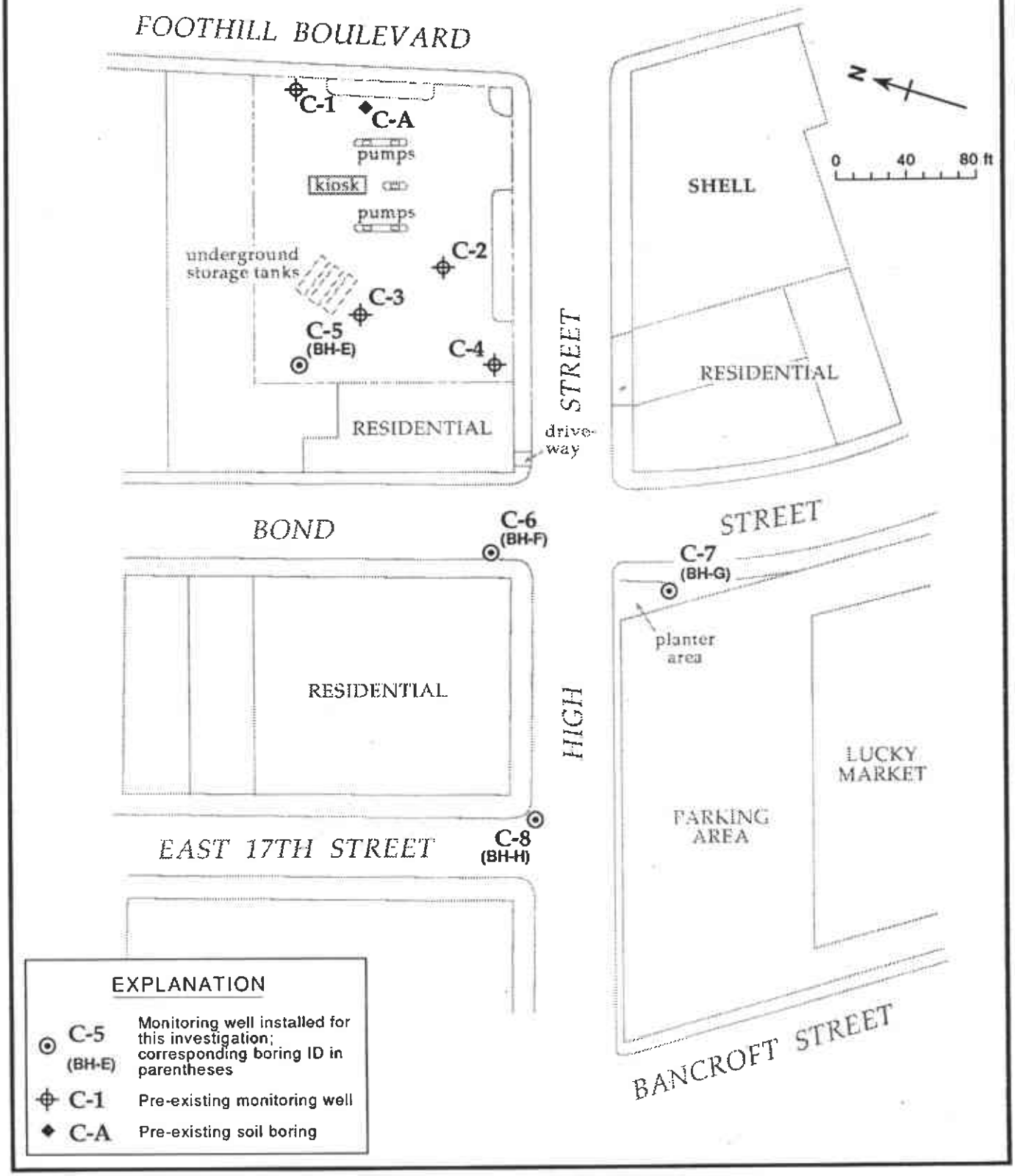

Figure 2. Monitoring Well Locations for Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

12/17/90

9) Performing an area reconnaissance to locate possible off-site hydrocarbon sources and preparing a map of the surrounding properties and businesses,

10) Arranging for disposal of drill cuttings and well purge water, and

11) Reporting the subsurface investigation results.

1.2 SITE SETTING AND LOCAL GEOLOGY

The site is located at approximately 35 ft above mean sea level in a mixed residential and commercial area on the northwest corner of Foothill Boulevard and High Street in Oakland, California. The local topography slopes gently to the southwest. The nearest surface water is the Brooklyn Basin Tidal Canal, a channel connecting the Oakland inner harbor on the San Francisco Bay with the San Leandro Bay, about 0.75 miles southwest of the site.

The regional, right-lateral Hayward fault zone runs in a northwest-southeast direction along the base of the Oakland Hills about 1.5 miles northeast of the site. In the site vicinity, Quaternary alluvium overlies Jurassic/Cretaceous Franciscan Formation rocks (Jennings, 1961). The site is located in the East Bay Plain ground water basin. The main regional water-bearing unit is a thick Pleistocene alluvial deposit that extends beneath Oakland and most of the East Bay Plain area (ACFCWCD - Zone 7, 1988).

1.3 BACKGROUND

On May 21, 1987, three steel gasoline tanks and one fiberglass waste oil tank were removed from the site. Immediately following the tank removal, Blaine Tech Services (BTS) of San Jose, California, collected ten soil samples from directly beneath the former tanks and from stockpiled soil. Up to 21 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G) were detected in two of the six samples from beneath the gasoline tanks. Trace concentrations of benzene, toluene and xylenes were detected in three of the six samples. 63 ppm TPH as waste oil and 100 ppm total oil and grease were detected in one of two soil samples collected from beneath the waste oil tank. Soil samples from the stockpiled soil contained up to 870 ppm TPH-G, 17 ppm benzene, 32 ppm toluene and 29 ppm xylenes (BTS, 1987).

On June 4, 1987, three 10,000 gallon double-wall fiberglass gasoline tanks were installed in the same location as the removed tanks. The waste oil tank was not replaced and its excavation was backfilled and compacted (Huffman, 1987).

On July 8, 1987, a gasoline odor and small amount of water with a product sheen was detected in an 11-ft deep sign footing on the Foothill Boulevard side of the site. No water or petroleum odors were detected in any other site excavation (Huffman, 1987).

On August 13, 1987, Pacific Environmental Group, Inc. (PEG) of Santa Clara, California, drilled five exploratory soil borings and installed ground water monitoring wells in four of the borings. The remaining boring was backfilled with concrete. Three of five soil borings contained TPH-G between 500 and 3,600 ppm with the highest concentration detected in boring C-A, the backfilled boring. Hydrocarbons were detected in ground water from all sampled monitoring wells except for well C-2 which was not sampled because it contained over two feet of floating hydrocarbons. Dissolved gasoline concentrations ranged from 250 to 22,000 parts per billion (ppb) in the three sampled wells (PEG, 1987).

2 years later ?

On April 28, 1989, WA collected ground water samples from all four site wells. Monitoring well C-2 contained about 0.01 ft of floating hydrocarbons. TPH-G was detected in ground water from monitoring wells C-2 and C-4 at over 1,000 ppb. Benzene was detected in samples from all four wells in concentrations in excess of regulatory action levels (WA, 1989a).

On August 8, 1989, WA collected ground water samples from three of the four ground water monitoring wells. Monitoring well C-2 was not sampled because it contained about 0.1 inch of floating hydrocarbons. Ground water from monitoring well C-4 contained TPH-G at 8,000 ppb, and all wells sampled contained benzene at or above regulatory action levels (WA, 1989b).

1.4 AREA SURVEYS

WA conducted an area business and property survey, and located and identified water wells within one-half mile of the site. These activities are described below.

1.4.1 Business and Property Survey

The business and property survey consisted of field reconnaissance of neighboring properties and businesses for an indication of use, storage or release of hazardous materials (Figure 3).

A BP Oil service station is located across Foothill Boulevard about 60 ft directly upgradient of the Chevron station. During a site visit on September 20, 1990, WA Staff Geologist Robert E. Kitay observed Paradiso Construction Company of Oakland, California, excavating soil at the BP station after removal of their underground storage tanks. A strong hydrocarbon odor was noted during the digging. Mr. Jack Jones of Paradiso Construction said that the tanks, product lines, and pump islands were to be replaced and that Kaprealian Engineering, Inc., of Benicia, California, was conducting the environmental sampling (Jones, personal communication, 1990).

A Shell service station is located across High Street south-southeast and crossgradient of the Chevron service station. No ground water monitoring wells were observed at this site. A dry cleaner is located about 200 ft southeast and crossgradient of the site. No other potential hydrocarbon sources were located in the immediate area.

1.4.2 Area Well Survey

WA located and identified wells within one-half mile of the site by reviewing California Department of Water Resources (DWR) and Alameda County records. The well survey identified forty wells within approximately one-half mile of the site (Figure 4). Of these forty wells, two are cathodic protection wells, one is for irrigation, one is for industrial use and the remaining are monitoring wells (Table 1). There are no domestic or municipal water supply wells within one-half mile of the site.

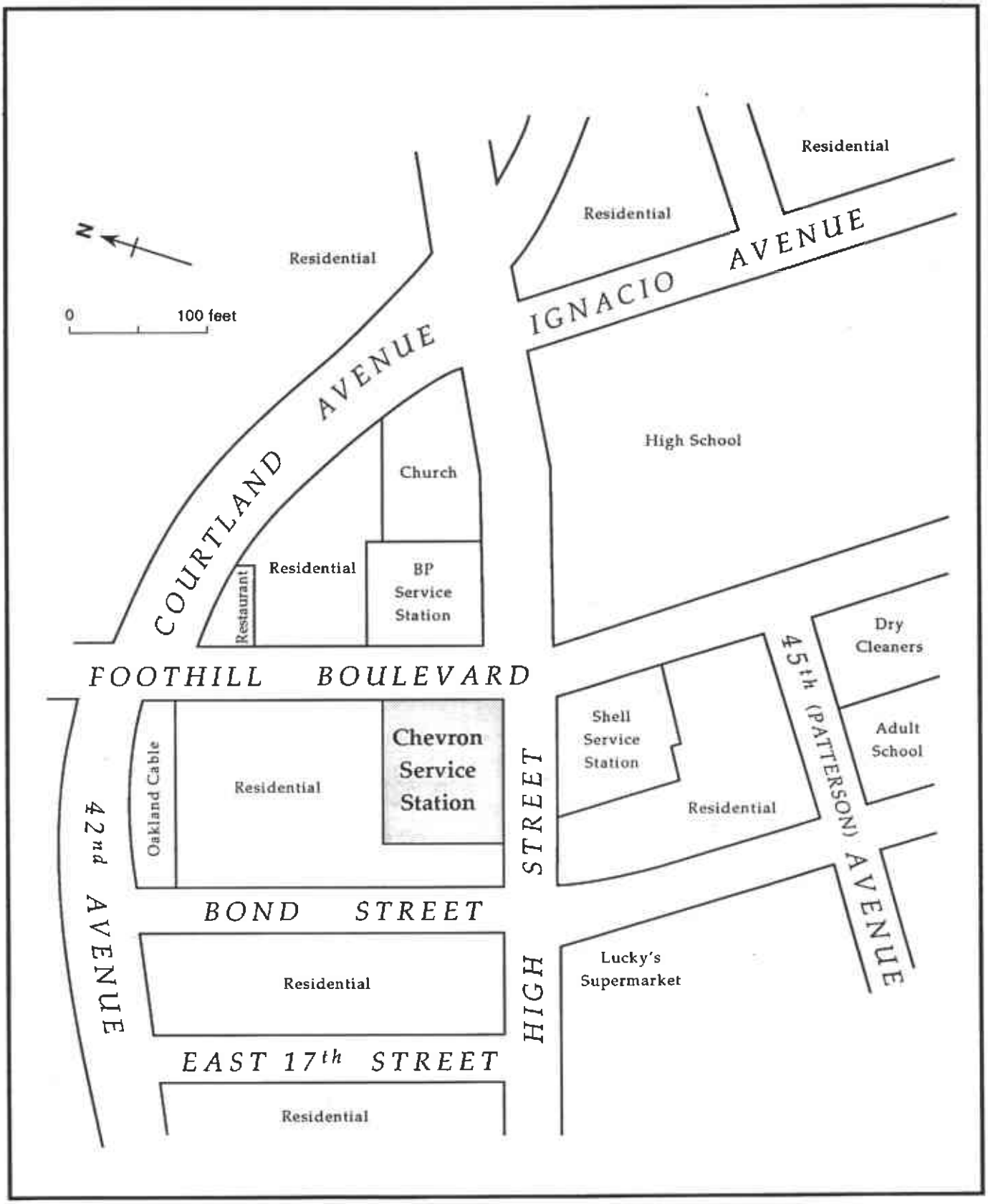

Figure 3. Businesses and Properties in the Vicinity of Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

12/10/90

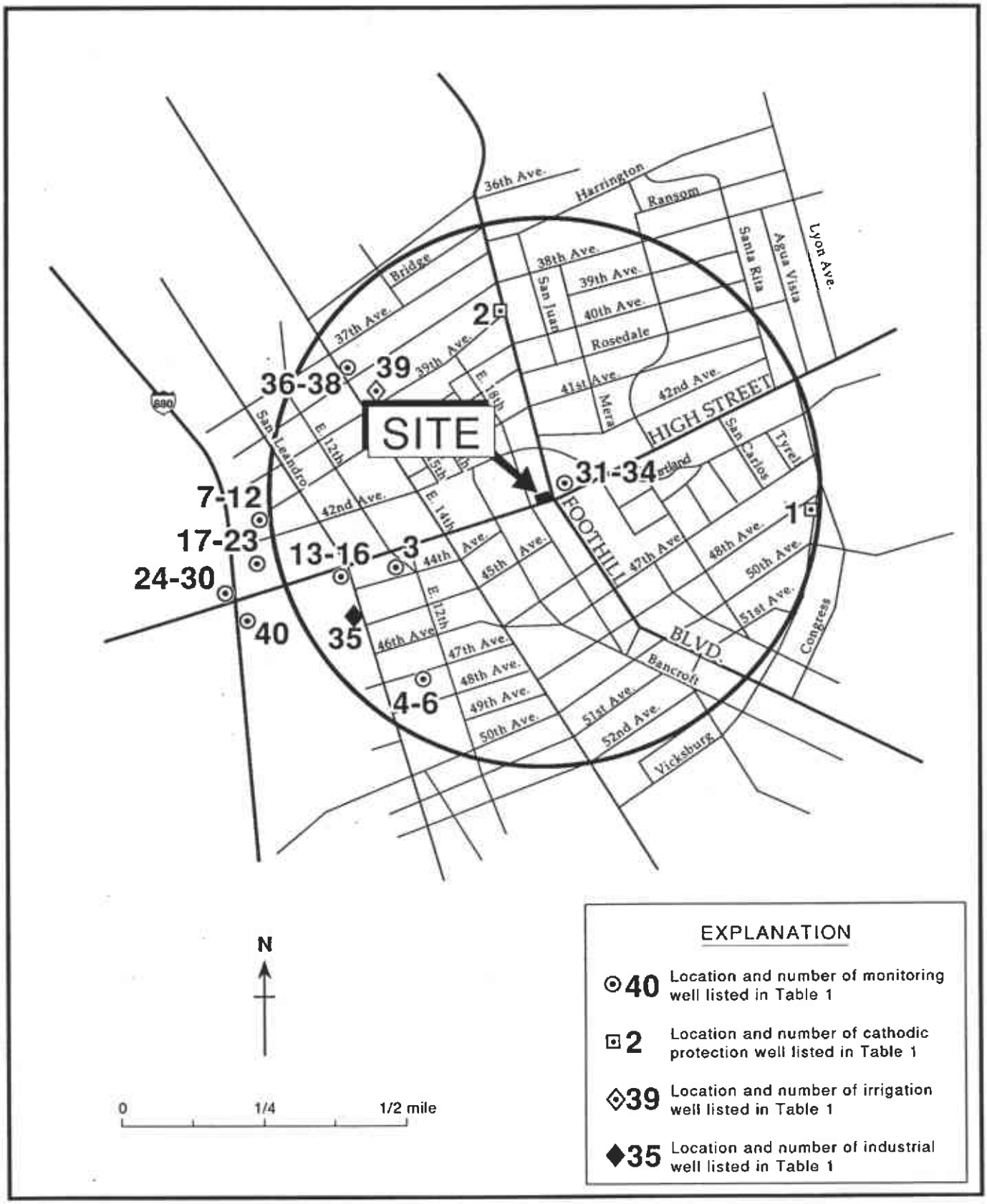

Figure 4. Wells Within Approximately 1/2 Mile of Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

12/5/90

TABLE 1. Wells Within a One-half Mile Radius of Chevron SS #90076, 4265 Foothill Blvd., Oakland, California

Well ID	Owner	Well Location	Date Drilled	Well Use
1	PG&E	S/S Vicksburg 38 ft east of 48th	1975	Cathodic Protection
2	PG&E	39th/Foothill Blvd.	Jan. 1975	Cathodic Protection
3	Craig Levitt	1033 44th Ave.	Oct. 1988	Monitoring
4-6	Peterson Properties	1066 47th Ave.	Mar. 1989	Monitoring
7-12	Clorox Co.	860-42nd Ave.	Aug. 1982 - Oct. 1983	Monitoring
13-16	Commercial Fueling Sys.	4301 San Leandro St.	Oct. 1986	Monitoring
17-23	Clorox Co.	850-42nd St.	Sept. 1986	Monitoring
24-30	Exxon Station #7-3006	720 High St.	Sept. 1987	Monitoring
31-34	B.P. Oil	4280 Foothill Blvd.	April 1989	Monitoring
35	Nat'l Lead Co.	4801 San Leandro St.	1923	Industrial
36-38	Shell Oil Co.	3750 E. 14th Avenue	1990	Monitoring
39	Trust for Public Land	1601 39th Avenue	1977	Irrigation
40	Robert Hekeboll	45th/Coliseum/High St.	1989	Monitoring

2. SUBSURFACE INVESTIGATION

On July 31 and August 1, 1990, Soils Exploration Services, Inc. of Vacaville, California drilled soil borings BH-E, BH-F and BH-G and installed ground water monitoring wells in the borings using a CME-55 hollow-stem auger drill rig. WA Staff Geologist Robert E. Kitay directed the drilling and well installation, working under the supervision of James W. Carmody, Registered Geologist. On November 1, 1990, after reviewing soil and ground water analytic results, boring BH-H was drilled and another monitoring well was installed to further assess the extent of hydrocarbons in ground water downgradient of the site vicinity.

2.1 SOIL BORINGS AND SAMPLING

Soil samples were collected in each boring at least every 5 ft to characterize the subsurface sediments and for possible chemical analysis. Samples were collected with a washed split-barrel sampler lined with steam-cleaned, 2-inch diameter brass tubes. After removal from the sampler, the tubes were immediately trimmed, capped with Teflon tape and plastic end caps, hermetically sealed with duct tape, labeled and refrigerated for delivery under chain-of-custody to GTEL Environmental Laboratory (GTEL) of Concord, California. Boring logs are presented in Appendix A and chain-of-custody forms for the soil samples are included in Appendix B.

Sediments encountered during drilling generally consisted of sand or gravel to about 8 ft, clays and silts to about 38 ft, and sand and gravel to the maximum depth explored of about 59 ft. Ground water was generally encountered between 33 and 45 ft below ground surface.

Soil cuttings from the borings were contained in Department of Transportation (DOT) approved 55-gallon drums and stored on-site pending analytic results. The soil was then transported by Crosby and Overton, Inc. of Oakland, California to the West Contra Costa Sanitary Landfill in Richmond, California for disposal as Class III waste.

2.2 ANALYTIC RESULTS FOR SOIL

Soil samples were surveyed in the field with a portable photoionization detector (PID) to qualitatively determine the presence or absence of volatile hydrocarbons. The PID measures hydrocarbon vapor concentrations in parts per million by volume (ppmv). It is used for qualitative rather than quantitative assessment because the relationship between measurement by the PID and measurement by the laboratory analytical tests is not well defined, and because field measurement procedures are not as rigorous as those in the laboratory. PID readings are shown on the boring logs presented in Appendix A.

Based on field observations and PID measurements, sixteen soil samples were analyzed by GTEL for:

- Total petrolcum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015, gas chromatography with flame ionization detection (GC/FID), and
- Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020, gas chromatography with photoionization (GC/PID).

Analytic results for soil are compiled in Table 2, and the laboratory analytic reports are presented in Appendix B. 54 ppm TPH-G and between 0.5 to 4.5 ppm BETX were detected in soil at 11 ft in boring BH-E. 42 ppm TPH-G was also detected in boring BH-F at 31 ft. Very low concentrations of BETX were detected in some of the remaining samples.

2.3 MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Ground water monitoring wells C-5, C-6, C-7 and C-8 were constructed in borings BH-E, BH-F, BH-G and BH-H, respectively. On-site monitoring well C-5 is screened from about 23 to 45 ft depth, monitoring wells C-6 and C-7 are screened from about 35 to 55 ft depth, and monitoring well MW-8 is screened from about 39 to 59 ft depth. All wells are screened to monitor the first water-bearing zone encountered. The wells are constructed with 2-inch diameter, 0.020-inch slotted, flush-threaded Schedule 40 PVC well screen and blank casing. Lonestar #3 Monterey sand occupies the annular space to about 2 ft above the well screen. A 1- to 2-ft thick hydrated bentonite layer separates the sand from the overlying 22- to 36-ft

TABLE 2. Results of Soil Analyses - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

Soil Boring (Well ID)	Sample Depth	Date Sampled	Analytical Lab	Analytic Method	Sat/ Unsat	TPH-G	B	E	T	X
						<----------parts per million (mg/kg)---------->				
BH-E	11.0	08/01/90	GTEL	8015/8020	Unsat	54	0.5	0.8	1.7	4.5
(C-5)	16.0	08/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	0.008	0.02
	21.0	08/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
	26.0	08/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
BH-F	16.0	08/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
(C-6)	21.0	08/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
	31.0	08/01/90	GTEL	8015/8020	Unsat	42	0.2	0.1	<0.005	0.3
	41.0	08/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
BH-G	11.0	07/31/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
(C-7)	16.0	07/31/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
	21.0	07/31/90	GTEL	8015/8020	Unsat	<10	0.02	<0.005	<0.005	<0.015
	31.0	07/31/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.015
	41.0	07/31/90	GTEL	8015/8020	Unsat	<10	0.007	<0.005	<0.005	<0.015
BH-H	5.5	11/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.005
(C-8)	40.0	11/01/90	GTEL	8015/8020	Unsat	<10	<0.005	<0.005	<0.005	<0.005
	45.0	11/01/90	GTEL	8015/8020	Sat	<10	<0.005	<0.005	<0.005	<0.005

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
E = Ethylbenzene
T = Toluene
X = Xylenes
Sat = Saturated soil sample
Unsat = Unsaturated soil sample
<n = Not detected at detection limit of n ppm

Analytical Laboratory:

GTEL = GTEL Environmental Laboratories, Concord, California

Analytic Methods:

8015 = Modified EPA Method 8015 for TPH-G
8020 = EPA Method 8020 for BETX

thick surface seal of Portland Type I, II cement mixed with 3 to 5% bentonite powder. The wellheads are secured with locking watertight well-plugs beneath at-grade traffic rated vaults. In addition to the watertight well-plug, monitoring well C-7 is protected with a locking stovepipe below its concrete vault.

On August 15 and 16, 1990, WA environmental technician Jim Martin developed monitoring wells C-5 through C-7. Monitoring well C-8 was developed by WA staff geologist Mike Cooke on November 8, 1990. All wells were developed using surge block agitation and airlift evacuation. Monitoring well C-5 yielded about 0.8 gallons per minute (gpm), monitoring well C-8 yielded about 0.6 gpm, and monitoring wells C-6 and C-7 yielded 0.1 gpm or less during development.

On August 27, 1990, WA environmental technician Jim Martin collected ground water samples from monitoring wells C-1 and C-3 through C-7. Monitoring well C-2 was not sampled because it contained 0.17 ft of floating hydrocarbons. Monitoring well C-8 was sampled on November 14, 1990, by WA staff geologist Tom Fojut. Prior to sampling, monitoring wells C-5, C-6, C-7 and C-8 were purged of at least three well casing volumes of ground water, approximately 5.5 to 8 gallons, with dedicated PVC bailers. Monitoring wells C-1, C-3 and C-4 were evacuated dry with dedicated PVC bailers and allowed to recover to 80% of their static water level prior to sampling. The samples were drawn from a sampling port on the bailers into 40 ml volatile organic analysis (VOA) vials, preserved with hydrochloric acid, labeled, refrigerated and transported under chain-of-custody to GTEL.

Well development and well sampling purge water and rinseate generated during steam-cleaning of the drilling equipment was contained in DOT approved 55-gallon drums and transported by Erickson, Inc. of Richmond, California to the Gibson Oil Refinery in Bakersfield, California for recycling.

2.4 ANALYTIC RESULTS FOR GROUND WATER

The ground water samples were analyzed by GTEL for:

- TPH-G by modified EPA Method 8015 (GC/FID), and

- BETX by EPA Method 602 (GC/PID).

Analytic reports and chain-of-custody forms are included in Appendix C. Ground water samples from monitoring wells C-4 and C-6 contained TPH-G and benzene in concentrations over 1,000 ppb. Samples from wells C-1 and C-7 contained concentrations of TPH-G over 100 ppb and benzene over 10 ppb. No hydrocarbons were detected in the water samples from monitoring wells C-3, C-5 and C-8. TPH-G and benzene isoconcentration contours in ground water are shown in Figures 5 and 6, respectively.

2.5 GROUND WATER ELEVATIONS

Top-of-casing elevations were surveyed referenced to mean sea level by John K. Koch of Berkeley, California (California Land Surveyor, License No. LS4811) on August 21, 1990, and November 30, 1990. The datum elevation for the surveys was the City of Oakland benchmark #1589 located at the northwest corner of the Foothill Boulevard and High Street intersection.

WA geologist Tom Fojut measured the water levels in all the wells on November 14, 1990. Ground water elevations are presented in Table 4, and are plotted on Figure 7. In the 100-ft between monitoring wells C-4 and C-6, ground water elevations differ by about 14 ft. Monitoring wells C-1 though C-5 on the Chevron property are screened in a shallower water-bearing zone that may be perched, and off-site monitoring wells C-6 through C-8 are screened in a deeper water-bearing zone. Because ground water may occur in two different water-bearing zones, a geologic section (Figure 8) was substituted for a ground water elevation contour map. However, ground water in both zones appears to flow southward with a 0.033 ft/ft gradient in the perched zone and a 0.0069 ft/ft gradient in the deeper zone.

TABLE 3. Analytic Results for Ground Water, Chevron Service Station #9-0076, 4265 Foothill Blvd, Oakland, California

Sample ID	Sample Date	Analytic Method	Analytical Lab	TPH-G	B	E	T	X
				<----------parts per billion---------->				
C-1	04/28/89	8015/8020	SAL	940	30	11	1.3	13
	08/08/89	8015/8020	SAL	820	45	13	2	13
	08/27/90	8015/8020	GTEL	440	15	6	1	13
C-2	04/28/89*	8015/8020	SAL	120,000	30,000	3,000	22,000	17,000
	08/08/89*	---	---	---	---	---	---	---
	08/27/90*	---	---	---	---	---	---	---
C-3	04/28/89	8015/8020	SAL	<500	1.7	<0.5	<0.5	<0.5
	08/08/89	8015/8020	SAL	<500	1	<0.5	<0.5	<0.5
	08/27/90	8015/8020	GTEL	<50	<0.3	<0.3	<0.3	<0.6
C-4	04/28/89	8015/8020	SAL	20,000	6,300	230	550	1,500
	08/08/89	8015/8020	SAL	8,000	7,500	88	340	1,000
	08/27/90	8015/8020	GTEL	26,000	10,000	410	280	1,400
C-5	08/27/90	8015/8020	GTEL	<50	<0.3	<0.3	<0.3	<0.6
C-6	08/27/90	8015/8020	GTEL	7,200	2,100	41	6	300
C-7	08/27/90	8015/8020	GTEL	110	26	4	0.8	6
C-8	11/14/90	8015/8020	GTEL	<50	<0.3	<0.3	<0.3	<0.6
Bailer Blank	08/08/89	8015/8020	SAL	<500	<0.5	<0.5	<0.5	<0.5
	08/27/90	8015/8020	GTEL	<50	<0.3	<0.3	<0.3	<0.6
Travel Blank	04/28/89	8015/8020	SAL	<500	<0.5	<0.5	<0.5	<0.5
	08/08/89	8015/8020	SAL	<500	<0.5	<0.5	<0.5	<0.5
	08/27/90	8015/8020	GTEL	<50	<0.3	<0.3	<0.3	<0.6
	11/14/90	8015/8020	GTEL	<50	<0.3	<0.3	<0.3	<0.6
DHS MCLs	---	---	---	NE	1	620	100[a]	1,750

-- Table 3 continues on next page --

TABLE 3. Analytic Results for Ground Water, Chevron Service Station #9-0076, 4265 Foothill Blvd, Oakland, California (continued)

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
E = Ethylbenzene
T = Toluene
X = Xylenes
* = Floating hydrocarbons in well
DHS MCLs = Department of Health Services maximum contaminant levels for drinking water
NE = Not established
[a] = DHS recommended action level for drinking water

Analytical Laboratory:

SAL = Superior Analytical Laboratory, Inc., San Francisco, California
GTEL = GTEL Environmental Laboratories, Inc., Concord, California

Analytic Method:

8015 = Modified EPA Method 8015, TPH-G
8020 = EPA Method 8020, BETX

TABLE 4. Ground Water Elevation Data - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

Well ID	Date	Top-of-casing Elevation (ft above msl)	Depth to Water (ft)	Floating Hydrocarbon Thickness	Ground Water Elevation (ft above msl)
C-1	04/28/89[a]	35.42[b]	20.05		15.37
	08/08/89[a]		24.07		11.35
	12/21/89		22.81		12.61
	08/27/90		22.12		13.30
	11/04/90		25.56		9.86
C-2	04/28/89[a]	35.18[b]	26.44		8.74
	08/08/89[a]		29.90	0.01	5.29[c]
	12/21/89		29.32		5.86
	08/27/90		29.55	0.17	5.77[c]
	11/04/90		30.47		4.71
C-3	04/28/89[a]	35.28[b]	28.00		7.28
	08/08/89[a]		30.00		5.28
	12/21/89		30.53		4.75
	08/27/90		29.68		5.62
	11/04/90	35.30[d]	30.36		4.94
C-4	01/12/89[a]	33.45[b]	29.49		3.96
	04/12/89[a]		27.44		6.01
	08/08/89[a]		29.55		3.90
	12/21/89		30.02		3.43
	08/27/90	33.48[d]	29.02		4.46
	11/04/90		29.81		3.67
C-5	08/27/90	35.50	29.83		5.67
	11/14/90		30.56		4.94
C-6	08/27/90	32.40	44.11		-11.71
	11/14/90		44.03		-11.63
C-7	08/27/90	32.17	44.23		-12.06
	11/14/90		44.11		-11.94
C-8	11/14/90	30.68	43.29		-12.61

-- Table 4 continues on next page --

TABLE 4. Ground Water Elevation Data - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

[a] = Ground water elevation measured against project datum, not actual top-of-casing elevation.
[b] = Top-of-casing elevation surveyed 1/03/90.
[c] = Ground water elevation adjusted for floating hydrocarbons in the well by the relation: Ground water elevation = Top-of-casing elevation - Depth to water + .8 (product thickness).
[d] = Top-of-casing elevation resurveyed 08/21/90.

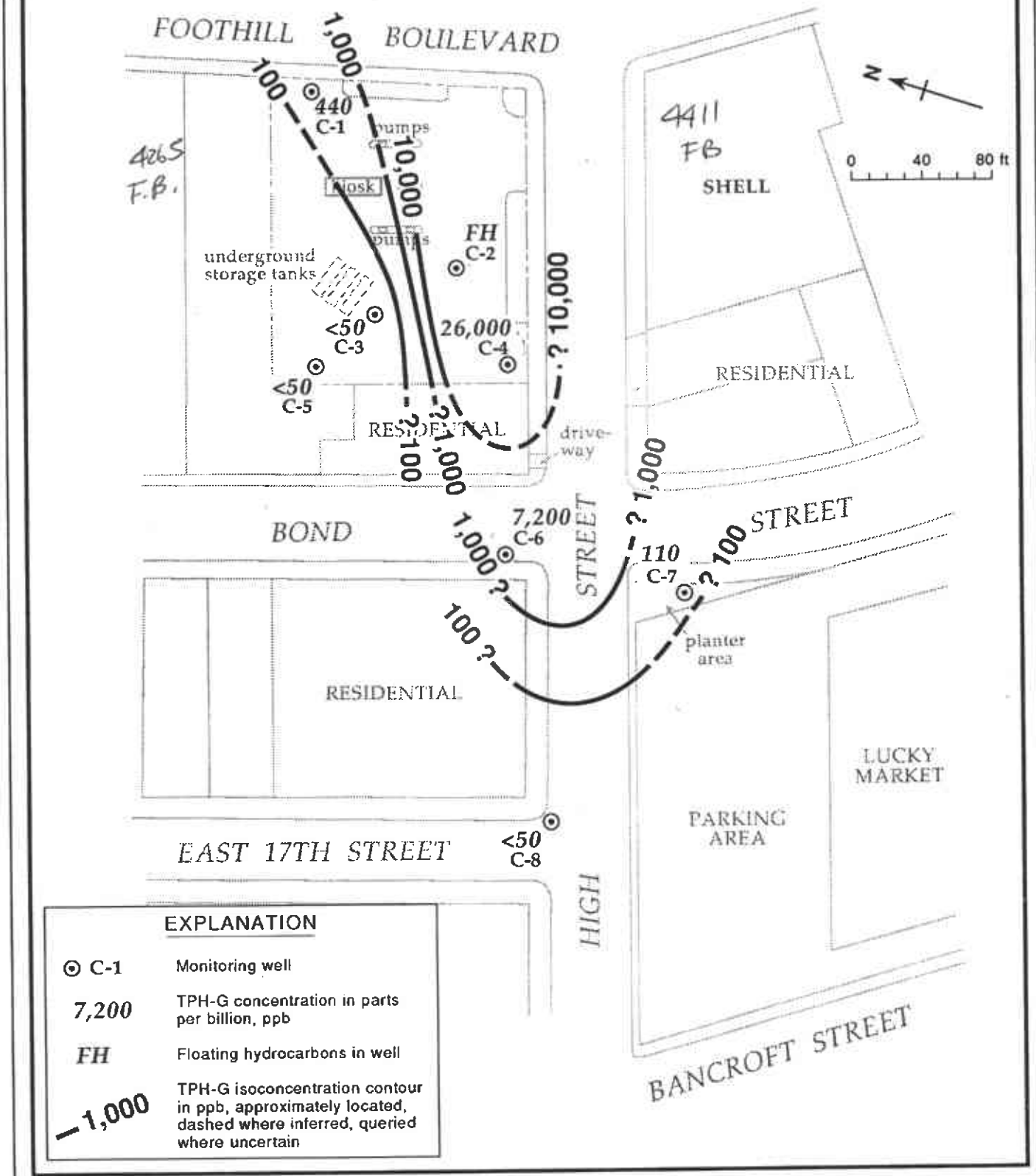

Figure 5. TPH-G Isoconcentration Contours - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

12/10/90

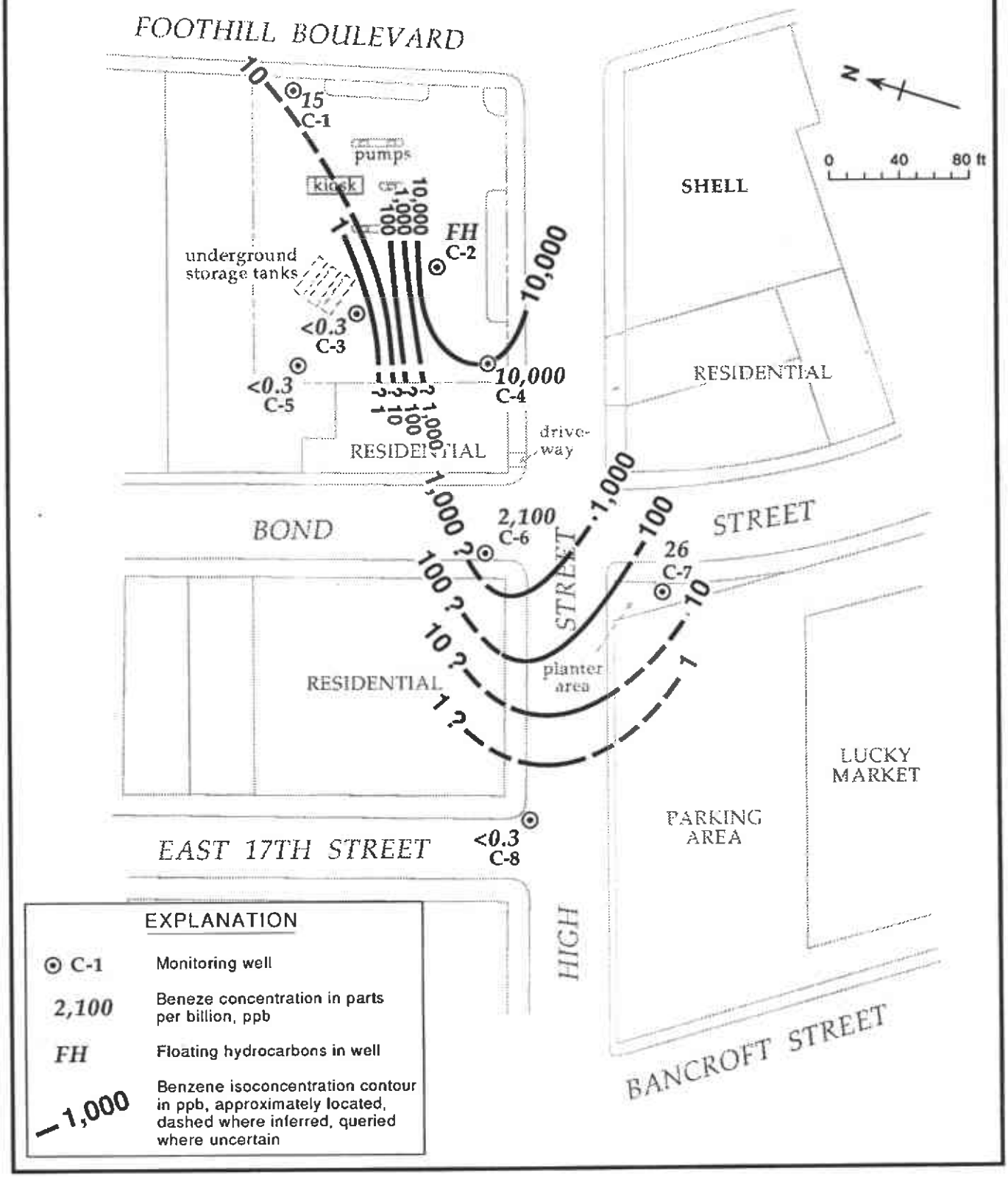

Figure 6. Benzene Isoconcentration Contours - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

12/10/90

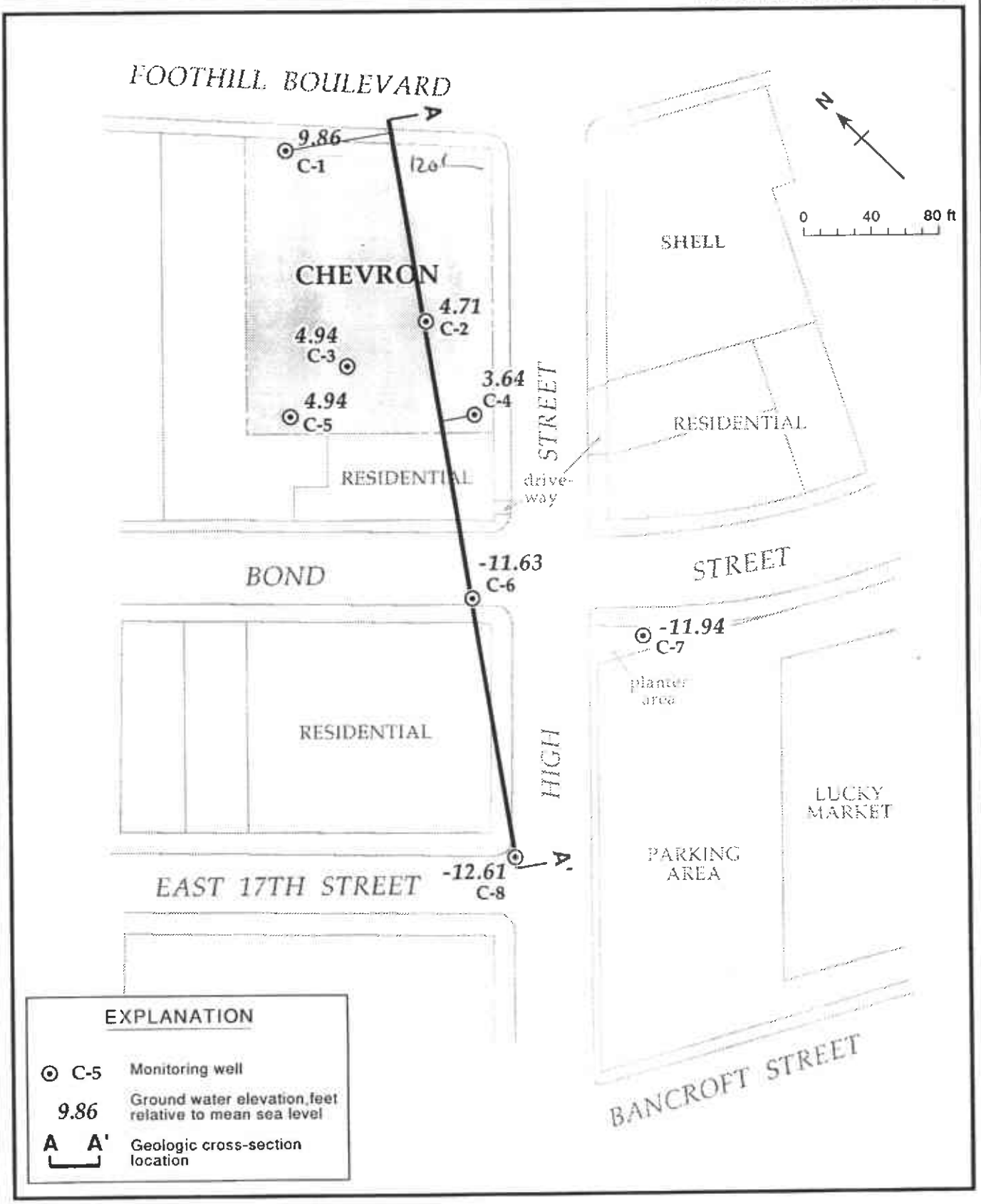

Figure 7. Geologic Cross-Section Location and Ground Water Elevations - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

12/11/90

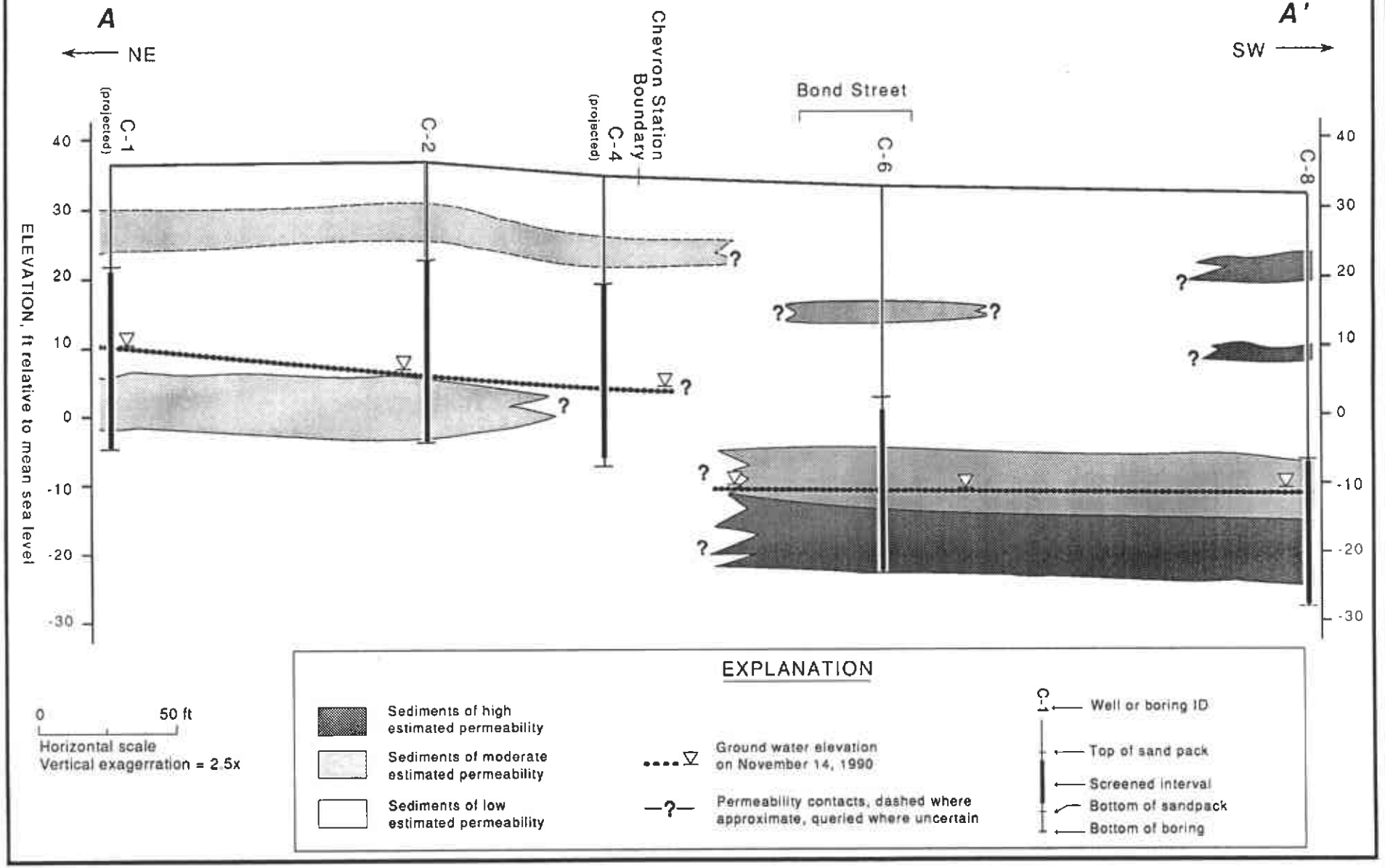

Figure 8. Geologic Cross-Section A-A' - Chevron Service Station #9-0076, 4265 Foothill Boulevard, Oakland, California

12/11/90

3. CONCLUSIONS

The results of the subsurface investigation include:

- TPH-G was detected at 54 ppm and 42 ppm in the soil samples from 11 ft depth in boring BH-E and 31 ft depth from boring BH-F, respectively. Only low concentrations of BETX were detected in other soil samples.

- Monitoring well C-2 contained 0.17 ft of floating hydrocarbons on August 27, 1990, and was not sampled.

- Ground water samples from monitoring wells C-4 and C-6 contained TPH-G and benzene in concentrations over 1,000 ppb. Samples from monitoring wells C-1 and C-7 contained over 100 ppb TPH-G and over 10 ppb benzene. No hydrocarbons were detected in the water samples from the monitoring wells C-3, C-5 and C-8.

- Ground water occurs in a shallower, possibly perched, zone beneath the site and in a deeper zone off-site.

- Although forty wells are located within approximately one-half mile of the site, none of these wells are used either for domestic or municipal water supplies.

- A BP service station that is located across Foothill Boulevard, directly upgradient of this site, appears to have hydrocarbon contamination in soil.

REFERENCES CITED

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Blaine Tech Services, Inc., 1987, Sampling Report, Chevron #90076, 4265 Foothill Blvd., Oakland, CA, consultants report prepared for Chevron USA, Inc., June 4, 1987, 3pp. and 2 attachments.

Huffman, Kay, 1987, letter from Kay Huffman, Chevron environmental engineer, to Ted Gerow, Alameda County Environmental Health Department, August 14, 1987, 2 pp.

Jennings, Charles W. and John L. Burnett, 1961, Geologic Map of California, San Francisco Sheet, Olaf P. Jenkins Edition, fifth printing 1980.

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Pacific Environmental Group, Inc., 1987, Soil and Groundwater Investigation, Chevron USA Station #0076, 4625 Foothill Boulevard at High Street, Oakland, California, consultant's report prepared for Gettler-Ryan, Inc., September 23, 1987, 12 pp. and 2 appendices.

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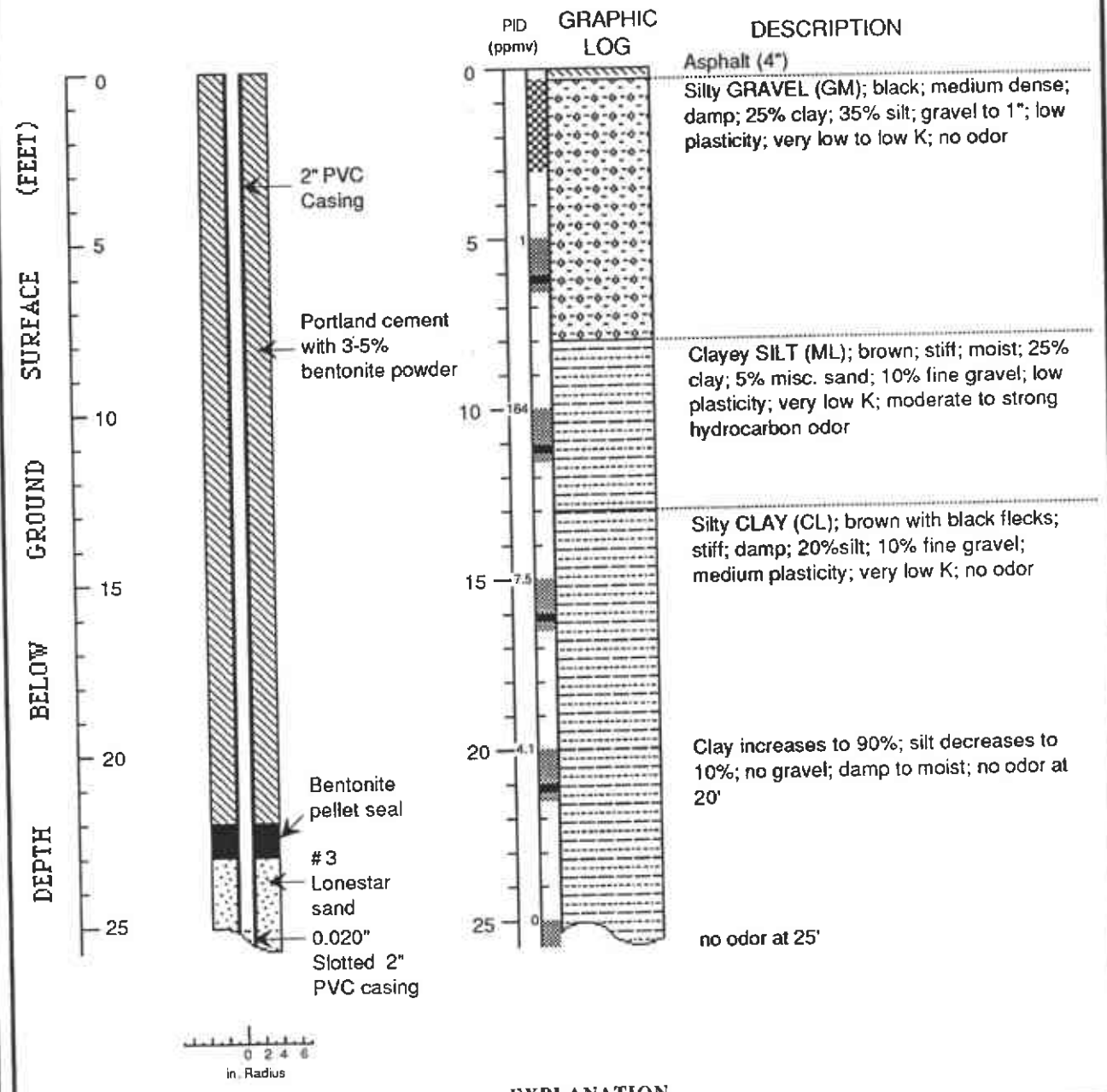
Weiss Associates, 1989b, Ground Water Sampling, Chevron Service Station #90076, 4625 Foothill Boulevard, Oakland, California, consultant's letter-report prepared for Chevron USA, September 13, 1989, 6 pp. and 3 attachments.

Well C-5 (BH-E)



EXPLANATION

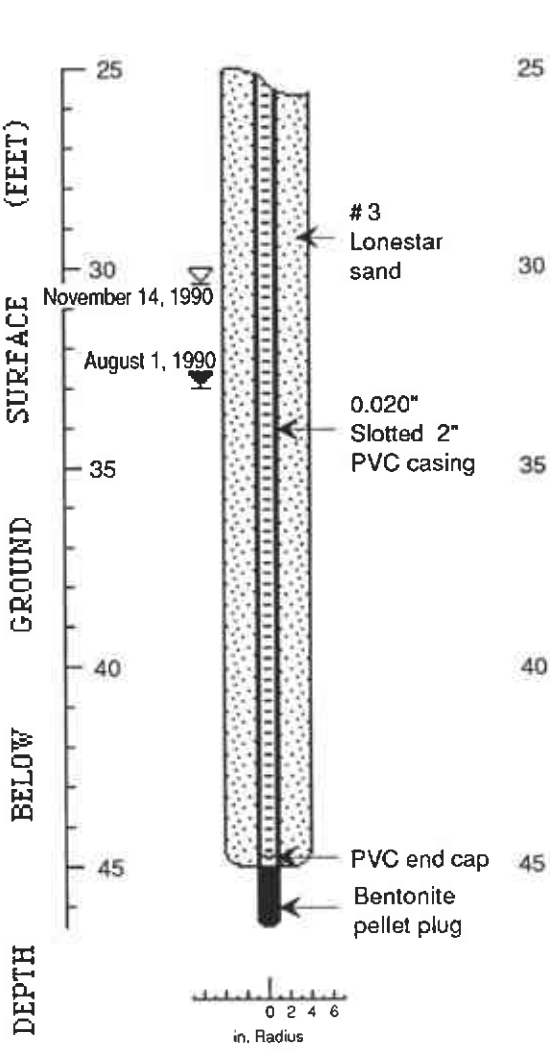
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

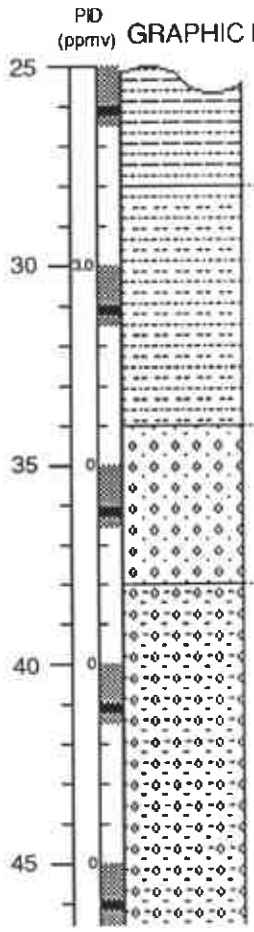
Logged by:	Robert E. Kitay
Supervisor:	James W. Carmody; RG 4872
Drilling Company:	Soils Exploration Services, Vacaville, CA
Driller:	Russ Ellis
Drilling Method:	Hollow stem auger
Date Drilled:	August 1, 1990
Well Head Completion:	2" locking well-plug with traffic-rated vaul
Type of sampler:	Split barrel (2" ID)
Ground surface elevation:	35.83 feet above mean sea level

Well Construction and Boring Log Details - Well C-5 (BH-E)

Chevron Service Station #9-0076
Oakland, California

WELL C-5 (BH-E) (cont.)





DESCRIPTION

Clayey SILT to SILT (ML); tan; very stiff; damp to moist; 0-10% clay; low plasticity; low to moderate K; no odor

Gravelly SAND (SW); dark brown to black; very dense; wet; 10% silt; 15% fine gravel; high K; no odor

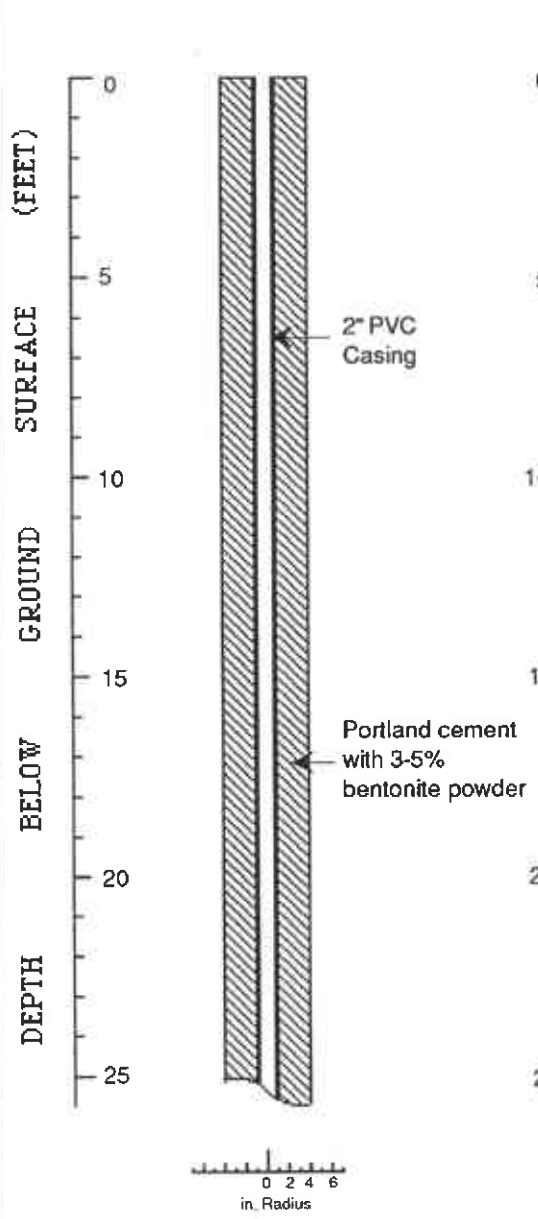
Gravelly SILT (ML); tan; very stiff; moist; 10% fine to medium sand; 40% gravel to 1" diameter; low plasticity; moderate K; no odor

6" SAND layer; no odor at 45'

Well Construction and Boring Log Details - Well C-5 (BH-E)

Chevron Service Station #9-0076
Oakland, California

Well C-6 (BH-F)



PID (ppmv)	GRAPHIC LOG	DESCRIPTION
0		Asphalt (5")
		Gravelly SILT (MH); tan; very stiff; damp; 30% fine gravel; 20% clay; 5% fine to medium sand; medium plasticity; very low to low K; no odor
0		
0		Silty CLAY (CL); brown; very stiff; damp; 20% silt; medium plasticity; very low K; no odor
0		Silty GRAVEL (GM); yellow; medium dense; damp; 30%silt; 10% clay; 5% fine gravel; angular gravel to 1" diameter; low K; no odor; gravel consists of white and dark brown chert
0		Silty CLAY (CL); brown; very stiff; damp; 20% silt; medium plasticity; very low K; no odor
44		Silty SAND (SW); green; medium dense; wet; 30% silt; 10% fine gravel; low to moderate K; moderate hydrocarbon odor
63		Clayey SILT (ML); green; very stiff; wet; 20% clay; 10% sand; 5% fine gravel; low plasticity; low K; moderate hydrocarbon odor Moist; moderate hydrocarbon odor at 25'

EXPLANATION

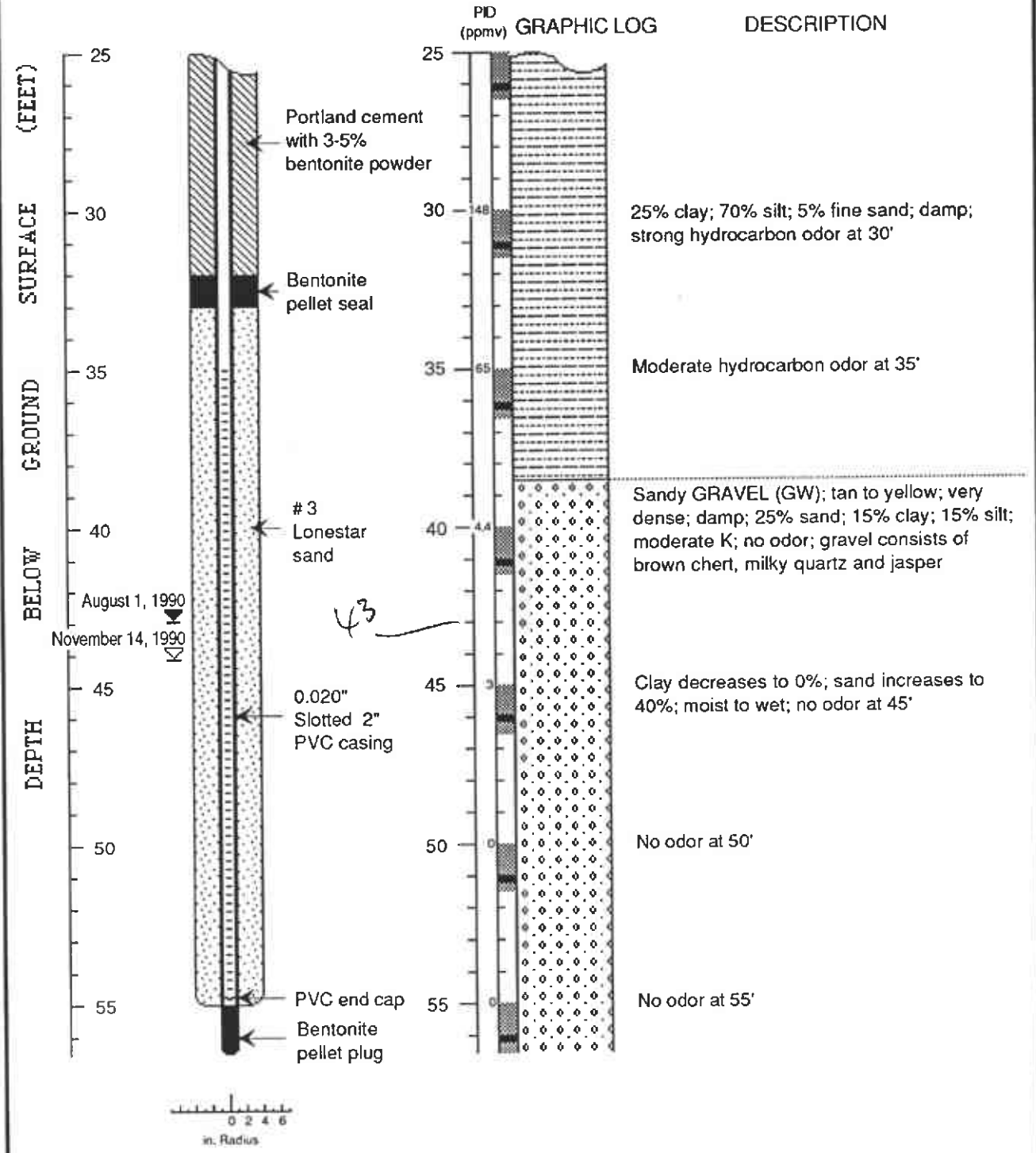
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged by:	Robert E. Kitay
Supervisor:	James W. Carmody; RG 4872
Drilling Company:	Soils Exploration Services, Vacaville, CA
Driller:	Russ Ellis
Drilling Method:	Hollow stem auger
Date Drilled:	August 1, 1990
Well Head Completion:	2" locking well-plug with traffic-ratted vault
Type of sampler:	Split barrel (2" ID)
Ground surface elevation:	

Well Construction and Boring Log Details - Well C-6 (BH-F)

Chevron Service Station #9-0076
Oakland, California

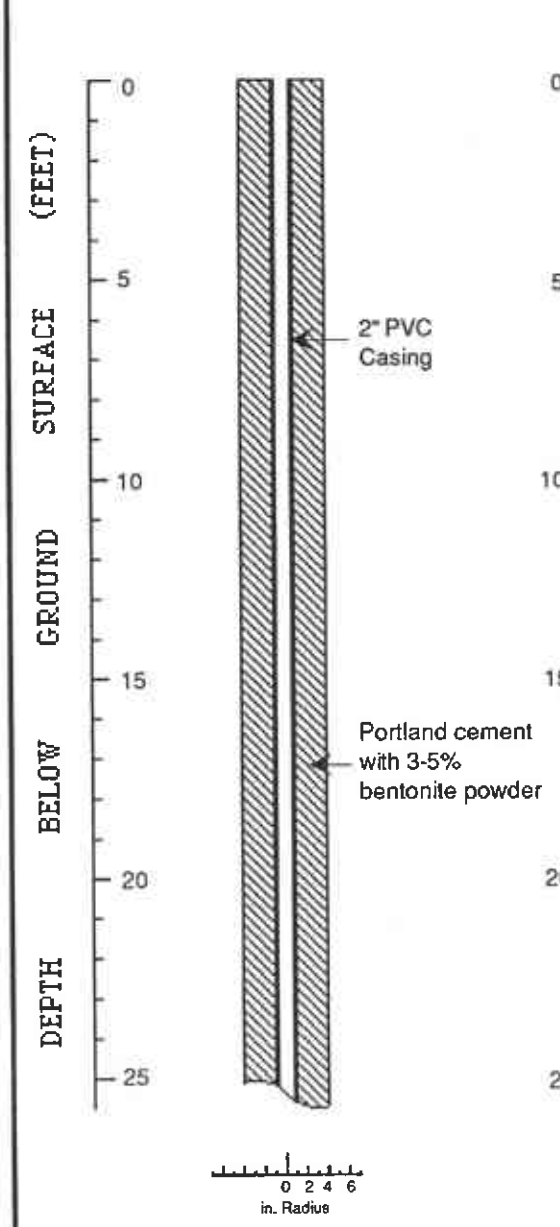
WELL C-6 (BH-F) (cont.)

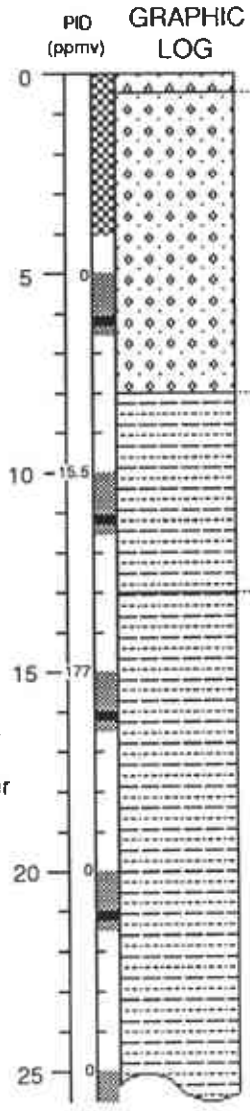


Well Construction and Boring Log Details - Well C-6 (BH-F)

Chevron Service Station #9-0076
Oakland, California

Well C-7 (BH-G)





DESCRIPTION
Topsoil (6")
Sandy GRAVEL (GW); light brown mottled red-brown; medium dense; damp; 20% sand; 10% silt; gravel to 1" diameter; very high K; no odor; FeO staining
Clayey SILT (MH); olive; very stiff; damp; 10% clay; 5-10% fine sand; medium plasticity; low K; no odor
Silty CLAY (CL); brown; very stiff; damp to moist; 35% silt; 5% fine sand; medium plasticity; very low K; strong hydrocarbon odor
Wet; no odor at 20'
Clay increases to 85%; silt decreases to 10%; medium to high plasticity; no odor at 25'

EXPLANATION

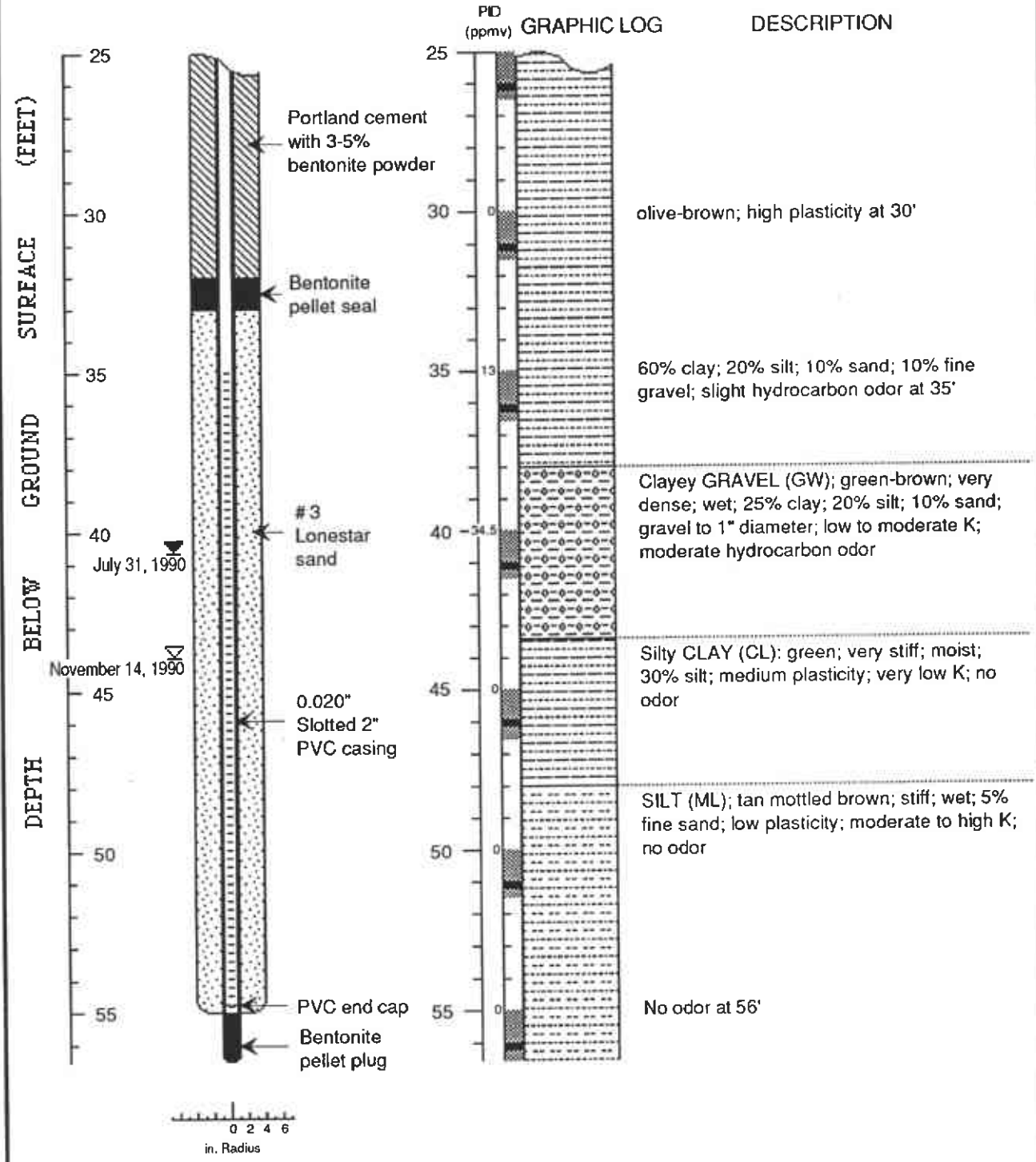
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged by:	Robert E. Kitay
Supervisor:	James W. Carmody; RG 4872
Drilling Company:	Soils Exploration Services, Vacaville, CA
Driller:	Russ Ellis
Drilling Method:	Hollow stem auger
Date Drilled:	July 31, 1990
Well Head Completion:	2" locking well-plug, stovepipe, traffic-ratted vault
Type of sampler:	Split barrel (2" ID)
Ground surface elevation:	32.65 feet above mean sea level

Well Construction and Boring Log Details - Well C-7 (BH-G)

Chevron Service Station #9-0076
Oakland, California

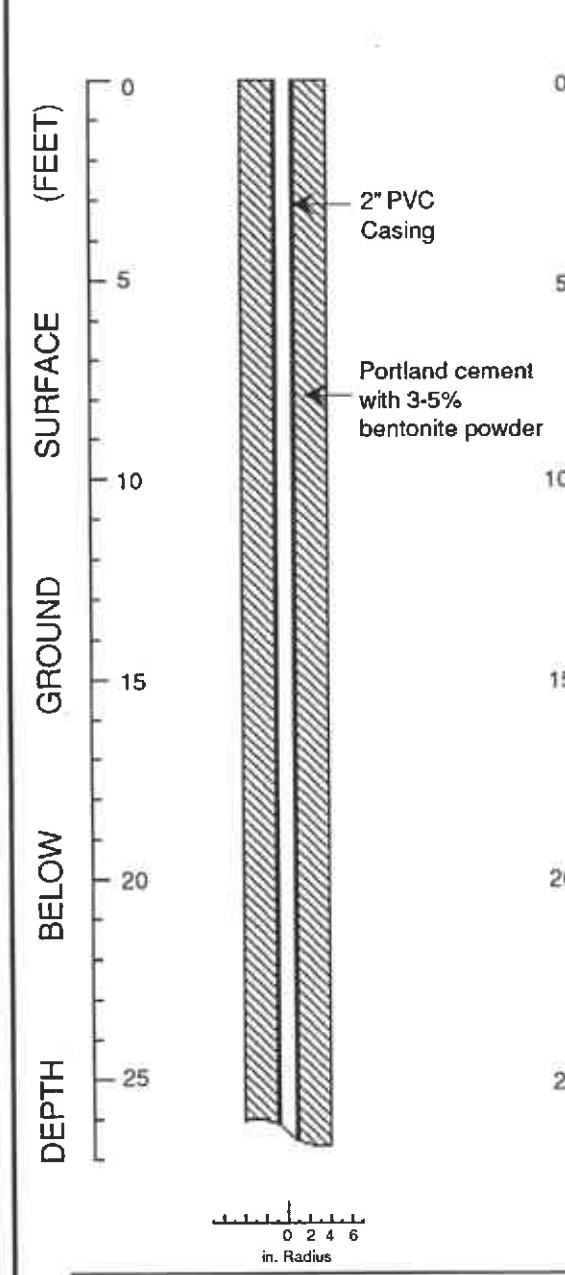
WELL C-7 (BH-G) (cont.)

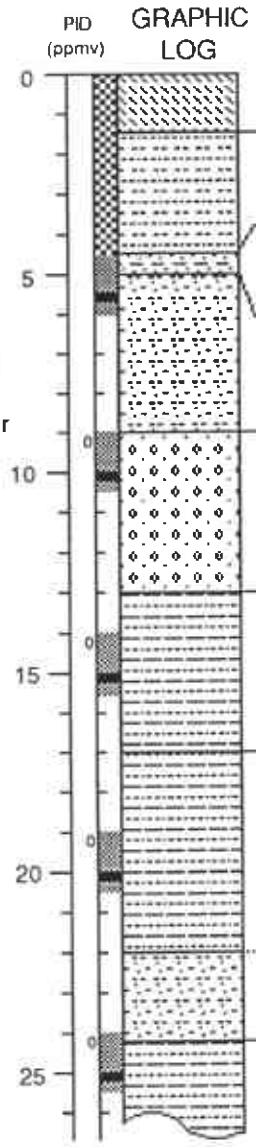


Well Construction and Boring Log Details - Well C-7 (BH-G)

Chevron Service Station #9-0076
Oakland, California

WELL C-8 (BH-H)





DESCRIPTION

Asphalt

SILT (ML); light tan-gray; medium stiff; dry to damp; 90 % silt; 5% fine to coarse sands; 5% clay; low K; no odor

Clayey SAND (SM/SC); yellow brown; stiff; dry to damp; 60% coarse sand; 20% clay; 20% silt; moderate K; no odor

Sandy SILT (MH); olive-tan to white; stiff; dry; 60% silt; 30% fine sand; 10% clay; medium plasticity; low K; no odor

Gravelly SAND (SW); brown-tan; medium dense; moist; 70% fine to coarse sand; 20% gravel to .5" diameter; 10% silt; high to very high K; no odor

Silty CLAY (CL); brown; stiff; damp; 50% clay; 25% silt; 20% fine sand; 5% gravel to .25" diameter; medium plasticity; very low K; no odor

Silty CLAY (CL); brown-tan; very stiff; damp; 75% clay; 20% silt; 5% very fine sand; medium plasticity; very low K; no odor

Silty SAND (SP); brown; loose; damp; 70% very fine sand; 30 % silt; moderate to high K; no odor

Silty CLAY (CL); gray-blue; stiff; damp; 50% clay; 45% silt; 5% very fine sand; medium plasticity; very low K; no odor

EXPLANATION

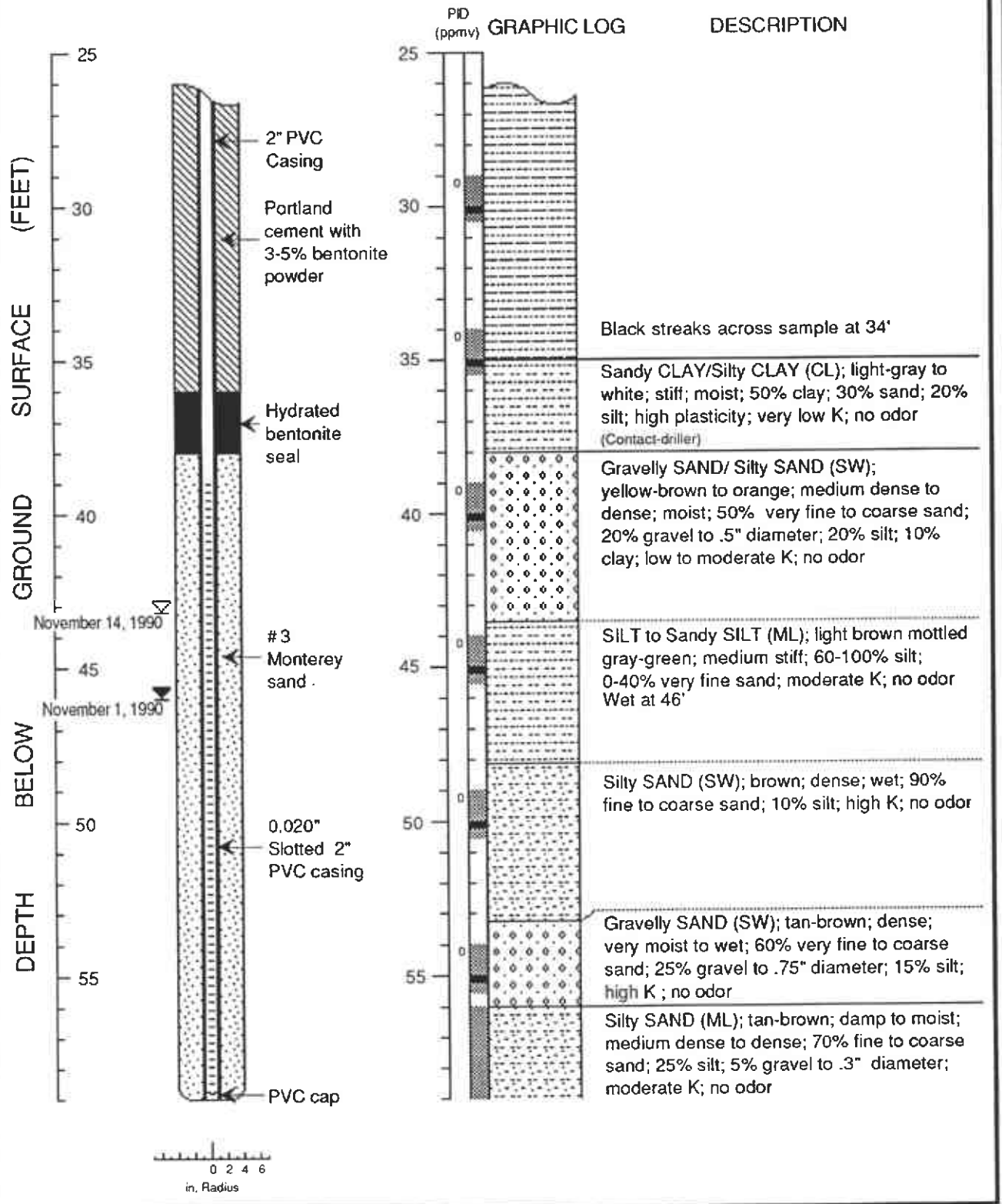
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged by: Robert Kitay / Mariette Shin
Supervisor: James W. Carmody; RG 4872
Drilling Company: Soils Exploration Services, Vacaville, CA
Driller: Rick Carr
Drilling Method: Hollow-stem auger
Date Drilled: November 1, 1990
Well Head Completion: 2" locking well-plug; traffic rated vault
Type of Sampler: Split barrel (2" ID)
Ground Surface Elevation: 31.17 feet above mean sea level

Boring Log and Well Construction Details - Well C-8 (BH-H)

Chevron Service Station #9-0076
Oakland, California

WELL C-8 (BH-H) (cont.)



Boring Log and Well Construction Details - Well C-8 (BH-H)

Chevron Service Station #9-0076
Oakland, California

APPENDIX B

ANALYTIC REPORTS AND CHAIN-OF-CUSTODY FORMS FOR SOIL

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008196, C008197, C008198, C008200
Report Issue Date: August 17, 1990

Jim Carmody
Weiss Associates
5500 Shellmound St.
Emeryville, CA 94608

Dear Mr. Carmody:

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories on 08/07/90.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to approved protocols.

If you have any questions concerning this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Emma P. Popek
Laboratory Director

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008196
Report Issue Date: August 15, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Soil
EPA Method 8020/8015[1]

GTEL Sample Number		01	02	03	04
Client Identification		BH-E-11.0	BH-E 16.0	BH-E 21.0	BH-E 26.0
Date Sampled		07/31/90 08/01/90	07/31/90 08/01/90	07/31/90 08/01/90	07/31/90 08/01/90
Date Extracted		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/09/90	08/10/90	08/09/90	08/09/90
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	0.5	<0.005	<0.005	<0.005
Toluene	0.005	1.7	0.008	<0.005	<0.005
Ethylbenzene	0.005	0.8	<0.005	<0.005	<0.005
Xylene (total)	0.015	4.5	0.02	<0.015	<0.015
TPH as Gasoline	10	54	<10	<10	<10

GTEL Sample Number		05	06	07	08
Client Identification		BH-F 16.0	BH-F 21.0	BH-F 31.0	BH-F 41.0
Date Sampled		07/31/90 08/01/90	07/31/90 08/01/90	07/31/90 08/01/90	07/31/90 08/01/90
Date Extracted		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/09/90	08/09/90	08/09/90	08/09/90
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	0.2	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	0.1	<0.005
Xylene (total)	0.015	<0.015	<0.015	0.3	<0.015
TPH as Gasoline	10	<10	<10	42	<10

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008196
Report Issue Date: August 15, 1990

Table 1 (continued)

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Soil
EPA Method 8020/8015[1]

GTEL Sample Number		09	10	11	12
Client Identification		BH-G 11.0	BH-G 16.0	BH-G 21.0	BH-G 31.0
Date Sampled		07/31/90 08/01/90	07/31/90 08/01/90	07/31/90 08/01/90	07/31/90 08/01/90
Date Extracted		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/09/90	08/09/90	08/09/90	08/09/90
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	0.02	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene (total)	0.015	<0.015	<0.015	<0.015	<0.015
TPH as Gasoline	10	<10	<10	<10	<10

GTEL Sample Number		13			
Client Identification		BH-G 41.0			
Date Sampled		07/31/90 08/01/90			
Date Extracted		08/09/90			
Date Analyzed		08/09/90			
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	0.007			
Toluene	0.005	<0.005			
Ethylbenzene	0.005	<0.005			
Xylene (total)	0.015	<0.015			
TPH as Gasoline	10	<10			

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

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

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent water blank and reagent methanol blank as shown in Tables 2a and 2b.

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) and Matrix Spike Duplicate (MSD) Accuracy and Precision

4.1 Percent recovery limits were met for 3 of 4 compounds in the MS and MSD as shown in Table 5.

4.2 Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the MS and MSD as shown in Table 5.

5.0 Sample Handling

5.1 Sample handling and holding time criteria were met for all samples.

5.2 There were no exceptional conditions requiring dilution of samples.

Table 2a

REAGENT WATER BLANK DATA

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

Date of Analysis: 08/09/90

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

< # = Not detected at the indicated detection limit.

Table 2b

REAGENT METHANOL BLANK DATA

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

Date of Analysis: 08/09/90
MeOH Lot No: AX675

Analyte	Concentration, mg/Kg
Benzene	<0.005
Toluene	<0.005
Ethylbenzene	<0.005
Xylene (total)	<0.015
Gasoline	<10

< # = Not detected at the indicated detection limit.

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

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

Date of Analysis: 08/08/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	52	104	85-115
Toluene	50	52	104	85-115
Ethylbenzene	50	54	108	85-115
Xylene (total)	150	166	111	85-115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

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

Analyte	Lot Number	Source
Benzene	LA18042	Supelco
Toluene	LA18042	Supelco
Ethylbenzene	LA18042	Supelco
Xylene (total)	LA18042	Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

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

Acceptability Limits[1]: 60 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Water Blank	200	215	108
MeOH Blank	200	207	104
01	200	151	75
02	200	141	71
03	200	184	92
04	200	189	95
05	200	182	91
06	200	181	90
07	200	164	82
08	200	178	89
09	200	165	83
10	200	155	77
11	200	148	74
12	200	141	71
13	200	138	69
MS	200	177	89
MSD	200	161	81

MS = Matrix Spike
MSD = Matrix Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008196
Report Issue Date: August 15, 1990

Table 5

MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) RECOVERY
AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

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

Date of Analysis: 08/09/90
Sample Used: C008196-04
Client ID: BH-E 26.0
Units: mg/Kg

Analyte	Sample Result	Concentration Added	MS Result	MS, % Recovery	MSD Result	MSD, % Recovery
Benzene	<0.005	2.86	1.69	59	1.37	48
Toluene	<0.005	2.86	1.79	63	1.42	50
Ethylbenzene	<0.005	2.86	1.86	65	1.49	52
Xylene (total)	<0.015	8.58	5.53	64	4.49	52

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	21	30	50 - 112
Toluene	23	30	50 - 108
Ethylbenzene	22	30	50 - 113
Xylene (total)	21	30	50 - 114

< # = Not Detected at the indicated detection limit
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008197
Report Issue Date: August 14, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Soil
EPA Method 8020/8015[1]

GTEL Sample Number		01	02	03	
Client Identification		COMP BHE	COMP BHF	COMP BHG	
Date Sampled		07/31-08/01/90	07/31-08/01/90	07/31-08/01/90	
Date Extracted		08/07/90	08/07/90	08/07/90	
Date Analyzed		08/08/90	08/08/90	08/08/90	
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	0.04	
Toluene	0.005	<0.005	<0.005	0.06	
Ethylbenzene	0.005	<0.005	<0.005	0.05	
Xylene (total)	0.015	<0.015	<0.015	0.32	
TPH as Gasoline	10	<10	<10	<10	

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

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

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent water blank and reagent methanol blank as shown in Tables 2a and 2b.

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) and Matrix Spike Duplicate (MSD) Accuracy and Precision

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

4.2 Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the MS and MSD as shown in Table 5.

5.0 Sample Handling

5.1 Sample handling and holding time criteria were met for all samples.

5.2 There were no exceptional conditions requiring dilution of samples.

Table 2a

REAGENT WATER BLANK DATA

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

Date of Analysis: 08/08/90

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

<# = Not detected at the indicated detection limit.

Table 2b

REAGENT METHANOL BLANK DATA

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

Date of Analysis: 08/08/90
MeOH Lot No: AX659

Analyte	Concentration, mg/Kg
Benzene	<0.005
Toluene	<0.005
Ethylbenzene	<0.005
Xylene (total)	<0.015
Gasoline	<10

<# = Not detected at the indicated detection limit.

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

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

Date of Analysis: 08/08/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	52	104	85-115
Toluene	50	52	104	85-115
Ethylbenzene	50	54	108	85-115
Xylene (total)	150	166	111	85-115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

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

Analyte	Lot Number	Source
Benzene	LA18042	Supelco
Toluene	LA18042	Supelco
Ethylbenzene	LA18042	Supelco
Xylene (total)	LA18042	Supelco

GTEL ENVIRONMENTAL LABORATORIES, INC.

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

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

Acceptability Limits[1]: 60 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Water Blank	200	234	117
MeOH Blank	200	108	104
01	200	210	105
02	200	205	103
03	200	202	101
MS	200	148	74
MSD	200	130	65

MS = Matrix Spike
MSD = Matrix Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008197
Report Issue Date: August 14, 1990

Table 5

MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) RECOVERY
AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

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

Date of Analysis: 08/08/90
Sample Used: C008197 Units: mg/Kg

Analyte	Sample Result	Concentration Added	MS Result	MS, % Recovery	MSD Result	MSD, % Recovery
Benzene	<0.005	2.86	2.28	80	2.36	83
Toluene	<0.005	2.86	2.31	81	2.40	84
Ethylbenzene	<0.005	2.86	2.34	82	2.42	85
Xylene (total)	<0.015	8.58	7.04	82	7.37	86

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	4	30	50 - 112
Toluene	4	30	50 - 108
Ethylbenzene	4	30	50 - 113
Xylene (total)	5	30	50 - 114

<# = Not Detected at the indicated detection limit
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008198
Report Issue Date: August 16, 1990

Table 1

ANALYTICAL RESULTS

Total Lead in Soil by ICP
EPA Method 6010[1]

Sample Identification		Date Sampled	Date Extracted	Date Analyzed	Concentration, mg/Kg [2]
GTEL No.	Client ID				
01	COMP BH-E 16/41	08/01/90	08/07/90	08/07/90	14
02	COMP BH-F 16/51	08/01/90	08/07/90	08/07/90	15
03	COMP BH-G 16/51	08/01/90	08/07/90	08/07/90	13

1 = Extraction by EPA Method 3050
2 = Method detection limit = 10 mg/Kg; analyte below this level would not be detected.

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

Total Lead in Soil by ICP
EPA Method 6010

1.0 Blanks

The method blank was below the detection limit as shown in Table 2.

2.0 Initial Instrument Calibration

The range of concentrations of the initial instrument calibration are shown in Table 3.

3.0 Calibration Verification Standards

3.1 The control limits were met for the initial calibration verification standard (ICVS) as shown in Table 4.

3.2 If applicable, the control limits were met for the continuing calibration verification standard (CCVS) as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

The control limits were met for 1 of 1 elements in the MS as shown in Table 5.

5.0 Sample Duplicate Precision

Relative percent difference criterion was met for the sample duplicate 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 no exceptional conditions requiring dilution of samples.

Table 2

METHOD BLANK DATA

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 08/07/90

Analyte	Concentration, mg/Kg
Total Lead	<10

<# = Not detected at the indicated detection limit.

Table 3

INITIAL CALIBRATION STANDARDS DATA

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 08/07/90

Standard Number	Concentration, mg/L
1	0
2	10

Table 4

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS RESULTS

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 08/07/90

Initial Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %
Total Lead	5.00	5.08	102	80 - 120
Continuing Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %
Total Lead	5.00	4.42	108	80 - 120

Table 4a

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS SOURCE

Total Lead in Soil by ICP
EPA Method 6010

Initial Calibration Verification Standard		
Analyte	Lot Number	Source
Total Lead	3-83-VS	Spex
Continuing Calibration Verification Standard		
Analyte	Lot Number	Source
Total Lead	1-88-Pb	Spex

GTEL ENVIRONMENTAL LABORATORIES, INC.

Table 5

MATRIX SPIKE (MS) RECOVERY REPORT

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 08/07/90 Client ID: COMP BH-E 16/41
Sample Spiked: C008198-01 Units: mg/Kg

Analyte	MS Result	Sample Result	Amount Recovered	Amount Added	MS, % Recovery	Acceptability Limits, %
Total Lead	455	14	441	500	88	80 - 120

<# = Not detected at the indicated detection limit.

Table 6

LABORATORY DUPLICATE SAMPLE RESULTS
AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 08/07/90 Client ID: COMP BH-E 16/41
Sample Used: C008198-01 Units: mg/Kg

Analyte	Sample Result	Duplicate Result	RPD, %	Maximum RPD, %
Total Lead	14	14	0	20

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008200
Report Issue Date: August 14, 1990

Table 1

ANALYTICAL RESULTS

Organic Lead in Soil by Flame AA
EPA Method 7420[1]

Sample Identification		Date Sampled	Date Extracted	Date Analyzed	Concentration, mg/Kg (2)
GTEL No.	Client ID				
01	COMP BH-E 16/41	07/31/90 08/01/90	08/07/90	08/07/90	<0.25
02	COMP BH-F 16/51	07/31/90 08/01/90	08/07/90	08/07/90	<0.25
03	COMP BH-G 16/51	07/31/90 08/01/90	08/07/90	08/07/90	<0.25

1 = Extraction by DHS method; LUFT Manual, 12/87 rev.: sample extracted with 50 mL Xylene/MIBK mixture, Aliquat 336.
2 = Method detection limit = 0.25 mg/Kg; analyte below this level would not be detected.

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

Organic Lead in Soil by Flame AA
EPA Method 7420

1.0 Blanks

The method blank was below the detection limit as shown in Table 2.

2.0 Initial Instrument Calibration

The range of concentrations of the initial instrument calibration are shown in Table 3.

3.0 Calibration Verification Standards

3.1 The control limits were met for the initial calibration verification standard (ICVS) as shown in Table 4.

3.2 The control limits were met for the continuing calibration verification standard (CCVS) as shown in Table 4.

4.0 Sample Duplicate Precision

Relative percent difference criterion was met for the sample duplicate as shown in Table 5.

5.0 Sample Handling

5.1 Sample handling and holding time criteria were met for all samples.

5.2 There were no exceptional conditions requiring dilution of samples.

Table 2

METHOD BLANK DATA

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 08/07/90

Analyte	Concentration, mg/Kg
Organic Lead	<0.25

< # = Not detected at the indicated detection limit.

Table 3

INITIAL CALIBRATION STANDARDS DATA

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 08/07/90

Standard Number	Concentration, mg/L
1	0
2	0.400
3	0.800
4	2.000

GTEL ENVIRONMENTAL LABORATORIES, INC.

Table 4

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS RESULTS

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 08/07/90

Initial Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %[1]
Organic Lead	0.400	0.350	88	80 - 120
Continuing Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %[1]
Organic Lead	0.400	0.399	100	80 - 120

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

Table 4a

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS SOURCE

Organic Lead in Soil by Flame AA
EPA Method 7420

Initial Calibration Verification Standard		
Analyte	Lot Number	Source
Organic Lead	AK215	Spectrum
Continuing Calibration Verification Standard		
Analyte	Lot Number	Source
Organic Lead	4718	Mallinckrodt

GTEL ENVIRONMENTAL LABORATORIES, INC.

Table 5

LABORATORY DUPLICATE SAMPLE RESULTS AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 08/07/90
Sample Used: C008200-01
Client ID: BHE-16/41
Units: mg/Kg

Analyte	Sample Result	Duplicate Result	RPD, %	Maximum RPD, %
Organic Lead	<0.25	<0.25	NA	20

NA = Not Applicable

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number 90076 (Oakland II)
Laboratory Release Number 248 2700
Consultant Project Number 4-417-02
Consultant Name Weiss Associates
Address 5500 Shellmound, Emeryville, CA 94608
Fax Number (415) 547-5043
Project Contact (Name) Jim Carmody
(Phone) (415) 547-5420

Chevron Contact (Name)
(Phone)
Laboratory Name GTEL
Laboratory Contract Number
Samples Collected by (Name) Robert Kitay
Collection Date July 31 to August 1, 1990
Signature Robert E. Kitay

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Volatile Organics Soil: 8240/Wtr.: 624	Total Organic Lead DHS-Luft	EDB DHS-AB 1803				Remarks
BH-E 6.0		1	S	G	8/1/90	None	Yes											
11.0		1	S	G				X			X							
16.0		1	S	G				X			X							
21.0		1	S	G				X			X							
26.0		1	S	G				X			X							
31.0		1	S	G														
36.0		1	S	G														
41.0		1	S	G														
46.0		1	S	G														
BH-F 6.0		1	S	G	8/1/90													
11.0		1	S	G														
16.0		1	S	G				X			X							
21.0		1	S	G				X			X							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Robert E. Kitay	Weiss Assoc.	8/5/90 16:15	Kevin Green	Consol Courier	8/6 16:15
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
			[illegible]		8/7 11:20

Turn Around Time (Circle Choice)
24 Hrs
48 Hrs
(5 Days)
10 Days

Printed in U.S.A.

MS-5136 (6-89)

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number: 90076 (Oakland II)
Laboratory Release Number: 2482700
Consultant Project Number: 4-417-02
Consultant Name: Weiss Associates
Address: 5500 Shellmound, Emeryville, CA 94608
Fax Number: (415) 547-5043
Project Contact (Name): Jim Carmody
(Phone): (415) 547-5420

Chevron Contact (Name):
(Phone):
Laboratory Name: GTEL
Laboratory Contract Number:
Samples Collected by (Name): Robert Kitay
Collection Date: July 31 to August 1, 1990
Signature: Robert E. Kitay

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Volatile Organics Soil: 8240/Wtr.: 624	Total Organic Lead DHS-Luft	EDB DHS-AB 1803				Remarks
BH-F 26.0		1	S	G	8/1/90	None	Yes											
31.0		1	S	G				X			X							
36.0		1	S	G														
41.0		1	S	G				X			X							
46.0		1	S	G														
51.0		1	S	G														
56.0		1	S	G														
BH-G 6.0		1	S	G	7/31/90													
11.0		1	S	G				X			X							
16.0		1	S	G				X			X							
21.0		1	S	G				X			X							
26.0		1	S	G														
31.0		1	S	G				X			X							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Robert E. Kitay	Weiss Assoc.	8/5/90 16:15	Kevin Frain	Cascad Comm.	8/6 16:14
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
					8/7 11:20

Turn Around Time (Circle Choice)
24 Hrs
48 Hrs
(5 Days)
10 Days

Printed in U.S.A.

MS-5135 (6-89)

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number: 90076 Oakland II
Laboratory Release Number: 2482700
Consultant Project Number: 4-417-02
Consultant Name: Weiss Associates
Address: 5500 Shellmound, Emeryville, CA 94608
Fax Number: (415) 547-5043
Project Contact (Name): Jim Carmody
(Phone): (415) 547-5420

Chevron Contact (Name):
(Phone):
Laboratory Name: GTEL
Laboratory Contract Number:
Samples Collected by (Name): Robert Kitay
Collection Date: July 31 to August 1, 1990
Signature: Robert E. Kitay

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Volatile Organics Soil: 8240/Wtr.: 624	Total Organic Lead ~~DHS Luft~~	EDB DHS-AB 1803				Remarks
BH-G 36.0		1	S	G	7/31/90	None	Yes											
41.0		1	S	G				X			X							
46.0		1	S	G														
51.0		1	S	G														
56.0		1	S	G														
Composite BH-E		16.0/41.0						X			X		X					Rush - 48 hrs
Composite BH-F		16.0/51.0						X			X		X					Rush - 48 hrs
Composite BH-G		16.0/51.0						X			X		X					Rush - 48 hrs

Analyses To Be Performed

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Robert E. Kitay	Weiss Assoc.	8/15/90 16:15	Kevin Francis	Concord Courier	8/6 16:15
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time 8/7 10:00

Turn Around Time (Circle Choice)
24 Hrs
48 Hrs
(5 Days)
10 Days

MS-5135 (6-89)

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(415) 825-0720 (FAX)

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417.02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011075, C011076, C011077, C011078
Report Issue Date: November 21, 1990

Robert Kitay
Weiss Associates
5500 Shellmound St. #100
Emeryville, CA 94608

Dear Mr. Kitay:

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories on 11/02/90.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to approved protocols.

If you have any questions concerning this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Emma P. Popek
Laboratory Director

GTEL Concord, CA
C011075A.DOC

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011075
Report Issue Date: November 20, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Soil
EPA Method 8020/8015[1]

GTEL Sample Number		01	02	03	
Client Identification		BH-H 5.5	BH-H40.0	BH-H 45.0	
Date Sampled		11/01/90	11/01/90	11/01/90	
Date Extracted		11/06/90	11/06/90	11/06/90	
Date Analyzed		11/13/90	11/13/90	11/13/90	
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005	<0.005	<0.005	
Toluene	0.005	<0.005	<0.005	<0.005	
Ethylbenzene	0.005	<0.005	<0.005	<0.005	
Xylene (total)	0.015	<0.015	<0.015	<0.015	
TPH as Gasoline	10	<10	<10	<10	

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

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

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent water blank and reagent methanol blank as shown in Tables 2a and 2b.

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) and Matrix Spike Duplicate (MSD) Accuracy and Precision

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

4.2 Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the MS and MSD as shown in Table 5.

5.0 Sample Handling

5.1 Sample handling and holding time criteria were met for all samples.

5.2 There were no exceptional conditions requiring dilution of samples.

Table 2a

REAGENT WATER BLANK DATA

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

Date of Analysis: 11/13/90

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

<# = Not detected at the indicated detection limit.

Table 2b

REAGENT METHANOL BLANK DATA

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

Date of Analysis: 11/13/90
MeOH Lot No: AX323

Analyte	Concentration, mg/Kg
Benzene	<0.005
Toluene	<0.005
Ethylbenzene	<0.005
Xylene (total)	<0.015
Gasoline	<10

<# = Not detected at the indicated detection limit.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011075
Report Issue Date: November 20, 1990

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

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

Date of Analysis: 11/14/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	45	90	85-115
Toluene	50	44	88	85-115
Ethylbenzene	50	46	92	85-115
Xylene (total)	150	138	92	85-115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

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

Analyte	Lot Number	Source
Benzene	LA19042	Supelco
Toluene	LA19042	Supelco
Ethylbenzene	LA19042	Supelco
Xylene (total)	LA19042	Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

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

Acceptability Limits[1]: 60 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Water Blank	200	247	123
MeOH Blank	200	221	111
01	200	201	100
02	200	255	128
03	200	255	120
MS	200	236	118
MSD	200	422	211*

MS = Matrix Spike
MSD = Matrix Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.
* Surrogate recovery high due to matrix interferences.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011075
Report Issue Date: November 20, 1990

Table 5

MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

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

Date of Analysis: 11/13/90
Sample Used: C011251-12
Client ID: B6-10
Units: mg/Kg

Analyte	Sample Result	Concentration Added	MS Result	MS, % Recovery	MSD Result	MSD, % Recovery
Benzene	<0.005	2.86	2.27	79	2.00	70
Toluene	<0.005	2.86	2.30	80	2.07	72
Ethylbenzene	<0.005	2.86	2.35	82	2.15	75
Xylene (total)	<0.015	8.58	7.12	83	6.55	76

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	12	30	50 - 112
Toluene	11	30	50 - 108
Ethylbenzene	9	30	50 - 113
Xylene (total)	9	30	50 - 114

<# = Not Detected at the indicated detection limit
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011076
Report Issue Date: November 15, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Soil
EPA Method 8020/8015[1]

GTEL Sample Number		01			
Client Identification		BH-H10, 30, 55 Composite			
Date Sampled		11/01/90			
Date Extracted		11/07/90			
Date Analyzed		11/09/90			
Analyte	Detection Limit, mg/Kg	Concentration, mg/Kg			
Benzene	0.005	<0.005			
Toluene	0.005	<0.005			
Ethylbenzene	0.005	<0.005			
Xylene (total)	0.015	<0.015			
TPH as Gasoline	10	<10			

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

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

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent water blank and reagent methanol blank as shown in Tables 2a and 2b.

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) and Matrix Spike Duplicate (MSD) Accuracy and Precision

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

4.2 Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the MS and MSD as shown in Table 5.

5.0 Sample Handling

5.1 Sample handling and holding time criteria were met for all samples.

5.2 There were no exceptional conditions requiring dilution of samples.

Table 2a

REAGENT WATER BLANK DATA

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

Date of Analysis: 11/09/90

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

<# = Not detected at the indicated detection limit.

Table 2b

REAGENT METHANOL BLANK DATA

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

Date of Analysis: 11/09/90
MeOH Lot No: AY323

Analyte	Concentration, mg/Kg
Benzene	<0.005
Toluene	<0.005
Ethylbenzene	<0.005
Xylene (total)	<0.015
Gasoline	<10

<# = Not detected at the indicated detection limit.

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

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

Date of Analysis: 11/14/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	53	106	85-115
Toluene	50	49	98	85-115
Ethylbenzene	50	51	102	85-115
Xylene (total)	150	153	102	85-115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

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

Analyte	Lot Number	Source
Benzene	LA19042	Supelco
Toluene	LA19042	Supelco
Ethylbenzene	LA19042	Supelco
Xylene (total)	LA19042	Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

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

Acceptability Limits[1]: 60 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Water Blank	200	122	61
MeOH Blank	200	185	93
01	200	191	95
MS	200	236	118
MSD	200	422	211*

MS = Matrix Spike
MSD = Matrix Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.
* = Surrogate recovery high due to matrix interferences.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011076
Report Issue Date: November 15, 1990

Table 5

MATRIX SPIKE (MS) AND MATRIX SPIKE DUPLICATE (MSD) RECOVERY
AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

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

Date of Analysis: 11/13/90
Sample Used: C011251-12
Client ID: B6-10
Units: mg/Kg

Analyte	Sample Result	Concentration Added	MS Result	MS, % Recovery	MSD Result	MSD, % Recovery
Benzene	<0.005	2.86	2.27	79	2.0	70
Toluene	<0.005	2.86	2.30	80	2.07	72
Ethylbenzene	<0.005	2.86	2.35	82	2.15	75
Xylene (total)	<0.015	8.58	7.12	83	6.55	76

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	12	30	50 - 112
Toluene	11	30	50 - 108
Ethylbenzene	9	30	50 - 113
Xylene (total)	9	30	50 - 114

x
<# = Not Detected at the indicated detection limit
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011077
Report Issue Date: November 20, 1990

Table 1

ANALYTICAL RESULTS

Total Lead in Soil by ICP
EPA Method 6010[1]

Sample Identification		Date Sampled	Date Extracted	Date Analyzed	Concentration, mg/Kg [2]
GTEL No.	Client ID				
01	BH-H 10,30,55 Composite	11/01/90	11/08/90	11/09/90	8

1 = Extraction by EPA Method 3050
2 = Method detection limit = 5 mg/Kg; analyte below this level would not be detected.

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

Total Lead in Soil by ICP
EPA Method 6010

1.0 Blanks

The method blank was below the detection limit as shown in Table 2.

2.0 Initial Instrument Calibration

The range of concentrations of the initial instrument calibration are shown in Table 3.

3.0 Calibration Verification Standards

3.1 The control limits were met for the initial calibration verification standard (ICVS) as shown in Table 4.

3.2 If applicable, the control limits were met for the continuing calibration verification standard (CCVS) as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

The control limits were met for 1 of 1 elements in the MS as shown in Table 5.

5.0 Sample Duplicate Precision

Relative percent difference criterion was met for the sample duplicate 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 no exceptional conditions requiring dilution of samples.

Table 2

METHOD BLANK DATA

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 11/09/90

Analyte	Concentration, mg/Kg
Total Lead	<5

<# = Not detected at the indicated detection limit.

Table 3

INITIAL CALIBRATION STANDARDS DATA

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 11/09/90

Standard Number	Concentration, mg/L
1	0
2	10

Table 4

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS RESULTS

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 11/09/90

Initial Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %
Total Lead	5.0	5.2	104	80 - 120
Continuing Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %
Total Lead	5.0	5.2	104	80 - 120

Table 4a

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS SOURCE

Total Lead in Soil by ICP
EPA Method 6010

Initial Calibration Verification Standard		
Analyte	Lot Number	Source
Total Lead	WS 176	SPEX
Continuing Calibration Verification Standard		
Analyte	Lot Number	Source
Total Lead	WS 175	SPEX

Table 5

MATRIX SPIKE (MS) RECOVERY REPORT

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 11/09/90 Client ID: BHH-10,30,55
Sample Spiked: C011077-01 Units: mg/Kg

Analyte	MS Result	Sample Result	Amount Recovered	Amount Added	MS, % Recovery	Acceptability Limits, %
Total Lead	54	8	46	50	92	80 - 120

<# = Not detected at the indicated detection limit.

Table 6

LABORATORY DUPLICATE SAMPLE RESULTS
AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Total Lead in Soil by ICP
EPA Method 6010

Date of Analysis: 11/09/90 Client ID: BHH-10,30,55
Sample Used: C011077-01 Units: mg/Kg

Analyte	Sample Result	Duplicate Result	RPD, %	Maximum RPD, %
Total Lead	7.3	8.5	15	20

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011078
Report Issue Date: November 14, 1990

Table 1

ANALYTICAL RESULTS

Organic Lead in Soil by Flame AA
EPA Method 7420[1]

Sample Identification		Date Sampled	Date Extracted	Date Analyzed	Concentration, mg/Kg (2)
GTEL No.	Client ID				
01	BH-H-COMPOSITE 55,10,30	11/01/90	11/08/90	11/08/90	<0.25

1 = Extraction by DHS method; LUFT Manual, 12/87 rev.: sample extracted with 50 mL Xylene/MIBK mixture, Aliquat 336.
2 = Method detection limit = 0.25 mg/Kg; analyte below this level would not be detected.

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

Organic Lead in Soil by Flame AA
EPA Method 7420

1.0 Blanks

The method blank was below the detection limit as shown in Table 2.

2.0 Initial Instrument Calibration

The range of concentrations of the initial instrument calibration are shown in Table 3.

3.0 Calibration Verification Standards

3.1 The control limits were met for the initial calibration verification standard (ICVS) as shown in Table 4.

3.2 The control limits were met for the continuing calibration verification standard (CCVS) as shown in Table 4.

4.0 Sample Duplicate Precision

Relative percent difference criterion was met for the sample duplicate as shown in Table 5.

5.0 Sample Handling

5.1 Sample handling and holding time criteria were met for all samples.

5.2 There were no exceptional conditions requiring dilution of samples.

Table 2

METHOD BLANK DATA

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 11/08/90

Analyte	Concentration, mg/Kg
Organic Lead	<0.25

<# = Not detected at the indicated detection limit.

Table 3

INITIAL CALIBRATION STANDARDS DATA

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 11/08/90

Standard Number	Concentration, mg/L
1	0
2	0.2
3	0.4
4	0.8
5	2.0

Table 4

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS RESULTS

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 11/08/90

Initial Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %[1]
Organic Lead	0.400	0.370	93	80 - 120
Continuing Calibration Verification Standard				
Analyte	Expected Result, mg/L	Observed Result, mg/L	Recovery, %	Acceptability Limits, %[1]
Organic Lead	0.400	0.371	94	80 - 120

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

Table 4a

INITIAL AND CONTINUING CALIBRATION
VERIFICATION STANDARDS SOURCE

Organic Lead in Soil by Flame AA
EPA Method 7420

Initial Calibration Verification Standard		
Analyte	Lot Number	Source
Organic Lead	SH75 Lot H622 KCPN-P	WS # 46
Continuing Calibration Verification Standard		
Analyte	Lot Number	Source
Organic Lead	SH75 Lot H622 KCPN-P	WS # 46

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C011078
Report Issue Date: November 14, 1990

Table 5

LABORATORY DUPLICATE SAMPLE RESULTS
AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Organic Lead in Soil by Flame AA
EPA Method 7420

Date of Analysis: 11/08/90
Sample Used: C011078-01 Units: mg/Kg

Analyte	Sample Result	Duplicate Result	RPD, %	Maximum RPD, %
Organic Lead	<0.25	<0.25	NA	20

NA = Not Applicable

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number: 90076
Laboratory Release Number: 2678742
Consultant Project Number: 4-417-02
Consultant Name: Weiss Associates
Address: 5500 Shellmound St. #100, Emeryville, CA 94608
Fax Number: (415) 547-5043
Project Contact (Name): Robert Kitay
(Phone): (415) 547-5420

Chevron Contact (Name): Nancy Vukelich
(Phone): (415) 842-9581
Laboratory Name: CTEL
Laboratory Contract Number:
Samples Collected by (Name): Mariette Shin/Robert Kitay
Collection Date: 11/1/90
Signature: Mariette Shin

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Volatile Organics Soil: 8240/Wtr.: 624	Total Organic Lead DHS-Luft	EDB DHS-AB 1803				Remarks
BH-H 5.5'		1	S	G	9:50	None	Y	X			X							
X BH-H 10.0		1			10:05													
BH-H 15.0		1			10:10													
BH-H 20.0		1			10:30													
BH-H 25.0		1			10:35													
X BH-H 30.0		1			11:00													
BH-H 35.0		1			11:20													
BH-H 40.0		1			11:40			X			X							
BH-H 45.0		1			11:55			X			X							
BH-H 50.0		1			12:15													
X BH-H 55.0		1	↓	↓	12:30	↓	↓											
Composite BH-H 10.0, 30.0 and 55.0 and analyze for TPH-G, BETX and Total and Organic Lead																		

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Mariette Shin	Weiss Assoc	11/2/90 14:15	Michael Lin Jr	Weiss Assoc.	11/2 14:15
Joyce Hemstad	Weiss Assoc.	11/2/90 15:30	Jess J Cunningham	Concord Courier	11/2 8:30P
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory By (Signature)		Date/Time
			M Donahue		11/2 500

Turn Around Time (Circle Choice)
24 Hrs
48 Hrs
5 Days
(10 Days)

INVOICE # 72-11009

DATE: 11/21/90

SUPERVISOR APP.:

JOB NO.: SFB-175-0204.72

JOB NAME: Chevron/90076

C.O.C.#

TO: Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
Attn: Accounts Payable

GTEL ENVIRONMENTAL LABORATORIES, INC.

Northwest Region
4080-C Pike Ln.
Concord, CA 94520
(415) 685-7852
FAX (415) 825-0720

PLEASE REMIT TO:
GTEL Environmental Laboratories, Inc.
P.O. Box 4795
Boston, MA 02212-4795
Terms: Net 30 Days

LABORATORY ANALYSIS CHARGES

	TEST	LAB NO.	DATE RECEIVED	NUMBER OF SAMPLES	CHARGE/ SAMPLE	AMOUNT
1	BTEX/TPH/EPA 8015/8020	C011075-03	11/25/90	3 soil		
2	BTEX/TPH/EPA 8020	C011076-01	11/25/90	1 soil		
3	Composit fee					
4	Lead/EPA 6010	C011077-01	11/25/90	1 soil		
5	Organic Lead/EPA 7420	C011078-01	11/25/90	1 soil		
6	Level 1 10 day TAT					
7.						
8.						
9.						
10.						

SHIPPING C

Item number 3 not in contract; see GTEL fee schedule on 7.

NOTES:

Lab Release#: 2678742

Contract#: N46CWC0244-9-X

Facility#: 90076

Consultant: Weiss Associates

Chevron Contact: Nancy Vukelich

APPENDIX C

ANALYTIC REPORTS AND CHAIN-OF-CUSTODY FORMS FOR WATER

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080 Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 from inside California
(800) 423-7143 from outside California

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417.02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008766
Report Issue Date: September 5, 1990

Mariette Shin
Wiess Associates
5500 Shellmound
Emeryville, CA 94608

Dear Ms. Shin:

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories on 08/28/90.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to approved protocols.

If you have any questions concerning this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Emma P. Popek /RMB

Sincerely,

GTEL Environmental Laboratories, Inc.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417.02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008766
Report Issue Date: September 5, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015[1]

GTEL Sample Number		01	02	03	04
Client Identification		080-1	080-3	080-4	080-5
Date Sampled		08/27/90	08/27/90	08/27/90	08/27/90
Date Analyzed		08/29/90	08/29/90	08/29/90	08/29/90
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	15	0.5	10000	<0.3
Toluene	0.3	1	<0.3	280	<0.3
Ethylbenzene	0.3	6	<0.3	410	<0.3
Xylene (total)	0.6	13	<0.6	1400	<0.6
TPH as Gasoline	50	440	<50	26000	<50

GTEL Sample Number		05	06	07	08
Client Identification		080-6	080-7	080-21	080-22
Date Sampled		08/27/90	08/27/90	08/27/90	08/27/90
Date Analyzed		08/29/90	08/29/90	08/29/90	08/29/90
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	2100	26	<0.3	<0.3
Toluene	0.3	6	0.8	<0.3	<0.3
Ethylbenzene	0.3	41	4	<0.3	<0.3
Xylene (total)	0.6	300	6	<0.6	<0.6
TPH as Gasoline	50	7200	110	<50	<50

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

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

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent blank as shown in Table 2.

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.

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

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 no exceptional conditions requiring dilution of samples.

Table 2

REAGENT BLANK DATA

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

Date of Analysis: 08/29/90

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

<# = Not detected at the indicated detection limit.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417.02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008766
Report Issue Date: September 5, 1990

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

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

Date of Analysis: 08/28/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	48	96	85 - 115
Toluene	50	45	90	85 - 115
Ethylbenzene	50	47	94	85 - 115
Xylene (total)	150	148	99	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	LA18042	Supelco
Toluene	LA18042	Supelco
Ethylbenzene	LA18042	Supelco
Xylene (total)	LA18042	Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

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

Acceptability Limits[1]: 70 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	200	199	100
01	200	223	112
02	200	215	108
03	200	191	96
04	200	192	96
05	200	184	92
06	200	200	100
07	200	206	103
08	200	252	126
MS	200	238	119
WS	200	171	86
WSD	200	176	88

MS = Matrix Spike
WS = Reagent Water Spike
WSD = Reagent Water Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417.02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008766
Report Issue Date: September 5, 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: 08/29/90
Sample Spiked: C008721-02
Client ID: MW-8
Units: ug/L

Analyte	Sample Result	Concentration Added	Concentration Recovered	MS Result	MS, % Recovery	Acceptability Limits[1], %
Benzene	<0.3	25	24.2	24.2	97	71 - 123
Toluene	<0.3	25	22.7	22.7	91	69 - 120
Ethylbenzene	<0.3	25	22.9	22.9	92	72 - 121
Xylene (total)	<0.6	75	68.2	68.2	91	75 - 123

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

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417.02
Contract Number: N46CWC0244-9-X
Facility Number: 90076
Work Order Number: C008766
Report Issue Date: September 5, 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: 08/29/90 Units: ug/L

Analyte	Concentration Added	WS Result	WS, % Recovery	WSD Result	WSD, % Recovery
Benzene	25	23.1	84	22.9	92
Toluene	25	20.9	84	21.9	88
Ethylbenzene	25	22.2	89	23.0	92
Xylene (total)	75	73.2	98	75.7	101

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	9	30	76 - 120
Toluene	5	30	72 - 117
Ethylbenzene	3	30	73 - 123
Xylene (total)	3	30	81 - 125

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

GTEL ENVIRONMENTAL LABORATORIES, INC.

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number: 90076 Oakland II
Consultant Release Number: ~~248~~ 2700
Consultant Project Number: 4-417-02
Consultant Name: Weiss Assoc
Address: 5500 Shellmound Emeryville
Fax Number: 415 547 5993
Project Contact (Name): Marietta Shaw
(Phone): 415 547 5920

Chevron Contact (Name): Nancy Vukelich
(Phone):
Laboratory Name: GTEL
Contract Number:
Samples Collected by (Name): James Martin
Collection Date: 8/27/90
Signature:

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803				Remarks
080-1		3	W	G	1619	HCl	Yes	X			X							
080-3					1609			X			X							
080-4					1635			X			X							
080-5					1729			X			X							
080-6					1236			X			X							
080-7		↓			1201	↓		X			X							
080-21		2			0900	NONE		X			X							
080-22		3	↓	↓	1600	HCl	↓	X			X							
																		called Weiss re: T.A.T. 2:40pm 8/28 M. Hsieh (Kdg.)

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
[signature]	Weiss Assoc	8/27/90 1845	[signature]	Weiss Assoc	8-28-90
[signature]	Weiss Assoc	8-28-90	[signature]	Concord Courier	8-28 11:55
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
			[signature]		8/28 0pm

Turn Around Time (Circle Choice): 24 Hrs, 48 Hrs, (5 Days), 10 Days

Stored in locked building overnight

Printed in U.S.A.

AMS 5135 (6-88)

INVOICE # 72- 9784

DATE: 09/05/90

SUPERVISOR APP.: [illegible]

JOB NO.: SFB-175-0204.72

JOB NAME: Chevron/90076

C.O.C.#

TO: Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
Attn: Accounts Payable

GTEL ENVIRONMENTAL LABORATORIES, INC.

Northwest Region
4080-C Pike Ln.
Concord, CA 94520
(415) 685-7852
FAX (415) 825-0720

PLEASE REMIT TO:
GTEL Environmental Laboratories, Inc.
P.O. Box 4795
Boston, MA 02212-4795
Terms: Net 30 Days

LABORATORY ANALYSIS CHARGES

TEST	LAB NO.	DATE RECEIVED	NUMBER OF SAMPLES
1. BTEX/TPH/EPA 8015/8020	C008766-08	3/28/90	8 water
2. Level 1 5 day TAT			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

SHIPPING CH

NOTES:

Lab Release#: 2482700

Contract#: N46CWC0244-9-X

Facility#: 90076

Consultant: Weiss Associates

Chevron Contact: James Yukelich

GTEL
ENVIRONMENTAL
LABORATORIES, INC.

Northwest Region
4080-C Pike Lane
Concord, CA 94520
(415) 685-7852
(800) 544-3422 *from inside California*
(800) 423-7143 *from outside California*
(415) 825-0720 (FAX)

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 9-0076 OAKLAND II
Work Order Number: C0011396
Report Issue Date: November 29, 1990

Robert Kitay
Weiss Associates
5500 Shellmound St.
Emeryville, CA 94608

Dear Mr. Kitay:

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories on 11/15/90.

A formal quality control/quality assurance program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to approved protocols.

If you have any questions concerning this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Emma P. Popek
Laboratory Director

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 9-0076 OAKLAND II
Work Order Number: C0011396
Report Issue Date: November 29, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015[1]

GTEL Sample Number		01	02		
Client Identification		110-08	110-21		
Date Sampled		11/14/90	11/14/90		
Date Analyzed		11/20/90	11/20/90		
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3		
Toluene	0.3	<0.3	<0.3		
Ethylbenzene	0.3	<0.3	<0.3		
Xylene (total)	0.6	<0.6	<0.6		
TPH as Gasoline	50	<50	<50		

1 = Extraction by EPA Method 5030

GTEL ENVIRONMENTAL LABORATORIES, INC.

QA Conformance Summary

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

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent blank as shown in Table 2.

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.

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

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 no exceptional conditions requiring dilution of samples.

Table 2

REAGENT BLANK DATA

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

Date of Analysis: 11/20/90

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

< # = Not detected at the indicated detection limit.

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

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

Date of Analysis: 11/03/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	52	104	85 - 115
Toluene	50	51	102	85 - 115
Ethylbenzene	50	53	106	85 - 115
Xylene (total)	150	156	104	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	LA18042	Supelco
Toluene	LA18042	Supelco
Ethylbenzene	LA18042	Supelco
Xylene (total)	LA18042	Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

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

Acceptability Limits[1]: 70 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	200	180	90
01	200	166	83
02	200	157	79
MS	200	161	81
WS	200	160	80
WSD	200	157	79

MS = Matrix Spike
WS = Reagent Water Spike
WSD = Reagent Water Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

GTEL ENVIRONMENTAL LABORATORIES, INC.

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 9-0076 OAKLAND II
Work Order Number: C0011396
Report Issue Date: November 29, 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: 11/20/90
Sample Spiked: C011327
Client ID: MW14
Units: ug/L

Analyte	Sample Result	Concentration Added	Concentration Recovered	MS Result	MS, % Recovery	Acceptability Limits[1], %
Benzene	<0.3	25	24.6	24.6	98	71 - 123
Toluene	<0.3	25	23.8	23.8	95	69 - 120
Ethylbenzene	<0.3	25	24.5	24.5	98	72 - 121
Xylene (total)	<0.6	75	73.5	73.5	98	75 - 123

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

Project Number: SFB-175-0204.72
Consultant Project Number: 4-417-02
Contract Number: N46CWC0244-9-X
Facility Number: 9-0076 OAKLAND II
Work Order Number: C0011396
Report Issue Date: November 29, 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: 11/21/90 Units: ug/L

Analyte	Concentration Added	WS Result	WS, % Recovery	WSD Result	WSD, % Recovery
Benzene	25	24.2	97	23.0	92
Toluene	25	23.6	94	22.4	90
Ethylbenzene	25	24.3	97	22.6	90
Xylene (total)	75	73.3	96	70	93

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	5	30	84 - 128
Toluene	4	30	83 - 122
Ethylbenzene	7	30	82 - 120
Xylene (total)	5	30	86 - 123

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

GTEL ENVIRONMENTAL LABORATORIES, INC.

INVOICE # 72-11083

DATE: 11/29/90

SUPERVISOR APP.:

JOB NO.: SFB-175-0204.72

JOB NAME: Chevron/9-0076

C.O.C.#

TO: Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
Attn: Accounts Payable

GTEL ENVIRONMENTAL LABORATORIES, INC.

Northwest Region
4080-C Pike Ln.
Concord, CA 94520
(415) 685-7852
FAX (415) 825-0720

PLEASE REMIT TO:
GTEL Environmental Laboratories, Inc.
P.O. Box 4795
Boston, MA 02212-4795
Terms: Net 30 Days

LABORATORY ANALYSIS CHARGES

TEST	LAB NO.	DATE RECEIVED	NUMBER OF SAMPLES	CHARGE/ SAMPLE	AMOUNT
1. BTEX/TPH/EPA 8015/8020	C011396-02	11/15/90	2 water		
2. Level 1 10 day TAT					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

SHIPPING CI

NOTES:

Lab Release#: 2692251

Contract#: N46CWC0244-9-X

Facility#:9-0076

Consultant: Weiss Associates

Chevron Contact: Nancy Vukelich

Chain-of-Custody Record

Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583
FAX (415) 842-9591

Chevron Facility Number 9-0076 OAKLAND II
Laboratory Release Number 2692251
Consultant Project Number 4-417-02
Consultant Name WEISS ASSOCIATES
Address 5500 SHELLMOUND ST EMERYVILLE
Fax Number (415) 547-5043
Project Contact (Name) ROBERT KITAY / JIM CARMODY
(Phone) (415) 547-5420

Chevron Contact (Name) ~~LISA MAR~~ NANCY VUKELICH
(Phone) (415) 842-9581
Laboratory Name GTEL
Laboratory Contract Number N46 CWC 0244-9-X
Samples Collected by (Name) TOM FOJUT
Collection Date 11-14-90
Signature Tom Fojut

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Volatile Organics Soil: 8240/Wtr.: 624	Total Organic Lead DHS-Luft	EDB DHS-AB 1803				Remarks
110-8		3	W	G	17:05	HCl	Y	X			X							
110-21		2	W	G	16:05	HCl	Y	X			X							

Received By: Jamie Davis 11/15/90 4:05

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Tom Fojut	WEISS ASSOCIATES	11-15-90 1135	AJ Rutkard	Weiss Assoc.	11-15-90 1135	24 Hrs
AJ Rutkard	Weiss Assoc.	11-15-90 140	Bustina Kitay	Weiss Assoc	11-15-90 1443	48 Hrs
K Kotzelvany	Weiss Assoc	11-15-90 2000	Received For Laboratory By (Signature)		Date/Time	5 Days
						10 Days

STORED IN LOCKED BLDG OVERNIGHT

FROM COX CORR COPIED 11/15/90 2000