WARE & FREIDENRICH
a professional corporation

Attorneys at Law

400 Hamilton Avenue
Palo Alto
California 94301-1825
(415) 328-6561

Facsimile
(415) 327-3699
Telex 348-372
Voice Mail
(415) 328-1983
EasyLink
62756934

March 23, 1992

Mr. Scott Seery
Alameda County Health Care Services Agency,
Department of Environmental Health/Hazardous Materials Division
80 Swan Way, Room 200
Oakland California 94621

B0697-900100

Re: **Former Chevron Service Station # 9-5630, 997 Grant Avenue, San Lorenzo, California (the "Property"); Independent Professional Analysis of Chevron's Investigation and Remediation Work to Date**

Dear Scott:

Thank you for speaking with me by telephone last Wednesday about the status of your office's involvement with monitoring the soil and groundwater remediation currently being performed by Chevron at the Property.

Enclosed for your review, as we discussed, is a report prepared by McLaren-Hart at the request of the Property owner and upon our recommendation. The report reviews and analyzes the soil and groundwater investigation and remediation that Chevron has performed to date, and presents McLaren's assessments and recommendations for the additional investigation and remediation that they feel is required.

We would appreciate your careful review of the McLaren-Hart report at your earliest convenience, as it provides a good overview of the work performed to date, and highlights important issues that Chevron still needs to address. I would also appreciate being copied on any correspondence your office prepares respecting the Property. Thank you for your assistance, and please feel free to call me should you have any questions.

Very truly yours,

WARE & FREIDENRICH,
A Professional Corporation

By Beth D. Castleberry
Beth D. Castleberry

cc: Lawrence A. Cogan, Esq.
Walter Baumann, Jr.
Nancy Vukelich, Environmental Engineer, Chevron U.S.A. Inc.
Jon Robbins, Counsel, Chevron U.S.A. Inc.

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Attorneys at Law

400 Hamilton Avenue
Palo Alto
California 94301-1825
(415) 328-6561

Facsimile
(415) 327-3699
Telex 348-372
Voice Mail
(415) 328-1983
EasyLink
62756934

March 26, 1992

B0697-900100

Ms. Nancy Vukelich
Environmental Engineer
Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, CA 94583-0804

Re: **Former Chevron Service Station No. 9-5630, at 997 Grant Avenue, San Lorenzo, California (the "Property")**

Dear Nancy:

Enclosed for your information and review is a copy of the report prepared by McLaren-Hart ("McLaren") at the request of the Property owner and upon our recommendation. We asked McLaren to review and analyze the existing data and reports regarding the soil and groundwater investigation and remediation that Chevron has performed to date, because it was suspected that these efforts have been inadequate. McLaren's review confirms that there are numerous important issues that are as yet unresolved, including the following:

1. Soil with very high levels of TPH-G has apparently been left in place (see Figure 2, locating soil samples left in place with 54 ppm, 220 ppm, 680 ppm, 780 ppm, 1100 ppm and 1900 ppm TPH-G);

2. Insufficient data exists from the existing groundwater monitoring wells to determine the **direction** of groundwater flow, and therefore also to determine whether contaminants have migrated off the Property, a matter which is of particular concern to the Property owner;

3. The installation of additional groundwater monitoring wells has been ordered by the County's Department of Environmental Health/Hazardous Materials Division, and McLaren-Hart agrees that additional wells are necessary to properly determine the extent and location of groundwater contamination, as well as the direction of groundwater flow; and

4. Monitoring well "C-4" was reportedly damaged or destroyed during tank and soil excavation activities, and, since this well was located in the area where the highest concentrations of TPH-G were detected during drilling, legitimate concerns remain regarding the inability to collect

additional groundwater samples in this location. Further, no information has been provided confirming whether well C-4 was properly closed after being damaged.

In addition, we have only just learned from Mr. Scott Seery at Alameda County that you sent Pamela Evans a letter on January 27, 1992, stating that Chevron was unilaterally extending the deadline imposed by Ms. Evans for Chevron's submission of a workplan for the installation of additional groundwater wells and the performance of additional groundwater remediation. Mr. Ron Sykora of the Bohannon Organization was copied on that letter, but our office never received a copy.

We are not pleased that Chevron chose to extend the February 15, 1992 deadline. Mr. Seery stated last week that the reason given in your letter for needing the extension did not make sense to him. He stated that the flow of the shallow groundwater can from time to time change direction, and the direction and location of any contaminant plume is at any one time nebulous and changing. He believes that one additional monitoring of the existing wells will not supply the necessary data for determining the direction of groundwater flow. We request your prompt attention to the development of a workplan that satisfies the County's previous request, and which also addresses the concerns raised in McLaren's report. We would hope that this workplan could be developed no later than April 30, 1992.

We are concurrently sending a copy of the McLaren report to Alameda County Department of Environmental Health. We anticipate a response from the County regarding both the soil and groundwater issues raised in the report.

This letter is also notice to Chevron that we expect Chevron to continue to make monthly payments to Mr. Walter Baumann, Trustee, as the representative of the owner, since there is no question that the clean-up of the Property has not been completed. We are not of the opinion that Chevron only owes these payments through the month of March, 1992, as previously stated by Jon Robbins in his letter to me dated January 30, 1992. Even if we were to agree with Mr. Robbins' reasoning in his letter, and we do not, the surface of the Property will not be useable by the end of March, 1992; Chevron is required to install additional groundwater monitoring wells and there is a strong possibility that the County will require Chevron to perform additional soils tests and further soils remediation.

Please feel free to contact me with any questions.

Very truly yours,

WARE & FREIDENRICH
A Professional Corporation

By _____
Beth D. Castleberry

BDC/sb
cc: Lawrence A. Cogan, Esq.
Mr. Walter Baumann, Jr. (w/ encl.)
Mr. Scott Seery, Alameda County Health Care Services Agency, Department of Environmental Health/Hazardous Materials Division (w/ encl.)
Mr. Jon Robbins, Counsel, Chevron U.S.A. Inc.

SUMMARY OF INVESTIGATIONS AT FORMER CHEVRON SERVICE STATION 9-5630 AT 997 GRANT AVENUE IN SAN LORENZO, CALIFORNIA

MARCH 18, 1992

PREPARED FOR:

SUMMARY OF INVESTIGATIONS AT FORMER CHEVRON SERVICE STATION 9-5630 AT 997 GRANT AVENUE IN SAN LORENZO, CALIFORNIA

MARCH 18, 1992

PREPARED FOR:

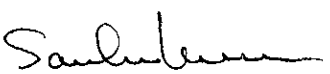
Ware & Freidenrich
400 Hamilton Avenue
Palo Alto, CA 94301-1925

PREPARED BY:

McLAREN/HART
1135 Atlantic Avenue
Alameda, California 94501

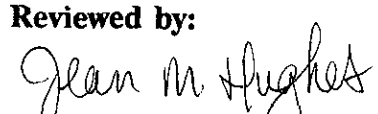
JOB NUMBER 04-0116502-000

Prepared by:



Saulius Germanas
Associate Geoscientist

Reviewed by:



Jean M. Hughes, REA
Manager,Environmental Assessments
Supervising Geoscientist

McLaren Hart™

March 18, 1992

Ms. Beth D. Castleberry
Ware & Freidenrich
400 Hamilton Avenue
Palo Alto, California 94301-1825

Dear Ms. Castleberry:

RESULTS OF REVIEW OF REPORTS REGARDING FORMER CHEVRON SERVICE STATION 9-5630, LOCATED AT 997 GRANT AVENUE, SAN LORENZO, CALIFORNIA

Enclosed please find the final report detailing the findings of McLaren/Hart's review of previous investigative activities conducted at the subject site. McLaren/Hart was provided and reviewed the following reports and correspondence regarding the site at 997 Grant Avenue in San Lorenzo, California:

- Tank Removal Observation Report, GeoStrategies, Inc., September 13, ~~1990~~ 1991;
- Work Plan for Preliminary Site Assessment, GeoStrategies, Inc., October 24, 1990;
- Preliminary Site Assessment / Well Installation Report, GeoStrategies, Inc., February 8, 1991;
- Quarterly Groundwater Sampling Report, Sierra Environmental Services, September 23, 1991;
- Quarterly Groundwater Sampling Report, Sierra Environmental Services, December 18, 1991, and;
- Miscellaneous correspondence regarding the subject site. Letters authored by Ms. Nancy Vukelich of Chevron USA, Jon N. Robbins of Chevron USA, Pamela J. Evans of Alameda County Health Care Services Department of Environmental Health, and Beth D. Castleberry of Ware & Freidenrich.

0228NCV2

1135 Atlantic Avenue, Alameda, CA 94501 (510) 521-5200 FAX (510) 521-1547

Based upon our review of these reports, McLaren/Hart has prepared the following summary and recommendations.

- Soils remain in place which contain greater than 10 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G), and in some locations, soils containing TPH-G concentrations in excess of 100 ppm remain in place. Regional Water Quality Control Board and Alameda County Health Services, Environmental Health Division recommend that soils containing greater than 10 ppm TPH-G be removed or remediated. McLaren/Hart believes that the areas which contain soil TPH-G concentrations greater than 10 ppm must be further assessed and remediated by Chevron USA.

- Four groundwater monitoring wells (C-1 through C-4) were installed at the site in November 1990. TPH-G concentrations in groundwater were detected at 1,100 parts per billion (ppb), and benzene concentrations were reported at 150 ppb in the groundwater sample collected from well C-3 in September 1991. The current California Department of Health Services regulated Maximum Contaminant Level (MCL) established for benzene in groundwater is 1 ppb. McLaren/Hart believes that additional monitoring and assessment will be required by regulatory agencies.

- McLaren/Hart recommends the installation of additional groundwater monitoring wells at the site to delineate the extent of petroleum hydrocarbon contamination at the site and to evaluate whether petroleum hydrocarbon contamination may have migrated downgradient and off-site. The locations of the existing monitoring wells with respect to fuel storage and pumping facilities does not allow for the determination of the lateral or vertical extent of contamination or provide data to indicate whether or not groundwater contamination has migrated off-site.

- Shallow groundwater flow direction at the site was reported to be to the west in December 1990, but to the northeast in September 1991 and December 1991. It appears that the groundwater elevation data collected in September and December 1991 is erroneous due to the use of the wrong reference datum. Groundwater flow direction must be better defined to ensure that the contaminant plume is adequately defined in the downgradient direction. The installation of additional groundwater monitoring wells and the resurveying of new and existing wells at the site would achieve this objective.

- The Alameda County Health Care Services Agency, Department of Environmental Health (ACHCSA-DEH) is requiring, in a letter to Chevron USA dated December 31, 1991, the installation of additional groundwater monitoring wells "to better define

the extent of groundwater contamination". A workplan for the additional investigation must be submitted and received by ACHCSA-DEH by February 15, 1992. In addition, a timetable must be submitted defining the time period for well installation, data acquisition and implementation of remediation. McLaren/Hart agrees with the regulatory agency that additional assessment and remediation of contamination at the site must be initiated.

To summarize these findings, it is McLaren/Hart's opinion that additional definition of soil and groundwater contamination needs to be undertaken by Chevron USA. Site investigation, data acquisition, remediation and site closure must occur to ensure the property be returned to a condition similar to the condition prior to occupancy by Chevron USA. Timely action by Chevron USA is necessary to return the site to a condition suitable for sale or development without undue loss of revenue by the landowner.

If you have any questions regarding this review and/or our recommendations, please do not hesitate to contact either of us at (510) 521-5200.

Sincerely,

Jean M. Hughes

Jean M. Hughes, REA
Manager, Environmental Assessments
Supervising Geoscientist

Saulius Germanas
Associate Geoscientist

Attachment

0228NCV2

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1.0 INTRODUCTION

This report summarizes McLaren/Hart's review of all documentation provided to McLaren/Hart regarding environmental investigations conducted at the former Chevron Service Station 9-5630, located at 997 Grant Avenue in San Lorenzo, California. This work was conducted at the request of Ware & Freidenrich in accordance with the authorization letter dated December 20, 1991. The objective of the review was to determine if the investigations performed for Chevron USA were complete, and whether sufficient data was collected during the investigations to warrant final site closure by the Alameda County Health Care Services Department of Environmental Health and the Regional Water Quality Control Board.

No information was provided to McLaren/Hart regarding the previous uses of the parcel prior to occupancy by Chevron, or the dates of occupancy by Chevron.

The following reports and correspondence were provided by Ware & Freidenrich and reviewed by McLaren/Hart:

- Tank Removal Observation Report, GeoStrategies, Inc., September 13, 1990;
- Work Plan for Preliminary Site Assessment, GeoStrategies, Inc., October 24, 1990;
- Preliminary Site Assessment and Well Installation Report, GeoStrategies, Inc., February 8, 1991;
- Quarterly Groundwater Sampling Report, Sierra Environmental Services, September 23, 1991;
- Quarterly Groundwater Sampling Report, Sierra Environmental Services, December 18, 1991, and;
- Miscellaneous correspondence regarding the subject site. Letters authored by Ms. Nancy Vukelich of Chevron USA, Jon N. Robbins of Chevron USA, Pamela J. Evans of Alameda County Health Care Services, Department of Environmental Health, and Beth D. Castleberry of Ware & Freidenrich.

2.0 REVIEW OF PREVIOUS INVESTIGATIONS

The reports and documentation provided to McLaren/Hart were reviewed and conclusions were made regarding the thoroughness of the investigations performed and data collected.

2.1 Site Description

The subject property is located at 997 Grant Avenue, at the intersection of Grant Avenue and Washington Avenue in the city of San Lorenzo, California. A site map is included as Figure 1. The site had been occupied by a Chevron USA service station, which ceased operations in the fall of 1990. It has not been reported whether automobile repairs had been performed at the site.

The nearest surface water, San Lorenzo Creek, is located approximately 1,600 feet to the north of the subject site. The creek flows to the west and empties into San Francisco Bay, located approximately 1.6 miles to the west of the site.

In September 1986 the product tanks failed a Petrotite test due to leaks found in the vent lines. The lines were replaced, the system was retested and the system tested tight. A tank test was also performed in November 1989, and the system tested tight.

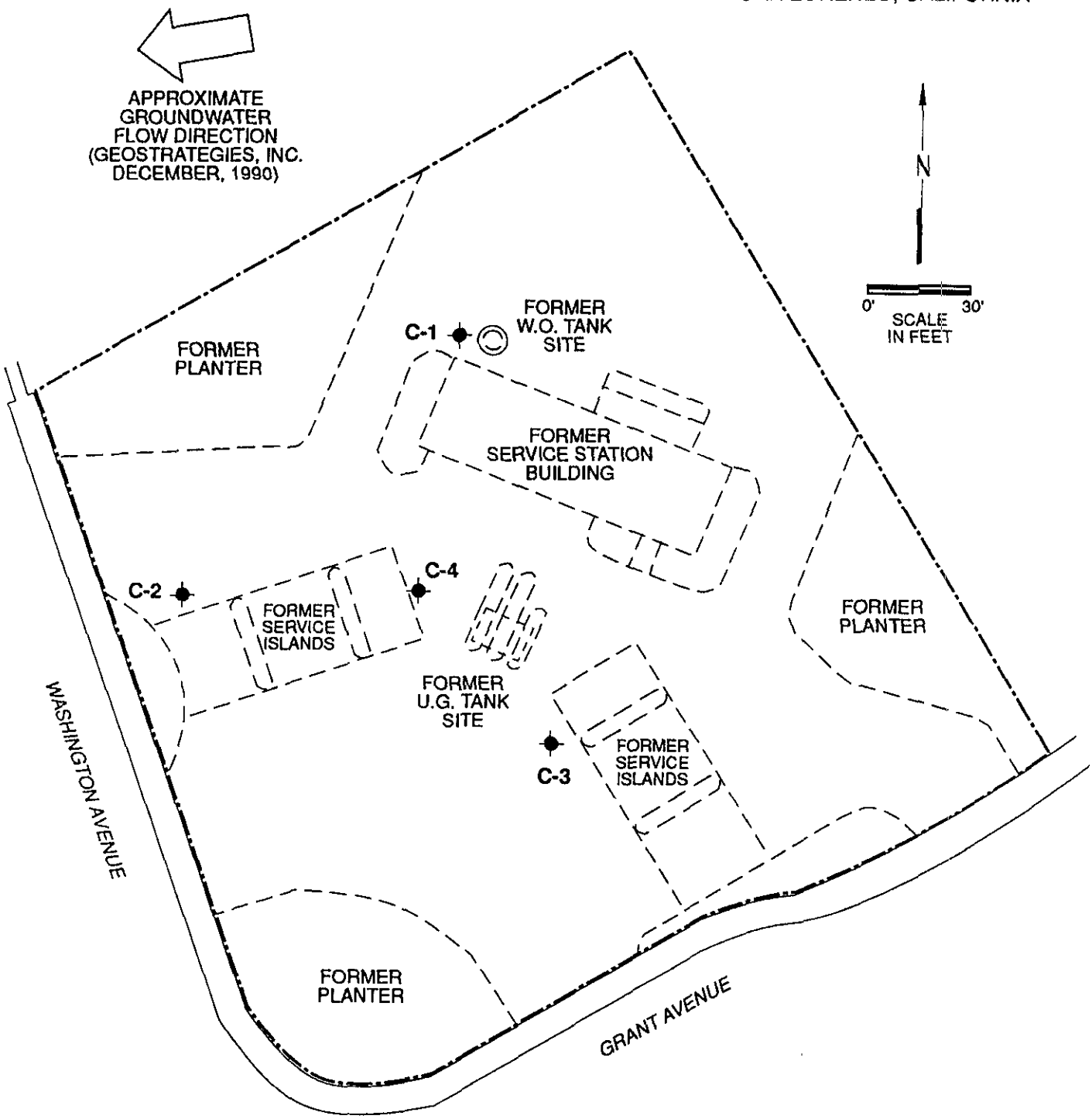
The service station facilities, including the station building, underground storage tanks, pump islands and associated piping were removed in the fall of 1990.

2.2 Soil Boring and Monitoring Well Installation Analytical Results

Four soil borings were drilled at the property and groundwater monitoring wells installed on November 12 and 13, 1990 by GeoStrategies, Inc. of Hayward, California. The borings/monitoring wells were designated as C-1 through C-4. Soil and groundwater analytical results from this investigation are presented in the "Preliminary Site Assessment and Well Installation Report" by GeoStrategies, Inc. dated February 8, 1991.

Soil boring C-1 was drilled adjacent to and northwest of the waste-oil tank location, soil boring C-2 was drilled a short distance from and to the northwest of the western pump island complex, soil boring C-3 was drilled a short distance from and to the northwest of the southern pump island complex, and soil boring C-4 was drilled a short distance from and to the northwest of the underground storage tank complex. The soil borings were completed as monitoring wells by installing 2-inch diameter PVC casing with 0.020-inch slotted screen.

FIGURE 1
SITE MAP
FORMER CHEVRON SERVICE STATION 9-5630
997 GRANT AVENUE
SAN LORENZO, CALIFORNIA



McLaren Hart

Soil and groundwater samples collected from the borings were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) by EPA Method 8015 Modified, and for benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8020. In addition, samples collected from boring C-1, were analyzed for total oil and grease by Standard Method 503E, and volatile organic compounds by EPA Method 8240. Analytic results from the soil boring/monitoring well installation are included in Table 1.

Soil Analytical Results

Soil analytical results indicated the presence of petroleum hydrocarbons in the soil samples collected from borings C-2, C-3 and C-4. Maximum concentrations of compounds detected in boring C-2 were present in the sample collected at 9.0 feet below ground surface, where TPH-G was detected at 99 parts per million (ppm), benzene detected at 0.18 ppm, toluene at 0.22 ppm, ethylbenzene at 0.96 ppm, and xylenes at 1.5 ppm.

Maximum concentrations of petroleum hydrocarbons detected in the soil samples collected from boring C-3 at 10.5 feet below ground surface included TPH-G detected at 140 ppm, benzene at 0.20 ppm, toluene at 0.041 ppm, ethylbenzene at 1.4 ppm, and xylenes at 0.93 ppm. It should also be noted that the soil sample collected from boring C-3 at 5.5 feet below ground surface contained a reported benzene concentration of 1.7 ppm, and a TPH-G concentration of 2 ppm. Since gasoline typically contains benzene concentrations on the order of approximately 0.12 to 3.5 percent by weight (Stephen C. Havlicek, "Characterization of Fuels and Fuel Spills, 1988), the reported benzene concentration is anomalous. Superior Analytical Laboratory, who performed the sample analysis, were asked to review the chromatograms. Mr. Richard Phaler of Superior Analytical Laboratory reviewed the data, and stated the chromatograms did not represent a typical gasoline pattern. The resulting chromatogram pattern was almost entirely a benzene peak, with minor peaks in the area of the other aromatic fuel compounds (pers. comm., January 31, 1991).

The highest petroleum hydrocarbon concentrations in soil in the November 1990 investigation were from the sample from boring C-4, collected at 10.5 feet below ground surface, where TPH-G was detected at 890 ppm, benzene at 2.8 ppm, toluene at 26 ppm, ethylbenzene at 22 ppm and xylenes at 110 ppm.

Maximum concentrations of TPH-G and BTEX compounds in soil are present in the samples collected from the 9.0 to 10.5 foot depth interval. Groundwater was encountered during drilling at approximately 11 feet below grade, and the analytical results reflect the tendency for petroleum hydrocarbon concentrations to be greatest in the samples collected immediately above the saturated zone. Concentrations of total petroleum hydrocarbons as gasoline in soil samples collected during drilling exceed the regulatory suggested maximum level of 10 ppm in borings C-2, C-3 and C-4.

TABLE 1 SOIL ANALYTICAL RESULTS - WELL INSTALLATION
(FROM GEOSTRATEGIES, INC. REPORT FEB. 8, 1991)

SOIL ANALYSES DATA

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TOG (PPM)
C-1-5.0	12-Nov-90	20-Nov-90	<1	<0.010	<0.015	<0.015	<0.015	<50
C-1-10.5	12-Nov-90	20-Nov-90	<1	<0.010	<0.015	<0.015	<0.015	<50
C-1-15.5	12-Nov-90	20-Nov-90	<1	<0.010	<0.015	<0.015	<0.015	<50
C-2-4.0	12-Nov-90	20-Nov-90	3	0.046	0.008	<0.005	0.036	N/A
C-2-9.0	12-Nov-90	20-Nov-90	99	0.18	0.22	0.96	1.5	N/A
C-2-14.0	12-Nov-90	20-Nov-90	<1	0.006	<0.005	<0.005	0.010	N/A
C-2-19.5	12-Nov-90	20-Nov-90	<1	<0.005	<0.005	<0.005	<0.005	N/A
C-3-5.5	12-Nov-90	20-Nov-90	2	1.7	0.019	0.036	0.037	N/A
C-3-10.5	12-Nov-90	20-Nov-90	140	0.20	0.041	1.4	0.93	N/A
C-3-15.5	12-Nov-90	20-Nov-90	<1	<0.005	0.008	<0.005	0.013	N/A
C-3-20.5	12-Nov-90	20-Nov-90	<1	<0.005	0.006	<0.005	0.011	N/A

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
TOG = Total Oil and Grease
PPM = Parts Per Million
N/A = Not Analyzed

Notes: 1. All data shown as <x are reported as ND (none detected).
2. BTEX results for samples C-1-5.0, C-1-10.5 and C-1-15.5 were reported in micrograms per kilogram (parts per billion).

TABLE 1 (CONTINUED) SOIL ANALYTICAL RESULTS - WELL INSTALLATION (FROM GEOSTRATEGIES, INC. REPORT FEB. 8, 1991)

SOIL ANALYSES DATA

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TOG (PPM)
C-4-10.5	12-Nov-90	21-Nov-90	890	2.8	26	22	110	N/A
C-4-15.5	12-Nov-90	20-Nov-90	<1	<0.005	<0.005	<0.005	0.008	N/A
C-4-20.5	13-Nov-90	20-Nov-90	1	0.007	0.014	0.008	0.043	N/A

TPH-G and BTEX compounds were also detected in the deeper saturated soil samples at maximum concentrations of 1 ppm TPH-G, 0.007 ppm benzene, 0.014 ppm toluene, 0.008 ppm ethylbenzene and 0.043 ppm xylenes in the sample from C-4 collected at a depth of 20.5 feet below ground surface.

Groundwater Analytical Results

Groundwater samples were collected from the newly installed wells on December 5, 1990. Analytical results for the December 5, 1990 groundwater sampling indicated the presence of benzene at a concentration of 4 ppb in the sample from well C-4. The regulatory Maximum Contaminant Level for benzene in groundwater is currently 1 ppb, and the concentration detected in the sample from well C-4 exceeds this level. Benzene was also detected in the sample collected from well C-3 at 1 ppb, and from well C-2 at 0.7 ppb. Low concentrations of toluene were detected in groundwater samples from wells C-3 and C-4, low concentrations of ethylbenzene were detected in well C-4, and low concentrations of xylenes were detected in samples from wells C-2 and C-4. TPH-G were not present above the detection limit of 50 ppb, and volatile organics and oil and grease were not detected in the sample from well C-1. Groundwater analytical results are presented in Table 2.

The groundwater flow direction was reported to be to the west in the December 1990 sampling.

2.3 Underground Storage Tank Removal and Soil Sampling Analytical Results

The four underground storage tanks, including associated piping and product pumps, were removed on December 18, 1990. The tank removal and sampling procedures are explained in the GeoStrategies Inc. Tank Removal Observation Report dated September 13, 1991. Two 10,000 gallon fiberglass storage tanks, containing regular leaded and regular unleaded gasolines, one 6,000 gallon fiberglass storage tank containing supreme unleaded gasoline, and one 1,000 gallon fiberglass waste-oil tank were excavated and removed. The regular leaded and waste-oil tank reportedly were sound, but small cracks were observed in the regular unleaded and supreme unleaded tanks. No mention was made in the report as to the age of the underground storage tanks. It had not been reported whether these were the original tanks or whether older underground storage tanks were removed from the site at some prior date.

Soil samples were collected from the bottom and sidewalls of the excavation during the underground storage tank removal, from the bottom and sidewalls of the trench during the product pipe excavation and removal, from the sidewalls of the additional overexcavation performed, and from the soil stockpiles during aeration. Review of analytical data contained

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Table 2. Analytic Results for Ground Water - Former Chevron Service Station #9-5630, 997 Grant Avenue, San Lorenzo, California

Well ID	Date Sampled	Analytic Lab	Analytic Method	TPPH (G)	B	T	E	X	O&G
				<----------ppb---------->					
C-1	12/5/90	SAL	8015/8020/503E	<50	<0.5	<0.5	<0.5	<0.5	<5,000
	9/6/91	SPA	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	12/4/91	**SPA**	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
C-2	12/5/90	SAL	8015/8020	<50	0.7	<0.5	<0.5	0.5	---
	9/6/91	SPA	8015/8020	<50	1.3	0.6	0.7	1.5	---
	12/4/91[3]	---	---	---	---	---	---	---	---
C-3	12/5/90	SAL	8015/8020	<50	1	0.7	<0.5	<0.5	---
	9/6/91	SPA	8015/8020	1,100	150	0.6	51	1.9	---
	12/4/91	**SPA**	8015/8020	89	<0.5	<0.5	0.7	0.6	---
C-4	12/5/90	SAL	8015/8020	<50	4	2	0.7	3	---
	9/6/91[1]	---	---	---	---	---	---	---	---
AA (Trip Blank)	12/5/90	SAL	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	9/6/91	SPA	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	12/4/91	**SPA**	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
BB (Bailer Blank)	9/6/91	SPA	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
	12/4/91	**SPA**	8015/8020	<50	<0.5	<0.5	<0.5	<0.5	---
DHS MCLs	---	---	---	NE	1	---	680	1,750	NE
DHS RALs	---	---	---	NE	---	100	---	---	NE

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Table 2. Analytic Results for Ground Water - Former Chevron Service Station #9-5630, 997 Grant Avenue, San Lorenzo, California (continued)

EXPLANATION:

TPPH(G) = Total Purgeable Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
O&G = Total Oil and Grease
--- = Not analyzed/Not applicable
DHS MCLs = Department of Health Services Maximum Contaminant Levels
DHS RALs = Department of Health Services Recommended Action Levels
NE = Not established
ppb = Parts per billion

ANALYTIC METHODS:

8015 = EPA Method 8015/5030 for TPPH(G)
8020 = EPA Method 8020 for BTEX
503E = Standards Method Method 503E for O&G

ANALYTIC LABORATORY:

SAL = Superior Analytical Laboratory of San Francisco, California
SPA = Superior Precision Analytical, Inc. of Martinez, California

NOTE:

[1] Well was destroyed during tank removal and soil excavation operations.
[2] Well obstructed, therefore could not be sampled.

in the two GeoStrategies Inc. reports indicates that soil was left in place which contains concentrations of total petroleum hydrocarbons as gasoline greater than 10 ppm, and future remedial investigation may be required by regulatory agencies. Figure 2 presents the results of soil samples collected following excavation and identifies areas where concentrations of TPH-G in soil greater than 10 ppm remain in place.

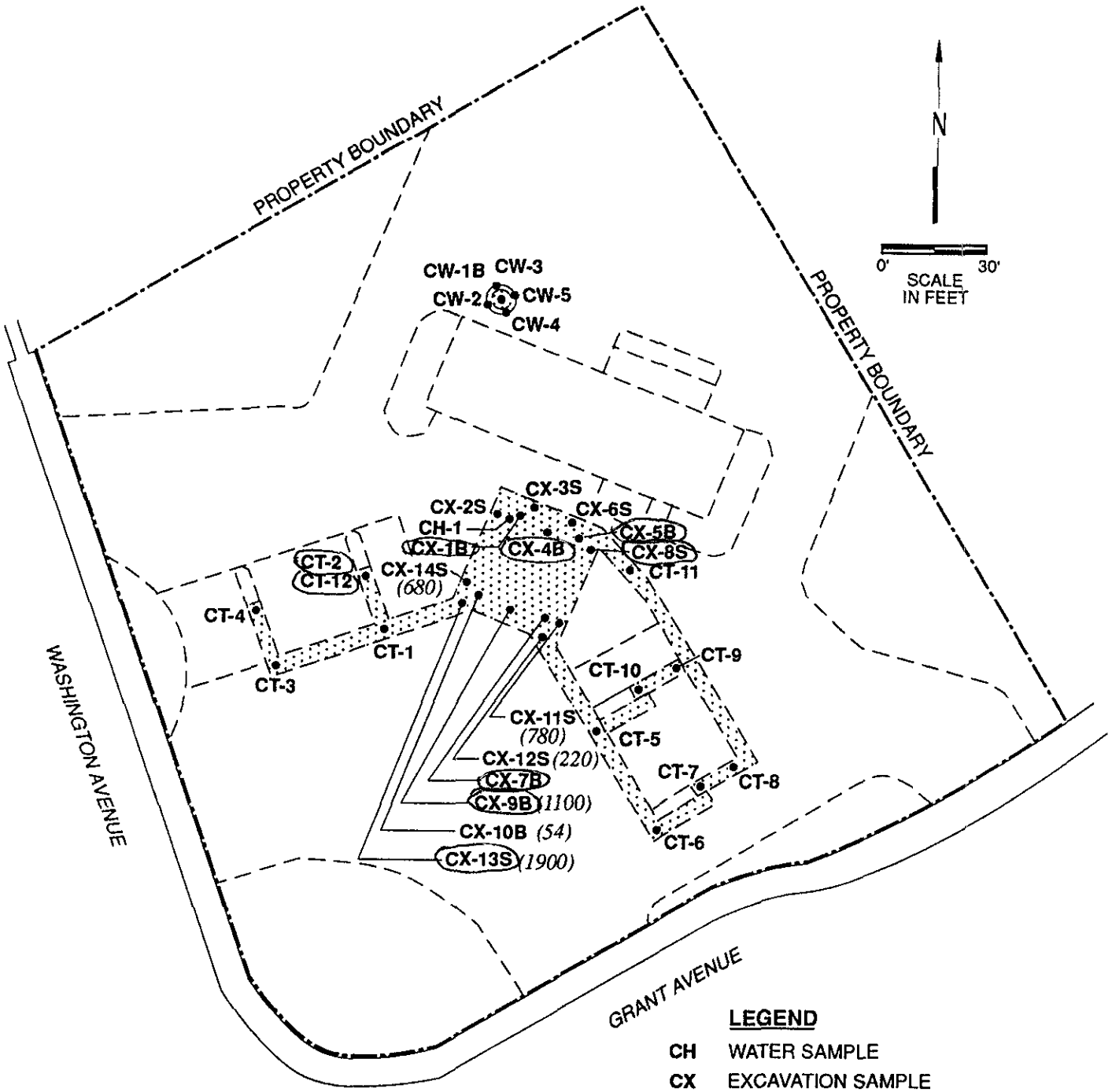
Approximately 400 cubic yards of soil from the tank removal and product line trenching were stockpiled on-site. Soil samples were collected from the bottom of the storage tank excavation, approximately 11.5 feet below ground surface, from the sidewalls of the excavation, approximately 8 to 9.5 feet below ground surface, and from the bottom of the trenches at approximately 3.5 to 5.5 feet below ground surface. Analytical results of the tank and piping removal soil sampling are presented in Table 3.

A program of overexcavation and additional soil sampling was initiated in February 1991. Overexcavation was continued based on field observations, results of readings of organic vapor using an Organic Vapor Meter (OVM) were less than 100 ppm, or until structural concerns prevented further excavation. Approximately 1,200 cubic yards of additional soil was excavated, stored on site, and aerated. Overexcavation soil analytical results are also included in Table 3. Figure 2 details the tank excavation, trench excavation and overexcavation soil analytical results which were of significant concern, and soil analytical results which represent contaminated soil left in place at the site are emphasized.

Soil piles were allowed to aerate, and were periodically resampled. If analytical results were less than 9 ppm TPH-G, the soil was used as fill at the site. If TPH-G concentrations were greater than 10 ppm, the soil was aerated for an additional period of time. Following review of the GeoStrategies Inc. Tank Removal Observation Report, it appears that soil aeration continued on-site until at least July 31, 1991, or approximately seven months following initial excavation.

GeoStrategies, Inc. state in their "Tank Removal Observation Report" that "an allowable volume of stockpiled soil with a TPH-Gasoline concentration of greater than 9 ppm was aerated on-site by G-R (Gettler-Ryan) to comply with Bay Area Air Quality Management District guidelines for uncontrolled soil aeration". Following review of the GeoStrategies Inc. report, it was found that "uncontrolled" soil aeration of the excavation soils occurred from December 18, 1990 to approximately July 31, 1991, or approximately seven months. According to the Bay Area Air Quality Management District (BAAQMD), unpermitted soil aeration can occur for no more than 90 days, after which permits are required and aeration must be controlled. It had not been mentioned in the GeoStrategies Inc. report whether appropriate permits were received from the BAAQMD, but it does not appear that unpermitted aeration of soil on-site would pose any future liability. Since the soils are now

FIGURE 2
SOIL EXCAVATION SAMPLE RESULTS
FORMER CHEVRON SERVICE STATION
997 GRANT AVENUE
SAN LORENZO, CALIFORNIA



LEGEND

CH	WATER SAMPLE
CX	EXCAVATION SAMPLE
CT	TRENCH SAMPLE
CW	WASTE OIL SAMPLE
S	SIDEWALL
B	BOTTOM
	EXCAVATED TRENCH AND PIT AREA
(220)	TPH-G CONCENTRATIONS IN SOIL LEFT IN PLACE

McLaren Hart

Ⓒ Conc. TPH > 1000 ppm in soil

TABLE 3 SOIL ANALYTICAL RESULTS-
TANK REMOVAL
(FROM GEOSTRATEGIES, INC. REPORT DATED
SEPTEMBER 13, 1991)

SOIL ANALYSES DATA

SAMPLE NO	DEPTH (FT)	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	OIL & GREASE (PPM)
CH-1	9.5	18-Dec-90	02-Jan-91	8	7.8	19	2.7	17	----
CW-1B	11	18-Dec-90	28-Dec-90	<1	<.005	<.005	<.005	<.005	<50
CW-2	7	18-Dec-90	28-Dec-90	<1	<.005	<.005	<.005	0.010	<50
CW-3	7	18-Dec-90	28-Dec-90	<1	<.005	<.005	<.005	0.007	<50
CW-4	7	18-Dec-90	28-Dec-90	<1	<.005	<.005	<.005	0.010	<50
CW-5	7	18-Dec-90	28-Dec-90	<1	<.005	<.005	<.005	<.005	<50
CT-1	3.5	18-Dec-90	28-Dec-90	<1	<.005	<.005	<.005	0.009	----
CT-2	3.5	18-Dec-90	28-Dec-90	3400	<0.5	1.7	12	80	----
CT-3	3.5	18-Dec-90	02-Jan-91	8	0.12	0.10	0.35	0.30	----
CT-4	3.5	18-Dec-90	28-Dec-90	8	0.11	0.069	0.26	0.15	----
CT-5	3.5	18-Dec-90	02-Jan-91	<1	0.010	<.005	<.005	0.017	----
CT-6	3.5	18-Dec-90	28-Dec-90	5	0.031	0.010	<.005	0.15	----

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPM = Parts Per Million
CX = Excavation and Overexcavation Sample
CW = Waste Oil Sample
B = Bottom
CH = Ground-water Sample
CT = Trench Sample
S = Sidewall

727802-3

TABLE 3 (CONTINUED) SOIL ANALYTICAL RESULTS - TANK REMOVAL
(FROM GEOSTRATEGIES, INC. REPORT DATED SEPTEMBER 13, 1991)

SOIL ANALYSES DATA

SAMPLE NO	DEPTH (FT)	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	OIL & GREASE (PPM)
CT-7	3.5	18-Dec-90	28-Dec-90	2	<.005	0.006	0.007	0.030	----
CT-8	3.5	18-Dec-90	28-Dec-90	<1	<.005	<.005	<.005	0.005	----
CT-9	3.5	18-Dec-90	28-Dec-90	3	<.005	0.012	<.005	0.030	----
CT-10	3.5	18-Dec-90	28-Dec-90	13	0.029	0.010	0.29	0.61	----
CT-11	3.5	18-Dec-90	28-Dec-90	4	0.45	<.005	0.11	0.062	----
CT-12	5.5	15-Jan-91	24-Jan-91	6000	0.500	17	56	400	----
CX-1B	11.5	18-Dec-90	28-Dec-90	1500	1.2	50	29	160	----
CX-2S	9.5	18-Dec-90	28-Dec-90	12	0.014	0.100	0.096	0.38	----
CX-3S	8.5	18-Dec-90	28-Dec-90	6	0.009	0.014	0.100	0.075	----
CX-4B	11.5	18-Dec-90	28-Dec-90	1700	0.40	31	25	150	----
CX-5B	11.5	18-Dec-90	28-Dec-90	1600	0.39	32	24	140	----
CX-6S	8.5	18-Dec-90	28-Dec-90	6	0.005	0.013	0.040	0.12	----
CX-7B	11.5	18-Dec-90	28-Dec-90	730	0.89	19	11	62	----
CX-8S	8.0	18-Dec-90	28-Dec-90	4500	0.70	10	39	210	----

TABLE 3 (CONTINUED) SOIL ANALYTICAL RESULTS - TANK REMOVAL
(FROM GEOSTRATEGIES, INC. REPORT DATED SEPTEMBER 13, 1991)

SOIL ANALYSES DATA

SAMPLE NO	DEPTH (FT)	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	OIL & GREASE (PPM)
CX-9B	11.5	18-Dec-90	28-Dec-90	1100	<0.3	9.9	15	80	----
CX-10B	11.5	18-Dec-90	28-Dec-90	54	0.026	0.23	0.38	1.6	----
CX-11S	8.0	18-Dec-90	28-Dec-90	780	0.35	11	11	65	----
CX-12S	8.5	18-Dec-90	28-Dec-90	220	0.17	0.070	7	0.30	----
CX-13S	8.5	18-Dec-90	28-Dec-90	1900	0.45	16	28	160	----
CX-14S	9.0	18-Dec-90	29-Dec-90	680	<0.3	6	9.6	57	----
CX-15S	9.5	15-Feb-91	25-Feb-91	3	<.005	<.005	0.014	0.008	----
CX-16S	9.5	15-Feb-91	25-Feb-91	2	<.005	<.005	0.011	0.013	----
CX-17S	9.5	15-Feb-91	25-Feb-91	<1	0.056	<.005	<.005	0.011	----
CX-18S	9.5	15-Feb-91	25-Feb-91	2	0.008	<.005	0.019	0.006	----
CX-19S	9.5	15-Feb-91	25-Feb-91	46	<.030	0.046	0.18	0.41	----
CX-20S	9.5	15-Feb-91	25-Feb-91	<1	<.005	<.005	<.005	<.005	----
CX-21S	9.5	15-Feb-91	25-Feb-91	170	0.037	0.075	2	4	----
CX-22S	9.5	15-Feb-91	25-Feb-91	54	0.024	0.038	0.25	0.83	----

TABLE 3 (CONTINUED) SOIL ANALYTICAL RESULTS - TANK REMOVAL
(FROM GEOSTRATEGIES, INC. REPORT DATED SEPTEMBER 13, 1991)

SOIL ANALYSES DATA

SAMPLE NO	DEPTH (FT)	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	OIL & GREASE (PPM)
CX-23S	9.5	15-Feb-91	25-Feb-91	270	0.011	0.093	3	9	----
CX-24S	8.5	26-Aug-91	30-Aug-91	5	<.005	0.049	0.012	0.015	----

either in the ground or disposed of in a landfill, the BAAQMD would not be involved in the site unless future remedial activities would be undertaken.

2.4 Quarterly Groundwater Sampling Program Analytical Results

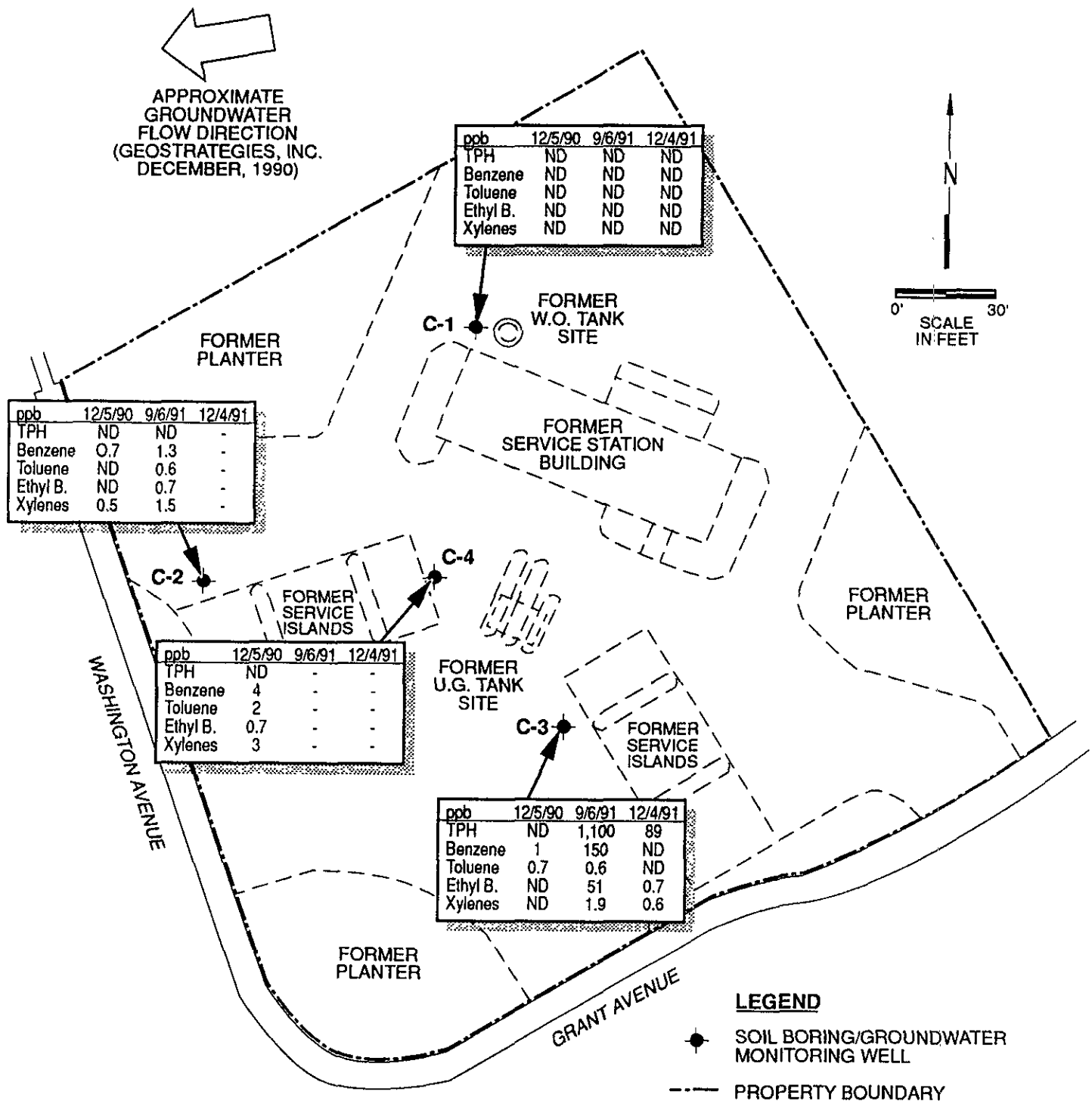
A groundwater sampling program was initiated on September 6, 1991 by Sierra Environmental Services, of Martinez, California. Groundwater samples were collected from monitoring wells C-1 through C-3. Well C-4 was reportedly damaged or destroyed during tank excavation and soil excavation activities. Groundwater samples were collected from the three monitoring wells and analyzed for the presence of total purgeable petroleum hydrocarbons (TPPH-G) and BTEX. The analytical method for TPPH-G is identical to the method reported for the analysis of TPH-G.

Analytical results indicated a great increase in the concentrations of TPPH-G and BTEX, in comparison to the results of the December 1990 sampling, in the groundwater sample collected from well C-3. TPPH-G was reported in the September 1991 sampling at 1,100 ppb, benzene at 150 ppb, toluene at 150 ppb, ethylbenzene at 51 ppb, and xylenes at 1.9 ppb. Concentrations of petroleum hydrocarbons in the water samples collected from wells C-1 and C-2 remained low or non-detectable. The groundwater flow direction in the September 1991 sampling was reported to be to the northeast.

Sierra Environmental Services again sampled the site on December 4, 1991. Groundwater samples could not be collected from well C-2 due to an obstruction. Water levels were obtained from wells C-1, C-2 and C-3, and a groundwater flow direction to the northeast was reported. Analytical results for TPPH-G and BTEX concentrations in groundwater samples from well C-1 remained below laboratory detection limits, and concentrations of TPPH-G and BTEX in the samples collected from well C-3 had decreased significantly from the September 1991 sampling. TPPH-G was reported in the December 1991 sampling at 89 ppb, benzene was below the detection limit of 0.5 ppb, toluene was also not detected above 0.5 ppb, ethylbenzene was reported at 0.7 ppb, and xylenes were reported at 0.6 ppb.

The concentrations of TPH-G (or TPPH-G) and BTEX compounds in groundwater have varied considerably in the three groundwater sampling events conducted to date. TPPH-G and benzene concentrations have varied in well C-3 from below the detection limit of 50 ppb for TPPH-G and 0.5 ppb for benzene, to detected concentrations of 1,100 ppb and 150 ppb, respectively. Historical groundwater analytical results are presented in Figure 3. The current State Department of Health Services (DHS) regulated Maximum Contaminant Level of benzene in groundwater is 1 ppb, and regulators generally aim to have site groundwater contamination defined to non-detectable levels of TPPH-G.

FIGURE 3
HISTORICAL GROUNDWATER ANALYTICAL DATA
FORMER CHEVRON SERVICE STATION 9-5630
997 GRANT AVENUE
SAN LORENZO, CALIFORNIA



ppb	12/5/90	9/6/91	12/4/91
TPH	ND	ND	ND
Benzene	ND	ND	ND
Toluene	ND	ND	ND
Ethyl B.	ND	ND	ND
Xylenes	ND	ND	ND

ppb	12/5/90	9/6/91	12/4/91
TPH	ND	ND	-
Benzene	0.7	1.3	-
Toluene	ND	0.6	-
Ethyl B.	ND	0.7	-
Xylenes	0.5	1.5	-

ppb	12/5/90	9/6/91	12/4/91
TPH	ND	-	-
Benzene	4	-	-
Toluene	2	-	-
Ethyl B.	0.7	-	-
Xylenes	3	-	-

ppb	12/5/90	9/6/91	12/4/91
TPH	ND	1,100	89
Benzene	1	150	ND
Toluene	0.7	0.6	ND
Ethyl B.	ND	51	0.7
Xylenes	ND	1.9	0.6

LEGEND

- SOIL BORING/GROUNDWATER MONITORING WELL
- PROPERTY BOUNDARY
- TPH TOTAL PETROLEUM HYDROCARBONS
- Ethyl B. ETHYL BENZENE
- ND NOT DETECTED
- \- NOT SAMPLED
- ppb PARTS PER BILLION

McLaren Hart

The groundwater flow direction beneath the site was reported to be to the west in the December 1990 sampling event, to the northeast in the September 1991 sampling, and again to the northeast in the December 1991 sampling. Review of the topographic map of the area (U.S.G.S.; San Leandro, California, 7.5 Minute Quadrangle) indicates the ground surface slopes to the west/southwest in the vicinity of the site, and therefore groundwater flow to the northeast would be topographically uphill, and not likely. Shallow groundwater flow generally follows surface slope. Review of the Sierra Environmental Services sampling data shows that the depth to water elevations are referenced to the top of casing (TOC) and not to the top of box (TOB). The elevations surveyed by GeoStrategies, Inc. were to the top of the christy box, and not to the top of the casing. Since the distance between the top of the casing and the top of the box may range from 0.2 to 0.8 feet, it appears that Sierra Environmental Services has been mistakenly using an unsurveyed portion of the well to determine groundwater elevations. The direction of groundwater flow must be determined to 1) understand the hydrologic system in the vicinity of the site, 2) define the direction of chemical migration, and 3) correctly place future monitoring wells downgradient of the source areas. If the Christy boxes had been damaged or disturbed during site excavation activities, it would be necessary to return to the site and resurvey the well elevations.

The determination of the groundwater flow direction is necessary to evaluate whether groundwater contamination has migrated downgradient of the source areas and possibly off-site. Existing groundwater analytical data is limited, and does not allow for determination of the extent of petroleum hydrocarbon contamination. The installation of additional monitoring wells in the verified downgradient direction is necessary to determine whether petroleum hydrocarbons have migrated from the source areas.

The inability to collect groundwater samples from monitoring well C-4 remains a concern, since this well is located in the area where the highest concentrations of TPH-G were detected during drilling. Soil excavation during tank removal did remove much of the soils in the vicinity of well C-4, but the excavation was terminated prior to the removal of all soil containing TPH-G concentrations greater than 10 ppm.

It is also a concern to regulators when monitoring wells are reported to be "destroyed during tank removal and soil excavation activities". No mention is made as to whether the well was properly destroyed following regulatory guidelines, or whether the portion of the well closest to the surface was damaged, and the lower portion of the well remains in place. To avoid any future liability regarding the possible existence of an improperly destroyed monitoring well, it must be determined whether the entire well was removed and the borehole grouted, whether the remaining casing and annulus was pressure grouted, or whether just the surface portion of the well was damaged and the rest of the well remains in place.

In a letter from the Alameda County Health Care Services, Department of Environmental Health (ACHCSDEH) to Ms. Nancy Vukelich of Chevron USA dated December 31, 1991, the ACHCSDEH "requires that Chevron install additional wells to better define the extent of groundwater contamination". Also, the ACHCSDEH request that Chevron "submit a written timetable defining (the) time period for installing additional wells, gathering data, and implementing remediation". A workplan, including a diagram of proposed well locations was requested to be submitted to the agency no later than February 15, 1992.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions were reached following review of the reports submitted to McLaren/Hart:

- Soils remain in place which contain greater than 10 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G), and in some locations, soils containing TPH-G concentrations in excess of 100 ppm remain in place. Regional Water Quality Control Board and Alameda County Health Services, Environmental Health Division recommend that soils containing greater than 10 ppm TPH-G be removed or remediated. McLaren/Hart believes that the areas which contain soil TPH-G concentrations greater than 10 ppm must be further assessed and remediated by Chevron USA.

- Four groundwater monitoring wells (C-1 through C-4) were installed at the site in November 1990, and sampled in December 1990. Three of these monitoring wells, C-1, C-2 and C-3 were sampled in September 1991, and two of these wells, C-1 and C-3 were sampled in December 1991. TPH-G concentrations in groundwater were detected at 1,100 parts per billion (ppb), and benzene concentrations were reported at 150 ppb in the groundwater sample collected from well C-3 in the September 1991 sampling event. Benzene was also detected in the water sample collected from well C-2 in the September 1991 sampling at 1.3 ppb. TPH-G and benzene concentrations in groundwater samples collected from well C-3 in the December 1991 sampling were 89 ppb and less than 0.5 ppb, respectively. The current California Department of Health Services regulated Maximum Contaminant Level (MCL) established for benzene in groundwater is 1 ppb. Two of the three wells on-site exceeded this level in the September 1991 sampling event. McLaren/Hart believes that additional monitoring and assessment will be required by regulatory agencies.

- McLaren/Hart recommends the installation of additional groundwater monitoring wells at the site to delineate the extent of petroleum hydrocarbon contamination. The potential also exists for petroleum hydrocarbon contamination to have migrated

downgradient and/or off-site. The installation of monitoring wells downgradient of the former service station facilities is necessary to determine the extent of contaminant migration.

- Shallow groundwater flow direction at the site was reported to be to the west in December 1990, but to the northeast in September 1991 and December 1991. A groundwater flow direction to the northeast seems unlikely since that would be topographically uphill. It appears that the groundwater elevation data collected in September and December 1991 is erroneous due to the use of the wrong reference datum. Groundwater flow direction must be better defined to ensure that the contaminant plume is adequately defined in the downgradient direction. The influence of tidal fluctuation on groundwater elevations and flow direction at the site should also be evaluated. The installation of additional groundwater monitoring wells and the resurveying of new and existing wells at the site would achieve this objective.

- The impact of the contaminated groundwater on the surrounding community has not been studied or reported. The existence of water-supply wells within a one-half mile radius of the subject site has not been studied, and the possibility exists that downgradient users may be impacted by contaminated groundwater.

- The Alameda County Health Care Services Agency, Department of Environmental Health (ACHCSA-DEH) is requiring, in a letter to Chevron USA dated December 31, 1991, the installation of additional groundwater monitoring wells "to better define the extent of groundwater contamination". A workplan for the additional investigation must be submitted and received by ACHCSA-DEH by February 15, 1992. In addition, a timetable must be submitted defining the time period for well installation, data acquisition and implementation of remediation. McLaren/Hart agrees with the regulatory agency that additional assessment and remediation of contamination at the site must be initiated.