ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

REMEDIAL ACTION COMPLETION CERTIFICATE

StID 3615 former Gulf Service Station #0006, 460 Grand Ave., Oakland, CA, 94610
(3-10,000, 2-250 gallons tanks removed)

December 3, 1998

Phillip R. Briggs, Project Manager Site Assessment & Remediation
Chevron Products Co.
6001 Bollinger Canyon Rd.
Bldg. L, Rm. 1110
PO Box 6004
San Ramon, CA 94583-0904

Dear Mr. Briggs:

This letter confirms the completion of site investigation and remedial action for the underground storage tank formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, Section 2721(e) of the California Code of Regulations.

Please contact our office if you have any questions regarding this matter.

Sincerely,

Mee Ling Tung, Director

cc: Chuck Headlee, RWQCB
Dave Deaner, SWRCB
Leroy Griffin, OFD

01-0611

ENVIRONMENTAL PROTECTION

97 APR 31 PM 3:08

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. AGENCY INFORMATION Date: 11/19/96

Agency name: **Alameda County-HazMat** Address: **1131 Harbor Bay Pky**
City/State/Zip: **Alameda CA 94502** Phone: **(510) 567-6700**
Responsible staff person: **Jennifer Eberle** Title: **Hazardous Materials Spec.**

II. CASE INFORMATION

Site facility name: **Former Gulf Service Station #0006**
Site facility address: **460 Grand Ave., Oakland CA 94610**
RB LUSTIS Case No: **N/A** Local Case No./LOP Case No.: **3615**
ULR filing date: **12/4/90** SWEEPS No: **N/A**

Responsible Parties: **Addresses:** **Phone Numbers:**
Phil Briggs, Chevron Products Co., PO Box 5004, San Ramon CA 94583-0804 (510-842-9136)

Falaschi Brothers, c/o Jack Gibson, The Legal Solutions Group, 1629-5th Ave., San Rafael CA 94901 (415-460-0100 ext.13)

Tank No:	Size in gal.:	Contents:	Closed in-place or removed?:	Date:
1	10,000	gasoline	removed	11/29/90
2	10,000	gasoline	removed	11/29/90
3	10,000	gasoline	removed	11/29/90
4	250	waste oil	removed	11/29/90
5	250	waste oil	removed	01/05/94

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and type of release: apparent piping leak
Site characterization complete? YES
Monitoring Wells installed? YES Number: four
Proper screened interval? YES
Highest GW depth below ground surface (DTW): 2.31'bgs on 3/22/95 in C-3
Lowest GW depth: 7.31'bgs on 9/20/95 in C-4
Flow direction: consistently south, towards Lake Merritt
Most sensitive current use at present: vacant lot

Leaking Underground Fuel Storage Tank Program

Are drinking water wells affected? NO Aquifer name: n/a
Is surface water affected? Probably not, since the downgradient well C-4 has been ND
Nearest SW name: Lake Merritt is approx 550' south of the site
Report(s) on file at **Alameda County, 1131 Harbor Bay Pky, Alameda CA 94502**

Treatment and Disposal of Affected Material:

Material	Amount (include units)	Action (Treatment of Disposal w/destination)	Date
Tank	four USTs	disposed to Erickson, #89891087 and #89891108,	11/29 & 30/90
Tank's Contents and Rinsate	10,235 gal	disposed to Refineries Services, #89804855, #89802491, and #89804851	11/27 & 28/90
Soil	approx 350 yd3	disposed to Forward Landfill	Jan 1994
	approx 450 yd3	disposed to Redwood Landfill	Jan 1994
Groundwater	10,000 gal	disposed to Chevron's Richmond refinery	1/26/93

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After
TPH (Gas)	1,700 [a]	2,300 [i]	2,300 [e]	80 [g]
TPH (Diesel)	7,100 [b]	200 [c]	170 [f]	NA [g]
Benzene	1.2 [b]	13 [i]	53 [e]	0.93 [g]
Toluene	10 [b]	80 [i]	160 [e]	ND [g]
Ethylbenzene	47 [a]	83 [i]	36 [e]	ND [g]
Xylene	260 [a]	440 [i]	160 [e]	ND [g]
Oil & Grease	24,000 [b]	ND [c]	ND [f]	ND [h]
PCE	1.0 [b]	0.074 [d]	ND [f]	ND [h]
1,1,1-TCA	0.25 [b]	0.042 [d]	ND [f]	ND [h]
1,2-DCB	ND [b]	0.048 [d]	ND [f]	ND [h]
1,2-DCA	ND [b]	0.028 [d]	ND [f]	3.5 [h]
Cd	0.8 [b]	10.8 [d]	ND [f]	ND [h]
Cr	12 [b]	58 [d]	ND [f]	190 [h]
Pb	40 [b]	12 [d]	ND [f]	70 [h]
Ni	22 [b]	74 [d]	ND [f]	360 [h]
Zn	41 [b]	83 [d]	70 [f]	380 [h]
MTBE				8.7

[a] from piping samples collected 12/4/90
[b] from waste oil tank excavation, collected 11/29/90
[c] from final excavation samples which were in the long term vadose zone (0-5.5'bgs), as used for the risk evaluation, collected Jan 1-21, 1994
[d] from final excavation samples (HVOCs in WX-3 and WO-9, and metals in H-S and WX-3), collected Jan 1-21, 1994
[e] from grab water sample from open fuel tank excavation, collected 11/29/90
[f] from grab water sample from open waste oil tank excavation, collected 12/4/92
[g] from last round of MW sampling, collected 12/12/95
[h] from MW sampling conducted on 12/16/92
[i] from soil sampling in borehole for well C-2, 12/14/92

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Undetermined
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Undetermined
Does corrective action protect public health for current land use? see comments in section V. regarding the risk evaluation
Site management requirements: **Commercial site development is acceptable with the site in its present condition. Residential site development is acceptable, providing that either 1) the development includes a 15' setback distance from Grand Ave., or 2) soil is excavated within the 15' setback zone, soil samples are collected under the purview of this Agency, and laboratory analysis indicates the samples are either non-detect or within acceptable concentrations (as per additional calculations and possibly another revised Risk Evaluation).**

Should corrective action be reviewed if land use changes? **YES**; see comments above
Monitoring wells Decommisioned: Not yet
Number Decommisioned: ○ Number Retained: 4
List enforcement actions taken: Pre-Enforcement Review Panel 7/27/93, Legal Request for Submittal of a Technical Report signed by Steven Ritchie of the RWQCB and dated 9/27/93
List enforcement actions rescinded: none

V. ADDITIONAL COMMENTS, DATA, ETC.

The property was reportedly first developed in the late 1940s, and operated as a service station by a series of parties. The property was reportedly purchased by Gulf Oil Co. in 1961, when the existing USTs were replaced with three new 10,000-gallon gasoline USTs. Gulf Oil Co. reportedly operated the service station from 1961 through 1978. The Falschi brothers reportedly purchased the property in August 1978, and reportedly removed the fuel dispensers and emptied the USTs. The station had reportedly not been used since 1978.

On 11/29/90, four USTs were removed, under purview of Gil Wistar of Alameda County. There were three 10,000-gallon fuel USTs and one 250-gallon waste oil UST. According to Mr. Wistar's notes, Fuel Tank #1 had deep pitting and no apparent holes, while Fuel Tank #2 had deep pitting and at least 2 small holes. Fuel Tank #3 appeared to be in better condition, while Waste Oil Tank #4 had numerous small holes. There were two tank excavations: one for the fuel USTs and one for the waste oil UST. Seven soil samples were collected and one grab water sample was collected (from the fuel tank pit). Four piping samples were collected on 12/4/90. **See Figure 1 and 2, and Tables 1 through 4.**

Results from the six fuel tank soil samples were unremarkable: ND TPHg and ND benzene except for one hit of 0.019 mg/kg benzene; maximum lead result was 3.8 mg/kg. The water sample contained 2,300 ug/L TPHg, ND TPHd, and 53 ug/L benzene. The maximum concentrations from the piping samples included 1,700 mg/kg TPHg and 0.0066 mg/kg benzene. The waste oil tank soil sample contained 400 mg/kg TPHg, 7,100 mg/kg TPHd, 24,000 mg/kg O&G, 1.2 mg/kg benzene, 1.0 mg/kg PCE, and 0.25 mg/kg 1,1,1-TCA. The stockpiled soils were apparently not sampled.

On 12/4/92, the stockpiled soils were sampled, groundwater was pumped out of the excavations, the pit water from the waste oil tank excavation was sampled, and pit water from the fuel tank excavation was resampled. Results from the fuel tank stockpiled soils indicated ND TPHg and ND BTEX. Results from the waste oil tank stockpiled soils indicated ND TPHg, ND BTEX, 8400 mg/kg O&G, ND HVOCs, 190 mg/kg TPHd, ND Cd, 23 mg/kg Cr, 88 mg/kg Pb, 30 mg/kg Ni, and 340 mg/kg Zinc. Results from the fuel tank pit water sample indicated ND TPHg, ND BTEX and ND Pb. Results from the waste oil tank pit water sample indicated ND TPHg, ND BTEX, 170 ug/L TPHd, ND HVOCs, ND Cd, ND Cr, ND Pb, ND Ni, and 0.07 mg/L Zn. **See Table 5 and Figure 2A.**

Three monitoring wells were installed on 12/14/92 and 12/15/92. Soils were sampled in the boreholes. **See Figure 5, 5A, 5B, 5C for locations and boring logs, and Table 6** for results. The downgradient boring (C2) near the pump island had significant soil concentrations.

On 3/19/93, the former waste oil tank pit, located at the northeast edge of the property, was overexcavated and resampled. Four sidewall samples were collected at 6'bgs. There was water in the excavation. Results indicated up to 21,000 mg/kg O&G, 730 mg/kg TPHg, 3,200 mg/kg TPHd, 2.1 mg/kg benzene, 0.320 mg/kg 1,1,1-TCA, 0.610 mg/kg PCE, and 0.065 mg/kg 1,2-DCB in sample WE. The results were not tabulated. **See Figure 4.**

On 12/28/93, the service station was demolished. This allowed better access to the former waste oil tank pit in the northeastern edge of the property, for the purpose of removing residual soil contamination. On 1/3/94, another UST was discovered below the former service station. It appeared to be a 250-gallon waste oil UST. Soil samples (WX series) were collected from the overexcavation of the former waste oil tank pit in the northeastern edge of the property. In addition, an oil/water separator was removed; soil samples (SM series) were collected. Two hydraulic hoists were removed; soil samples HS and HN were collected. Sample results in these locations were unremarkable, with the exception of sample WX-3 from the northern edge of the property (1,300 mg/kg TPHd and 970 mg/kg TOG at 3'bgs); **see Figure 6 & 7, Tables 7 & 8.**

On 1/5/94, the pump islands were excavated. There was a strong gasoline odor. Several samples (IX series) were collected in the pump island excavation. The newly-discovered 250-gallon waste oil UST was removed. There were 2 large corrosion holes on the top; the bottom and sides appeared intact. Approximately 150 gallons of waste oil were pumped out on 1/4/94. Four soil samples were initially collected from the newly-discovered 250-gallon waste oil UST excavation (WO series). **See Table 7 and Figure 6.**

On 1/20/94 and 1/21/94, further overexcavation ensued in the areas of the former islands and the newly discovered waste oil UST/hydraulic hoists. The data is compiled in **Tables 7 and 8. See Figures 5, 6, and 7 also.**

During these activities, approximately 350 yd3 of soil were removed from the waste oil tank excavation and disposed at Forward Landfill. Approximately 450 yd3 of soil were removed from the pump island excavation and disposed at Redwood Landfill. This makes a total of approximately 800 yd3 of soil removed from this site.

The final sampling locations are depicted in Figure 7, with the exception of sample WO-7, which was overexcavated. The residual benzene concentrations left in place are samples WO-8, WO-9, IX-7, IX-11, IX-12, IX-13, IX-14, IX-15, IX-16, IX-17, IX-18, IX-19, IX-21, and IX-22.

Further subsurface investigation was conducted offsite and downgradient in Grand Avenue in May 1995. A fourth monitoring well (C4) was installed; two additional borings were attempted but not completed, due to the presence of utilities. **See Figure 9 for the boring log of C4.**

Groundwater was sampled and monitored for 8 events between 12/16/92 and 12/12/95 in the first three wells, and for 3 events between 6/5/95 and 12/12/95 in the downgradient well (C4). **See Table 9.** Results indicated low to ND concentrations of benzene and TPHg. Groundwater flow direction was consistently south, towards Lake Merritt. **See Figure 8.**

An ASTM RBCA Tier 2 risk evaluation was prepared by Chevron Research and Technology Company (CRTC), dated 5/20/96. They evaluated indoor inhalation for a residential scenario, for both soil and groundwater conditions. The risk evaluation was amended to address the concerns of the soil sampling selection and correct the solutions to the equations. The soil samples selected contained benzene at a depth of 0 to 5.5'bgs, the expected long term vadose zone. These samples included WO-8, WO-9, IX-11, IX-13, IX-15, and IX-18. Two scenarios were evaluated: conservative and plausible. The conservative scenario used the maximum site benzene concentration in groundwater and the average of the six benzene impacted soil samples, not including ND samples. The plausible scenario used the 12/12/95 (final) benzene concentration in groundwater (well C2), and the average benzene concentration of the 14 soil samples taken in the 0-5.5'bgs interval, including ND samples.

Results of the amended risk evaluation indicated a risk value of 4.05×10^{-5} for the conservative scenario, and a risk value of 1.7×10^{-5} for the plausible scenario. These risk values are combined values for soil and groundwater. **These are acceptable risk values for commercial/industrial development of the site.**

The risk assessment was revised again, since the soil sampling results from the three monitoring wells (C1 to C3) were not included in calculating the benzene concentrations. The revised results were transmitted to the County via fax from CRTC dated 1/10/97. The benzene concentrations were calculated using the arithmetic average. After some debate, it was decided that this was the best method for small UST sites such as this; the geometric average is used on large Superfund sites. It was also decided to use the calculated risk for the *plausible scenario,* and not the conservative scenario. The risk was calculated to be 8.85×10^{-5}. Since this number approaches 1×10^{-4}, **the risk was considered acceptable for a commercial/industrial scenario.**

Residential site development would be acceptable, providing that either 1) the development should include a 15' setback distance from Grand Ave., or 2) soil will be excavated within the 15' setback zone, soil samples are collected under the purview of this Agency, and laboratory analysis indicates the samples are either non-detect or within acceptable concentrations (as per additional calculations and another revised Risk Evaluation).

No further investigations are recommended since this site appears to meet the SF Bay RWQCB's definition of a low risk groundwater case. To summarize, the reasons that this case should be closed are as follows:

* The sources have been removed (five USTs, 10,000 gallons of water from the excavation, and approximately 800 cubic yards of contaminated soil);

* The site has been adequately characterized;

* The groundwater downgradient well (C4) has been ND for BTEX and TPHg;

* Although there is a sensitive environmental receptor in the site vicinity (Lake Merritt lies approximately 600 feet from the site), this distance is a significant and unlikely distance for a hydrocarbon plume to travel;

* There is no significant risk to human health, based on the tier 2 risk evaluation. **The risk is acceptable for commercial/industrial development of the site. Residential site development would be acceptable, providing that either 1) the development should include a 15' setback distance from Grand Ave., or 2) soil will be excavated within the 15' setback zone, soil samples are collected under the purview of this Agency, and laboratory analysis indicates the samples are either non-detect or within acceptable concentrations (as per additional calculations and another revised Risk Evaluation).**

VI. LOCAL AGENCY REPRESENTATIVE DATA

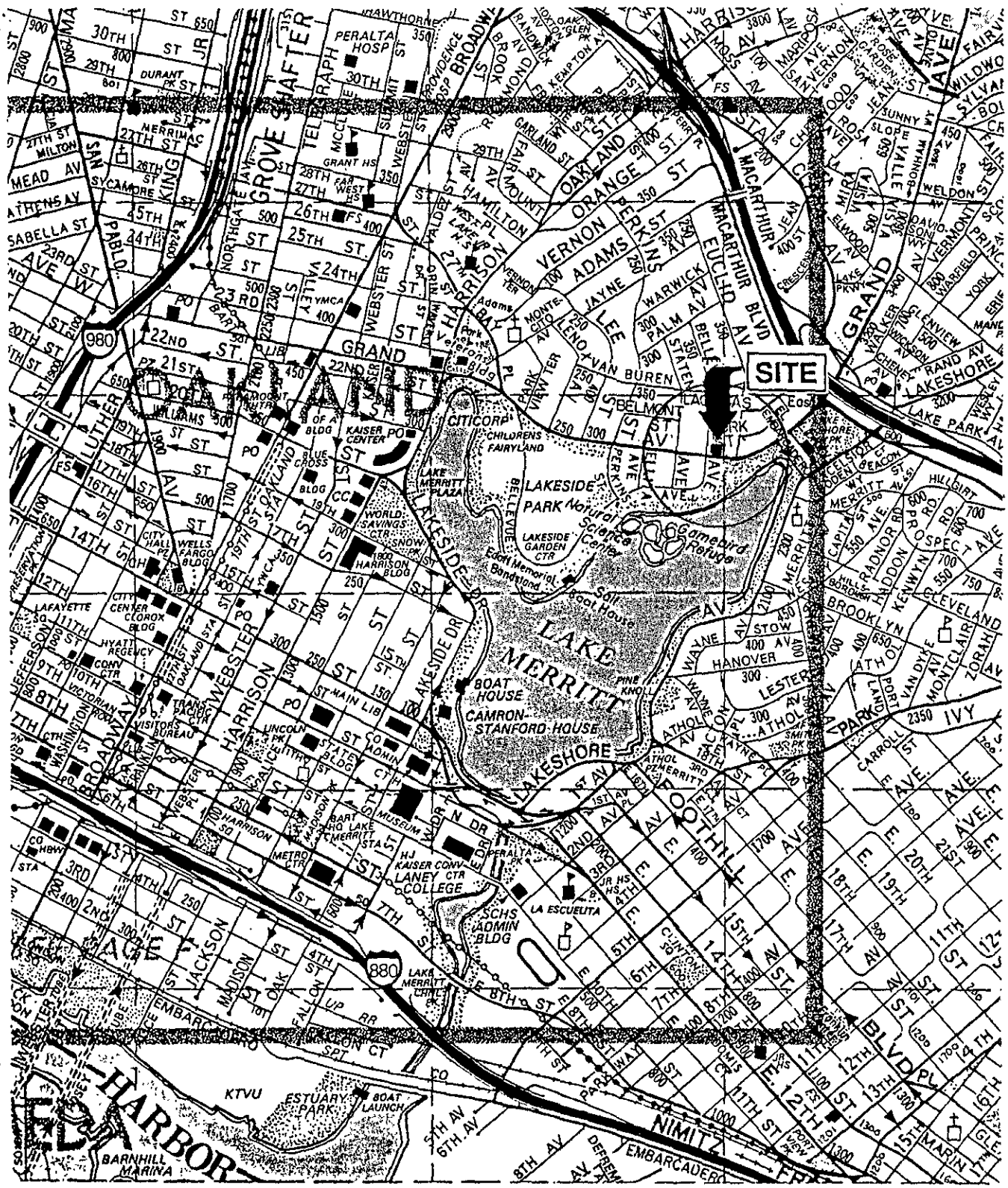
Name: Jennifer Eberle Title: Hazardous Materials Specialist
Signature: Eberle Date: 1-30-97

Reviewed by
Name: Madhulla Logan Title: Hazardous Materials Specialist
Signature: Madhulla Date: 4-1-97

Name: Tom Peacock Title: Manager of LOP
Signature: Thomas Peacock Date: 4-1-97

VII. RWQCB NOTIFICATION

Date Submitted to RWQCB: 4-2-97 RWQCB Response: Approved
RWQCB Staff Name: Kevin Graves Title: Associate Water Resources Control Engineer
Date: 4/21/97



Reference: Thomas Brothers Map, 1988

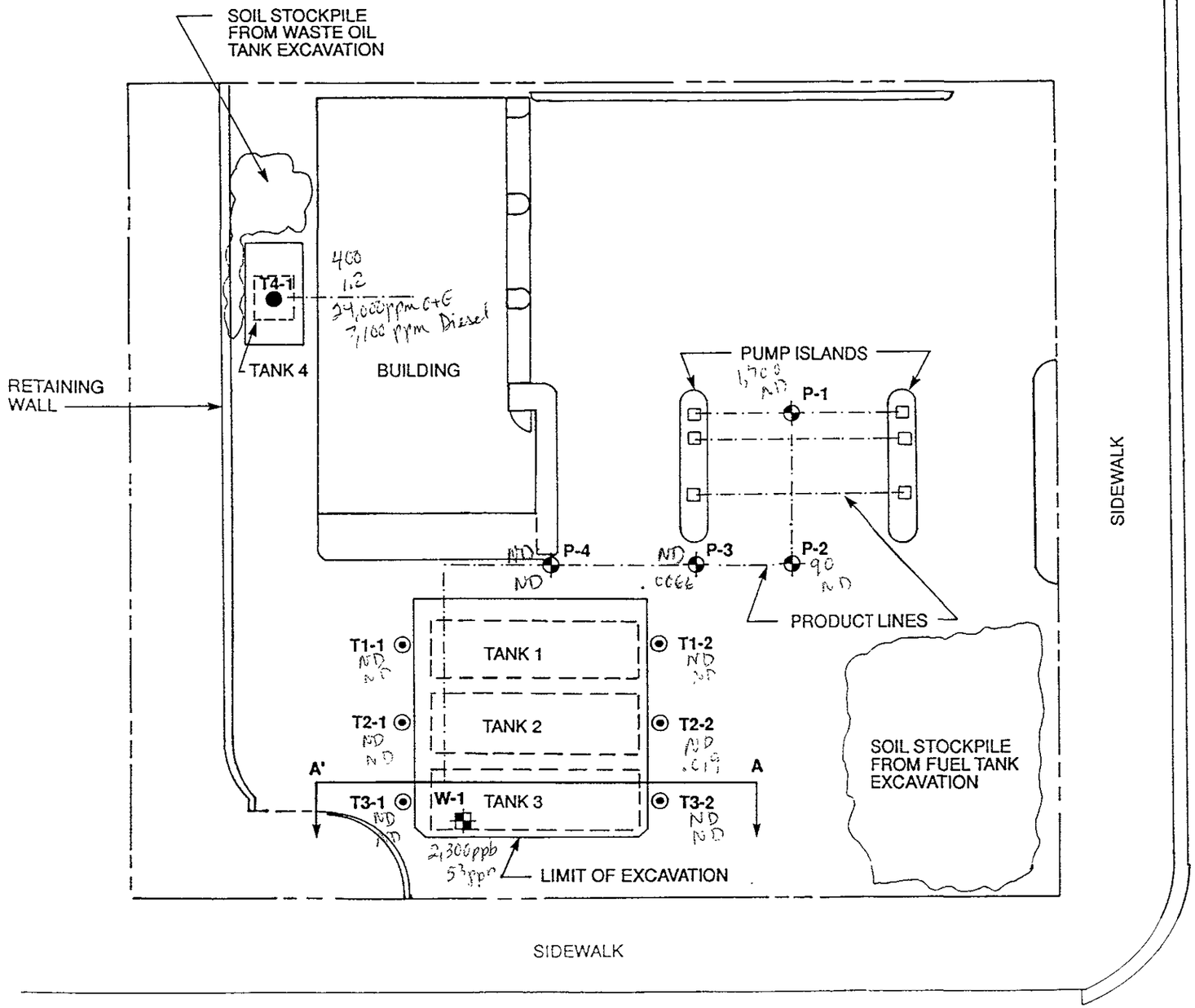
460 GRAND AVENUE (at BELLEVUE)
OAKLAND, CALIFORNIA

VICINITY MAP

TREADWELL & ASSOCIATES, INC.
Consulting Engineers and Scientists

Project No. 1132A

Figure 1



TANK NO.	CAPACITY	CONTENTS
1	10,000 gal.	GASOLINE
2	10,000 gal.	GASOLINE
3	10,000 gal.	GASOLINE
4	250 gal.	WASTE OIL

EXPLANATION

- Sidewall Soil Sample
- Pipeline Trench Soil Sample
- Soil Sample Beneath Waste Oil Tank
- Groundwater Sample From Tank Excavation

0 15

Approximate
Scale in Feet

N

TPH-g (ppm)

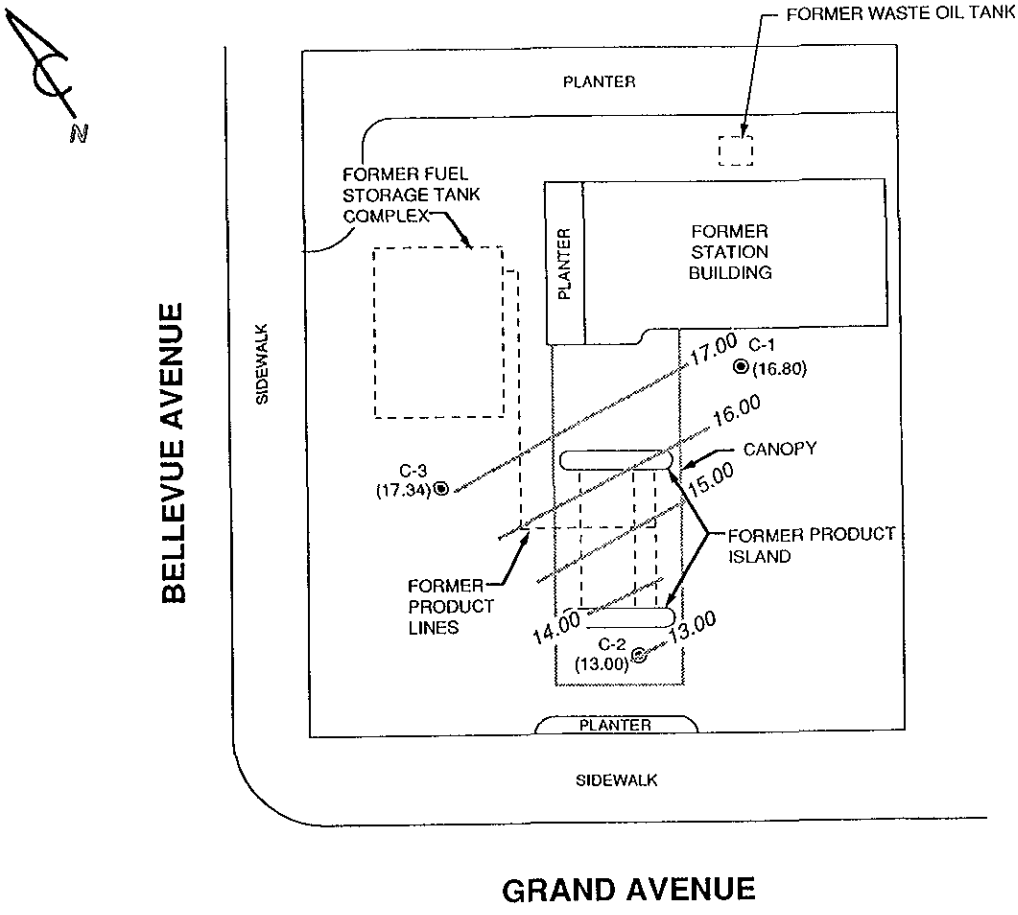
460 GRAND AVENUE (at BELLEVUE)
OAKLAND, CALIFORNIA

SITE PLAN

Project No. 1132A | Figure 2

TREADWELL & ASSOCIATES, INC.
Consulting Engineers and Scientists

Figure 3



LEGEND

C-1 ◉ GROUNDWATER MONITORING WELL LOCATIC AND DESIGNATION

(16.80) GROUNDWATER ELEVATION IN FEET - MSL, 1

14.00 GROUNDWATER ELEVATION CONTOUR IN FE

12-16-92

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

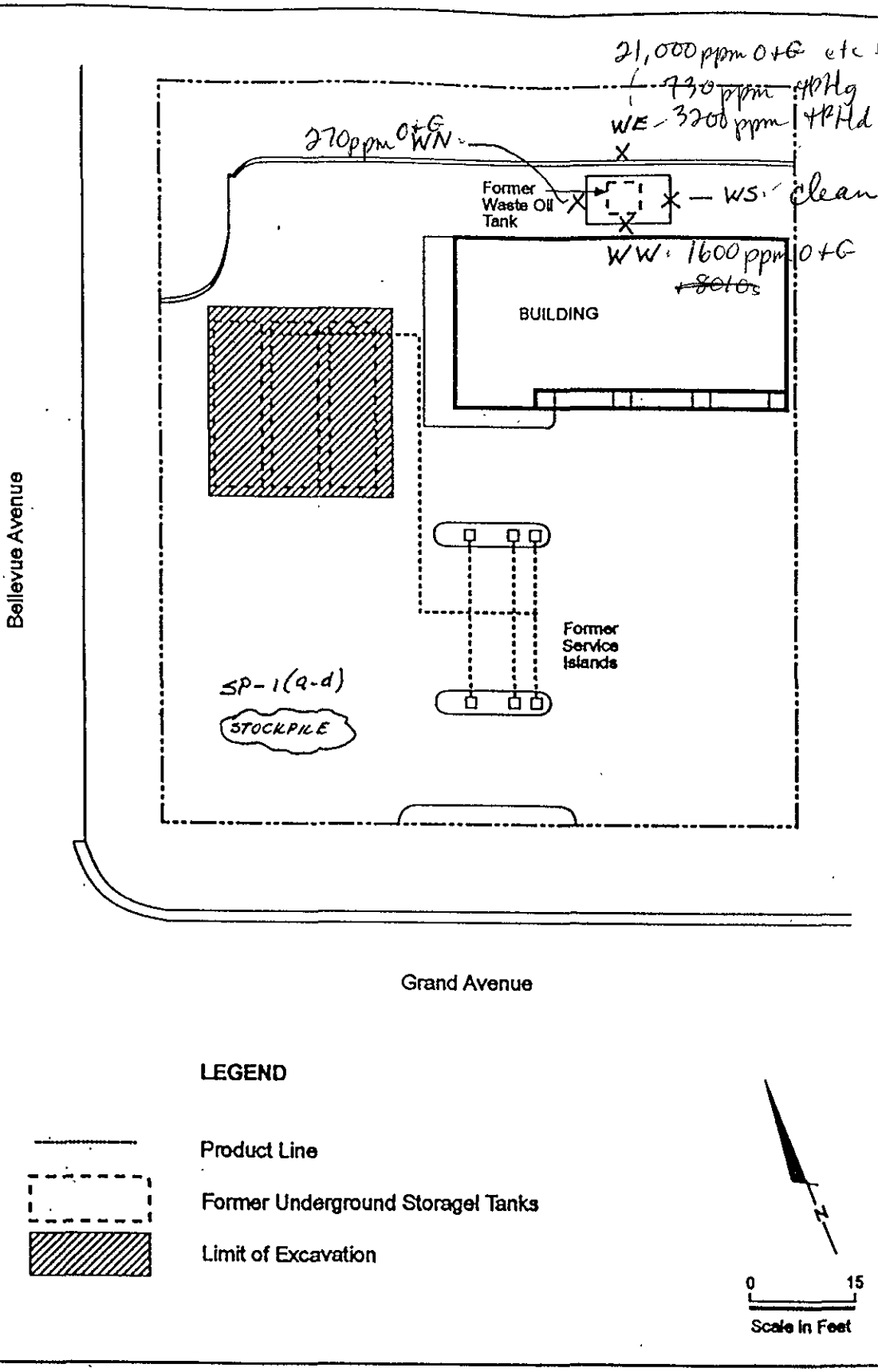
MAP TAKEN F

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 20 40 FEET

FORMER GULF SERVICE STATION 0006
460 Grand Avenue at Bellevue Avenue
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP

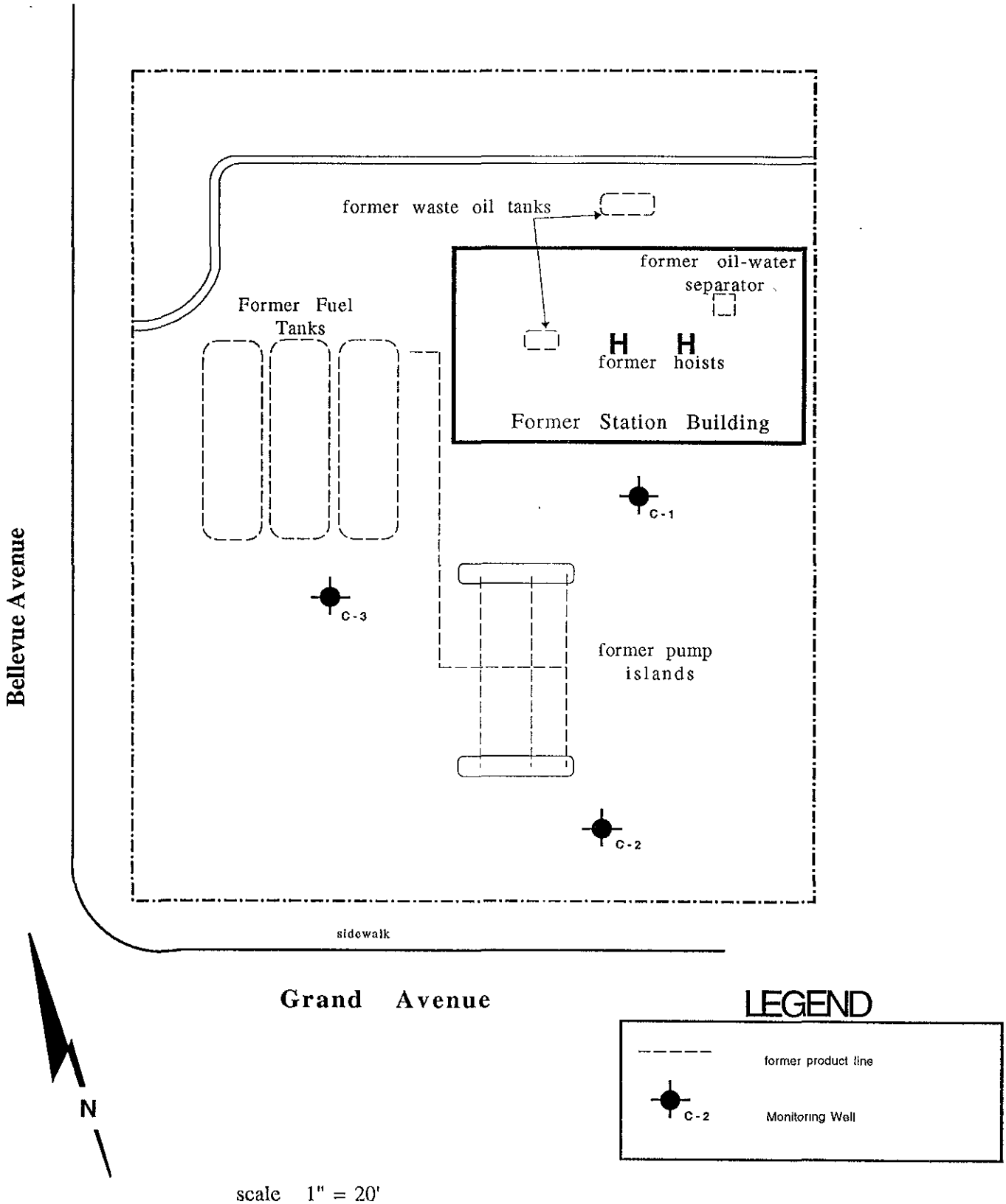


Touchstone Developments
Environmental Management

Site Plan
Former Chevron Station 9-0006
460 Grand Avenue at Bellevue
Oakland, California

FIGURE
4

PROJECT NUMBER	DRAWN	APPROVED	DATE
0006-1	PM		1/93



scale 1" = 20'

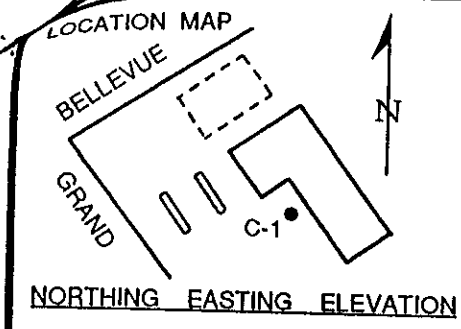
Touchstone Developments
Environmental Management

Site Plan
460 Grand Avenue
Oakland, California

Figure 5

3-13-94 | mjt

Project Number 0006-2



PACIFIC ENVIRONMENTAL GROUP, INC.

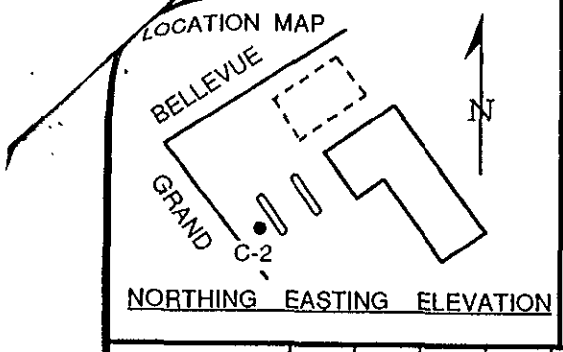
WELL NO. C-1
PAGE 1 OF 1

PROJECT NO. 325-31.01
LOGGED BY: DEM
DRILLER: BAYLANDS
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020"
GRAVEL PACK: 2/12 SAND

CLIENT: CHEVRON
DATE DRILLED: 12/14/92
LOCATION: 460 GRAND AVE., OAK
HOLE DIAMETER: 8"
HOLE DEPTH: 20'
WELL DIAMETER: 2"
WELL DEPTH: 15'
CASING STICKUP: -0.37'

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT				0			FILL	Asphalt.
				2			ML	CLAYEY SILT: medium to light brown (5Y 4/3); low plasticity; blue gray mottling to 2 cm; micaceous; trace fine to medium sand; no product odor.
				4				
	Dp	142	push	6				
				8			CL	
	Dp	1.0	22	10				CLAY: olive brown (5Y 5/3); silty; micaceous; very stiff; no product odor.
SAND				12				
	Wt/ Sat	ND	18	14			SP	SAND: medium brown (2.5Y 4/4); <5% fines; fine to medium sand; orange brown mottling; micaceous; medium dense; no product odor.
				16				
	Dry/ Dp	ND	30	18				
				20			CL	CLAY: yellowish brown (10YR 5/4); silty; low plasticity; micaceous; trace 1 mm wide orange brown liesegang banding; very stiff; no product odor.
BENTONITE				22				
				24				
				26				BOTTOM OF BORING AT 20'
				28				
				30				
				32				
				34				
				36				
				38				
				40				
				42				
				44				

Fig. 5A



PACIFIC ENVIRONMENTAL GROUP, INC.

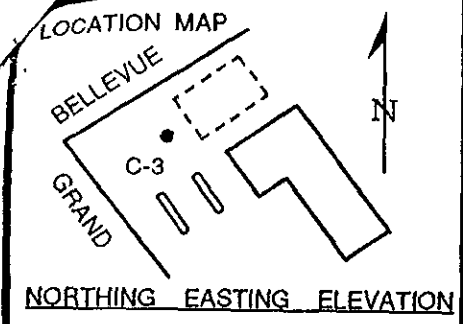
WELL NO. C-2
PAGE 1 OF 1

PROJECT NO. 325-31.01
LOGGED BY: DEM
DRILLER: BAYLANDS
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020"
GRAVEL PACK: 2/12 SAND

CLIENT: CHEVRON
DATE DRILLED: 12/14/92
LOCATION: 460 GRAND AVE., OAK
HOLE DIAMETER: 8"
HOLE DEPTH: 16-1/2"
WELL DIAMETER: 2"
WELL DEPTH: 15'
CASING STICKUP: -0.34'

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL / GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT				0		FILL	Asphalt.
				2		ML	SANDY SILT (2.5Y5/3); low plasticity; 15-25% fine sand; stiff; faint product odor.
				4			
	Dry	1.4	12	6			
SAND				8			
	Dry	13	16	10		CL	CLAY: (10YR5/4); low plasticity; orange brown mottling; blue gray mottling; stiff; no product odor.
				12			
	Mst/ Wt	11.8	17	14		SC	CLAYEY SAND (2.5Y5/3); 30-40% fines; micaceous; sandier and wet at 15-1/2 to 16'; medium dense; no product odor.
	Dry	ND	29	16		ML	CLAYEY SILT: (5Y5/3); low plasticity; micaceous; 1-2 mm wide orange brown; liesegang banding; very stiff; no product odor.
BENTONITE				18			
				20			BOTTOM OF BORING AT 16-1/2'
				22			
				24			
				26			
				28			
				30			
				32			
				34			
				36			
				38			
				40			
				42			
				44			

Fig 5B



PACIFIC ENVIRONMENTAL GROUP, INC.

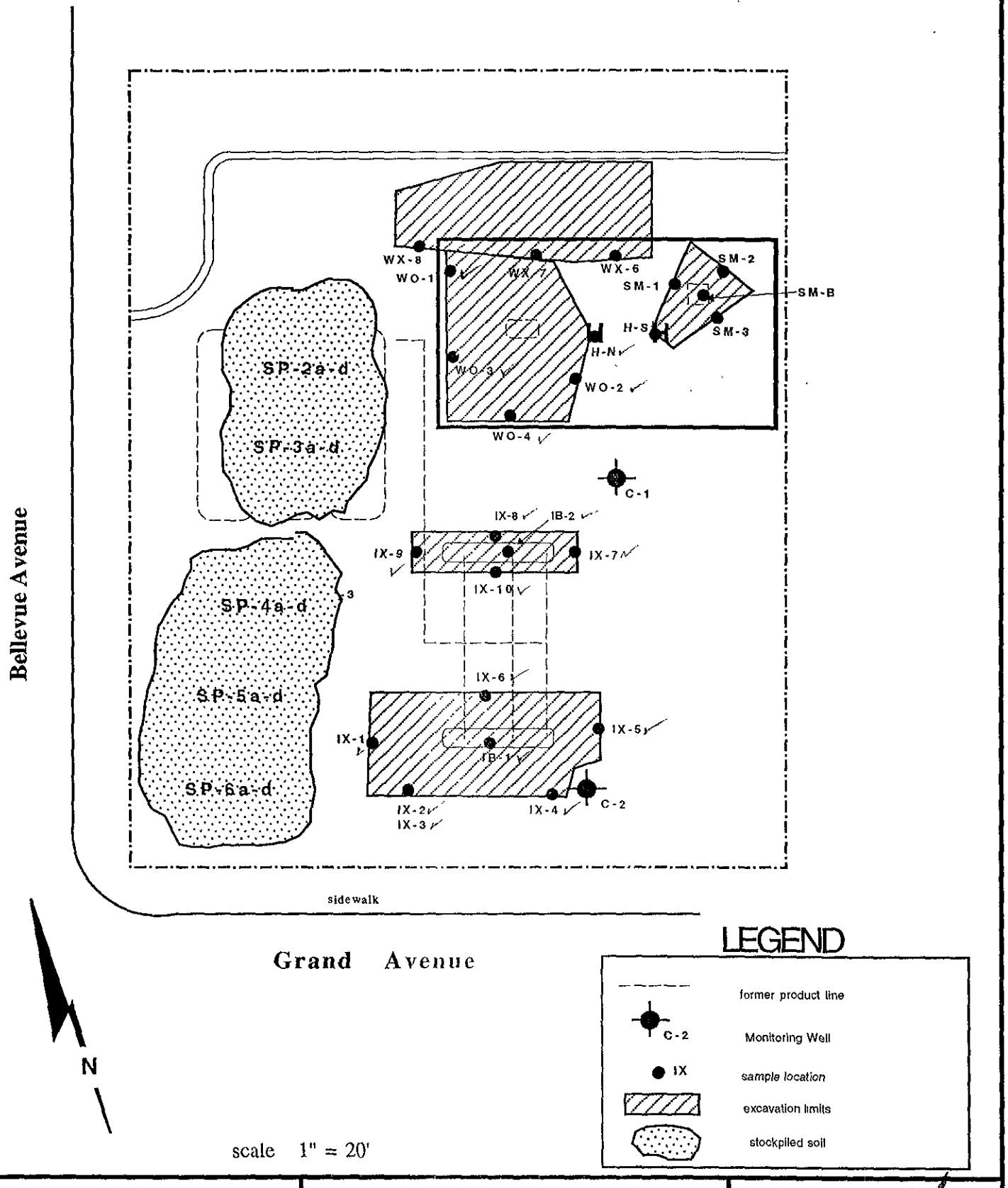
WELL NO. C-3
PAGE 1 OF 1

PROJECT NO. 325-31.01
LOGGED BY: DEM
DRILLER: BAYLANDS
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020"
GRAVEL PACK: 2/12 SAND

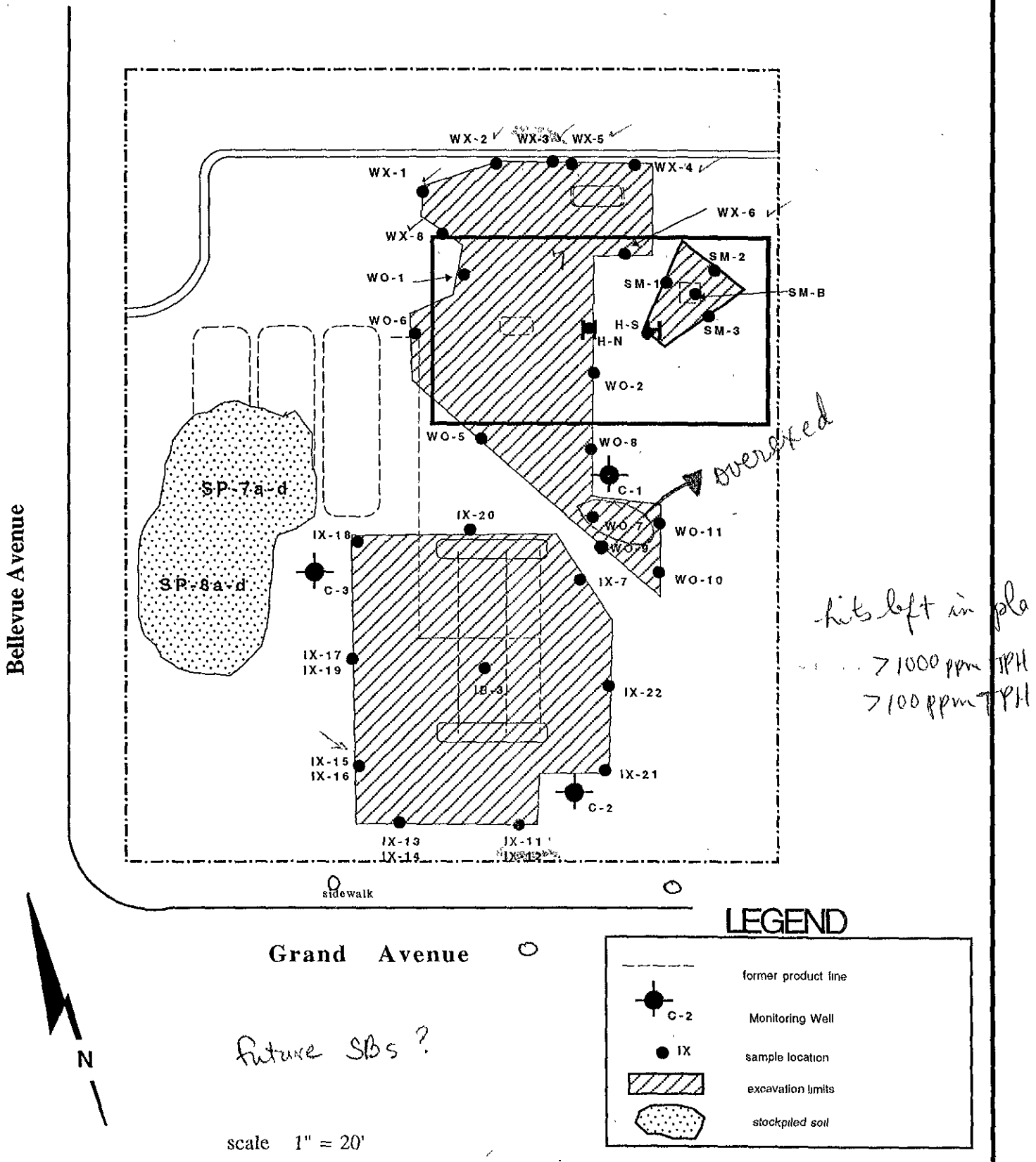
CLIENT: CHEVRON
DATE DRILLED: 12/15/92
LOCATION: 460 GRAND AVE., OAK
HOLE DIAMETER: 7-1/4"
HOLE DEPTH: 15'
WELL DIAMETER: 2"
WELL DEPTH: 15'
CASING STICKUP: -0.34'

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT				0			FILL	Asphalt.
				2			SC	CLAYEY SAND: (5GY 4/1); 15-25% fines; fine sand; dense; faint to moderate product odor.
				4				
	Dp	320	40	6			CL	CLAY: (5G 5/1); low plasticity; micaceous; medium brown mottling; silty; hard; no to faint product odor.
				8				
	Dp	0.6	19	10				@8-1/2': (2.5Y 4/2); silty; blue green mottling; trace 1-2 cm nodules fine gray sand; stiff; no product odor.
	Sat	ND		12			SC	CLAYEY SAND: medium brown; 30-40% fines; fine to medium sand; medium dense; no product odor.
SAND / BENTONITE	Dry/ Dp	ND	16	14			CL	CLAY: (5Y 4/2); silty; low plasticity; micaceous; 10-20% blue green mottling; stiff; no product odor.
				16				
				18				
				20				BOTTOM OF BORING AT 15'
				22				
				24				
				26				
				28				
				30				
				32				
				34				
				36				
				38				
				40				
				42				
				44				

Fig 5C



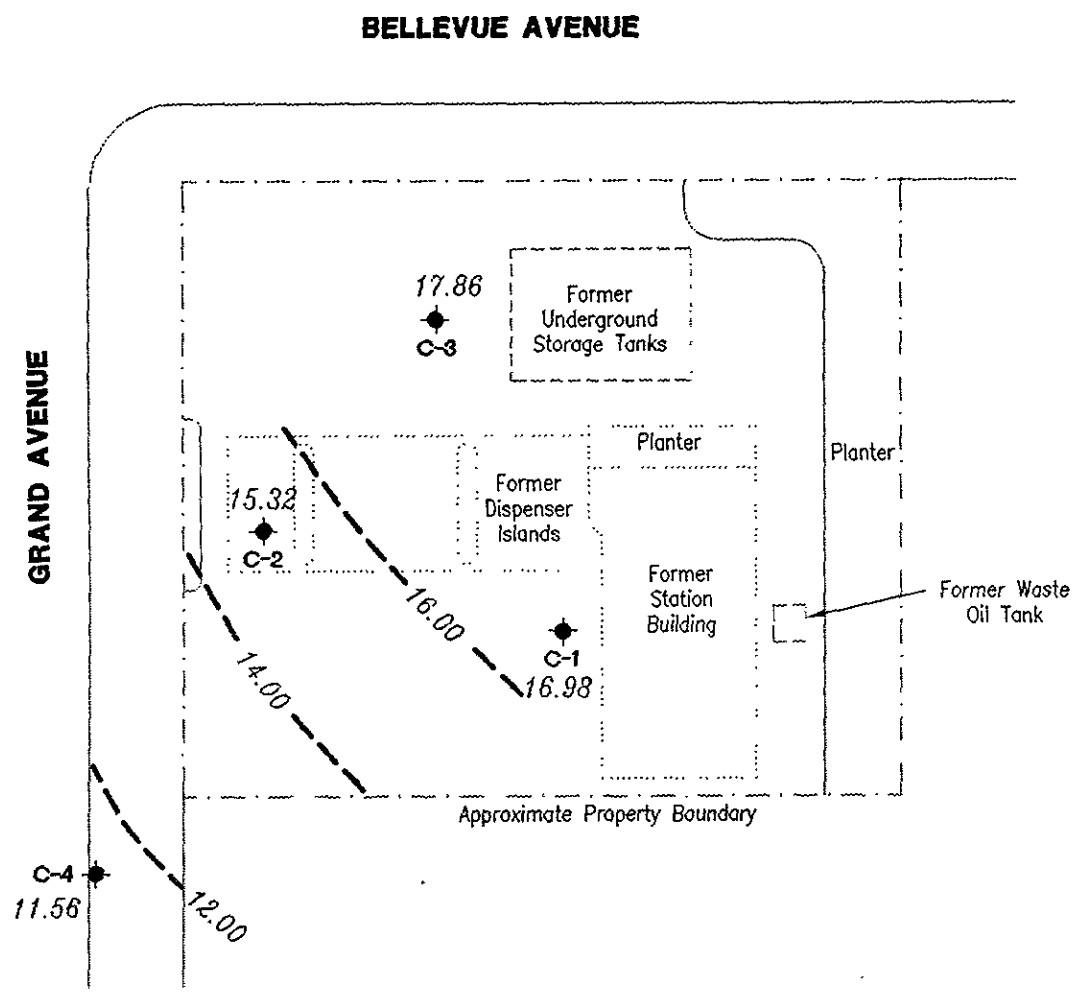
Touchstone Developments Environmental Management	**Excavation & Sampling** **in progress** 460 Grand Avenue Oakland, California	**Figure** 4 6 3-13-94 mjt Project Number 0006-2



hits left in pla
> 1000 ppm TPH
> 100 ppm TPH

future SBs ?

Touchstone Developments Environmental Management	**Final Excavation & Sample Locations** 460 Grand Avenue Oakland, California	Figure 4 & 7 3-13-94 mjt Project Number 0006-2



EXPLANATION

- Groundwater monitoring well
- 99.99 — Groundwater elevation in feet referenced to Mean Sea Level (MSL)
- 99.99 — Groundwater elevation contour, dashed where inferred.

Approximate groundwater flow direction at a gradient of 0.08 Ft./Ft.

N

0 30

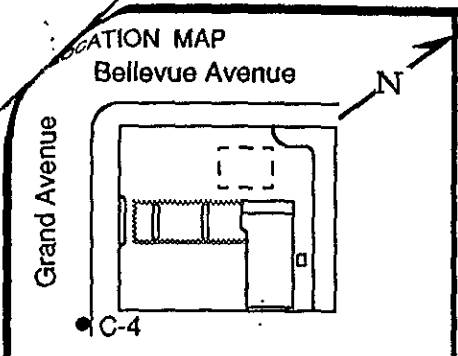
Scale in Feet

Gettler - Ryan Inc.
6747 Sierra Ct., Suite J (510) 551-7555
Dublin, CA 94568

POTENTIOMETRIC MAP
Former Gulf Service Station No. 0006
460 Grand Avenue
Oakland, California

FIGURE
Fig. 8

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
5208.80	JC	December 12, 1995	



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. C-4
PAGE 1 OF 1

PROJECT NO. 325-031.01
LOGGED BY: CTH
DRILLER: V&W
DRILLING METHOD: HSA
SAMPLING METHOD: CALMOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020"
GRAVEL PACK: 2 x 12 SAND

CLIENT: CHEVRON
DATE DRILLED: 5-4-95
LOCATION: 460 Grand Avenue
HOLE DIAMETER: 8"
HOLE DEPTH: 21.5'
WELL DIAMETER: 2"
WELL DEPTH: 20'
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
				0					CONCRETE: 0-6"
				2				ML	ARTIFICIAL FILL: 6"-1.5'
				4					SILT: light yellowish brown; low plasticity; minor orange brown mottling; very stiff; no product odor.
GROUT	Dry	0	30	6					
				8				ML	CLAYEY SILT: light yellowish brown; low plasticity; orange brown streaks; very stiff; no product odor.
BENTONITE	Mst	1.2	38	10					
	Static			12					
SAND				14				SP	SAND: dark yellowish brown; 5% fines; orange brown; mottling; minor mica; dense; no product odor.
	Mst	1.3	41	16					
	First water			18				ML	SILT: light yellowish brown; low plasticity; minor orange brown mottling; very stiff; no product odor.
	Wt	0	39	20					
				22					BOTTOM OF BORING AT 21.5'
				24					
				26					
				28					
				30					
				32					
				34					
				36					
				38					
				40					
				42					
				44					

Fig. 9

TABLE 1

SIDEWALL SOIL SAMPLE ANALYTICAL DATA 11-29-90

FUEL TANK EXCAVATION

460 Grand Avenue
Oakland, California

Sample No.	TVPH as Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Total Xylenes (mg/kg)	Ethyl Benzene (mg/kg)	Lead (mg/kg)
T1-1	ND	ND	0.10	ND	ND	NT
T1-2	ND	ND	0.097	ND	ND	3.8
T2-1	ND	ND	0.14	ND	ND	NT
T2-2	ND	0.019	0.065	ND	ND	ND
T3-1	ND	ND	0.220	ND	ND	NT
T3-2	ND	ND	0.063	ND	ND	3.4
Detection Limit	1.0	0.005	0.005	0.005	0.005	2.5

Notes:

TVPH = total volatile petroleum hydrocarbons
mg/kg = milligram per kilogram
ND = not detected at or above reporting limit
NT = not tested

TABLE 2

ANALYTICAL DATA FOR WATER SAMPLE W-1 11-29-90

FUEL TANK EXCAVATION

460 Grand Avenue
Oakland, California

Sample No.	TVPH as Gasoline (mg/l)	TEPH as Diesel (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Total Xylenes (mg/l)	Ethyl Benzene (mg/l)
W-1	2.3 = 2,300ppb	ND	0.053 = 53ppb	0.160	0.160	0.036

Notes:

TVPH = total volatile petroleum hydrocarbons
TEPH = total extractable petroleum hydrocarbons
mg/l = milligrams per liter
ND = not detected at or above reporting limit

12-4-90

TABLE 3

PIPELINE TRENCH SOIL SAMPLE ANALYTICAL DATA

460 Grand Avenue
Oakland, California

These were collected from 6" into the native soil from the product line trench.

Sample No.	TVPH as Gasoline (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Total Xylenes (mg/kg)	Ethyl Benzene (mg/kg)
P-1	1,700	ND	8.7	260	47
P-2	90	ND	1.7	4.7	0.89
P-3	ND	0.0066	0.18	0.033	0.0053
P-4	ND	ND	0.036	0.0055	ND

Notes:

TVPH = total volatile petroleum hydrocarbons
mg/kg = milligram per kilogram
ND = not detected at or above reporting limit

TABLE 4

ANALYTICAL DATA FOR SOIL SAMPLE T4-1 11-29-90

WASTE OIL TANK EXCAVATION

460 Grand Avenue
Oakland, California

Constituent	Sample T4-1 Concentration (mg/kg)
TVPH as Gasoline	400
TEPH as Diesel	7,100
Oil & Grease	24,000
Tetrachloroethylene	1.0
1,1,1-Trichloroethane	0.25
Benzene	1.2
Toluene	10
Total Xylenes	35
Ethyl Benzene	5.2
Cadmium	0.8
Chromium	12
Lead	40
Nickel	22
Zinc	41

Notes:

mg/kg = milligram per kilogram
TVPH = total volatile petroleum hydrocarbons
TEPH = total extractable petroleum hydrocarbons

~~Table A:~~ Analytical Summary Table 5 - 12-4-92

Fuel Tank Stockpile Samples (Soil)

Sample ID #	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8
Sample Date	12/4/92							
Laboratory	Superior							
TPH-Gas	Not detected at or above the detection limit (ND)							
Benzene	ND							
Toluene	ND							
Ethylbenzene	ND							
Xylene(ppm)	ND							

Fuel Tank Excavation Water Sample

Sample ID #	FT-1
Sample Date	12/4/92
Laboratory	Superior
TPH-Gas	ND
Benzene	ND
Toluene	ND
Ethylbenzene	ND
Xylenes	ND
Total Lead	ND

Waste Oil Tank Excavation and Stockpile Samples 12-4-92

Sample ID #	W-1(Soil) 5P ppm	WT-1(Water) ppm
Sample Date	12/4/92	12/4/92
Laboratory	Superior	Superior
TPH-Gas	ND	ND
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Xylenes	ND	ND
TPH-Diesel	190	0.170 ppm = 170 ppb
Oil&Grease	8400	ND
Nickel	30	~~17~~ ND
Cadmium	ND	ND
Chromium	23	ND
Lead	88	ND
Zinc	340	0.07 = 70 ppb
8010	ND	ND

Table 6

~~Table 2~~

Summary of Soil Analytical Results
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

Former Gulf Service Station 0006
460 Grand Avenue
Oakland, California

Boring Number	Sample Date	Sample Depth (feet)	TPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)
C-1	12/14/92	5 - 6-1/2	8.6*	ND	ND	0.024	0.012
		8-1/2 - 10	ND	ND	ND	ND	ND
C-2	12/14/92	5 - 6-1/2	2,300	13	80	83	440
		8-1/2 - 10	ND	ND	0.006	ND	0.017
C-3	12/15/92	5 - 6-1/2	0.6	0.008	ND	0.012	ND
		8-1/2 - 10	ND	ND	ND	ND	ND
EB-1	12/15/92	6-1/2 - 7	3.3	0.094	0.30	0.16	0.73
Detection Limits:			0.3	0.005	0.005	0.005	0.005

TPH = Total petroleum hydrocarbons
ppm = Parts per million
ND = Not detected
* A typical chromatograph pattern; see certified analytical reports.

Table 7

~~Table A~~: Analytical Summary for Over-excavation Samples (in ppm)

Waste Oil Tank Excavation Sampling Results

Sample ID	Depth (FT)	TPH-gas	Benzene	Toluene	Ethyl Benzene	Xylenes	TPH-D	TOG	8010	8270	Metals
WX-1	6	ND	ND	ND	ND	ND	2	ND	ND	ND	*
WX-2	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
WX-3	3	30	ND	ND	ND	0.95	1300	970	*	*	*
WX-4	6	ND	ND	ND	ND	ND	470	ND	ND	ND	*
WX-5	6	ND	ND	ND	ND	ND	24	ND	ND	ND	*
WX-6	6	ND	ND	ND	ND	ND	3	ND	ND	ND	*
WX-7	6	ND	ND	ND	ND	ND	14	ND	ND	ND	*
WX-8	6	ND	ND	ND	ND	ND	2	ND	ND	ND	*
WO-1	6	ND	ND	ND	ND	0.008	ND	ND	ND	ND	*
WO-2	6	ND	ND	ND	ND	0.011	ND	ND	ND	ND	*
WO-3	6.5	170	ND	ND	0.36	0.34	4400	120	ND	ND	*
WO-4	6.5	27	ND	0.007	0.064	0.18	130	210	ND	ND	*
WO-5	5	ND	ND	ND	ND	0.005	ND	ND	NA	NA	NA
WO-6	5	5*	ND	ND	ND	0.011	17*	ND	NA	NA	NA
WO-7	5	16*	ND	0.008	ND	0.066	51*	ND	NA	NA	NA
WO-8	4.5	10*	0.005	0.007	0.007	0.031	200*	ND	NA	NA	NA
WO-9	5.5	49	0.077	0.71	0.99	6.43	10	ND	*	ND	NA
WO-10	5	18	ND	ND	0.084	0.36	90	ND	ND	ND	NA
WO-11	4.5	ND	ND	ND	ND	0.006	2	ND	ND	ND	NA

Pump Island Excavation Sampling Results

Sample ID	Depth (FT)	TPH-gas	Benzene	Toluene	Ethyl Benzene	Xylenes
IB-1	9	ND	ND	ND	ND	ND
IB-2	7	ND	ND	ND	ND	ND
IB-3	9	ND	ND	ND	ND	ND
IX-1	8.5	18	0.97	2.2	0.4	2.5
IX-2	8.5	1900	2	11	15	66
IX-3	3	390	1.3	5.8	1.9	8.7
IX-4	7	84	0.89	3.2	2.6	16
IX-5	8	4	0.73	0.62	0.12	0.62
IX-6	7	ND	ND	ND	ND	0.008
IX-7	7	ND	0.016	0.013	0.017	0.068
IX-8	6'	1	0.023	0.21	0.056	0.38
IX-9	7	1	0.005	0.064	0.032	0.21
IX-10	7.5 6.5	ND	ND	ND	ND	ND
IX-11	5	3	0.6	0.24	0.097	0.5
IX-12	9	2600	12	120	46	240
IX-13	5.5	21	0.41	0.077	0.19	0.13
IX-14	10	7	1	0.92	0.2	0.78
IX-15	5	9	1.2	1.2	0.13	0.68
IX-16	9.5	780	3.7	31	20	100
IX-17	6	7	0.25	1.2	0.32	1.9
IX-18	4	15	0.18	0.49	0.52	3.1
IX-19	8.5	ND	0.11	0.01	0.055	0.029
IX-20	5	ND	ND	0.006	ND	0.008
IX-21	6	900	1.7	35	16	110
IX-22	6	14	0.26	0.94	0.17	1.5

HITS

* = see certified analytical reports
NA = analysis not requested
ND = not detected
TPH-gas = Total petroleum hydrocarbons calculated as gasoline
TPH-D = Total petroleum hydrocarbons calculated as diesel
TOG = Total oil and grease

✓ hits left in place

highest hits:

1,300	TPHd	WX-3	3'bgs
970	TOG	WX-3	"
2,600	TPHg	IX-12	9'bgs
12	benzene	IX-12	"

Table 8

~~Table B~~: Analytical Summary for Hoist & Sump Excavation Samples (in ppm)

Hoist Sampling Results

1-3-94

Sample ID	Depth (FT)	TPH-gas	Benzene	Toluene	Ethyl Benzene	Xylenes	TPH-D	TOG	8010	8270	Metals
H-N	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
H-S	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	*

Oil-Water Separator Sampling Results

1-3-94

Sample ID	Depth (FT)	TPH-gas	Benzene	Toluene	Ethyl Benzene	Xylenes	TPH-D	TOG	8010	8270	Metals
SM-B	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	*
SM-1	5	1	ND	ND	ND	0.012	10	ND	*	ND	*
SM-2	5	ND	ND	ND	ND	ND	3	ND	ND	ND	*
SM 3	5	ND	ND	ND	ND	ND	5	ND	ND	ND	*

✓ hits left in place

~~Table C~~. Analytical Summary for Stockpile Samples (in ppm)

Stockpile Sampling Results

waste oil

1-5-94

1-20

Pump Island

Sample ID	TPH-gas	Benzene	Toluene	Ethyl Benzene	Xylenes	TPH-D	TOG	8010	8270	Metals
SP-2a-d	47*	ND	0.093	0.26	1.9	1200	2500	*	ND	*
SP-3a-d	33*	ND	0.065	0.54	0.17	220	100	*	ND	*
SP-4a-d	150	ND	3	3	20	NA	NA	NA	NA	ND
SP-5a-d	1300	0.8	30	21	120	NA	NA	NA	NA	NA
SP-6a-d	2600	1.8	86	40	230	NA	NA	NA	NA	NA
SP-7a-d	130*	ND	2.2	2.9	20	NA	NA	NA	NA	NA
SP-8a-d	180*	ND	1.4	3.5	27	NA	NA	NA	NA	NA

< 10X STLC
ND Soluble Pb
ND org. Pb

Aerated Stockpile Sampling Results

1-19

1-26

Sample ID	TPH-gas	Benzene	Toluene	Ethyl Benzene	Xylenes
SP-4a-d	33	ND	0.096	0.086	1
SP-5a-d	88	0.006	0.19	0.19	2.4
ASP-6a-d	36	ND	0.11	0.067	0.72
ASP-7a-d	53	ND	0.059	0.23	1.8
ASP-8a-d	14	0.29	0.89	0.27	1.3

* = see certified analytical reports
NA = analysis not requested
ND = not detected
TPH-gas = Total petroleum hydrocarbons calculated as gasoline
TPH-D = Total petroleum hydrocarbons calculated as diesel
TOG = Total oil and grease

hits

Table 9

~~Table 1.~~ Water Level Data and Groundwater Analytical Results - Former Gulf Service Station 0006, 460 Grand Avenue, Oakland, California

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	TPH(G)	B	T	E	X	MTBE
					<ppb>					
C-1/ 22.48[1]	12/16/92[2,3,4,5]	5.68	16.80	0	<50	<0.5	<0.3	<0.3	<0.4	—
	6/22/94	5.55	16.93	0	<50	<0.5	<0.5	<0.5	<0.5	—
	9/26/94	6.07	16.41	0	<50	<0.5	<0.5	<0.5	<0.5	—
	12/12/94	5.28	17.20	0	<50	2.9	3.8	<0.5	<0.5	—
	3/22/95	2.86	19.62	0	<50	<0.5	<0.5	<0.5	<0.5	—
	6/5/95	4.86	17.62	0	<50	<0.5	<0.5	<0.5	<0.5	—
	9/20/95	5.82	16.66	0	<50	<0.5	<0.5	<0.5	<0.5	—
	12/12/95	**5.50**	**16.98**	**0**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**8.7**
C-2/ 20.49[1]	12/16/92[2,3,6,7]	7.49	13.00	0	640	63	83	37	90	—
	6/22/94	5.48	15.01	0	200	2.8	4.5	1.5	15	—
	9/26/94	6.02	14.47	0	<50	1.1	1.1	<0.5	0.5	—
	12/12/94	5.17	15.32	0	77	2.8	4.6	3.4	15	—
	3/22/95	2.60	17.89	0	590	<0.5	<0.5	38	130	—
	6/5/95	5.29	15.20	0	<50	<0.5	<0.5	1.9	4.9	—
	9/20/95	5.59	14.90	0	<50	<0.5	<0.5	<0.5	<0.5	—
	12/12/95	**5.17**	**15.32**	**0**	**80**	**0.93**	**<0.50**	**<0.50**	**<0.50**	**5.1**
C-3/ 22.51[1]	12/16/92[2,3,5,8]	5.17	17.34	0	<50	<0.4	<0.3	<0.3	<0.4	—
	6/22/94	5.10	17.41	0	140	5.6	3	4.2	4.4	—
	9/26/94	5.66	16.85	0	51	4.2	4.2	0.7	1.5	—
	12/12/94	4.60	17.91	0	<50	2.6	3.6	1.1	4.2	—
	3/22/95	2.31	20.20	0	<50	<0.5	<0.5	<0.5	<0.5	—
	6/5/95	4.61	17.90	0	<50	0.6	<0.5	<0.5	<0.5	—
	9/20/95	5.09	17.42	0	<50	<0.5	<0.5	<0.5	<0.5	—
	12/12/95	**4.65**	**17.86**	**0**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**0.91**
C-4/ 18.44[9]	6/5/95	7.24	11.20	0	<50	<0.5	<0.5	<0.5	<0.5	—
	9/20/95	7.31	11.13	0	<50	<0.5	<0.5	<0.5	<0.5	—
	12/12/95	**6.88**	**11.56**	**0**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.60**
Trip Blank TB-LB	6/22/94	—	—	—	<50	<0.5	<0.5	<0.5	<0.5	—
	9/26/94	—	—	—	<50	<0.5	<0.5	<0.5	<0.5	—
	12/12/94	—	—	—	<50	<0.5	<0.5	<0.5	<0.5	—
	3/22/95	—	—	—	<50	<0.5	<0.5	<0.5	<0.5	—
	6/5/95	—	—	—	<50	<0.5	<0.5	<0.5	<0.5	—
	9/20/95	—	—	—	<50	<0.5	<0.5	<0.5	<0.5	—
	12/12/95	—	—	—	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.60**

Table 9

~~Table 1.~~ Water Level Data and Groundwater Analytical Results - Former Gulf Service Station 0006, 460 Grand Avenue, Oakland, California (continued)

EXPLANATION:

DTW = Depth to water
TOC = Top of casing elevation
GWE = Groundwater elevation
TPH(G) = Total Purgeable Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl-teritary-butyl ether
ppb = Parts per billion
— = Not analyzed/not applicable

ANALYTICAL METHODS:

TPH(G) = EPA Method 8015/5030
BTEX = EPA Method 8020
MTBE = EPA Method 8020

NOTES:

Water level elevation data and laboratory analytic results prior to March 22, 1995 were compiled from Quarterly Monitoring Reports prepared for Chevron by Sierra Environmental Services.

NOTES: (continued)

* Product thickness was measured with an MMC flexi-dip interface probe on and after June 22, 1994.

1 TOC elevation is actually top of box elevation.
2 TPH(D) was also analyzed but not detected at detection limits of 50 ppb.
3 Motor oil was also analyzed but not detected at detection limits of 200 ppb.
4 Cadmium, chromium, lead, nickel and zinc were also analyzed but not detected at detection limits of 0.005, 0.01, 0.05, 0.02, and 0.01 ppm, respectively.
5 Analysis by EPA method 8010 for Halogenated Volatile Organic Compounds (HVOCs) was also performed. HVOCs were not detected at detection limits of 0.2 to 4.0 ppb.
6 Cadmium, chromium, lead, nickel and zinc were also analyzed. Chromium, Nickel and zinc were detected at 0.05, 0.08 and 0.08 ppm, respectively. Other metals not detected.
7 Analysis by EPA method 8010 for HVOCs was also performed. 1,2-Dichloroethane was detected at 3.5 ppb. Other HVOCs were not detected at detection limits of 0.2 to 4.0 ppb.
8 Cadmium, chromium, lead, nickel and zinc were also analyzed. Chromium, lead, nickel and zinc were detected at 0.19, 0.07, 0.36 and 0.38 ppm, respectively. Cadmium was not detected at detection limits of 0.005 ppm.
9 TOC for well C-4 was surveyed June 9, 1995 by Mission Engineers of Santa Clara, California.