CAMBRIA

March 14, 2001

Ms. Juliet Shin
Alameda County Department of Environmental Health
UST Local Oversight Program
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Re: **Request for Remediation System Modification**
Hooshi's Auto Service
1499 MacArthur Blvd.
Oakland, California 94602

Dear Ms. Shin:

On behalf of Ms. Naomi Gatzke, Cambria Environmental Technology, Inc. (Cambria) has prepared this report requesting remediation system modification for the above-referenced site. Presented below are the project objectives, remediation system design and performance, groundwater quality, and justification for remediation system modification.

PROJECT OBJECTIVES

In a letter dated September 11, 1996, Alameda County Health Care Services Agency (ACHCSA) requested the installation of a SVE remediation system for the purpose of removing free product at the above referenced site. At that time, free product was present in monitoring wells MW-2 and MW-5, up to a maximum thickness of 1.0 ft. A soil vapor extraction pilot test performed by Century West Engineering Corporation (CWEC) indicated that site cleanup could be attained in a period of four to six months. The September 11, 1996 ACHCSA letter and CWEC Corrective Action Plan are presented as Appendix A.

REMEDIATION SYSTEM

Remediation System Installation: In 1999, Cambria supervised the installation of a SVE system. The SVE system consists of a trailer mounted all electric Falco-100 catalytic oxidizer with heat exchanger, a 50-gallon moisture knockout tank, and a regenerative blower capable of generating airflow of 100 cfm. Monitoring wells MW-1, MW-2, and MW-5 were converted in soil vapor extraction wells and connected to the system. The remediation system layout is shown in Figure 1.

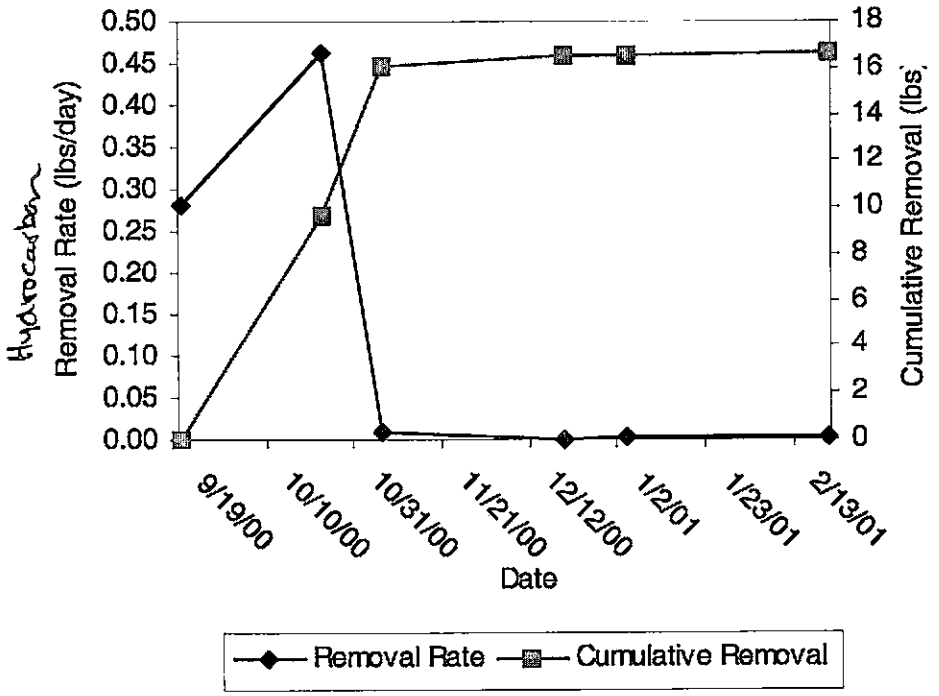
Oakland, CA
San Ramon, CA
Sonoma, CA
Portland, OR

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

Remediation System Performance: From June 26 to September 19, 2000, Cambria performed system troubleshooting and startup of the SVE system. Since September 19, 2000, the SVE system has operated almost continuously. Vapor extraction flow rates and influent vapor concentrations have been significantly below those estimated during soil vapor extraction testing. A maximum system flow rate of 35 cfm and a maximum system vapor concentration of 43 ppmv were measured during the beginning of SVE system operations (See Table 1 attached). Subsequent well vapor samples collected since system startup have been significantly less and/or below laboratory detection limits. A total of 16.7 pounds of hydrocarbons have been destroyed to date, with only 0.6 pounds having been removed from November 6, 2000 to February 21, 2001. Figure A indicates the hydrocarbon removal rates and cumulative removal. SVE system performance and analytical results are summarized in Table 1.

Figure A - Cumulative Removal and Removal Rates vs. Time



On October 23, 2000, wells MW-2 and MW-5 were modified to allow in-well air sparging using the vacuum from the SVE system blower. In-well sparging was performed to facilitate the removal of free product, increase the low well vapor concentrations, reduce electric utility costs, and speed up overall site cleanup.

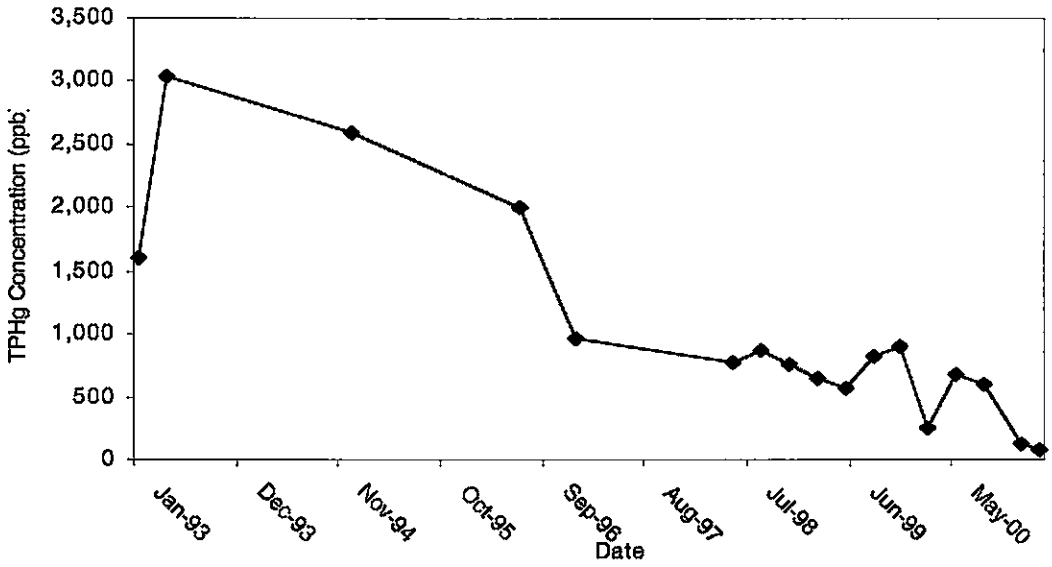
GROUNDWATER QUALITY

Historical Hydrocarbon Concentrations in Groundwater: Since the initiation of groundwater monitoring in 1993, hydrocarbons have been present primarily in wells MW-1, MW-2, and MW-5 located next to the former USTs. From June 1996 to August 2000, monitoring wells MW-2 and MW-5 contained measurable amounts of free product up to a maximum thickness of 1.0 ft. See Table 2 for historical groundwater monitoring and sampling data.

Recent Hydrocarbon Concentrations in Groundwater: Recent sampling results indicate that TPHg concentrations in MW-2 and MW-5 have decreased significantly from free product levels down to 2,900 and 33,000 micrograms per liter (ug/L), respectively. TPHg concentrations in MW-1 have decreased from 3,300 to 64 ug/L. The maximum benzene concentration remaining at the site is 63 ug/L in well MW-5. The maximum MTBE concentration remaining at the site is 5.6 ug/L detected in well MW-1. Figure 2 indicates the historical maximum and current groundwater concentrations. Groundwater monitoring and sampling data is summarized in Table 2.

Along with remediation system operations, natural attentuation processes have had a significant affect in decreasing hydrocarbon concentrations. Monitoring well MW-3, located outside of the source area and active remediation wells, has shown significant reductions of hydrocarbons (see Figure B).

Figure B - MW-3 Hydrocarbon Concentration vs. Time



Depth to Groundwater: Groundwater ranges in depth from approximately 7 to 14 feet below grade (fbg). Boring logs indicate that monitoring wells MW-4, MW-5, and MW-6 are screened across the groundwater table from 4.5 to 20 fbg. It is assumed that the other onsite wells have comparable screen intervals.

JUSTIFICATION FOR REMEDIATION SYSTEM MODIFICATION

Cambria requests permission to remove the SVE system and replace it with dedicated air sparging equipment. This would require modification of the existing well head connections and installation of an air compressor. System modification is requested for the following reasons:

- Continued SVE system rental ($2,200/month) and operation is no longer a cost effective means of corrective action. System influent vapor concentrations and flow rates are very low and in turn the hydrocarbon removal rate is insignificant.
- Groundwater quality has significantly improved since the beginning of SVE and in-well air sparging operations. Free product is no longer present in wells MW-2 and MW-5.
- Natural attenuation processes are actively reducing hydrocarbon concentrations in groundwater, as evidenced in the groundwater monitoring data from well MW-3. The proposed air sparging into wells MW-1, MW-2, and MW-5 would help to enhance biodegradation of the remaining hydrocarbons in the vicinity of the former USTs.

FUTURE ACTIVITES

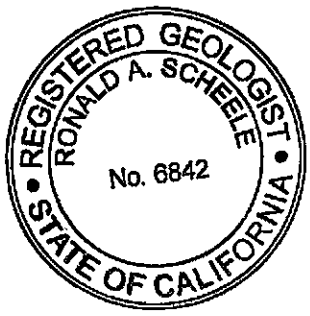
Cambria will continue to perform quarterly groundwater monitoring and operate the SVE system pending agency approval of our system modification request. Cambria anticipates operation of the air sparging system for a period of 6 to 12 months. During this time, Cambria may consider preparation of a site closure request if groundwater concentrations remain at current levels.

CLOSING

If you have any questions or comments regarding this report, please call Ron Scheele at (510) 450-1983.

Sincerely,
Cambria Environmental Technology, Inc.

Jason Olson
Senior Staff Environmental Scientist



Ron Scheele, RG
Senior Geologist

Attachments: Figure 1 – Site Plan
Figure 2 –Current and Historical Maximum Hydrocarbon Groundwater Concentrations
Table 1 – SVE System Performance and Analytical Results
Table 2 – Groundwater Elevation and Analytical Data
Appendix A – ACHCSA letter and CEC Corrective Action Plan

cc: Ms. Naomi Gatzke, 1545 Scenic View Dr., San Leandro, CA 94577

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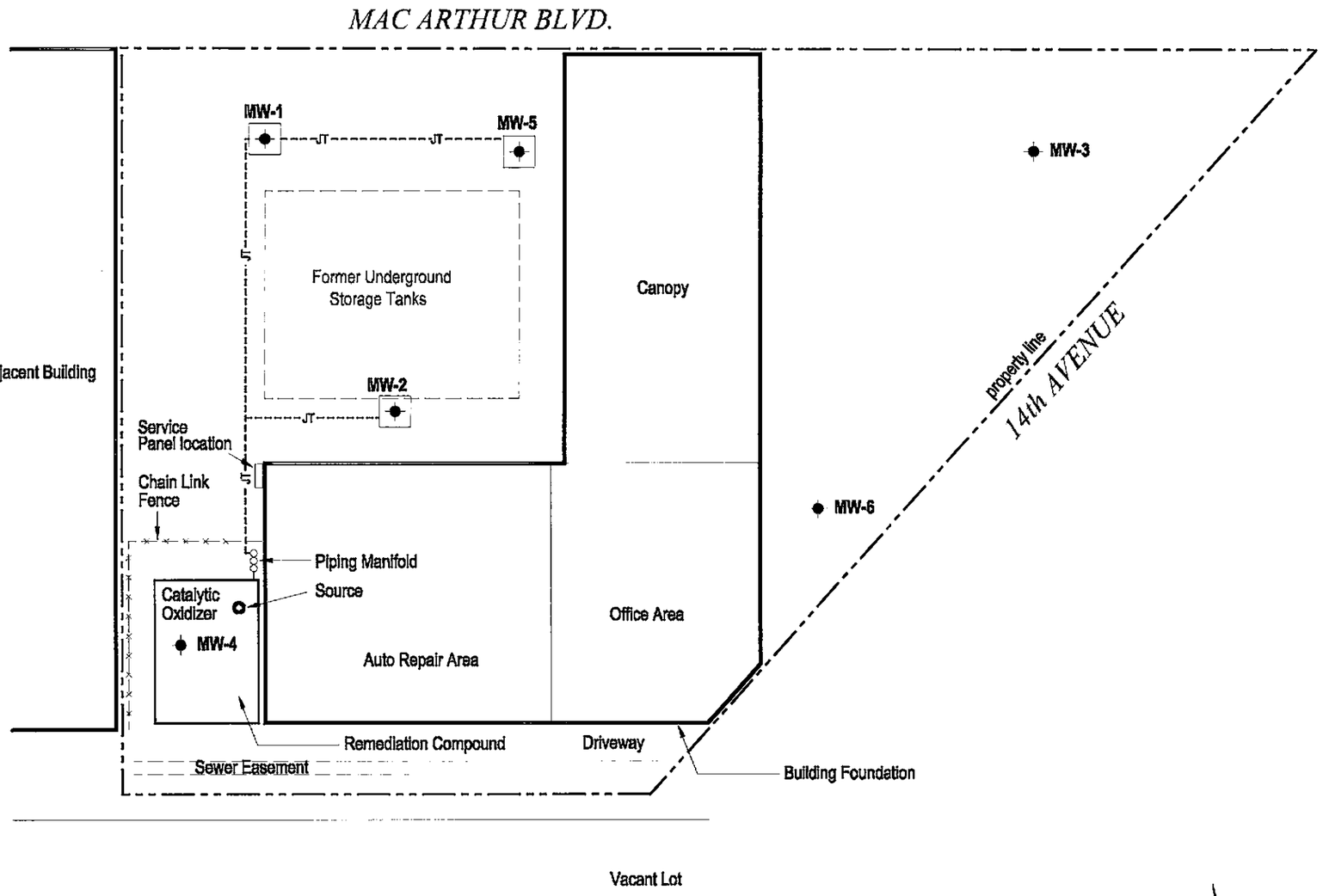
Hooshi's Auto Service

1499 MacAurthur Boulevard
Oakland, California

Site Plan



EXPLANATION

- Monitoring well and utility vault location
- Monitoring well location
- JT Joint Trench

N

0 5 10 20

Scale (ft)

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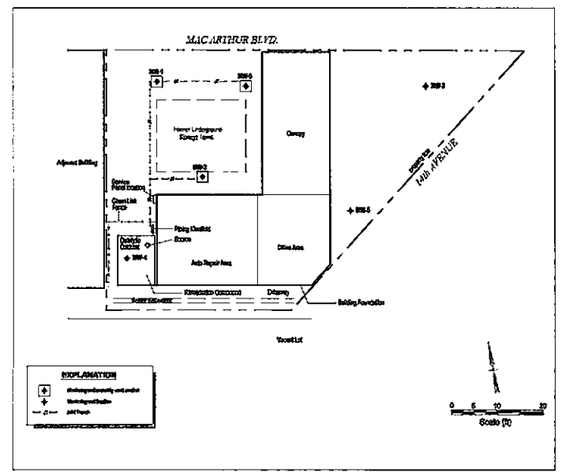

FIGURE 1

07/21/99

H:\SB-2004\HOOSHI\FIGURES\SITE-PLAN.DWG

H:\SB-2004\OAK-HOOSH\FIGURES\CONCENTRATIONS.DWG

Hooshi's Auto Service

1499 MacAurthur Boulevard

Oakland, California

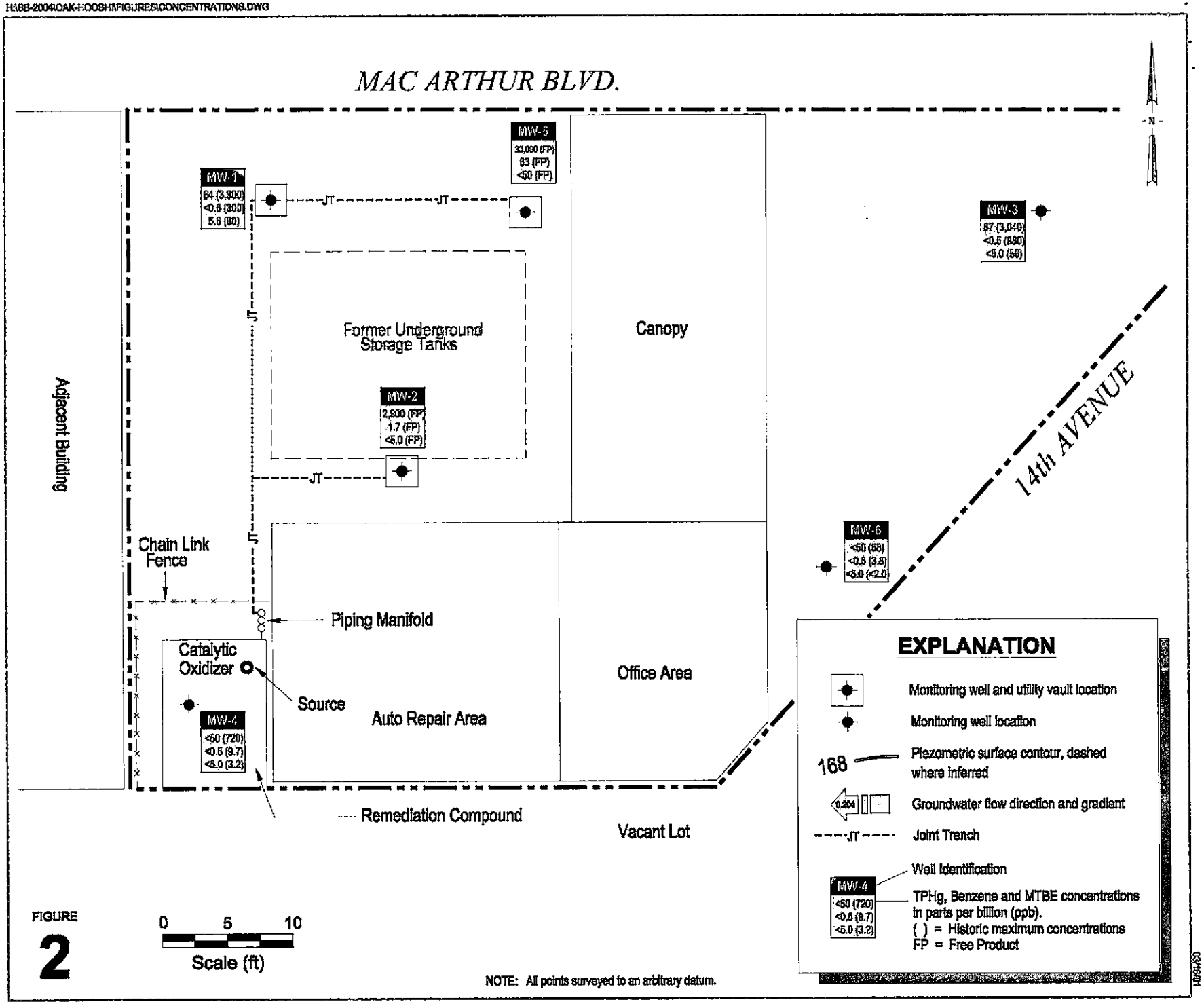

FIGURE **2**

NOTE: All points surveyed to an arbitrary datum.

Current and Historical Hydrocarbon Concentrations in Groundwater

February 8, 2001

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03/18/01

Table 1. SVE System Performance and Analytical Results - Hooshi's Auto Service, 1499 MacArthur Boulevard, Oakland, California

Date	Hour Meter Readings (hrs)	System Uptime (per interval) (%)	Total Well Flow Rate (prior to dilution) (cfm)	Total Well HC Conc. (ppmv)	System Inlet Temp. (degree F)	System Flow Rate (after dilution) (cfm)	System Influent HC Conc. [1] (ppmv)	System Effluent HC Conc. [2] (ppmv)		HC Removal Rate [3] (lbs/day)	Emission Rate (lbs/day)		TPHg Destruction Efficiency (%)	Gasoline Cumulative Removal (lbs)
							TPHg	TPHg	Benz	TPHg	TPHg	Benz		
9/19/00	0	--	8.0	110	628	35	19	<10	<0.15	0.28	<0.11	<0.002	*	0
10/23/00	823	101%	7.2	200	626	32	43	<10	--	0.46	<0.10	--	*	9.7
11/6/00	1,155	99%	3.1	<10	626	32	<10	<10	<0.15	<0.01	<0.10	<0.001	*	16.1
12/20/00	2,211	100%	1.5	2	626	19	2	0	--	0	0	--	*	16.5
1/4/01	2,570	100%	1.0	<10	626	19	<10	<10	<0.15	0	<0.06	<0.001	*	16.5
2/21/01	3,722	100%	0.7	<10	626	19	<10	<10	<0.15	0	<0.06	<0.001	*	16.7

Notes and Abbreviations:

TPHg = Total petroleum hydrocarbons as gasoline

Benz = Benzene

HC Conc. = Hydrocarbon Concentrations

ppmv = Parts per million by volume. Analytical lab results converted from micrograms per liter (ug/l) to ppmv assumes the molecular weight of gasoline to be equal to that of hexane. at 1 atmosphere of pressure and 20 degrees Celsius.

[1] TPHg and benzene concentrations based on lab results by Modified EPA Methods 8015 and 8020 or Horiba gas analyzer measurements.

[2] The hydrocarbon removal/emission rate is based on the Bay Area Air Quality Management's District's (BAAQMD) Procedures for Soil Vapor Extraction where Rate = concentration (ppmv) x flow rate (acfm) x 1 lb-mole/386x$10^6$$ft^3$ x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene) x 1440 min/day.

[3] Gasoline Removal = The previous removal rates multiplied by the interval days of operation plus the previous total removal amount. The total TPHg removal is based on lab analytical or horiba gas analyzer results.

* As per BAAQMD permit conditions, system destruction efficiency need not be calculated for effluent TPHg concentrations less than 10 ppmv

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Table 2. Groundwater Elevation and Analytical Data - Hooshi's Auto Service, 1499 MacArthur Boulevard, Oakland, California

Well ID *TOC (ft*)*	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft**)	Separate Phase Hydrocarbons (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes
					← (µg/L) →						
MW-1	1/4/93	--	--	--	539	130	12	22	13	--	
181.00	4/22/93	--	--	--	1,130	75	8.0	38	11	--	
	12/27/94	--	--	--	770	22	6.6	14	21	--	
	6/27/96	14.11	166.89	--	3,300	260	34	59	170	80	
	12/10/96	13.71	167.29	--	1,500	84	11	22	32	34	
	5/8/98	13.85	167.15	--	3,200	300	12	62	36	<120	a
	8/17/98	14.11	166.89	--	1,700	160	18	32	27	39	a
	11/4/98	14.28	166.72	--	1,100	11	4.3	3.6	6.5	<50	a
	2/17/99	13.41	167.59	--	320	200	47	72	75	57	a
	5/27/99	14.16	166.84	--	2,500	81	12	29	41	<80	a
	8/19/99	14.18	166.82	--	780	19	<0.5	5.7	4.5	28	a
180.83	11/23/99	14.43	166.40	--	1,300	24	0.64	1.8	3.3	<100	a
	2/17/00	13.85	166.98	--	1,300	60	9.1	22	19	22 (16)	a,b
	5/9/00	14.01	166.82	--	2,700	55	13	19	25	34 (29)	a
	8/15/00	14.24	166.59	--	--	--	--	--	--	--	
	12/1/00	8.75	172.08	--	480	6.4	5.9	1.1	3.9	18 (21)	a
180.63	**2/8/01**	**8.49**	**172.14**	**--**	**64**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**6.1 (5.6)**	**a,c**
MW-2	1/4/93	--	--	--	149,000	21,700	25,000	ND	7,760	--	
180.45	4/22/93	--	--	--	136,300	9,900	15,870	15,300	2,190	--	
	12/27/94	--	--	--	94,000	11,000	18,000	2,700	16,000	--	
	6/27/96	12.61	168.64	1.00	--	--	--	--	--	--	
	12/10/99	11.10	169.55	0.25	--	--	--	--	--	--	
	5/8/98	10.81	169.66	0.03	--	--	--	--	--	--	
	8/17/98	12.16	168.31	0.02	--	--	--	--	--	--	
	11/4/98	12.61	167.86	0.02	--	--	--	--	--	--	
	2/17/99	9.82	170.66	0.04	--	--	--	--	--	--	
	5/27/99	11.07	169.48	0.13	--	--	--	--	--	--	
	8/19/99	12.79	167.68	0.02	--	--	--	--	--	--	
180.24	11/23/99	12.14	168.20	0.12	--	--	--	--	--	--	

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Table 2. Groundwater Elevation and Analytical Data - Hooshi's Auto Service, 1499 MacArthur Boulevard, Oakland, Calfornia

Well ID *TOC (ft*)*	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft**)	Separate Phase Hydrocarbons (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes
					← (µg/L) →						
	2/17/00	10.01	170.37	0.18	--	--	--	--	--	--	
	5/9/00	10.88	169.38	0.03	--	--	--	--	--	--	
	8/15/00	12.28	167.97	0.01	--	--	--	--	--	--	
	12/1/00	8.03	172.21	--	260,000	1,100	5,000	1,900	17,000	<100	a
	2/8/01	**7.86**	**172.38**	**--**	**2,900**	**1.7**	**14**	**5.0**	**140**	**<5.0**	**c,d**
MW-3	1/4/93	--	--	--	1,610	772	14	11	ND	--	
179.94	4/22/93	--	--	--	3,040	980	34	19	16		
	12/27/94	--	--	--	2,600	180	9.0	7.2	13		
	6/27/96	13.20	166.74	--	2,000	22	2.9	11	7.4	56	
	12/10/96	13.13	166.81	--	970	<0.5	<0.5	<0.5	<0.5	24	
	5/8/98	13.03	166.91	--	780	3.7	2.1	1.1	2.4	<32	a
	8/17/98	13.22	166.72	--	870	2.8	<0.5	<0.5	3.7	<5.0	b,c
	11/4/98	13.31	166.63	--	770	1.6	4.4	2.0	6.9	<30	c
	2/17/99	12.89	167.05	--	650	6.2	3.4	1.5	2.6	<5.0	b,c
	5/27/99	12.32	167.62	--	570	1.5	1.2	0.72	1.1	<20	a
	8/19/99	13.19	166.75	--	830	<0.5	1.9	<0.5	1.3	<20	c,d
179.55	11/23/99	13.26	166.29	--	900	<0.5	1.8	0.56	1.4	<20	c,d
	2/17/00	12.78	166.77	--	250	<0.5	1.5	<0.5	0.62	<5.0	d
	5/9/00	12.92	166.63	--	690	<0.5	2.1	0.85	1.6	<5.0	a
	8/15/00	13.19	166.36	--	610	<0.5	2.3	0.75	1.2	<5.0	c,d
	12/1/00	7.50	172.05	--	120	<0.5	0.90	0.65	0.62	<5.0	c,d
	2/8/01	**7.20**	**172.35**	**--**	**87**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	**c,d**
MW-4	6/27/96	17.03	163.51	--	720	2	0.5	2.5	23	3.2	
180.54	12/10/96	8.50	172.04	--	80	2.4	<0.5	<0.5	6.6	<2.0	
	5/8/98	11.46	169.08	--	<50	0.60	<0.5	<0.5	<0.5	<5.0	
	8/17/98	13.98	166.56	--	<50	<0.5	<0.5	<0.5	0.5	<5.0	
	11/4/98	14.36	166.18	--	96	9.7	8.1	4.8	18	<5.0	a
	2/17/99	8.39	172.15	--	<50	<0.5	<0.5	<0.5	0.5	<5.0	

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Table 2. Groundwater Elevation and Analytical Data - Hooshi's Auto Service, 1499 MacArthur Boulevard, Oakland, Calfornia

Well ID *TOC (ft*)*	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft**)	Separate Phase Hydrocarbons (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes
					← (µg/L) →						
	5/27/99	12.80	167.74	--	<50	<0.5	1.0	<0.5	2.9	<5.0	
	8/19/99	14.42	166.12	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
180.12	11/23/99	14.63	165.49	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	2/17/00	8.15	171.97	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	5/9/00	12.81	167.31	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	8/15/00	14.29	165.83	--	<50	2.1	<0.5	<0.5	<0.5	<5.0	
	12/1/00	12.80	167.32	--	81	6.0	8.4	1.0	5.6	<5.0	a
	2/8/01	**12.57**	**167.55**	--	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	
MW-5	6/27/96	13.62	166.74	0.16	--	--	--	--	--	--	
180.23	12/10/96	13.26	167.77	1.00	--	--	--	--	--	--	
	5/8/98	13.15	167.11	0.04	--	--	--	--	--	--	
	8/17/98	13.36	166.89	0.02	--	--	--	--	--	--	
	11/4/98	13.52	166.73	0.02	--	--	--	--	--	--	
	2/17/99	13.02	167.23	0.02	--	--	--	--	--	--	
	5/27/99	13.80	166.71	0.35	--	--	--	--	--	--	
	8/19/99	13.45	166.86	0.10	--	--	--	--	--	--	
180.09	11/23/99	14.03	166.35	0.36	--	--	--	--	--	--	
	2/17/00	13.28	167.02	0.26	--	--	--	--	--	--	
	5/9/00	13.55	166.77	0.29	--	--	--	--	--	--	
	8/15/00	13.58	166.54	0.04	--	--	--	--	--	--	
	12/1/00	8.00	172.09	0.00	54,000	240	1,700	870	1,000	<300	c,d
180.04	**2/8/01**	**7.88**	**172.16**	**0.00**	**33,000**	**63**	**420**	**120**	**4,500**	**<50**	**a,b**
MW-6	6/27/96	18.55	161.48	--	ND	ND	ND	ND	ND	--	
180.03	12/10/99	11.79	168.24	--	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	
	5/8/98	11.62	168.41	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	8/17/98	12.66	167.37	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	11/4/98	13.56	166.47	--	68	3.8	3.7	2.8	11	<5.0	a

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Table 2. Groundwater Elevation and Analytical Data - Hooshi's Auto Service, 1499 MacArthur Boulevard, Oakland, Calfornia

Well ID *TOC (ft*)*	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft**)	Separate Phase Hydrocarbons (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Notes
					←			(µg/L)		→	
	2/17/99	12.91	167.12	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	5/27/99	13.03	167.00	--	<50	1.0	1.7	0.82	4.9	<5.0	
	8/19/99	13.10	166.93	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
179.63	11/23/99	13.58	166.05	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	2/17/00	10.72	168.91	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	5/9/00	11.71	167.92	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	8/15/00	12.49	167.14	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	12/1/00	8.64	170.99	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	2/8/01	**8.20**	**171.43**	**--**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5.0**	
Trip Blank	5/8/98	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	11/4/98	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	5/27/99	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	11/23/99	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	
	12/1/00	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	

Abbreviations and Methods:

TPHg = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015

Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020

MTBE = Methyl tertiary butyl ether by EPA Method 8020

(concentration in parentheses confirmed by EPA Method 8260)

µg/L = Micrograms per liter

TOC = Top of casing elevation

* = wells surveyed to an arbitrary datum

** = Calculated groundwater elevation corrected for SPH by the relation:

Groundwater Elevation = Well Elevation - Depth to Water +(0.8xSPH thickness (ft))

Abbreviations and Methods (Cont'd):

MCLs = California primary maximum contaminant levels for drinking water (22 CCR 64444)

NE = MCLs not established

ND = Compound not detected, detection limit unknown

Notes:

a - The analytical laboratory noted that unmodified or weakly modified gasoline is significant.

b - The analytical laboratory noted that lighter than water immiscible sheen is present.

c - The analytical laboratory noted no recognizable pattern.

d - The analytical laboratory noted heavier gasoline range compounds are significant (aged gasoline?).

APPENDIX A

ACHCSA letter and CEC Corrective Action Plan

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

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

STID 3597

September 11, 1996

Naomi English
Gary Nickles
1545 Scenic View Drive
San Leandro, CA 94577

RE: HOOSHI'S AUTO SERVICE, 1499 MACARTHUR BLVD., OAKLAND, CA 94602

Dear Ms. English and Mr. Nickles:

This office recently completed a review of the case file for the above referenced Oakland site up to and including the Centurywest Engineering Corporation (CEC) "Report of Phase II Site Characterization" report dated August 30, 1996. The purpose of the Phase II Site Characterization was to collect additional data necessary to prepare a feasible Corrective Action Plan (CAP). As part of the CAP, groundwater pumping and treatment, as well as soil-vapor extraction were evaluated by CEC as potential alternative cleanup technologies.

As documented in the August 30 1996, CEC report, free phase petroleum hydrocarbons were observed in wells MW-2 and MW-5 at thicknesses of 12" and 2", respectively. The proposed CAP would utilize wells MW-1, MW-2 and MW-5 as soil-vapor extraction (SVE) wells for the removal of free product and impacted petroleum hydrocarbons in the vicinity of the former USTs. CEC estimates that roughly 300 to 1,500 pounds of petroleum hydrocarbons may be present in the immediate vicinity of the former UST excavation.

CEC estimates that initial vapor removal rates of between five and fifteen pounds of petroleum hydrocarbons per day may be achievable. CEC also estimates a substantial site clean-up in a period of four to six months from the initial start-up of the SVE system.

Please submit a minimum of three bids for the installation and maintenance of the proposed SVE system for pre-approval to Patrick Wheeler of the State Water Resources Control Board. Recent changes in the legislation governing the UST Fund require that the UST Fund provide you with assistance in procuring contractor and consultant services for the implementation of the corrective action plan. Mr. Wheeler's direct line at the UST Fund in Sacramento is (916)227-0743.

Please submit for pre-approval a minimum of three bids for the installation and maintenance of the proposed SVE system to Patrick Wheeler of the UST Fund, within 60 days of the date of this letter, or no later than November 11, 1996.

Please be advised that this letter constitutes a formal request for technical reports pursuant to California Water Code Section 13267(b) and Health and Safety Code Sections 25299.37 and 25299.78.

Please call me at 510/567-6880 should you have any questions about the content of this letter.

Sincerely,

Dale Klettke, CHMM
Hazardous Materials Specialist

c: Thomas Peacock, LOP Manager--files
Patrick Wheeler, UST Fund
Rajeev Cherwoo, c/o Centurywest Engineering, 7950 Dublin Blvd., Suite 203, Dublin, CA 94568

3597cap1.ok

REPORT OF PHASE II SITE CHARACTERIZATION
Hooshi's Auto Service
1499 MacArthur Boulevard
Oakland, California

CWEC 20596-001-01

Prepared for:

Ms. Naomi English
1545 Scenic View Drive
San Leandro, California 94577

Prepared by:

Century West Engineering Corporation
7950 Dublin Boulevard, Suite 203
Dublin, California 94568

August 30, 1996

centurywest
ENGINEERING CORPORATION

August 30, 1996

Ms. Naomi English
1545 Scenic View Drive
San Leandro, California 94577

SUBJECT: Report of Phase II Site Characterization, 1499 MacArthur Boulevard, Oakland, California

Dear Ms. English:

The enclosed report addresses the recent work performed by Century West Engineering Corporation regarding the subject site. On the basis of data collected, we have prepared a Corrective Action Plan (section 6.0) for mitigation of environmental concerns associated with the former leaking underground storage tanks at the property.

In the Corrective Action Plan, we have included plans and specifications for application of vapor extraction remediation, monitoring, and reporting. It is our opinion that application of this technology will result in effective mitigation of environmental concerns associated with hydrocarbons in soil and groundwater at the site.

We appreciate the opportunity to be of service to you. If you have any questions, please call us at (510) 551-7774.

Sincerely,

REGISTERED GEOLOGIST
MATTHEW L. BROMLEY
No. 6204
Exp. 12/96
STATE OF CALIFORNIA

Century West Engineering Corporation

Rajeev Cherwoo
Project Engineer

Matthew L. Bromley, R.G.
Senior Geologist/Division Manager

cc: Mr. Dale Klettke, Contra Costa County
Mr. Patrick Wheeler, State Water Resources Control Board, UST Cleanup Fund

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6.0 CORRECTIVE ACTION PLAN

The results of Century West Engineering Corporation's investigation of the subject site support the application of vapor extraction remediation. Due to the limited extent of high concentrations of hydrocarbons in soil and groundwater, it is difficult to accurately estimate the mass of hydrocarbons in soils and groundwater. On the basis of what we consider to be reasonable assumptions, we estimate that roughly 300 to 1,500 pounds of hydrocarbons may present in the immediate vicinity of the UST excavation.

We estimate that initial vapor extraction rates of between five and fifteen pounds of hydrocarbons per day may be achievable. As remediation progresses, hydrocarbon removal rates will decrease until remediation is complete. Based on the information available to us at this time, we estimate that the application of vapor extraction remediation may result in substantial site clean-up in a period of four to six months.

6.1 Remediation System Design Specifications

The remediation system design specifications are summarized in Table 4. The location of remediation system, joint trenches, and piping manifold are shown on Figure 4. Appropriate environmental permits will be obtained prior to installation of the remediation system. The remediation system will be installed by state licenced contractor in accordance with appropriate regulations and guidelines.

Monitoring wells MW-1, MW-2 and MW-5 will be used for vapor extraction, and each vapor extraction well will be connected to the remediation system via a horizontal vapor extraction conduit. Remediation of extracted vapors will be performed by a 150 cfm capacity all electric catalytic oxidizer. The remediation system will be equipped with necessary safety interlocks and emergency shutoff devices. The remediation system will be placed at the southwest corner of the Auto Repair Building as shown on Figure 4, and a temporary chain link fence will be installed on the north, west and south sides of the remediation system. A manifold will be constructed inside the remediation compound to connect underground vapor extraction conduit to the remediation system, and to install necessary valves, gauges, and sampling ports. A temporary electric connection will be installed at the site for the operation of the remediation system.

6.2 Operation and Maintenance

The vapor extraction system will be operated until such a time that significant quantities of vapors cease to be extracted from the subsurface. At this time we assume that the system will operate for a six month period. The system will be operated and maintained in such a manner to extract the maximum amount of hydrocarbons, and to collect the data necessary to quantify the removal mass. The necessary data will be collected to evaluate the effectiveness of each well in contributing to hydrocarbon removal. The system will be shut down and removed from the site when the remediation is complete, regardless of the amount of time the system is in operation.

6.3 Testing and Documentation

During operation of the remediation system, the following parameters shall be monitored on at least a weekly basis:

- Cumulative hours of system operation;
- Rate of gas extracted in cubic feet per minute;
- System Vacuum.

Tedlar bag gas samples will be collected by appropriate protocol to evaluate vapor concentrations in extracted gas on a weekly basis for the first three weeks of operation, and at least monthly thereafter. Samples will be analyzed for TPH-G and BTEX.

Groundwater will be sampled from each well, unless free phase hydrocarbons are observed. Site monitoring will be performed on a quarterly basis for the duration of the remediation (assumed to be six months-three sampling and analytical events). Groundwater samples will be analyzed for TPH-G, BTEX, and MTBE.

6.4 Reporting

At the conclusion of the remediation, or after six months, whichever comes first, a remediation report will be prepared and submitted to Alameda County. The report will include all of the data collected during the remediation. The scope of work will be described in detail. Daily hydrocarbon removal rates will be calculated and presented in tabular form. The total mass of hydrocarbons removed will be calculated and presented. Groundwater analytical results will be

presented and discussed. The report will include groundwater elevation contour drawings. The report will present conclusions and recommendation for continuation or cessation of vapor extraction. If appropriate, the report will present recommendations for site closure.