CAMBRIA

TRANSMITTAL LETTER

To:	**Juliet Shin**
Organization:	Alameda County Environmental Health
Address:	1131 Harbor Bay Parkway, 2nd Floor Alameda, CA 94502
Date:	Thursday, February 11, 1999
Re:	**Hooshi's Auto Service** 1499 MacAuthur Boulevard Oakland, CA

Ms. Shin,

Enclosed are copies of the letters you requested. I have included some additional correspondence as well. If these are not the letters you require, please let me know, and I will forward you copies of any letters you need.

Call me at (510) 420-3316 if you have any questions or comments.

Owen Ratchye

From the desk of...

Owen C. Ratchye, P.E.
Project Engineer
Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608

Telephone: (510) 420-3316
Facsimile: (510) 420-9170

FILE COPY

CAMBRIA Environmental Technology, Inc.

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

TRANSMITTAL LETTER

TO: Naomi English

FROM: Leslie McDonough

COMPANY: Hooshi's Auto Service

DATE: May 18, 1998

SUBJECT: Reimbursement Request

PROJECT NUMBER:

COMMENTS:

Enclosed please find an original and a copy of the reimbursement request for your UST Cleanup Fund reimbursement submittal. Please sign the enclosed original document where indicated and mail the enclosed information along with the cover letter to Ms. Torres in the envelope provided. Please keep the copy for your file.

If you have any questions, please do not hesitate to call me at (510)420-3322.

Thank you for your help.

Leslie McDonough

CAMBRIA

May 18, 1998

Ms. Anna Torres
RWQCB UST Cleanup Fund
2014 T Street
Sacramento, CA 94244-2120

Re: **Reimbursement Request**
Hooshi's Auto Service
1499 MacArthur Boulevard
Oakland, California
Claim No.8519

Dear Ms. Torres:

Cambria Environmental Technology, Inc. (Cambria) is pleased to submit this reimbursement request to the UST Cleanup Fund on behalf of Ms. Naomi English. Enclosed please find the necessary UST Cleanup Fund forms and supporting documentation.

If you have any questions regarding this request, please do not hesitate to call me at (510)420-3322.

Sincerely,

Leslie McDonough
Environmental Scientist

Attachments:
A - Reimbursement Request
B - Narrative Work Description
C - Spreadsheet
D - Invoices
E - Cost Pre-approvals
F - Air Permit

CAMBRIA
ENVIRONMENTAL
TECHNOLOGY, INC.
1144 65TH STREET,
SUITE B
OAKLAND,
CA 94608
PH: (510) 420-0700
FAX: (510) 420-9170

H:\SB-2004\Oakl - Hoosi's\UST Fund\REIMTR.WPD

CAMBRIA

ATTACHMENT A

Reimbursement Request

REIMBURSEMENT REQUEST - UNDERGROUND STORAGE TANK CLEANUP FUND

CLAIM NO: 008519 REGION: 2 REIMBURSEMENT NO:

CLAIMANT: NAOMI ENGLISH
CO-PAYEE: NONE
JOINT CLAIMANT: NONE

CLAIMANT ADDRESS: 1545 SCENICVIEW DR
SAN LEANDRO, CA 94577

CONTAMINATED SITE: HOOSHI AUTO SERVICE
ADDRESS: 1499 MACARTHUR BLVD
OAKLAND, CA 94602

LETTER OF COMMITMENT AMOUNT: $60,000 AMENDMENT NO: 2

PROJECT COSTS INCURRED TO DATE* (The accumulative costs to-date are unavailable)

(This Section to be completed by claimant)

		APPROVED FOR PAYMENT (TO DATE) (State Use Only)
1. CORRECTIVE ACTION COSTS (Costs entered here must be cumulative, Total-to-date, NOT INCREMENTAL.)	$ *6,725.80	$
2. THIRD PARTY JUDGEMENT	$ —	$
3. ADJUSTMENT	$ (—)	$
4. DEDUCTIBLE (Subtract)	$ (5,000)	$ (5,000)
TOTAL (Lines 1, 2, 3 & 4)	$ 6,725.80	$

CERTIFICATION:
I have read and agree with the Conditions of Payments (Exhibit I), listed on the reverse side of this document.
NOTE: This request CANNOT BE PROCESSED unless the Conditions of Payments are included on the reverse side when submitted.

The costs claimed have been incurred and have been paid or will be paid within thirty (30) days of receipt of the funds requested hereby. If such costs have not been paid within 30 days, funds received under this request will be returned to the State Water Resources Control Board.

CLAIMANT SIGNATURE: DATE:

STATE USE ONLY: APPROVAL FOR PAYMENTS

$ _____ LESS: $ _____ = $ _____
Approved for Payment to Date *Previous Payments* *Amount Due*

Reviewed By: _____ *Title:* _____ *Date:* _____

Approved By: _____ *Title:* _____ *Date:* _____

EXHIBIT I

CONDITIONS OF PAYMENT

By submission hereof, and as a condition of payment hereunder, the Claimant warrants and agrees that:

1. The Claimant has complied with, and will comply with, all applicable state laws, rules and regulations which are a condition of payment from the Underground Storage Tank Cleanup Fund (Fund) and with all terms, conditions and commitments in the Claimant's Application, any documents in support thereof, and this Payment Request;

2. All costs for which reimbursement is sought are eligible for reimbursement and Claimant is entitled to reimbursement therefore;

3. The Claimant has established and will maintain separate accounting records and such other books, records, and documents as may be needed to adequately and accurately reflect and verify all costs claimed by this Payment Request and Claimant's entitlement thereto, and Claimant agrees to retain such records for at least three years after disbursement from the Fund on account of this Payment Request or three years after final payment from the Fund on account of costs at the site which is the subject of this Payment Request, whichever period is longer. The retention period shall be extended until completion of any audit in progress at the time of normal expiration of the retention period;

4. The Claimant will expeditiously provide any reports, data, information, or certifications required by the State Water Resources Control Board (SWRCB);

5. If the Claimant receives reimbursement on account of any cost for which reimbursement is also received from the Fund, the Claimant will remit to the Fund an amount equal to the sum disbursed from the Fund on account of such cost, provided, however, that if such cost was advanced to the Claimant under circumstances where the Claimant is obligated to repay the advance from any reimbursement from the Fund, and if the Claimant receives no benefit, direct or indirect, from such repayment, no remittance to the Fund is required;

6. Any overpayment from the Fund, or any other payment from the Fund to which the Claimant is not entitled, will be repaid to the Fund by the Claimant immediately upon knowledge or notice that such a payment has been made and in any event, not later than 30 days after a written request for repayment by the SWRCB or any authorized representative thereof;

7. The SWRCB or any authorized representative thereof may, any time during the retention period specified in Paragraph 3, above commence an audit of any costs relevant to reimbursement from the Fund, and the Claimant will make available all necessary books and records therefore, including, but not limited to, the records specified in Paragraph 3 above. The Claimant agrees to reimburse the Fund for any costs disallowed as a result of such audit immediately upon receipt of a copy of such audit.

8. Any repayments due to the Fund shall bear interest at the highest legal rate from the date due to the Fund to the date of actual repayment.

9. The Claimant will indemnify, defend and save harmless the State, its officers, agents, and employees from any and all claims, losses and liability arising out of or connected with any payment to the Claimant pursuant to this Payment Request, including but not limited to the reasonable cost any attorney fees and any associated court and trial costs.

10. In the event of any litigation related to the provisions of this Payment Request, the prevailing party, in addition to any other relief, shall be entitled to reasonable attorney fees and costs.

11. The Claimant will promptly notify the appropriate Division of the SWRCB in writing when the project which is the subject of this Payment Request has been completed and will thereafter cooperate with the Division in any close out procedures requested by the Division.

12. The Claimant understands that, Pursuant to Section 25299.74(c) of the California Health and Safety Code, the SWRCB at its option may require that the Claimant transfer and assign to the State of California, and subrogated the State to, any and all rights which the Claimant may have to recover corrective action costs included in this Payment Request from any person or persons responsible or liable for the unauthorized release which is the subject of this Payment Request, up to the amount of any reimbursement received by the Claimant pursuant to this Payment Request.

CAMBRIA

ATTACHMENT B

Narrative Work Description

CAMBRIA

Narrative Work Description
Hooshi's Auto Service
1499 MacArthur Boulevard
Oakland, California

The following work was conducted from November 1997 to February 1998 for the above referenced property. All work was required by the State Water Resources Control Board (SWRCB)

November 1997: Cambria compiled the necessary information to complete an air permit application for an Authority to Construct / Permit to Operate for a soil vapor extraction system (SVE).

***December 1997*:** Cambria consulted Bay Area Quality Management District (BAAQMD) to determine the correct risk screen analysis forms to completed. Calculations were performed to determine estimates of yearly admission from the SVE.

January through March 1998: In January 1998, the air permit was finalized and submitted to the BAAQMD. The BAAQMD responded with a request for additional work, including a mailing to every residence located near the site because the site is located within 1,000 ft. of a school. Cambria contacted PG&E, submitted a service planning request, and determined that the existing electrical service was inadequate. Cambria specified the size and type of temporary electrical service that would be required to power the SVE system.

ATTACHMENT C

Spreadsheet

CLAIMANT: Ms. Naomi English		*SPREADSHEET*			*Page 1*						
CLAIM NO.: 8519											
REQUEST NO.: 1											
#	Payee	Purpose	Invoice No.	Invoice Date	Invoice Amount ($)	Amount Requested ($)	Amount Ineligible ($)	Check No.	Check Date	Check Amount ($)	Third Party Costs ($)	Comments
		Previous Total				**Do not have previous total**						
1	Cambria	Air Permit	2222	12/10/97	542.00	542.00		—	—	—		
2	Cambria	Air Permit	2552	02/05/98	850.00	850.00		—	—	—		
3	Cambria	Air Permit, SVE system installation, Electrical service design and permitting	2741	03/13/98	2,721.95	2,721.95		—	—	—		
4	Cambria	Air Permit, SVE system installation oversight, Electrical service design and permitting	2957	04/10/98	1,531.95	1,531.95		—	—	—		
5	Cambria	Air Pemit, Reimbursement Fund, Electrical service design and permitting	3807	05/15/98	1,079.90	1,079.90		—	—	—		
	Totals				6,725.80	6,725.80						

ATTACHMENT D

Invoices

Invoice

Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608
(510)420-0700

December 10, 1997
Project No: 129-0741
Invoice No: 0002222

Hooshi's Auto Service
1545 Scenic View Dr.
Attn: Ms. Naomi English
San Leandro CA 94577

Project: 129-0741 Hoosi's Auto Service

Professional Services: November 1, 1997 through November 30, 1997

Task: 001 Air Permit

Professional Personnel

	Hours	Rate	Amount	
Principal				
Clark-Riddell, Robert	1.00	120.00	120.00	
Project Level				
Ratchye, Owen	3.50	85.00	297.50	
Staff Level				
Marsic, Scott D.	0.30	65.00	19.50	
Clerical				
Chang, Jason	2.00	42.00	84.00	
Smart, Rena	0.50	42.00	21.00	
Totals	7.30		542.00	
Total Labor				**542.00**

Billing Limits	**Current**	**Prior**	**To-date**	
Total Billings	542.00	0.00	542.00	
Limit			1,900.00	
Remaining			1,358.00	
			Total this task	**$542.00**
			Total this invoice	**$542.00**

Invoice

Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608
(510)420-0700

February 5, 1998
Project No: 129-0741
Invoice No: 0002552

Hooshi's Auto Service
1545 Scenic View Dr.
Attn: Ms. Naomi English
San Leandro CA 94577

Project: 129-0741 Hoosi's Auto Service

Professional Services: December 1, 1997 through December 31, 1997

Task: 001 Air Permit

Professional Personnel

		Hours	Rate	Amount	
Project Level					
Ratchye, Owen		10.00	85.00	850.00	
	Totals	10.00		850.00	
	Total Labor				**850.00**

Billing Limits	**Current**	**Prior**	**To-date**	
Total Billings	850.00	542.00	1,392.00	
Limit			1,900.00	
Remaining			508.00	
			Total this task	**$850.00**
			Total this invoice	**$850.00**

Outstanding Invoices

Number	**Date**	**Balance**
0002222	12/10/97	542.00
Total		**542.00**

Invoice

Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608
(510)420-0700

March 13, 1998
Project No: 129-0741
Invoice No: <~~Draft~~>
2741

Hooshi's Auto Service
1545 Scenic View Dr.
Attn: Ms. Naomi English
San Leandro CA 94577

Project: 129-0741 Hoosi's Auto Service

Professional Services: January 1, 1998 through February 28, 1998

Task: 001 Air Permit: finalize air permit package.

Professional Personnel

	Hours	Rate	Amount	
Staff Level				
Chenue, Scott E.	3.00	65.00	195.00	
Totals	3.00		195.00	
Total Labor				**195.00**

Reimbursable Expenses

Find invoice

Permit Fees				
03/04/98 Bay Area Air Quality Management District	Permit Fees		493.00	
Total Reimbursables		**1.15 times**	**493.00**	**566.95**

Total this task **$761.95**

Task: 003 Install Oversight: Site walk with contractor, arrange for electrical service, schedule installation, project communications with client.

Professional Personnel

	Hours	Rate	Amount	
Project Level				
Ratchye, Owen	12.75	90.00	1,147.50	
Staff Level				
Chenue, Scott E.	12.50	65.00	812.50	
Totals	25.25		1,960.00	
Total Labor				**1,960.00**

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	1,960.00	0.00	1,960.00
Limit			5,450.00
Remaining			3,490.00

Total this task **$1,960.00**

Total this invoice **$2,721.95**

Outstanding Invoices

Number	**Date**	**Balance**
0002222	12/10/97	542.00
0002552	2/5/98	850.00
Total		**1,392.00**

Invoice

Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608
(510)420-0700

April 10, 1998
Project No: 129-0741
Invoice No: 0002957

Hooshi's Auto Service
1545 Scenic View Dr.
Attn: Ms. Naomi English
San Leandro CA 94577

Project: 129-0741 Hoosi's Auto Service

COPY

Professional Services: March 1, 1998 through March 31, 1998

Task: 001 Air Permit

Professional Personnel

	Hours	Rate	Amount	
Principal				
McKereghan, Peter	0.25	125.00	31.25	
Sr Project Level				
Elias, David	3.50	100.00	350.00	
Project Level				
Ratchye, Owen	3.75	90.00	337.50	
Staff Level				
Chenue, Scott E.	8.25	68.00	561.00	
Totals	15.75		1,279.75	
Total Labor				**1,279.75**
			Total this task	**$1,279.75**

Task: 003 Install Oversight

Professional Personnel

	Hours	Rate	Amount	
Staff Level				
McDonough, Leslie	1.90	68.00	129.20	
CADD Operator				
Glasser, Grady	2.50	45.00	112.50	
Clerical				
Burdett, Carroll	0.25	42.00	10.50	
Totals	4.65		252.20	
Total Labor				**252.20**

Billing Limits	**Current**	**Prior**	**To-date**
Total Billings	252.20	1,960.00	2,212.20
Limit			5,450.00
Remaining			3,237.80

Total this task **$252.20**

Total this invoice **$1,531.95**

Outstanding Invoices

Number	Date	Balance
0002222	12/10/97	542.00
0002552	2/5/98	850.00
0002741	3/15/98	2,721.95
Total		**4,113.95**

Invoice

Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608
(510)420-0700

May 15, 1998
Project No: 129-0741
Invoice No: 0003807

Hooshi's Auto Service
1545 Scenic View Dr.
Attn: Ms. Naomi English
San Leandro CA 94577

Project: 129-0741 Hoosi's Auto Service

Professional Services: April 1, 1998 through April 30, 1998

Task: 001 Air Permit: Finalize air permit package.

Professional Personnel

	Hours	Rate	Amount
Project Level			
Ratchye, Owen	6.00	90.00	540.00
Staff Level			
Chenue, Scott E.	2.00	68.00	136.00
CADD Operator			
Glasser, Grady	2.00	45.00	90.00
Totals	10.00		766.00

Total Labor **766.00**

Total this task **$766.00**

Task: 010 UST Fund Reimbursement Package: Time to compile and submit fund reimbursement package.

Professional Personnel

	Hours	Rate	Amount
Project Level			
Ratchye, Owen	1.75	90.00	157.50
Staff Level			
McDonough, Leslie	2.30	68.00	156.40
Totals	4.15		313.90

Total Labor **313.90**

Total this task **$313.90**

Total this invoice **$1,079.90**

Outstanding Invoices

Number	Date	Balance
0002222	12/10/97	542.00
0002552	2/5/98	850.00
0002741	3/15/98	2,721.95
0002957	4/10/98	1,531.95
Total		**5,645.90**

ATTACHMENT E

Cost-Pre-approvals

Cal/EPA

State Water Resources Control Board

Division of Clean Water Programs

Mailing Address:
P.O. Box 944212
Sacramento, CA
94244-2120

2014 T Street,
Suite 130
Sacramento, CA
95814
(916) 227-0744
FAX (916) 227-4530

World Wide Web
http://www.swrcb.ca.gov/~cwphome/fundhome.htm

Pete Wilson
Governor

October 2, 1997

Cambria

Naomi English
1545 Scenicview Dr
San Leandro, CA 94577

PRE-APPROVAL OF CORRECTIVE ACTION COSTS, CLAIM NO. 8519,
SITE ADDRESS: 1499 MACARTHUR BLVD, OAKLAND, CA 94602

I have reviewed your request, received on July 16, 1997, for pre-approval of corrective action costs; I will place these documents in your file for future reference. I have included a copy of the "Cost Pre-Approval Request" form; please use this form in the future for requesting pre-approval of corrective actions costs.

With the following provisions, the total cost pre-approved as eligible for reimbursement for completing the August 30, 1996, CAMBRIA Corrective Action Plan approved by the Alameda County EHD (County) in their September 11, 1996 letter, is **$ 61,500**; see the table below for a breakdown of costs. (The total amount approved for payment through request number 3 for work at your site that has been directed and approved by the County is $ 41,005.)

*Be aware that this pre-approval does not constitute a decision on reimbursement: **all reasonable and necessary corrective action costs for work directed and approved by the County** will be eligible for reimbursement per the terms of your Letter of Commitment at costs consistent with those pre-approved in this letter.*

All future costs for corrective action must be approved in writing by Fund staff.
Future costs for corrective action must meet the requirements of
Article 11, Chapter 16, Underground Storage Tank Regulations.

COST PRE-APPROVAL BREAKDOWN

Task	Amount Pre-Approved	Comments
Permitting (Air)	1,900.00	The Fund will need a breakdown by date, task, time & cost and all subcontractor invoices.
System installation/building permit (Contractor)	20,900	Refer to comment above.
Equipment delivery, installation, oversight (Cambria)	5,450	Refer to comment above.
System startup and testing	1,950	Refer to comment above.

Task	Amount Pre-Approved	Comments
Vapor Equipment Rental for 6 month total	14,520	Refer to comment above.
O&M labor & materials (weekly)	8,400	Refer to comment above.
Vapor samples (TPHg/BTEX) 8 sample total	480	Refer to comment above.
Groundwater sampling/reporting (w/TPHg/BTEX) total for two events	3,200	Refer to comment above.
Final report (after 6 months)	1,900	Refer to comment above.
System decommissioning	2,800	Refer to comment above.
TOTAL PRE-APPROVED	**$ 61,500**	

- The actual costs and scope of work performed must be consistent with the pre-approval for it to remain valid.
- The work products must be acceptable to the County and the Regional Water Quality Control Board.
- It is my opinion that it is unnecessary to obtain three bids for this scope of work; the Fund's three bid requirement is waived for this scope of work.
- If a different scope of work becomes necessary, then you must request pre-approval of costs on the new scope of work.
- Although I have referred to the CAMBRIA proposal in my pre-approval above, please be aware that you will be entering into a private contract: The State of California cannot compel you to sign any specific contract. This letter pre-approves the costs as presented in the proposal dated July 11, 1997 by CAMBRIA for conducting the work approved by the County for implementing the August 30, 1996, CAMBRIA Corrective Action Plan.

I also want to remind you that the Fund's regulations require that you obtain at least three bids, or a bid waiver from Fund staff, from qualified firms for all necessary corrective action work. The legislation governing the Fund requires that the Fund assist you in procuring contractor and consultant services for corrective action. If you need assistance in contracting for corrective action services, don't hesitate to call me.

Please remember that it is still necessary to submit the actual costs of the work as explained in the Reimbursement Request Instructions to confirm that the costs are consistent with this pre-approval before you will be reimbursed. *To make this easier, insure that your consultant prepares his invoices to match the format of the original estimate, and provides reasonable explanations for any changes made in the scope of work or increases in the costs. When the invoices are submitted you must include copies of all:*

- *subcontractor invoices,*
- *a detailed description of work done for each invoice,*
- *a breakdown for each invoice by date, task, time, and cost*
- *technical reports, when available, and*
- *applicable correspondence from the County.*

Please call if you have any questions; I can be reached at (916) 227-0744.

Sincerely,

Jennifer White, Associate Governmental Program Analyst
Technical Review Unit
Underground Storage Tank Cleanup Fund

Enclosure

cc:

Mr. Thomas Peacock
Alameda County EHD
1131 Harbor Bay Pkway, 2nd Fl.
Alameda, CA 94502-6577

Send copy to Tom Peacock 10-8-97

CAMBRIA

COPY

February 23, 1998

Bay Area Air Quality Management District
PERMIT SERVICES DIVISION
939 Ellis Street
San Francisco, CA 94109

Re: **Air Permit Application**
Hooshi's Auto Service
1499 MacArthur Blvd
Oakland, CA 94602

Dear Permit Services:

On behalf of Ms. Naomi English, Cambria Environmental Technology, Inc., is submitting this air permit application for an Authority To Construct/Permit to Operate for a soil vapor extraction (SVE) system at the subject site. The SVE system will consist of a vacuum blower (S-1) with a maximum operating capacity of 150 scfm, and a combination of the following abatement devices depending on equipment availability upon permit issuance, and depending on field observations prior to implementing SVE:

- A-1: Catalytic Oxidation Unit
- A-2: 1,000 lb Capacity Carbon Adsorption Vessel
- A-3: 1,000 lb Capacity Carbon Adsorption Vessel

Cambria has enclosed the following required forms and supporting documentation:

- Site Plan, Process Flow Diagram, and Site Location Map
- Application Forms *(Attachment A)*
- Vapor Extraction Test Results by Century West Engineering Corporation *(Attachment B)*

Discussed below are the risk analysis information, abatement equipment usage and emission calculations.

CAMBRIA
ENVIRONMENTAL
TECHNOLOGY, INC.
1144 65TH STREET,
SUITE B
OAKLAND,
CA 94608
PH: (510) 420-0700
FAX: (510) 420-9170

Risk Analysis Information

Based on discussions with BAAQMD personnel, we understand that we do not need to complete Data Form P's and Risk Screen Analyses Forms for each abatement device. Therefore, Attachment A includes one Data Form P and one Risk Screen Analysis Form. We understand that BAAQMD performs the risk screen analyses using the worst case scenario for each system. We also understand that our proposed equipment is considered BACT and that the risk from SVE emissions must be under the threshold of 10 in a million. For SVE operations, BACT is defined as attainment of set destruction efficiencies corresponding to set influent concentration values. Operation of the catalytic oxidizer (Cat-Ox) and the carbon vessels will be performed to ensure attainment of the following required destruction efficiencies: $\geq$ 98.5% if inlet volatile organic compound (VOC) concentration $\geq$ 2000 ppm; $\geq$ 97% if inlet VOC > 200 to < 2000 ppm; $\geq$ 90% if inlet VOC $\leq$ 200 ppm.

Abatement Equipment Usage

The abatement devices will be applied in succession as the influent VOC concentration decreases with change-over level at 100 ppmv. The initial phase of abatement will be accomplished by a Stealth Bobcat 150 cfm Cat-Ox. The Cat-Ox achieves destruction efficiencies consistent with current BACT guidelines. Once influent concentrations fall below 100 ppmv, the system will be changed over to carbon adsorption. The carbon adsorption system will consist of two Westates VSC-1000, 1000-lb activated carbon vessels (A-2, A-3) connected in series.

Cambria will provide written notification at the start of each phase of abatement. Emission monitoring for operation of the cat-ox will be conducted according to established source test methodology. The carbon unit influent and effluent VOC concentrations will be monitored with a portable vapor screening instrument on a schedule reflecting current loading rates and predicted carbon capacity. To ensure proper operation of equipment and verify attainment of steady-state conditions, carbon performance will be monitored daily for the first five days. Cambria may then elect to change the monitoring schedule based on measured influent concentrations and calculated carbon loading.

Emission Calculations

Cambria plans to abate emissions by SVE system for a period of approximately six months. During which, VOC concentrations are expected to have dropped to levels appropriate for abatement by carbon (i.e. 100 ppmv). Cambria estimates that A-2 / A-3 may need to be run for the following six months of the

permit issuance period. Although we plan to stop SVE after the initial six month period, we have applied for carbon use in case the project objectives change. For a conservative estimate of yearly emissions, we shall assume that A-1 is operated for three months with an inlet concentration corresponding to the initial soil concentration level and for an additional three months with an inlet concentration corresponding to 50% of the initial concentration. Further, we assume that A-2 and A-3 are used for an additional six months with an inlet concentration of 100 ppmv. This is a conservative estimate since the SVE test data included in Attachment B indicates that initial soil vapor concentrations will be approximately 4,600 ppmv. Generalized assumptions follow:

- Operating conditions: Pressure = 1 Atm; Inlet Temperature = 21°C; 1 mole occupies 24.15 l.
- Molecular weight of TPHg = 100 g/mole (value for "weathered gasoline"). Molecular weight of benzene = 78 g/mole.
- Influent values based on operational parameters of equipment and conservative estimates of initial soil vapor concentrations: influent rate = 150 scfm throughout; maximum influent concentration = 4,600 ppmv; average influent concentration = 2,300 ppmv, 100 ppmv for carbon adsoprtion; destruction efficiency = 98.5% (Cat-OX) or 97% (Carbon).

Emissions of Precursor Organics (Abated by A-1, Cat-Ox):

Initial Vapor Concentrations

4,600E-6 * 150 ft^3/min * 1440 min/day * 28.32 l/ft^3 * 1/24.15 mole * 100 g/mole * 1/454 lbs/g * (1-0.985) =
3.8 lbs/day (abated)

Average Vapor Concentrations

2,300E-6 * 150 ft^3/min * 1440 min/day * 28.32 l/ft^3 * 1/24.15 mole * 100 g/mole * 1/454 lbs/g * (1-0.985) =
1.9 lbs/day (abated)

The highest daily projected emissions occur initially, under Cat-Ox abatement. Actual emissions should be less due to the decline in influent concentration. For the annual average we computed the total emissions under Cat-Ox abatement for six months:

3.8 lbs/day * 92 days + 1.9 lbs/day * 92 days = 524 lbs

Annual Average = 524 lbs/year * 1/365 year/days = 1.4 lbs/day

Summary:

Highest Daily Emissions	**= 3.8 lbs/day**
Average Daily Emissions	**= 1.4 lbs/day**

Closing

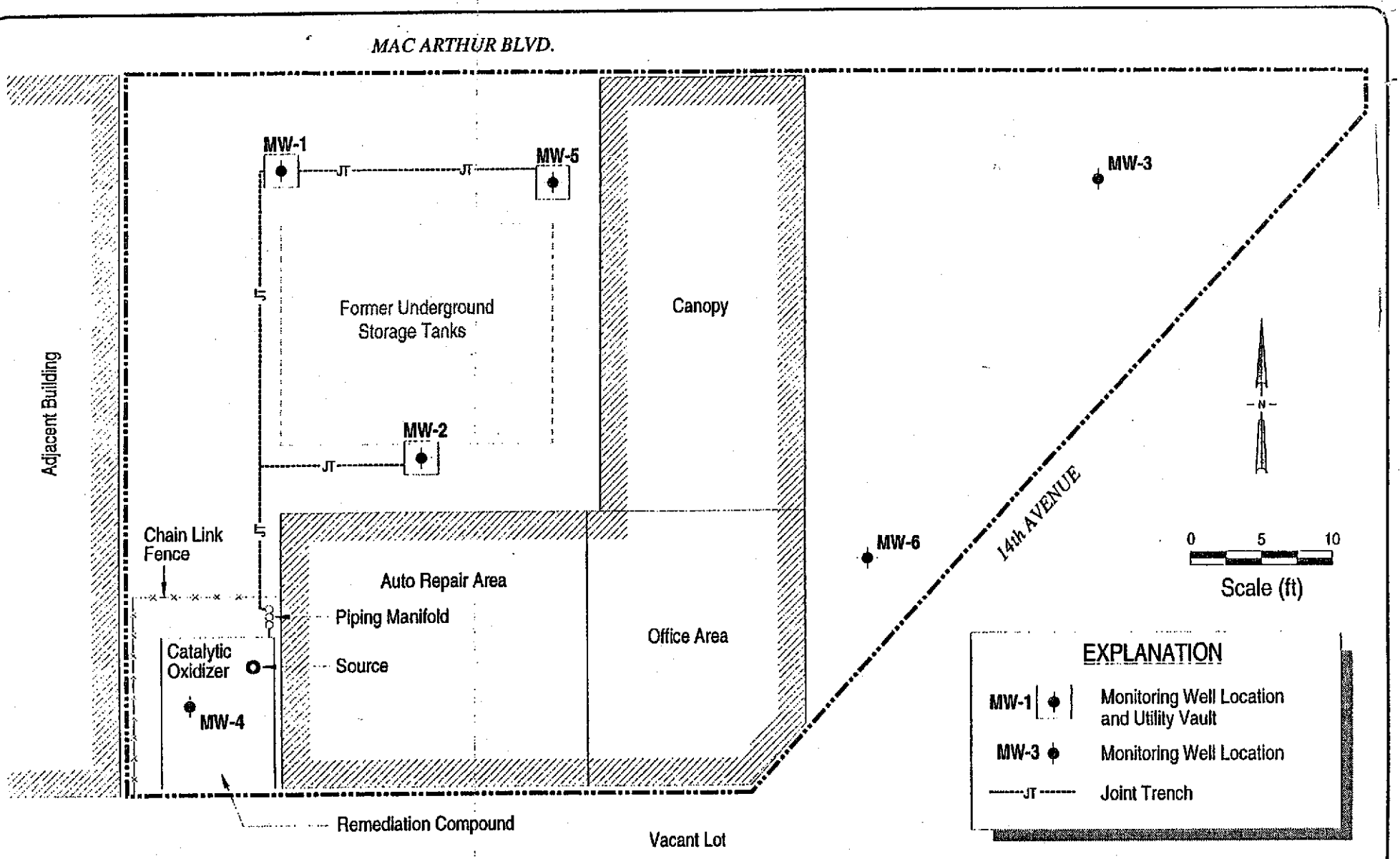
We would appreciate any efforts to expedite processing of this application since the Alameda County Environmental Health Services Department would like SVE to commence as soon as possible. Please contact me at (510) 420-3316, if you have any questions.

Sincerely,
Cambria Environmental Technology, Inc.

Owen Ratchye, P.E.
Project Engineer

F:\PROJECT\SB-2004\Oakl - Hoosi's\BAAQMDPERMIT.SVE.wpd

Attachments: A - Application Forms
B - Soil Vapor Extracion Test Results



CAMBRIA
Environmental Technology, Inc.

Hooshi's Auto Service
1499 MacAurthur Boulevard
Oakland, California

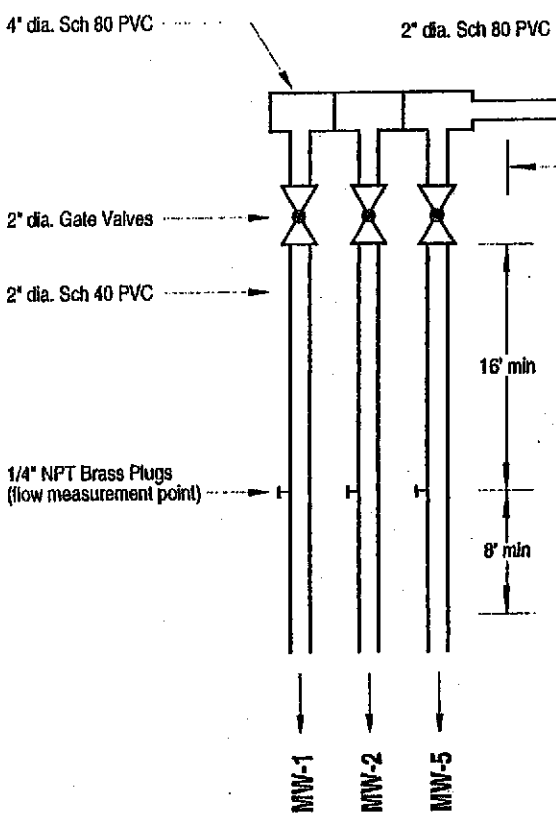
F:\PROJECT\HOOSHI\FIGURES\SITE-PLN.DWG

Site Plan

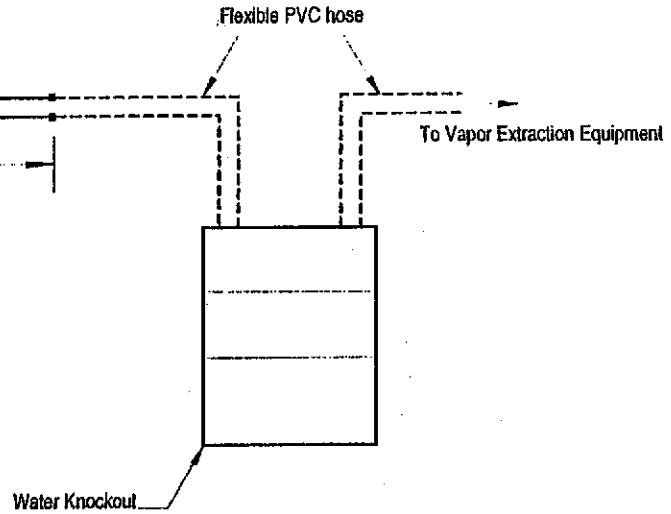
FIGURE
1

2/19/98

* Support Entire Manifold with Unistrut or Equivalent Bracing



Vapor Piping Detail



Water Knockout Detail

EXPLANATION

- Differential Pressure Flow Gauge
- Differential Pressure Vacuum Gauge
- Gate Valve
- NPT Brass Plug

CAMBRIA
Environmental Technology, Inc.

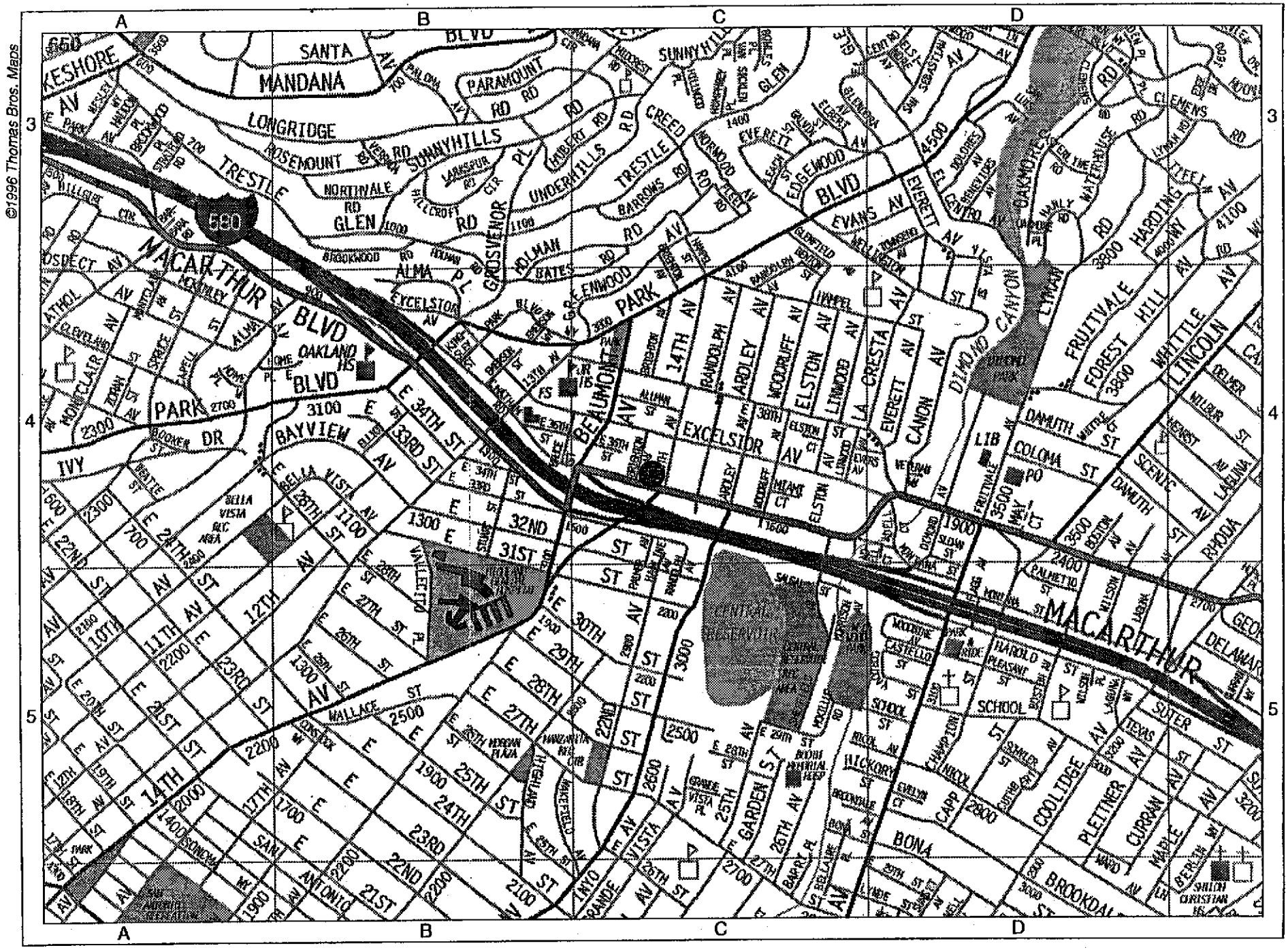
Hooshi's Auto Service
1499 MacAurthur Boulevard
Oakland, California

F:\PROJECT\HOOSHI\FIGURES\PIPE-DTL.DWG

Vapor Piping and
Water Knockout Detail

FIGURE
2

2/19/98



1499 Macarthur Blvd, Oakland, 94602, Page & Grid 650 C4

ATTACHMENT F

Air Permit

ATTACHMENT A

Application Forms

Bay Area Air Quality Management District
939 Ellis Street, San Francisco, CA 94109
(415) 749-4990 FAX (415) 749-5030

AUTHORITY TO CONSTRUCT
PERMIT TO OPERATE

Application Information

Application No. _____ (assigned by District) Plant No. _____ (leave blank if unknown)

Business Name: HASEGAWA'S AUTO SERVICE c/o CAMBRIA ENVIRONMENTAL TECHNOLOGY, INC.

Equipment Description: SVE BLOWER (150 scfm) AND 3 ABATEMENT DEVICES

If you qualify for the District's **Accelerated Permitting Program,** (see reverse for criteria), check here ☐
If you are applying to permit or to register **portable equipment,** in accordance with Regulation 2-1-220, check here ☐

If you have not previously been assigned a Plant Number by the District or if you want to update any site data that you have previously supplied to the District, please complete the New Plant Information box below.

New Plant Information

Plant Address (equipment location): 1499 MacArthur Rd
City: Oakland State: CA Zip: 94602
Mailing Address: 1545 Scenicview Drive
City: San Leandro State: CA Zip: 94577
Plant Contact: Ms. Naomi English
Title:
Telephone: 510 483 9015 Fax: _____ Email Address: _____

All correspondence regarding this application will be sent to the above site contact person unless you wish to designate a different contact for this application.

Application Contact Information

Application Contact: Mr. Owen Ratchye
Title/Company: Senior Engineer / Cambria Environmental Technology, INC.
Mailing Address: 1144 65th St, Ste C.
City: Oakland State: CA Zip: 94608
Telephone: 510-420-0700 Fax: 510 420 9170 Email Address: OCATCHYE@CAMBRIA-ENV.COM

Small Business Certification

You are entitled to a reduced permit fee if you qualify as a small business as defined by BAAQMD Regulation 3. In order to qualify, you must certify that your business meets all of the following criteria:

- ☐ The principal office is in California, and its officers live in California.
- ☐ The business is independently owned and operated.
- ☐ The business is not dominant in its field of operation and is not an affiliate of a non-small business.
- ☐ If a non-manufacturer, it does not employ more than 25 persons and its annual receipts do not exceed $1 million.
- ☐ If a manufacturer, it does not employ more than 50 persons and its annual receipts do not exceed $5 million.

Signature Date

Accelerated Permitting Program

You may be eligible to receive an accelerated permit. The Accelerated Permitting Program entitles you to install and operate qualifying sources of air pollution and abatement equipment **without waiting for the District to issue a Permit to Operate.** In order to participate in this program you must certify that your project will meet all of the following criteria. Please acknowledge each item by checking each box and signing below.

- ☐ Uncontrolled emissions of any single pollutant are each less than 1.5 tons per year, or the source has been precertified by the BAAQMD.
- ☐ Emissions of toxic compounds do not exceed the trigger levels identified in Table 2-1-316 (see District Regulation 2, Rule 1)
- ☐ For replacement of abatement equipment, the new equipment must have an equal or greater overall abatement efficiency than the equipment being replaced.
- ☐ The minimum permit fee payment of $368.00 per source is included with the application. Additional permit fees may be assessed at the time the application is evaluated. (If you meet our small business criteria, the minimum permit fee payment is $226.00 per source.)

All Applications

All applications should contain the following additional information :

- ☑ Completed data form(s) for each piece of equipment, (data forms listed below)
- ☑ A facility map, drawn roughly to scale, that locates the equipment and its emission points
- ☑ Project/equipment description, manufacturer's data
- ☑ Pollutant flow diagram
- ☑ Discussion/calculations relating to emissions from the equipment
- ☑ If a new site, a local map showing the location of your business

Pursuant to Section 25536 and 42301.6 of the Health and Safety Code, I hereby certify that the sources in this permit application:

- ☐ Are within 1,000 feet of the outer boundary of the nearest school
- ☑ Are not within 1,000 feet of the outer boundary of the nearest school

Has an Environmental Impact Report (EIR) or other California Environmental Quality Act (CEQA) document been prepared for this project?

☑ no ☐ yes If yes, by whom? _____

IMPORTANT: Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items separate as specified in Regulation 2 Rule 1, Section 202.7, please circle those items in your submittals, write "confidential" at the top of the page and append a written explanation for your confidentiality request.

Signature _____ Date _____

Mail the completed application to :

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Attention: Permit Services Division

The appropriate data form(s) should be completed for all equipment requiring a Permit to Operate. The data forms are listed below. If you are uncertain which data form to use, need additional data forms, or require assistance completing a form, please call the **Permit Services Division at (415) 749-4990** or contact our **Permit Assistance Center at (408) 437-3618** or **(510) 229-9972.**

Form_A	Abatement Device	Form_C	Combustion Equipment
Form_D	Dry cleaner	Form_F	Semiconductor Fabrication
Form_G	Other Miscellaneous	Form_SC	Solvent Cleaning Operation
Form_S	Surface Coating	Form_SS	Form S supplement for printers
Form_T	Organic Liquid Loading/Storage	F orm_P	Emission Point

DATA FORM G
General Air Pollution Source

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 Ellis Street . . . San Francisco, CA 94109. . . (415) 749-4990

If in addition to the general process described hereon this source burns fuel, then complete Form C also. Use specific forms if applicable: Form T (organic tankage, loading), Form S (surface coating, solvent use).

1. Business Name: HOOSH'S AUTO SERVICE C/O CAMB2IA Plant No: _____ (if unknown, leave blank)
2. SIC No.: _____ Date of Initial Operation 3/98
3. Name or Description SOIL VAPOR EXTRACTION SYSTEM Source No.: S- 1
4. Make, Model, and Rated Capacity of Equipment EXTRACTION BLOWER 150 SCFM MAX
5. Process Codes Material Code 7156 Material Code 572 Usage Unit*: CF
6. Total throughput, last 12 months _____ usage units Max operating rate: _____ usage units/hr
7. Typical % of total throughput: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %
8. Typical operating times: 24 hrs/day 7 days/week 52 weeks/year
9. For batch or cyclic processes: _____ minute/cycle _____ minutes between cycles
10. Exhaust gases from source: *(at maximum operation)* Wet gas flowrate 150 cfm at 70 °F
    Approximate water vapor content AMB vol %

EMISSION FACTORS *(at maximum operating rate)*

If this form is being submitted as part of an application for an *AUTHORITY TO CONSTRUCT*, completion of the following table is mandatory. If not, and the Source is *already in operation*, completion of the table is requested but not required.

If this source also burns fuel, do not include those combustion products in the emission factors below; they are accounted for on Form C. If source test or other data are available for composite emissions only, estimate from those data the emissions attributable to just the general process and show below.

☐ Check box if factors apply to emissions ***after*** Abatement Device(s).

	Emission Factors lb/Usage Unit	***Basis Code***
11. Particulate		
12. Organics	1.68×10^{-3}	5
13. Nitrogen Oxides (as NO_2)		
14. Sulfur Dioxide		
15. Carbon Monoxide		
16. Other: 41	4.6×10^{-6}	5
17. Other:		

With regard to air pollutant flow into this emission point, what sources(s) and/or abatement device(s) are **immediately** downstream?

S-	S-	S-	A- 1	A- 2	A-
P-	P-	P-	P-	P-	

***See Process Code Tables (see next page)**

Person completing this form	Date 2/12/98

Data Form A
ABATEMENT DEVICE

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 Ellis Street . . . San Francisco, CA 94109. . . (415) 749-4990

for office use only

Abatement Device: Equipment/process whose primary purpose is to reduce the quantity of pollutant(s) emitted to the atmosphere.

1. Business Name: HOOSHI'S AUTO SERVICE C/O CAMBRIA Plant No: _____ (If unknown, leave blank)
2. Name or Description CATALYTIC OXIDIZER Abatement Device No: A- 1
3. Make, Model, and Rated Capacity STEALTH FLIGHT 150 CFM CATALYTIC OXIDIZER
4. Abatement Device Code (See table*) 2 Date of Initial Operation 3/98
5. With regard to air pollutant flow into this emission point what sources(s) and/or abatement device(s) are **immediately** upstream?

   S- 1 S- _____ S- _____ S- _____ S- _____
   S- _____ A- _____ A- _____ A- _____ A- _____ A- _____
6. Typical gas stream temperature at inlet: 70 °F

If this form is being submitted as part of an application for an ***Authority to Construct***, completion of the following table is mandatory. If not, and the Abatement Device is *already in operation*, completion of the table is requested but not required.

	Pollutant	Weight Percent Reduction (at typical operation)	Basis Codes (see table**)
7.	Particulate		
8.	Organics	97	5
9.	Nitrogen Oxides (as NO_2)		
10.	Sulfur Dioxide		
11.	Carbon Monoxide		
12.	Other: 41	97	5
13.	Other:		

14. ☐ Check box if this Abatement Device burns fuel; complete lines 1, 2 and 15-36 on Form C (using the Abatement Device No. above for the Source No.) and attach to this form.
15. With regard to air pollutant flow from this abatement device, what sources(s), abatement device(s) and/or emission point(s) are ***Immediately*** downstream?

    S- _____ A- _____ A- _____ P- 1 P- _____ P- _____

Person completing this form:	Date: 2/12/99

P:www\FormA (revised: 1/98)

Data Form A
ABATEMENT DEVICE

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 Ellis Street . . . San Francisco, CA 94109. . . (415) 749-4990

for office use only

Abatement Device: Equipment/process whose primary purpose is to reduce the quantity of pollutant(s) emitted to the atmosphere.

1. Business Name: HOOSH'S AUTO SERVICE c/o CANBERRA Plant No: _____ (If unknown, leave blank)
2. Name or Description CARBON ADSORPTION VESSEL Abatement Device No: A- 2
3. Make, Model, and Rated Capacity WESTATES VSC-1000 ; 1000 lb Carbon
4. Abatement Device Code (See table*) 56 Date of Initial Operation 3/97
5. With regard to air pollutant flow into this emission point what sources(s) and/or abatement device(s) are **immediately** upstream?

   S- 1 S- _____ S- _____ S- _____ S- _____
   S- _____ A- _____ A- _____ A- _____ A- _____ A- _____

6. Typical gas stream temperature at inlet: 70 °F

If this form is being submitted as part of an application for an ***Authority to Construct***, completion of the following table is mandatory. If not, and the Abatement Device is *already in operation,* completion of the table is requested but not required.

	Pollutant	Weight Percent Reduction (at typical operation)	Basis Codes *(see table**)*
7.	Particulate		
8.	Organics	90	5
9.	Nitrogen Oxides (as NO_2)		
10.	Sulfur Dioxide		
11.	Carbon Monoxide		
12.	Other: Hl	90	5
13.	Other:		

14. ☐ Check box if this Abatement Device burns fuel; complete lines 1, 2 and 15-36 on Form C (using the Abatement Device No. above for the Source No.) and attach to this form.
15. With regard to air pollutant flow from this abatement device, what sources(s), abatement device(s) and/or emission point(s) are ***immediately*** downstream?

    S- _____ A- 3 A- _____ P- _____ P- _____ P- _____

Person completing this form:	Date: 2/12/98

P:www\FormA (revised: 1/98)

Data Form A
ABATEMENT DEVICE

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 Ellis Street . . . San Francisco, CA 94109. . . (415) 749-4990

for office use only

Abatement Device: Equipment/process whose primary purpose is to reduce the quantity of pollutant(s) emitted to the atmosphere.

1. Business Name: Hoosh I's Auto Service % Chabot Plant No: _____ (If unknown, leave blank)
2. Name or Description CARBON ADSORPTION VESSEL Abatement Device No: A-3
3. Make, Model, and Rated Capacity 1,000 lb Carbon
4. Abatement Device Code (See table*) 56 Date of Initial Operation 3/98
5. With regard to air pollutant flow into this emission point what sources(s) and/or abatement device(s) are **immediately** upstream?

S- _____ S- _____ S- _____ S- _____ S- _____
S- _____ A- 2 A- _____ A- _____ A- _____ A- _____

6. Typical gas stream temperature at inlet: 70 °F

If this form is being submitted as part of an application for an ***Authority to Construct***, completion of the following table is mandatory. If not, and the Abatement Device is *already in operation,* completion of the table is requested but not required.

	Pollutant	Weight Percent Reduction (at typical operation)	Basis Codes *(see table**)*
7.	Particulate		
8.	Organics	90	5
9.	Nitrogen Oxides (as NO_2)		
10.	Sulfur Dioxide		
11.	Carbon Monoxide		
12.	Other: 41	90	5
13.	Other:		

14. ☐ Check box if this Abatement Device burns fuel; complete lines 1, 2 and 15-36 on Form C (using the Abatement Device No. above for the Source No.) and attach to this form.
15. With regard to air pollutant flow from this abatement device, what sources(s), abatement device(s) and/or emission point(s) are ***immediately*** downstream?

S- _____ A- _____ A- _____ P- 1 P- _____ P- _____

Person completing this form:	Date: 2/12/98

P:www\FormA *(revised: 1/98)*

DATA FORM P
Emission Point

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

939 Ellis Street . . . San Francisco, CA . . . 94109. . . (415) 749-4990

Form P is for well-defined emission points such as stacks or chimneys only; do not use for windows, room vents, etc.

Business Name: Moosehill's Auto Service c/o Cambria Env. Tech. Inc. Plant No: _____

Emission Point No: P-1

With regard to air pollutant flow into this emission point, what sources(s) and/or abatement device(s) are **immediately** upstream?

S- _____ S- _____ S- _____ S- _____ S- _____
S- _____ A- 1 A- 3 A- _____ A- _____ A- _____

Exit cross-section area: 0.20 sq. ft. Height above grade: 15 ft.

Effluent Flow from Stack				
	Typical Operating Condition		*Maximum Operating Condition*	
Actual Wet Gas Flowrate	440	cfm	460	cfm
Percent Water Vapor	1.8	Vol %	1.8	Vol %
Temperature	700	°F	800	°F

If this stack is equipped to measure (monitor) the emission of any air pollutants,

Is monitoring continuous? (yes)/no

What pollutants are monitored? % LEL

Person completing this form _____ Date 2/12/98

REQUEST FOR INFORMATION; RISK SCREENING ANALYSIS

NOTE: You must fill out one of these forms for each source in the permit application that requires a risk screen, unless all sources exhaust through a single stack. These may be discrete sources such as stacks or area sources such as surface area fugitive emissions.

Plant name HOOSHI'S AUTO SERVICE

Source description 150 cfm blower for soil vapor extraction

Source # S-1 (if known) ___ Emission point P-1 (if known)

SECTION A

1. Is the source a clearly defined emission point, i.e., a stack or ~~ventilation~~ duct?
   (YES) NO (If NO, go on to section B)

2. ~~Does the~~ stack stand alone or is it located on the roof of a building?
   (ALONE) ON ROOF

3. What is the stack height? 15 meters or (feet)
   (Note: stack height only, whether free-standing or on rooftop)

4. What is the combined stack height and building height (if applicable)? N/A meters or feet

5. What is the stack diameter? 0.16 meters or (feet) 12") 200 scfm

6. What is the stack gas flowrate? 150 (cfm) or m^3/sec

7. What is the stack gas exit temperature? 800 degrees
   (Fahrenheit) or Centigrade

8. If the stack is located on a rooftop, what are the dimensions of the building?

   height = NA meters or feet

   width = NA meters or feet

   length = NA meters or feet

9. Are there any buildings, walls or other structures located near this source ? (YES) NO

If YES, what are their dimensions?

height = 15 meters or feet

width = 75 meters or feet

length = 40 meters or feet

distance from source 5 meters or feet

(GO ON TO SECTION C)

SECTION B

1. Is the source located within a building? YES NO

(If NO, please provide a description of the source. For example, fugitive emissions that must be evaluated as an area source. If an area source, provide the dimensions of the area in question. Then go on to section C.)

(If YES, proceed to #2, below)

2. *Does the building have a ventilation system that is vented to the outside?*
YES NO

a. *If NO, are the building's doors and windows kept open during hours of operation?*
YES NO

3. Please provide the building dimensions:

height = _____meters or feet

width = _____meters or feet

Length = _____meters or feet

4. Are there any buildings, walls or other structures located near this source ?

YES NO

If YES, what are their dimensions?

height = _____meters or feet

width = _____meters or feet

length = _____meters or feet

distance from source _____meters or feet

(GO ON TO SECTION C)

SECTION C

1. Describe the area where the source is located (select one):

a) zoned for commercial use

b) zoned for residential use

c) zoned for mixed commercial and residential use

2. Distance from source (stack or building) to property line =

10 _____ meters or feet

(continued on p. 4)

3. Distance from source to nearest receptor** =

50 meters or feet

IMPORTANT:

You must provide a plot plan or a map, drawn to scale, which clearly demonstrates the location of your site, the property lines and any surrounding residences and/or businesses. The plot plan or map should also show the location of the source(s) at the site and their relationship to the property line.

(see attached)

** Receptors are defined as individual dwellings where persons are assumed to be in continuous residence. *Please note that this does not refer to places of business.*

ATTACHMENT B

Soil Vapor Extraction Test Results

Groundwater samples were collected in appropriate containers using disposable PVC bailers. Each container was labeled and placed in a cooler with crushed ice and transported to the analytical laboratory under chain-of-custody. Purge water generated during the purging and sampling activities was stored on site in 55-gallon capacity drums pending analytical results and appropriate disposal.

2.5 Soil Vapor Extraction Pilot Test

July 3, 1996, a letter was forwarded to Bay Area Air Quality Management District, providing details regarding the soil vapor extraction pilot test. On July 10, and 11, 1996, CWEC observed Envirosupply and Service of Pleasanton, California perform a soil vapor extraction pilot test at three monitoring wells (MW-1, MW-2 and MW-5) at the site. A 200-cubic feet per minute (cfm) capacity internal combustion engine was used to perform the pilot test. The pilot test included applying vacuum at each of the three monitoring wells to extract subsurface vapors for approximately three hours.

During vapor extraction testing at each monitoring well, vacuum applied, flow rate of extracted gas and vapors, percent oxygen in extracted gas; volatile organic compound concentrations and lower explosive limit were monitored and recorded. Two air samples, one in the beginning and one at the end of each three-hour pilot test, were collected in Tedlar bags for chemical analyses. Radius of influence created by extracting subsurface vapors at each monitoring well was estimated

by measuring vacuum at surrounding monitoring wells. This was accomplished by equipping each surrounding monitoring well with magnahelic gauges, and vacuum readings were measured at these wells at approximate ten-minute intervals.

2.6 Hydraulic Testing

On July 15, 1996, a CWEC geologist performed slug tests at two monitoring wells (MW-1 and MW-3). This test was performed by instantaneously dewatering each monitoring well (to the extent practical) with a centrifugal pump. After each monitoring well was dewatered, the rate of groundwater recharge in each monitoring well was measured and recorded at one-minute intervals for approximately 15- minutes, using a water level measurement probe.

4.4 Soil Vapor Extraction Pilot Test Results

Field and laboratory results of the soil vapor extraction pilot test performed on wells MW-5, MW-1 and MW-2 are summarized in Table 3. Laboratory reports are included in Appendix C.

The results of the pilot test performed at MW-5 indicated that upon applying a vacuum of approximately 150 inches of water, a vapor extraction rate of approximately 20 cubic feet per minute (cfm) was achieved. Significant vacuum influence was measured in surrounding monitoring wells MW-1, MW-2 and MW-3. Vacuum influence was not observed at MW-4 and MW-6 (as shown in Table 3). High concentrations of volatile organic compounds were measured in vapors extracted from MW-5 in the field. Laboratory results of vapor samples collected at the beginning and at the end of the pilot test at MW-5 indicated the presence of high concentrations of TPH-G and BTEX (as shown in Table 3).

The results of the pilot test performed at MW-1 indicated that upon applying a vacuum of approximately 110 inches of water, a vapor extraction rate of approximately 11 cfm was achieved. Significant vacuum influence was measured in surrounding monitoring wells MW-2, MW-3 and MW-5. Vacuum influence was not observed at MW-4 and MW-6 (as shown in Table 3). High concentrations of volatile organic compounds were measured in vapors extracted from MW-1 in the field. Laboratory results of vapor samples collected at the beginning and at the end of the

pilot test at MW-1 indicated the presence of high concentrations of TPH-G and BTEX (as shown in Table 3).

The results of the pilot test performed at MW-2 indicated that upon applying a vacuum of approximately 125 inches of water, a vapor extraction rate of approximately 2.7 cfm was achieved. Vacuum influence was detected in wells MW-1, MW-3 and MW-5. No vacuum influence was observed at MW-4 and MW-6 (as shown in Table 3). High concentrations of volatile organic compounds were measured in vapors extracted from MW-2 in the field. Laboratory results of vapor samples collected at the beginning and at the end of the pilot test at MW-2 indicated the presence of high concentrations of TPH-G and BTEX.

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.

Table 3
Summary of Soil Vapor Extraction Pilot Test Results
Hooshi's Auto Service
1499 MacArthur Boulevard
Oakland, California

Extraction Well #	Date	Time	Vacuum (Inches of Water)	Flow (cfm)	Percent Oxygen	LEL	VOC Field Readings (ppm)	TPH-G Laboratory Results (ppmV)	Vacuum at Monitoring Wells (Inches of Water)				
									MW-1	MW-2	MW-3	MW-4	MW-5
MW-5	7/10/96	12:00	0	0	NM	NM	NM	NA	0.04	0	0.06	0	0
MW-5	7/10/96	12:10	100	9.8	5.5	49	> 10,000	NA	0.3	0.48	0.4	0	0
MW-5	7/10/96	12:12	100	9.8	NM	NM	NM	NA	0.5	0.5	0.55	0	0
MW-5	7/10/96	12:14	100	9.9	NM	NM	NM	NA	1.1	1.8	1.3	0	0
MW-5	7/10/96	12:16	100	10	NM	NM	NM	NA	1.3	1.8	1.8	0	0
MW-5	7/10/96	12:18	100	10.2	NM	NM	NM	NA	1.8	2.2	2.2	0	0
MW-5	7/10/96	12:20	100	10.4	5.2	50	> 10,000	NA	2.2	2.6	2.5	0	0.02
MW-5	7/10/96	12:30	150	16.1	7.7	48	> 10,000	2,300	2.5	4	3.6	0	0.04
MW-5	7/10/96	12:40	150	17.3	NM	NM	NM	NA	3.5	4.5	4	0	0.05
MW-5	7/10/96	12:50	150	17.3	NM	NM	NM	NA	3.5	4.6	4.1	0	0.05
MW-5	7/10/96	13:00	160	18.6	8.8	46	> 10,000	NA	4.5	4.8	4.2	0	0.04
MW-5	7/10/96	13:20	150	21.2	NM	NM	NM	NA	4.5	4.2	3.5	0	0.02
MW-5	7/10/96	13:40	150	21.6	NM	NM	NM	NA	4.3	4.2	3.5	0	0.02
MW-5	7/10/96	14:00	150	21	11	36	>10,000	NA	4.3	4.1	3.5	0	0.02
MW-5	7/10/96	14:20	160	21	NM	NM	NM	NA	4.3	4.5	3.8	0	0.03
MW-5	7/10/96	14:40	150	19.9	NM	NM	NM	NA	4.3	4.5	3.8	0	0.02
MW-5	7/10/96	15:00	150	20.2	13	26	>10,000	NA	4.3	4.5	3.8	0	0.01
MW-5	7/10/96	15:20	150	20.1	NM	NM	NM	NA	4.3	4.5	3.8	0	0.01
MW-5	7/10/96	15:30	150	20.3	NM	NM	NM	1,600	4.3	4.5	3.8	0	0.01
									MW-2	MW-3	MW-4	MW-5	MW-6
MW-1	7/11/96	9:15	0	0	NM	NM	NM	NA	0	0	0	0	0
MW-1	7/11/96	9:20	130	8.25	3.9	58	> 10,000	NA	4	2.2	0	2.4	0
MW-1	7/11/96	9:30	130	7.6	NM	NM	NM	NA	6	2.9	0	2.4	0
MW-1	7/11/96	9:40	100	10.7	NM	NM	NM	NA	5.5	2.6	0	2.1	0
MW-1	7/11/96	9:50	100	10.1	11.6	35	> 10,000	2,700	6	2.8	0	2.3	0
MW-1	7/11/96	10:00	100	10.3	NM	NM	NM	NA	6.5	3	0	2.4	0
MW-1	7/11/96	10:10	105	10.4	NM	NM	NM	NA	6.7	3.2	0	2.5	0
MW-1	7/11/96	10:20	110	10.5	4.6	38	> 10,000	NA	6.7	3.2	0	2.5	0
MW-1	7/11/96	10:30	160	14	9.9	40	> 10,000	NA	8.2	4.1	0	3.1	0
MW-1	7/11/96	10:40	110	11.6	NM	NM	NM	NA	7.5	3.8	0	2.9	0
MW-1	7/11/96	11:00	110	11.5	9.7	41	> 10,000	2,900	6.7	3.2	0	2.5	0

Table 3 (Continued)
Summary of Soil Vapor Extraction Pilot Test Results
Hooshi's Auto Service
1499 MacArthur Boulevard
Oakland, California

Extraction Well #	Date	Time	Vacuum in Inches of Water	Flow in cfm	Percent Oxygen	LEL	VOC Field Readings (ppm)	TPH-G Laboratory Results (ppmV)	Vacuum at Monitoring Wells (Inches of Water)				
									MW-1	MW-3	MW-4	MW-5	MW-6
MW-2	7/11/96	11:20	90	2.9	10.4	86	> 10,000	NA	1.8	0.7	0	0.9	0
MW-2	7/11/96	11:30	90	2.6	NM	NM	NM	6,300	1.7	0.7	0	0.35	0
MW-2	7/11/96	11:40	90	2.3	13.8	84	80,000	NA	1.8	0.6	0	0.35	0
MW-2	7/11/96	11:50	90	2.4	NM	NM	NM	NA	1.5	0.5	0	0.29	0
MW-2	7/11/96	12:00	90	2.3	14.1	86	82,000	NA	1.4	0.4	0	0.25	0
MW-2	7/11/96	12:10	160	4	12.6	95	> 100,000	NA	1.9	0.8	0	0.5	0
MW-2	7/11/96	12:20	160	4.1	NM	NM	NM	NA	2	0.9	0	0.5	0
MW-2	7/11/96	12:30	125	3	13.4	90	95,000	NA	1.8	0.7	0	0.5	0
MW-2	7/11/96	12:40	125	2.8	NM	NM	NM	NA	1.6	0.6	0	0.52	0
MW-2	7/11/96	12:50	125	2.8	NM	NM	NM	NA	1.6	0.6	0	0.45	0
MW-2	7/11/96	13:00	125	2.7	14.6	84	90,000	9,300	1.5	0.6	0	0.4	0

NOTES

cfm	Cubic Feet Per Minute
LEL	Lower Explosive Limit
TPH-G	Total Petroleum Hydrocarbons as Gas
VOC	Volatile Organic Compounds
ppm	Parts per million