

20 August 1999  
Project No. 1132.04

Mr. Leroy Griffin  
City of Oakland Fire Services Agency  
Hazardous Materials Management Program  
505 - 14th Street, 5th Floor  
Oakland, CA 94612

**Subject: 460 Grand Avenue, Oakland, California  
Former Gulf Service Station #0006  
Alameda County Case Number 3615**

Dear Mr. Griffin:

As we discussed earlier this week, the enclosed information is submitted to your agency for review and action. The 460 Grand Avenue site was a Gulf Service Station, and underground storage tanks (USTs) were removed from the site in 1990 and 1994. Treadwell & Rollo, Inc., performed an Oakland RBCA Tier 2 site screening (Attachment 1) consistent with the Urban Land Redevelopment (ULR) Program to support the conclusion that no institutional controls for future residential land use are required at this site. Alameda County-HazMat issued a Case Closure Summary on November 19, 1996 (Attachment 2), and a Remedial Action Completion Certification on December 3, 1998 (Attachment 3). The Case Closure Summary includes a property use restriction, as follows:

Residential site development would be acceptable, provided 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 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).

Treadwell & Rollo, Inc., used the Oakland RBCA Tier 2 spreadsheet provided through the ULR Program to screen the site using the currently accepted risk based approach. Tier 2 uses site data to establish site-specific target levels (SSTLs) for chemical compounds (the site soil type is "clayey silts"; borings logs are included in the Case Closure Summary). The completed Oakland RBCA Eligibility Checklist (included in Attachment 1) demonstrates that the site is eligible for the Oakland RBCA process. The Oakland RBCA Cover Sheet (Attachment 1) presents the site-specific information, and is consistent with Case Closure Summary. A partial print-out of the Oakland RBSLs (risk-based screening levels) table (Attachment 1) shows the results of the Tier 2 analysis for benzene with residential land use, as follows:

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Medium	Inhalation of Outdoor Air Vapors	Inhalation of Indoor Air Vapors
Subsurface soil	160 milligrams/kilogram (mg/kg)	3.3 mg/kg
Groundwater	> solubility	6.6 milligrams/Liter (mg/L)

Included in Attachment 1, Table 1 (Summary of Benzene Data) presents a summary of the benzene concentrations in soil used in the risk assessment included in the 19 November 1996 Case Closure Summary as well as a statistical analysis of that data. The 1996 risk assessment used the maximum detected value of benzene in soil and was based on a "forward calculation" to estimate risk due to exposure at that maximum concentration. The current Oakland RBCA process is based on a "backward calculation", resulting in an SSTL. The SSTL is then compared to the site data. The relevant results of the statistical analysis of the same 1996 site data and the results of the Oakland RBCA Tier 2 for residential use are as follows:

Sample mean	1.1 mg/kg
Upper confidence limit (UCL)	2.3 mg/kg
SSTL	3.3 mg/kg (lowest applicable RBSL)

The Oakland ULR Program guidance document states that if "the existing concentration of . . . chemicals of concern at your site is lower than the Tier 2 SSTL . . . , you may immediately petition the lead regulatory agency for site closure". The setback included in the 1996 Case Closure Summary (an institutional control) is not required based on the results of the RBCA Tier 2 analysis—the UCL is less than the SSTL for residential land use. Therefore, it is requested that the Case Closure Summary be amended to allow unrestricted residential land use.

We appreciate your prompt attention to this request. Redevelopment plans are currently underway to return this vacant lot to productive use as new residential units for the City of Oakland. Please call me if you have any questions.

Sincerely yours,  
TREADWELL & ROLLO, INC.

Margaret K. (Peggy) Peischl, P.E.  
Senior Engineer

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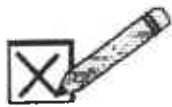
Included to complete this document:

Attachment 1	Oakland RBCA Documentation
Attachment 2	Remedial Action Completion Certificate, 3 December 1998
Attachment 3	Case Closure Summary, 19 November 1996

**ATTACHMENT 1**

**Oakland RBCA Documentation**

### Oakland RBCA Eligibility Checklist



The Oakland Tier 1 RBSLs and Tier 2 SSTLs are intended to address human health and environmental concerns at the majority of small to medium-sized sites in Oakland where commonly-found contaminants are present. Large and/or complicated sites—especially those with continuing releases, special ecological concerns or unusual subsurface conditions—will likely require a Tier 3 analysis. The following checklist is designed to assist you in determining your site's eligibility for the Oakland RBCA levels.

CRITERIA	YES	NO
<b>Source:</b>		
Is there a continuing, <i>primary</i> source of a chemical of concern, such as a leaking container, tank or pipe? (This does <i>not</i> include secondary/residual sources.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there any mobile or potentially-mobile free product?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are there more than five chemicals of concern at the site, each of which is at a concentration greater than the lowest applicable Oakland RBCA level?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Pathways:</b>		
Are there any preferential vapor migration pathways—such as gravel channels or utility corridors—that are potential conduits for the migration, on-site or off-site, of a volatilized chemical of concern?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there a chemical of concern at the site within 20 feet of a surface water body?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If groundwater ingestion is <i>not</i> an exposure pathway of concern, does groundwater at the site both (a) exist at depths less than 10 feet <i>and</i> (b) contain volatile chemicals of concern? (If groundwater ingestion is an exposure pathway of concern, this criterion may be disregarded because the Oakland RBCA levels will be protective for all potential groundwater-related exposure scenarios.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are there any existing on-site or off-site structures intended for future use that are adjacent to a volatile chemical of concern and possess at least one of the following?		
(a) A slab-on-grade foundation that is less than 15 cm (6 inches) thick (i.e., that does not meet Uniform Building Code standards)		
(b) An enclosed, below-grade space (e.g., a basement) that has floors or walls less than 15 cm (6 inches) thick		
(c) A crawl space that is not ventilated	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Receptors:</b>		
Are there any immediate health risks to humans associated with contamination at the site (i.e., explosive levels of a chemical or vapor concentrations that could cause acute health effects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are there any complete pathways to nearby ecological receptors, such as endangered species, wildlife refuge areas, wetlands or other protected areas?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If you answer "no" to all questions, your site is eligible for the Oakland RBCA levels. If you answer "yes" to any of the questions, your site is *not* eligible for the Oakland RBCA levels.

# Oakland RBCA Cover Sheet

Project Proponent: Falaschi Brothers

Site Address: 460 Grand Avenue, Oakland, CA 94610

Alameda County Parcel Number(s):

Chemicals of Concern		
(1) Benzene	(4)	(7)
(2)	(5)	(8)
(3)	(6)	(9)

Exposure Pathways of Concern	
<i>Surficial Soil</i> <input type="checkbox"/> Ingestion/dermal contact/inhalation	<i>Groundwater</i> <input type="checkbox"/> Ingestion of groundwater
<i>Subsurface Soil</i> <input type="checkbox"/> Ingestion of groundwater impacted by leachate	<input checked="" type="checkbox"/> Inhalation of indoor air vapors
<input checked="" type="checkbox"/> Inhalation of indoor air vapors	<input checked="" type="checkbox"/> Inhalation of outdoor air vapors
<input checked="" type="checkbox"/> Inhalation of outdoor air vapors	<i>Water Used for Recreation</i> <input type="checkbox"/> Ingestion/dermal contact

Land Use Scenario	
<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Commercial/Industrial

Method of Analysis	
<input type="checkbox"/> Tier 1	
<input checked="" type="checkbox"/> Tier 2 (specify soil type: <input type="checkbox"/> Merritt sands <input type="checkbox"/> sandy silts <input checked="" type="checkbox"/> clayey silts)	
<input type="checkbox"/> Tier 3 Model(s) employed: <input type="checkbox"/> Oakland RBCA <input type="checkbox"/> Other(s) (specify: )	

Application of RBCA Levels	
<input type="checkbox"/> As evidence that no further action required	
<input type="checkbox"/> As target cleanup levels for removal or treatment of chemical(s) of concern	
<input checked="" type="checkbox"/> Other (specify: As evidence to remove setback requirement for residential use included in Case Closure Summary, Alameda County HazMat, 11/19/96)	

Containment Measures	
<input type="checkbox"/> Cap (specify material: )	<input type="checkbox"/> Vapor barrier (specify material: )
<input type="checkbox"/> Other(s) (specify: )	
<i>Exposure pathways that will be affected:</i>	

Institutional Controls			
<input type="checkbox"/> Permit tracking	<input type="checkbox"/> Deed restriction	<input type="checkbox"/> Deed Notice	<input type="checkbox"/> Water well restriction
<input type="checkbox"/> Access control	<input type="checkbox"/> Other(s) (specify: )		

Public Notification	
<i>Specify all actions to be taken:</i>	

Submitted by: Margaret K. (Peggy) Peischl, P.E.; Treadwell & Rollo, Inc.

Date submitted: 20 August 1999

Oakland RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Arsenic	Barium	Benz(a)-anthracene	Benzene	Benzo(a)-pyrene	
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic					2.6E+00		1.7E+00	1.9E+01	1.7E-01	
			Hazard	2.3E+03	2.3E+03	3.7E+03	1.2E+04	1.8E+01	5.0E+03		6.3E+01		
		Commercial/ Industrial	Carcinogenic					9.5E+00		4.3E+00	4.9E+01	4.3E-01	
			Hazard	1.1E+04	1.1E+04	1.8E+04	5.6E+04	1.5E+02	7.1E+04		3.0E+02		
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							SAT	1.6E+02	SAT	
			Hazard	SAT	SAT	1.2E+05	SAT				6.5E+02		
		Commercial/ Industrial	Carcinogenic							SAT	6.2E+02	SAT	
			Hazard	SAT	SAT	SAT	SAT				SAT		
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	3.3E+00	SAT	
			Hazard	SAT	SAT	1.2E+04	SAT				1.1E+01		
		Commercial/ Industrial	Carcinogenic							SAT	5.2E+01	SAT	
			Hazard	SAT	SAT	SAT	SAT				3.2E+02		
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic						4.4E+00	1.3E+02	1.4E+01	4.5E-03	1.2E+01
			Hazard	4.0E+02	2.7E+02	1.5E+00	SAT	4.4E+00	1.3E+02		4.5E-03	1.2E+01	
		Commercial/ Industrial	Carcinogenic					4.4E+00	1.3E+02	5.8E+01	4.5E-03	1.2E+01	
			Hazard	SAT	SAT	9.7E+00	SAT	4.4E+00	1.3E+02		4.5E-03	1.2E+01	
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic					5.0E-02	1.0E+00	5.6E-04	1.0E-03	2.0E-04	
			Hazard	9.4E-01	9.4E-01	1.6E+00	>Sol	5.0E-02	1.0E+00		1.0E-03	2.0E-04	
		Commercial/ Industrial	Carcinogenic					5.0E-02	1.0E+00	2.4E-03	1.0E-03	2.0E-04	
			Hazard	>Sol	>Sol	1.0E+01	>Sol	5.0E-02	1.0E+00		1.0E-03	2.0E-04	
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>Sol	6.6E+00	>Sol	
			Hazard	>Sol	>Sol	4.0E+04	>Sol				2.2E+01		
		Commercial/ Industrial	Carcinogenic							>Sol	1.0E+02	>Sol	
			Hazard	>Sol	>Sol	>Sol	>Sol				6.3E+02		
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic								>Sol	>Sol	
			Hazard	>Sol	>Sol	9.5E+05	>Sol				>Sol		
		Commercial/ Industrial	Carcinogenic								>Sol	>Sol	
			Hazard	>Sol	>Sol	>Sol	>Sol				>Sol		
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic					2.0E-02		1.6E-04	6.3E-02	1.1E-05	
			Hazard	1.1E+00	1.7E+00	4.2E+01	>Sol	1.2E-01	2.8E+01		1.8E-01		

\*Italicized concentrations based on California MCLs  
 SAT = RBSL exceeds saturated soil concentration of chemical  
 >SOL = RBSL exceeds solubility of chemical in water

08/19/99 THU 10:00 FAX 925 253 4985

TREADWELL & ROLLO

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**TABLE 1**  
**Summary of Benzene Data**  
 460 Grand Avenue, Oakland, California

Sample	Depth (feet, bgs)	Benzene (mg/kg)	
		x	x <sup>2</sup>
WO-8	4.5	0.0005	0.00000025
WO-9	5.5	0.077	0.005929
IX-18	4	0.18	0.0324
IX-15	5	1.2	1.44
IX-13	5.5	0.41	0.1681
IX-11	5	0.6	0.36
C-3	5	0.008	0.000064
C-2	5	13	169
C-1*	5	0.0025	0.00000625
IX-20*	5	0.0025	0.00000625
WO-10*	5	0.0025	0.00000625
WO-11*	4.5	0.0025	0.00000625
WO-7*	5	0.0025	0.00000625
WO-5*	5	0.0025	0.00000625
Sum of Values		Sx	15.4905
Sum of Values Squarec		Sx <sup>2</sup>	171.01
Number of Samples		n	14
Sample Mean		$\bar{x}$	1.1
Variance		s <sup>2</sup>	11.836
Sample St. Dev.		s	3.440
Standard Error of Samj		s <sub>x</sub>	0.919
Degrees of Freedom		n-1	13
t <sub>.20</sub> for n-1 degrees of freedom		t <sub>.20</sub>	1.35
Confidence Interval		CI	2.3      Upper CI
(two-tailed with probability = 0.20 or one-tailed with probability = 0.10)			-0.1      Lower CI

\*Assume value of 1/2 the Reporting Limit (0.005 mg/kg) for NDs  
 Statistical Analysis per:  
*Test Methods for Evaluating Solid Waste, SW-847, Third Edition,*  
 Vol. 2, USEPA, November 1986