



If site is also planned for residential use, should do soil ingestion / dermal / vapor to residents - including child.

client stated that site will be completely capped.

February 7, 2002
BEI Job. No. 201064

Ms. Eva Chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502-6577

FEB 13 2002

**Subject: Printout Corrections for ASTM RBCA Health Risk Assessment
819-823 East 12th Street
Oakland, California
STID # 6139**

Dear Ms. Chu:

Blymyer Engineers, Inc. (Blymyer) is pleased to forward the attached documents in response to our telephone conversation of February 6, 2002. In our conversation, you correctly noted that the representative concentration of Total Recoverable Petroleum Hydrocarbons (TRPH) in soil contained in the summary printout (*Appendix I; Printouts: Representative COC Concentrations in Source Media (Soil)*) appeared low. The representative concentration for soil contamination was calculated as 73 milligrams per kilogram (mg/kg).

After reviewing the input data Blymyer is in agreement, and cannot trace the exact cause of the error. As stated in the text of the accompanying report, it was the intent of Blymyer to remove non-source zone analytical concentration data which dilute the calculation of means and upper confidence levels (UCL) for the source zone. A review of the data tables included in the referenced report indicates that the removal was only partial, and for some reason it appears that the data was captured at a mid-point in the removal process. This was not caught at the time of the final printout of data.

With the full removal of non-source zone data points, an additional complication was created. As we discussed, an UCL for naphthalene could not be generated due to detection in only two soil samples (minimum of three required). As a result, either the maximum concentration for TRPH could be used, or naphthalene could be eliminated from the analytical suite, and the UCL for all remaining chemicals, using an arithmetic mean calculation, could be utilized to calculate the Site Specific Target Level (SSTL). Both situations were evaluated, and in either case the resulting TRPH (and benzene) SSTL was unchanged. Additional complications with other COC are engendered by use of maximum concentrations as representative of source zone concentrations, and this is clearly not a reasonable assumption. Additionally, because naphthalene did not contribute significantly to the health risk present at the site, it was judged reasonable to eliminate naphthalene as a COC. Based upon this reasoning, please find attached copies of the revised pertinent printouts from the modeling program. In a review of these printouts, some relatively minor changes will be observed in several risk calculation values; however, as will also be noted, the SSTLs for TRPH and benzene have not changed.



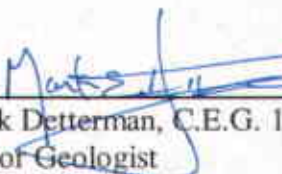
Ms. Eva Chu
February 7, 2002
Page 2

One additional error was located in the program printout and has also been corrected. Specifically, the local rainfall modification contained in the *Site-Specific Soil Parameters* menu, was also not retained. The correct rainfall amount should be 741 centimeters rather than 59 centimeters per year. The attached printouts incorporate this revision.


Should you have further questions or comments, please contact Mark Detterman at (510) 521-3773.

Sincerely,

Blymyer Engineers, Inc.

By: 
Mark Detterman, C.E.G. 1788
Senior Geologist



And: 
Michael S. Lewis
Vice President, Technical Services

Enclosures

c: Mr. Robert Mintz, Robert Mintz Design Studio

Site-Specific Soil Parameters

1. Soil Source Zone Characteristics ?

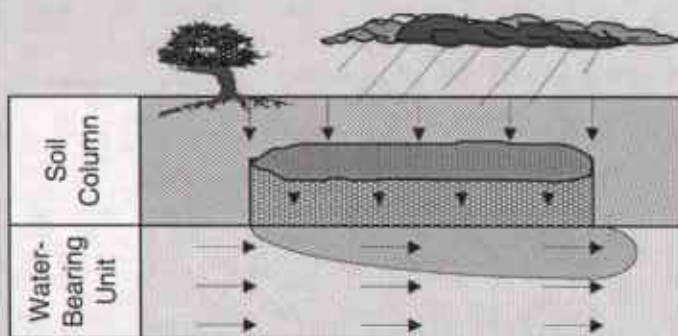
Hydrogeology

General Case Construction

Depth to water-bearing unit	457	(cm)
Capillary zone thickness	29	(cm)
Soil column thickness	428	(cm)

Affected Soil Zone

Depth to top of affected soils	0	(cm)
Depth to base of affected soils	730	(cm)
Affected soil area	4E+06	4E+06 (cm ²)
Length of affected soil parallel to assumed wind direction	3505	3505 (cm)
Length of affected soil parallel to assumed GW flow direction	3505	(cm)



Site Name: Former J&R Auto Dismantlers

Job ID: 201064

Location: 819 - 823 East 12th Street, Oakland, CA

Date: 1-Dec-01

Compl. By: Mark Detterman

2. Surface Soil Column

Vadose Zone Capillary Fringe

Predominant USCS Soil Type

CL: Silty Clay ?

or	Enter Directly	
Total porosity	0.36	(-)
Volumetric water content	0.34	0.35 (-)
Volumetric air content	0.02	0.010 (-)
Dry bulk density	1.7	(kg/L)
Vertical hydraulic conductivity	8.6E-3	(cm/d)
Vapor permeability	1.0E-13	(cm ²)
Capillary zone thickness	2.9E+1	(cm)

Net Rainfall Infiltration

Net infiltration estimate	98.83458	(cm/yr)
or	Enter Directly	
Average annual precipitation	741	(cm/yr)

Partitioning Parameters

Fraction organic carbon	0.01	(-)
Soil/water pH	6.8	(-)

3. Commands and Options

Main Screen

Use Default Values

Print Sheet

Set Units

Help

RBCA SITE ASSESSMENT

TPH Criteria SSTL Worksheet

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Detterman
 Date Completed: 1-Dec-01

Job ID: 201064

CALCULATION OF SSTL VALUES FOR TPH

CONSTITUENTS OF CONCERN		Mass Fractions		Representative Concentrations		Calculated Concentration Limits		Applicable SSTL Values	
		Soil	Groundwater	Soil	Groundwater	Residual Soil Concentration	Solubility	Soils (0 - 730 cm)	Groundwater
CAS No.	Name	(-)	(-)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)
0-00-0	TPH - Aliph >C21-C34	1.0E+0	1.0E+0	1.3E+4	2.0E+3	1.6E+1	2.5E-6	>1.6E+1	>2.5E-6
* = Chemical with user-specified data									
Total		1.0E+0	1.0E+0	1.3E+4	2.0E+3	Total TPH SSTL value		>Res	>Sol

*> indicates risk-based target concentration greater than constituent residual saturation value; NC = Not calculated.

RBCA SITE ASSESSMENT

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Detterman
 Date Completed: 1-Dec-01

Job ID: 201064

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1 0E-6
 Target Risk (Class C) 1 0E-5
 Target Hazard Quotient 1 0E+0

Groundwater DAF Option: Domenico - First Order
 (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("X" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration (mg/L)	X Groundwater Ingestion			X	X Groundwater Volatilization to Outdoor Air			Applicable SSTL (mg/L)	SSTL Exceeded? "■" if yes	Required CRF Only if "yes" left
			On-site (0 cm)	Off-site 1 (915 cm)	Off-site 2 (6100 cm)	On-site (0 cm)	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)			
71-43-2	BenzeneCA*	1.7E+0	NA	3.9E-3	3.2E-2	1.9E+0	>1.8E+3	>1.8E+3	NA	3.9E-3	■	4.4E+2
108-88-3	Toluene	2.5E+0	NA	1.5E+2	>5.2E+2	>5.2E+2	>5.2E+2	>5.2E+2	NA	1.5E+2	□	<1
100-41-4	Ethylbenzene	7.9E-1	NA	1.9E+1	>1.7E+2	>1.7E+2	>1.7E+2	>1.7E+2	NA	1.9E+1	□	<1
1330-20-7	Xylene (mixed isomers)	4.1E+0	NA	>2.0E+2	>2.0E+2	>2.0E+2	>2.0E+2	>2.0E+2	NA	>2.0E+2	□	NA
0-00-0	TPH - Aliph >C21-C34	2.0E+3	NA	>2.5E-6	>2.5E-6	NC	NC	NC	NA	>2.5E-6	□	NA
7440-43-9	Cadmium	0.0E+0	NA	6.6E-2	5.0E-1	>6.5E+5	>6.5E+5	>6.5E+5	NA	6.6E-2	□	<1
16065-83-1	Chromium (III)	0.0E+0	NA	>1.7E+5	>1.7E+5	NC	NC	NC	NA	>1.7E+5	□	NA
7439-92-1	Lead*	0.0E+0	NA	NC	NC	NC	NC	NC	NA	NC	□	NA
7440-02-0	Nickel	0.0E+0	NA	2.6E+0	1.9E+1	>1.7E+5	>1.7E+5	>1.7E+5	NA	2.6E+0	□	<1
7440-66-6	Zinc	0.0E+0	NA	3.9E+1	2.9E+2	NC	NC	NC	NA	3.9E+1	□	<1

* = Chemical with user-specified data

">" indicates risk-based target concentration greater than constituent solubility value. NA = Not applicable. NC = Not calculated.

RBCA SITE ASSESSMENT

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Detterman
 Date Completed: 1-Dec-01

Job ID: 201064

SOIL (0 - 730 cm) SSTL VALUES

Target Risk (Class A & B) 1.0E-6
 Target Risk (Class C) 1.0E-5
 Target Hazard Quotient 1.0E+0

Groundwater DAF Option: Domenico - First Order
 (One-directional vertical dispersion)

CONSTITUENTS OF CONCERN		Representative Concentration (mg/kg)	SSTL Results For Complete Exposure Pathways ("X" if Complete)											Applicable SSTL (mg/kg)	SSTL Exceeded? <input type="checkbox"/>	Required CRF Only if 'yes' left
			X Soil Leaching to Groundwater Ingestion			X Soil Vol. to Indoor Air	X Soil Volatilization and Surface Soil Particulates to Outdoor Air				X Surface Soil Inhalation, Ingestion, Dermal Contact					
			On-site (0 cm)	Off-site 1 (915 cm)	Off-site 2 (6100 cm)	On-site (0 cm)	On-site (0 cm)		Off-site 1 (785 cm)	Off-site 2 (0 cm)	On-site (0 cm)					
CAS No.	Name	(mg/kg)	None	Commercial	Residential	Residential	Residential	Construction Worker	Commercial	None	Commercial	Construction Worker	(mg/kg)	*#* if yes		
71-43-2	BenzeneCA*	2.5E-3	NA	7.5E-3	6.2E-2	5.7E-2	2.9E+0	NA	4.0E+0	NA	3.0E+0	7.6E+1	7.5E-3	<input type="checkbox"/>	<1	
108-88-3	Toluene	1.8E-1	NA	5.5E+2	>8.0E+2	1.6E+2	>8.0E+2	NA	>8.0E+2	NA	5.3E+3	5.5E+3	1.6E+2	<input type="checkbox"/>	<1	
100-41-4	Ethylbenzene	1.8E+0	NA	1.8E+2	>6.5E+2	>6.5E+2	>6.5E+2	NA	>6.5E+2	NA	3.3E+3	3.3E+3	1.8E+2	<input type="checkbox"/>	<1	
1330-20-7	Xylene (mixed isomers)	1.4E+1	NA	>5.2E+2	>5.2E+2	>5.2E+2	>5.2E+2	NA	>5.2E+2	NA	6.2E+4	6.3E+4	6.2E+4	<input type="checkbox"/>	<1	
0-00-0	TPH - Aliph >C21-C34	1.3E+4	NA	>1.6E+1	>1.6E+1	NC	NC	NA	NC	NA	NC	NC	>1.6E+1	<input type="checkbox"/>	NA	
7440-43-9	Cadmium	1.1E+1	NA	1.2E+1	9.3E+1	>4.9E+7	2.5E+5	NA	4.2E+5	NA	1.0E+3	7.1E+2	1.2E+1	<input type="checkbox"/>	<1	
18065-83-1	Chromium (III)	4.8E+1	NA	>3.0E+11	>3.0E+11	NC	NC	NA	NC	NA	NC	NC	>3.0E+11	<input type="checkbox"/>	NA	
7439-92-1	Lead*	7.3E+2	NA	NC	NC	NC	NC	NA	NC	NA	NC	NC	NC	<input type="checkbox"/>	NA	
7440-02-0	Nickel	7.2E+1	NA	4.2E+2	3.1E+3	>1.1E+7	9.4E+5	NA	1.6E+5	NA	NC	NC	4.2E+2	<input type="checkbox"/>	<1	
7440-66-6	Zinc	5.8E+2	NA	6.0E+3	4.4E+4	NC	NC	NA	NC	NA	NC	NC	6.0E+3	<input type="checkbox"/>	<1	

* = Chemical with user-specified data

>* indicates risk-based target concentration greater than constituent residual saturation value. NA = Not applicable. NC = Not calculated.

RBCA SITE ASSESSMENT

Chemical-Specific Tier 2 Cleanup Summary

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Detterman
 Date Completed: 1-Dec-01

Job ID: 201064

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Constituent: BenzeneCA* CAS No.: 71-43-2

Site-Specific Target Level (SSTL) Concentrations			
	On-site	Off-site1	Off-site2
Groundwater Ingestion			
Receptor Type / Distance (cm)	None	Commercial / 915	Residential / 6100
SSTL _{gw} THQ = 1e+0	NA	4.2E-1	4.1E+0
(mg/L) TR = 1e-6	NA	3.9E-3	3.2E-2
Soil Leaching to Groundwater Ingestion			
Receptor Type / Distance (cm)	None	Commercial / 915	Residential / 6100
SSTL _s THQ = 1e+0	NA	8.1E-1	7.9E+0
(mg/kg) TR = 1e-6	NA	7.5E-3	6.2E-2
Surface Soil Inhalation, Ingestion, Dermal Contact			
Receptor Type / Distance (cm)	Com./Constr. / 0	No Off-site Receptors	
SSTL _{ss} THQ = 1e+0	9.6E+1		
(mg/kg) TR = 1e-6	3.0E+0		
Outdoor Air Inhalation			
Receptor Type / Distance (cm)	Residential / 0	Commercial / 765	None
RBEL _{air} THQ = 1e+0	6.2E+0	8.7E+0	NA
(µg/m ³) TR = 1e-6	2.9E-1	4.9E-1	NA
Soil Volatilization/Particulates to Outdoor Air Inhalation			
Receptor Type / Distance (cm)	Residential / 0	Commercial / 765	None
SSTL _s THQ = 1e+0	6.1E+1	7.1E+1	NA
(mg/kg) TR = 1e-6	2.9E+0	4.0E+0	NA
Groundwater Volatilization to Outdoor Air Inhalation			
Receptor Type / Distance (cm)	Residential / 0	Commercial / 765	None
SSTL _{gw} THQ = 1e+0	>1.8E+3	>1.8E+3	NA
(mg/L) TR = 1e-6	>1.8E+3	>1.8E+3	NA
Indoor Air Inhalation			
Receptor Type / Distance (cm)	Residential / 0	No Off-site Receptors	
RBEL _{air} THQ = 1e+0	6.2E+0		
(µg/m ³) TR = 1e-6	2.9E-1		
Soil Volatilization to Indoor Air Inhalation			
Receptor Type / Distance (cm)	Residential / 0	No Off-site Receptors	
SSTL _s THQ = 1e+0	1.2E+0		
(mg/kg) TR = 1e-6	5.7E-2		
Groundwater Volatilization to Indoor Air Inhalation			
Receptor Type / Distance (cm)	Residential / 0	No Off-site Receptors	
SSTL _{gw} THQ = 1e+0	4.0E+1		
(mg/L) TR = 1e-6	1.9E+0		

Chemical Parameters			
	Units	Value	Reference
Physical Properties			
MW	(g/mol)	7.8E+1	PS
Sol	(mg/L)	1.8E+3	PS
P _{vap}	(mmHg)	9.5E+1	PS
H _{alm}	(atm·m ³ /mol)	5.6E-3	PS
pK _a	(log[mol/mol])	-	-
pK _b	(log[mol/mol])	-	-
log(K _{oc})	(log[L/kg])	1.8E+0	PS
D _{air}	(cm ² /sec)	8.8E-2	PS
D _{soil}	(cm ² /sec)	9.8E-6	PS
Toxicity Data			
Wt of Evid.		A	
SF _c	(1/[mg/kg/day])	1.0E-1	PS
SF _d	(1/[mg/kg/day])	3.0E-2	TX
URF _i	(1/[µg/m ³])	8.3E-6	PS
RfD _o	(mg/kg/day)	3.0E-3	R
RfD _d	(mg/kg/day)	-	-
RfC _i	(mg/m ³)	6.0E-3	R
Dermal Exposure Parameters			
RAF _d	(mg/mg)	5.0E-1	D
K _p	(cm/hr)	2.1E-2	
tau _d	(hr/event)	2.6E-1	
t _{crit}	(hr)	6.3E-1	
B	(-)	1.3E-2	
Regulatory Standards			
MCL	(mg/L)	1.0E-3	*
TWA	(mg/m ³)	3.3E+0	-
AQL	(mg/L)	-	-
Miscellaneous Parameters			
ADL _{gw}	(mg/L)	1.0E-3	S
ADL _s	(mg/kg)	5.0E-3	S
t _{1/2, sat}	(d)	7.2E+2	H
t _{1/2, unsat}	(d)	7.2E+2	H

* MCL ref = -

	Units	Residential	Commercial	Construction
Cross-Media Transfer Factors				
VF _{sa}	(kg-soil/m ³ -air)	6.5E-6	7.1E-6	NA
VF _{samb}	(kg-soil/m ³ -air)	1.0E-4	1.2E-4	NA
VF _{wamb}	(m ³ -wat/m ³ -air)	7.2E-8	7.2E-8	NA
VF _{resp}	(kg-soil/m ³ -air)	5.2E-3	NA	NA
VF _{wmp}	(m ³ -wat/m ³ -air)	1.5E-4	NA	NA
LF	(kg-soil/L-wat)	All exposures: 5.2E-1		NA

	Units	On-Site	Off-Site1	Off-Site2
Lateral Transport Factors				
DAF _{gw}	(-)	NA	1.4E+0	3.7E+1
DAF _{s/gw}	(-)	NA	1.4E+0	3.7E+1

	Units	Value
Derived Parameters		
H	(L-wat/L-air)	2.3E-1
K _{aw}	(L-wat/kg-soil)	1.3E+0
C _{soil}	(mg/kg-soil)	1.4E+3
C _{soil/vap}	(µg/m ³ -air)	4.0E+8
D _{off,s}	(cm ² /sec)	1.1E-5
D _{all,crk}	(cm ² /sec)	6.9E-3
D _{off,cap}	(cm ² /sec)	1.0E-5
D _{off,vs}	(cm ² /sec)	1.1E-5
R _{sat}	(-)	1.3E+0
R _{unsat}	(-)	3.9E+0
Z	(cm/event)	7.3E-2

- Notes:** 1) NA = Not applicable; NC = Not calculated.
 2) Definitions and references presented on page 11 of 11.

RBCA SITE ASSESSMENT	Baseline Risk Summary-All Pathways
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Site Name: Former J&R Auto Dismantlers

Completed By: Mark Detterman

Site Location: 819 - 823 East 12th Street, Oakland, CA

Date Completed: 1-Dec-01

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TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk Limit(s) Exceeded?	Hazard Quotient		Hazard Index		Toxicity Limit(s) Exceeded?
	Maximum Value	Target Risk	Total Value	Target Risk		Maximum Value	Applicable Limit	Total Value	Applicable Limit	
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.3E-9	1.0E-6	1.5E-9	1.0E-5	<input type="checkbox"/>	2.1E-4	1.0E+0	5.0E-4	1.0E+0	<input type="checkbox"/>
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	9.4E-7	1.0E-6	9.4E-7	1.0E-5	<input type="checkbox"/>	4.4E-2	1.0E+0	5.1E-2	1.0E+0	<input type="checkbox"/>
SOIL EXPOSURE PATHWAYS										
Complete:	8.0E-10	1.0E-6	8.0E-10	1.0E-5	<input type="checkbox"/>	2.3E-2	1.0E+0	4.2E-2	1.0E+0	<input type="checkbox"/>
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	4.4E-4	1.0E-6	4.4E-4	1.0E-5	<input checked="" type="checkbox"/>	4.1E+0	1.0E+0	5.3E+0	1.0E+0	<input checked="" type="checkbox"/>
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	<input type="checkbox"/>	NA	NA	NA	NA	<input type="checkbox"/>
CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)										
	4.4E-4	1.0E-6	4.4E-4	1.0E-5	<input checked="" type="checkbox"/>	4.1E+0	1.0E+0	5.3E+0	1.0E+0	<input checked="" type="checkbox"/>
	<i>Groundwater</i>		<i>Groundwater</i>			<i>Groundwater</i>		<i>Groundwater</i>		

RBCA SITE ASSESSMENT	Cumulative Risk Worksheet
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Site Name: Former J&R Auto Dismantlers

Completed By: Mark Detterman

Job ID: 201064

Site Location: 819 - 823 East 12th Street, Oakland, CA

Date Completed: 1-Dec-01

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CUMULATIVE RISK WORKSHEET

CONSTITUENTS OF CONCERN		Representative Concentration		Proposed CRF		Resultant Target Concentration	
CAS No.	Name	Soil (mg/kg)	Groundwater (mg/L)	Soil	GW	Soil (mg/kg)	Groundwater (mg/L)
71-43-2	BenzeneCA*	2.5E-3	1.7E+0			2.5E-3	1.7E+0
108-88-3	Toluene	1.8E-1	2.5E+0			1.8E-1	2.5E+0
100-41-4	Ethylbenzene	1.8E+0	7.9E-1			1.8E+0	7.9E-1
1330-20-7	Xylene (mixed isomers)	1.4E+1	4.1E+0			1.4E+1	4.1E+0
0-00-0	TPH - Aliph >C21-C34	1.3E+4	2.0E+3			1.3E+4	2.0E+3
7440-43-9	Cadmium	1.1E+1	0.0E+0			1.1E+1	0.0E+0
16065-83-1	Chromium (III)	4.8E+1	0.0E+0			4.8E+1	0.0E+0
7439-92-1	Lead*	7.3E+2	0.0E+0			7.3E+2	0.0E+0
7440-02-0	Nickel	7.2E+1	0.0E+0			7.2E+1	0.0E+0
7440-66-6	Zinc	5.8E+2	0.0E+0			5.8E+2	0.0E+0

Cumulative Values:

RBCA SITE ASSESSMENT

Cumulative Risk Worksheet

Site Name: Former J&R Auto Dismantlers

Site Name: Former J&R Auto Dismantlers

Completed By: Mark Detterman

Job ID: 201064

Site Location: 819 - 823 East 12th Street, Oakland, CA (Site Location: 819 - 823 East 12th Street, Oakland, CA) / Date Completed: 1-Dec-01

2 OF 3

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-5 Target Hazard Index: 1.0E+0

ON-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure:		Indoor Air Exposure:		Soil Exposure:		Groundwater Exposure:	
		Residential		Residential		Commercial		None	
CAS No.	Name	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0
		Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	BenzeneCA*	1.3E-9	6.3E-5	9.4E-7	4.4E-2	8.0E-10	2.4E-5		
108-88-3	Toluene		4.7E-5		2.0E-3		3.3E-5		
100-41-4	Ethylbenzene		1.8E-4		1.8E-3		5.4E-4		
1330-20-7	Xylene (mixed isomers)		2.1E-4		2.9E-3		2.2E-4		
0-00-0	TPH - Aliph >C21-C34						2.1E-2		
7440-43-9	Cadmium	4.2E-11	2.5E-12	0.0E+0	0.0E+0		1.0E-2		
16065-83-1	Chromium (III)						1.6E-5		
7439-92-1	Lead*								
7440-02-0	Nickel	7.6E-11		0.0E+0			1.8E-3		
7440-66-6	Zinc						9.5E-4		
Cumulative Values:		1.5E-9	5.0E-4	9.4E-7	5.1E-2	8.0E-10	3.5E-2	0.0E+0	0.0E+0

■ indicates risk level exceeding target risk

RBCA SITE ASSESSMENT

Cumulative Risk Worksheet

Site Name: Former J&R Auto Dismantlers

Site Name: Former J&R Auto Dismantlers

Completed By: Mark Detterman

Job ID: 201064

Site Location: 819 - 823 East 12th Street, Oakland, CA Date Completed: 1-Dec-01

3 OF 3

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-5 Target Hazard Index: 1.0E+0

Groundwater DAF Option: Domenico - First Order

OFF-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure:				Groundwater Exposure:			
		Commercial (765 cm)		None		Commercial (915 cm)		Residential (6100 cm)	
CAS No.	Name	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-6 / 1.0E-5	Target HQ: 1.0E+0
		Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	BenzeneCA*	9.0E-10	5.1E-5			4.4E-4	4.1E+0	5.3E-5	4.1E-1
108-88-3	Toluene		4.0E-5				1.7E-2		6.6E-6
100-41-4	Ethylbenzene		1.6E-4				4.1E-2		9.4E-4
1330-20-7	Xylene (mixed isomers)		1.8E-4				1.3E-2		6.7E-4
0-00-0	TPH - Aliph >C21-C34						1.6E-11		6.4E-34
7440-43-9	Cadmium	2.5E-11	1.8E-12				8.6E-1		1.1E-1
16065-83-1	Chromium (III)						3.5E-17		1.5E-35
7439-92-1	Lead*								
7440-02-0	Nickel	4.5E-11					1.7E-1		2.3E-2
7440-66-6	Zinc						9.7E-2		1.3E-2
Cumulative Values:		9.7E-10	4.2E-4	0.0E+0	0.0E+0	4.4E-4 ■	5.3E+0 ■	5.3E-5 ■	5.7E-1

■ indicates risk level exceeding target risk

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SOILS (0 - 730 cm): LEACHING TO
GROUNDWATER INGESTION

Constituents of Concern	1) Source Medium	2) NAF Value (L/kg) Receptor			3) Exposure Medium Groundwater: POE Conc. (mg/L) (1)/(2)		
	Soil Conc. (mg/kg)	On-site (0 cm) None	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	On-site (0 cm) None	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential
BenzeneCA*	2.5E-3		2.6E+0	7.2E+1		9.5E-4	3.4E-5
Toluene	1.8E-1		2.7E+1	2.0E+5		6.7E-3	9.3E-7
Ethylbenzene	1.8E+0		1.8E+1	2.2E+3		1.0E-1	8.4E-4
Xylene (mixed isomers)	1.4E+1		9.9E+0	5.4E+2		1.4E+0	2.7E-2
TPH - Aliph >C21-C34	1.3E+4		9.6E+18	6.7E+41		1.3E-15	1.9E-38
Cadmium	1.1E+1		2.4E+2	5.1E+3		4.4E-2	2.1E-3
Chromium (III)	4.8E+1		9.0E+15	6.0E+34		5.4E-15	8.1E-34
Lead*	7.3E+2		NA	NA			
Nickel	7.2E+1		2.1E+2	4.2E+3		3.5E-1	1.7E-2
Zinc	5.8E+2		2.0E+2	4.0E+3		3.0E+0	1.4E-1

* = Chemical with user-specified data

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former J&R Auto Dismantlers
Site Location: 819 - 823 East 12th Street, Oakland, CA
Completed By: Mark Detterman

Date Completed: 1-Dec-01
Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

SOILS (0 - 730 cm): LEACHING TO
GROUNDWATER INGESTION (cont'd)

Constituents of Concern	4) Exposure Multiplier (IR×EF×ED)/(BW×AT) (L/kg-day)			5) Average Daily Intake Rate (mg/kg/day) (3) x (4)		
	On-site (0 cm)	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	On-site (0 cm)	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential
	None			None		
BenzeneCA*		3.5E-3	1.2E-2		3.3E-6	4.0E-7
Toluene		9.8E-3	2.7E-2		6.6E-5	2.5E-8
Ethylbenzene		9.8E-3	2.7E-2		1.0E-3	2.3E-5
Xylene (mixed isomers)		9.8E-3	2.7E-2		1.4E-2	7.3E-4
TPH - Aliph >C21-C34		9.8E-3	2.7E-2		1.3E-17	5.3E-40
Cadmium		9.8E-3	2.7E-2		4.3E-4	5.7E-5
Chromium (III)		9.8E-3	2.7E-2		5.3E-17	2.2E-35
Lead*		9.8E-3	2.7E-2			
Nickel		9.8E-3	2.7E-2		3.4E-3	4.6E-4
Zinc		9.8E-3	2.7E-2		2.9E-2	4.0E-3

* = Chemical with user-specified data

NOTE: AT = Averaging time (days)
BW = Body weight (kg)

ED = Exposure duration (yr)
EF = Exposure frequency (days/yr)

IR = Ingestion rate (mg/day)

Site Name: Former J&R Auto Dismantlers
Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Detterman
Date Completed: 1-Dec-01

Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

Constituents of Concern	1) Source Medium	2) NAF Value (unitless) Receptor			3) Exposure Medium Groundwater: POE Conc. (mg/L) (1)/(2)		
	Groundwater Conc. (mg/L)	On-site (0 cm) None	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	On-site (0 cm) None	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential
BenzeneCA*	1.7E+0		1.4E+0	3.7E+1		1.3E+0	4.5E-2
Toluene	2.5E+0		7.1E+0	5.2E+4		3.5E-1	4.9E-5
Ethylbenzene	7.9E-1		1.9E+0	2.3E+2		4.2E-1	3.4E-3
Xylene (mixed isomers)	4.1E+0		1.6E+0	8.4E+1		2.6E+0	4.9E-2
TPH - Aliph >C21-C34	2.0E+3		6.2E+11	4.3E+34		3.2E-9	4.6E-32
Cadmium	0.0E+0		1.3E+0	2.7E+1		0.0E+0	0.0E+0
Chromium (III)	0.0E+0		2.0E+9	1.3E+28		0.0E+0	0.0E+0
Lead*	0.0E+0		1.3E+0	2.5E+1		0.0E+0	0.0E+0
Nickel	0.0E+0		1.3E+0	2.6E+1		0.0E+0	0.0E+0
Zinc	0.0E+0		1.3E+0	2.6E+1		0.0E+0	0.0E+0

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

GROUNDWATER INGESTION (cont'd)

Constituents of Concern	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg/day)			5) Average Daily Intake Rate (mg/kg/day) (3) x (4)		
	On-site (0 cm) None	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	On-site (0 cm) None	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential
	BenzeneCA*		3.5E-3	1.2E-2		4.4E-3
Toluene		9.8E-3	2.7E-2		3.4E-3	1.3E-6
Ethylbenzene		9.8E-3	2.7E-2		4.1E-3	9.4E-5
Xylene (mixed isomers)		9.8E-3	2.7E-2		2.6E-2	1.3E-3
TPH - Aliph >C21-C34		9.8E-3	2.7E-2		3.2E-11	1.3E-33
Cadmium		9.8E-3	2.7E-2		0.0E+0	0.0E+0
Chromium (III)		9.8E-3	2.7E-2		0.0E+0	0.0E+0
Lead*		9.8E-3	2.7E-2		0.0E+0	0.0E+0
Nickel		9.8E-3	2.7E-2		0.0E+0	0.0E+0
Zinc		9.8E-3	2.7E-2		0.0E+0	0.0E+0

* = Chemical with user-specified data

NOTE: AT = Averaging time (days)
BW = Body weight (kg)

ED = Exposure duration (yr)
EF = Exposure frequency (days/yr)

IR = Ingestion rate (mg/day)

Site Name: Former J&R Auto Dismantlers

Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Dettlerman

Date Completed: 1-Dec-01

Job ID: 201064

RBCA SITE ASSESSMENT

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TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

MAXIMUM PATHWAY INTAKE (mg/kg/day)

*(Maximum intake of active pathways
soil leaching & groundwater routes.)*

Constituents of Concern	On-site (0 cm)	Off-site 1	Off-site 2
	None	Commercial	Residential
BenzeneCA*		4.4E-3	5.3E-4
Toluene		3.4E-3	1.3E-6
Ethylbenzene		4.1E-3	9.4E-5
Xylene (mixed isomers)		2.6E-2	1.3E-3
TPH - Aliph >C21-C34		3.2E-11	1.3E-33
Cadmium		4.3E-4	5.7E-5
Chromium (III)		5.3E-17	2.2E-35
Lead*			
Nickel		3.4E-3	4.6E-4
Zinc		2.9E-2	4.0E-3

* = Chemical with user-specified data

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

(CHECKED IF PATHWAYS ARE ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Maximum Carcinogenic Intake Rate (mg/kg/day)			(3) Oral Slope Factor (mg/kg-day) ⁻¹	(4) Individual COC Risk (2) x (3)		
		On-site (0 cm) None	Off-site 1 Commercial	Off-site 2 Residential		On-site (0 cm) None	Off-site 1 Commercial	Off-site 2 Residential
BenzeneCA*	A		4.4E-3	5.3E-4	1.0E-1		4.4E-4	5.3E-5
Toluene	D							
Ethylbenzene	D							
Xylene (mixed isomers)	D							
TPH - Aliph >C21-C34	D							
Cadmium	B1							
Chromium (III)	-							
Lead*	D							
Nickel	A							
Zinc	D							

Total Pathway Carcinogenic Risk = 4.4E-4 5.3E-5

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

(CHECKED IF PATHWAYS ARE ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Maximum Toxicant Intake Rate (mg/kg/day)			(6) Oral Reference Dose (mg/kg/day)	(7) Individual COC Hazard Quotient (5) / (6)		
	On-site (0 cm) None	Off-site 1 Commercial	Off-site 2 Residential		On-site (0 cm) None	Off-site 1 Commercial	Off-site 2 Residential
BenzeneCA*		1.2E-2	1.2E-3	3.0E-3		4.1E+0	4.1E-1
Toluene		3.4E-3	1.3E-6	2.0E-1		1.7E-2	6.6E-6
Ethylbenzene		4.1E-3	9.4E-5	1.0E-1		4.1E-2	9.4E-4
Xylene (mixed isomers)		2.6E-2	1.3E-3	2.0E+0		1.3E-2	6.7E-4
TPH - Aliph >C21-C34		3.2E-11	1.3E-33	2.0E+0		1.6E-11	6.4E-34
Cadmium		4.3E-4	5.7E-5	5.0E-4		8.6E-1	1.1E-1
Chromium (III)		5.3E-17	2.2E-35	1.5E+0		3.5E-17	1.5E-35
Lead*							
Nickel		3.4E-3	4.6E-4	2.0E-2		1.7E-1	2.3E-2
Zinc		2.9E-2	4.0E-3	3.0E-1		9.7E-2	1.3E-2

? How derived?

Total Pathway Hazard Index =

	5.3E+0	5.7E-1
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Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

Site Name: Former J&R Auto Dismantlers Site Location: 819 - 823 East 12th Street, Completed By: Mark Detterman Date Completed: 1-Dec-01 1 OF 1

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAY (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:

ON-SITE INGESTION AND
DERMAL CONTACT

Constituents of Concern	1) Source/Exposure Medium	2) Exposure Multiplier (IR+SAxMxRAF)xEFxED/(BWxAT) (kg/kg/day)		3) Average Daily Intake Rate (mg/kg/day) (1) x (2)	
	Surface Soil Conc. (mg/kg)	Commercial	Construction Worker	Commercial	Construction Worker
BenzeneCA*	2.5E-3	1.0E-5	4.2E-7	2.6E-8	1.0E-9
Toluene	1.8E-1	2.9E-5	2.9E-5	5.3E-6	5.3E-6
Ethylbenzene	1.8E+0	2.9E-5	2.9E-5	5.2E-5	5.3E-5
Xylene (mixed isomers)	1.4E+1	2.9E-5	2.9E-5	4.1E-4	4.2E-4
TPH - Aliph >C21-C34	1.3E+4	3.3E-6	3.5E-6	4.3E-2	4.5E-2
Cadmium	1.1E+1	4.9E-7	7.0E-7	5.2E-6	7.4E-6
Chromium (III)	4.8E+1	4.9E-7	7.0E-7	2.4E-5	3.4E-5
Lead*	7.3E+2	#VALUE!	#VALUE!		
Nickel	7.2E+1	4.9E-7	7.0E-7	3.5E-5	5.0E-5
Zinc	5.8E+2	4.9E-7	7.0E-7	2.8E-4	4.1E-4

NOTE: RAF = Relative absorption factor (-) AT = Averaging time (days) ED = Exposure duration (yrs) IR = Soil ingestion rate (mg/day)
M = Adherence factor (mg/cm²) BW = Body weight (kg) EF = Exposure frequency (days/yr) SA = Skin exposure area (cm²/day)

Site Name: Former J&R Auto Dismantlers
Site Location: 819 - 823 East 12th Street, Oakland, CA
Completed By: Mark Detterman

Date Completed: 1-Dec-01
Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY (CHECKED IF PATHWAY IS ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)				(3) Slope Factor (mg/kg/day) ⁻¹		(4) Individual COC Risk	
		(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(2a)x(3a) + (2b)x(3b)	(2c)x(3a) + (2d)x(3b)
		Commercial		Construction Worker				Commercial	Construction Worker
BenzeneCA*	A	4.4E-10	2.5E-8	2.5E-11	1.0E-9	1.0E-1	3.0E-2	8.0E-10	3.3E-11
Toluene	D								
Ethylbenzene	D								
Xylene (mixed isomers)	D								
TPH - Aliph >C21-C34	D								
Cadmium	B1								
Chromium (III)	-								
Lead*	D								
Nickel	A								
Zinc	D								

* No dermal slope factor available—oral slope factor used

Total Pathway Carcinogenic Risk = 8.0E-10 3.3E-11

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY

(CHECKED IF PATHWAY IS ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Intake Rate (mg/kg/day)				(6) Oral Reference Dose (mg/kg-day)		(7) Individual COC Hazard Quotient	
	(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(5a)/(6a) + (5b)/(6b)	(5c)/(6a) + (5d)/(6b)
	Commercial		Construction Worker				Commercial	Construction Worker
BenzeneCA*	1.2E-9	7.1E-8	1.8E-9	7.1E-8	3.0E-3	3.0E-3*	2.4E-5	2.4E-5
Toluene	8.9E-8	5.2E-6	1.3E-7	5.2E-6	2.0E-1	1.6E-1	3.3E-5	3.3E-5
Ethylbenzene	8.9E-7	5.2E-5	1.3E-6	5.2E-5	1.0E-1	9.7E-2	5.4E-4	5.4E-4
Xylene (mixed isomers)	7.0E-6	4.1E-4	1.0E-5	4.1E-4	2.0E+0	1.8E+0	2.2E-4	2.3E-4
TPH - Aliph >C21-C34	6.3E-3	3.6E-2	9.0E-3	3.6E-2	2.0E+0	2.0E+0*	2.1E-2	2.3E-2
Cadmium	5.2E-6	0.0E+0	7.4E-6	0.0E+0	5.0E-4	5.0E-4*	1.0E-2	1.5E-2
Chromium (III)	2.4E-5	0.0E+0	3.4E-5	0.0E+0	1.5E+0	2.0E-2	1.6E-5	2.3E-5
Lead*								
Nickel	3.5E-5	0.0E+0	5.0E-5	0.0E+0	2.0E-2	2.0E-2*	1.8E-3	2.5E-3
Zinc	2.8E-4	0.0E+0	4.1E-4	0.0E+0	3.0E-1	6.0E-2	9.5E-4	1.4E-3

* No dermal reference dose available--oral reference dose used.

Total Pathway Hazard Index = 3.5E-2 4.2E-2

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SOILS (0 - 730 cm): VAPOR

INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	1) Source Medium	2) NAF Value (m ³ /kg) Receptor	3) Exposure Medium Indoor Air: POE Conc. (mg/m ³) (1) / (2)	4) Exposure Multiplier (EF×ED)/(AT×365) (unitless)	5) Average Inhalation Exposure Concentration (mg/m ³) (3) X (4)
	Soil Conc. (mg/kg)	Residential	Residential	Residential	Residential
BenzeneCA*	2.5E-3	1.9E+2	1.3E-5	4.1E-1	5.3E-6
Toluene	1.8E-1	3.8E+2	4.8E-4	9.6E-1	4.6E-4
Ethylbenzene	1.8E+0	1.1E+3	1.7E-3	9.6E-1	1.7E-3
Xylene (mixed isomers)	1.4E+1	7.0E+2	2.0E-2	9.6E-1	2.0E-2
TPH - Aliph >C21-C34	1.3E+4	2.7E+5	4.8E-2	9.6E-1	4.6E-2
Cadmium	1.1E+1	NA		4.1E-1	
Chromium (III)	4.8E+1	NA		9.6E-1	
Lead*	7.3E+2	NA		9.6E-1	
Nickel	7.2E+1	NA		4.1E-1	
Zinc	5.8E+2	NA		9.6E-1	

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INTRUSION INTO ON-SITE BUILDINGS Constituents of Concern	Exposure Concentration				
	1) Source Medium Groundwater Conc. (mg/L)	2) NAF Value (m ³ /L) Receptor Residential	3) Exposure Medium Indoor Air: POE Conc. (mg/m ³) (1) / (2) Residential	4) Exposure Multiplier (EF×ED)/(AT×365) (unitless) Residential	5) Average Inhalation Exposure Concentration (mg/m ³) (3) × (4) Residential
BenzeneCA*	1.7E+0	6.5E+3	2.6E-4	4.1E-1	1.1E-4
Toluene	2.5E+0	6.6E+3	3.8E-4	9.6E-1	3.6E-4
Ethylbenzene	7.9E-1	7.6E+3	1.0E-4	9.6E-1	9.9E-5
Xylene (mixed isomers)	4.1E+0	7.3E+3	5.6E-4	9.6E-1	5.4E-4
TPH - Aliph >C21-C34	2.0E+3	2.0E+0	1.0E+3	9.6E-1	9.6E+2
Cadmium	0.0E+0	NA		4.1E-1	
Chromium (III)	0.0E+0	NA		9.6E-1	
Lead*	0.0E+0	NA		9.6E-1	
Nickel	0.0E+0	NA		4.1E-1	
Zinc	0.0E+0	NA		9.6E-1	

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

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TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m³)

(Sum average exposure concentrations from soil and groundwater routes.)

Constituents of Concern	Residential
BenzeneCA*	1.1E-4
Toluene	8.2E-4
Ethylbenzene	1.8E-3
Xylene (mixed isomers)	2.0E-2
TPH - Aliph >C21-C34	9.6E+2
Cadmium	
Chromium (III)	
Lead*	
Nickel	
Zinc	

Site Name: Former J&R Auto Dismantlers Date Completed: 1-Dec-01
 Site Location: 819 - 823 East 12th Street, Oakland Job ID: 201064
 Completed By: Mark Detterman

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAYS ARE ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m ³)	(3) Inhalation Unit Risk Factor (μg/m ³) ⁻¹	(4) Individual CDC Risk (2) x (3) x 1000
		Residential		Residential
BenzeneCA*	A	1.1E-4	8.3E-6	9.4E-7
Toluene	D			
Ethylbenzene	D			
Xylene (mixed isomers)	D			
TPH - Aliph >C21-C34	D			
Cadmium	B1		1.8E-3	
Chromium (III)	-			
Lead*	D			
Nickel	A		4.8E-4	
Zinc	D			

Total Pathway Carcinogenic Risk = 9.4E-7

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

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TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAYS ARE ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Exposure (mg/m ³)	(6) Inhalation Reference Concentration (mg/m ³)	(7) Individual COC Hazard Quotient (5) / (6)
	Residential		Residential
BenzeneCA*	2.6E-4	6.0E-3	4.4E-2
Toluene	8.2E-4	4.0E-1	2.0E-3
Ethylbenzene	1.8E-3	1.0E+0	1.8E-3
Xylene (mixed isomers)	2.0E-2	7.0E+0	2.9E-3
TPH - Aliph >C21-C34			
Cadmium	0.0E+0	2.2E+1	0.0E+0
Chromium (III)			
Lead*			
Nickel			
Zinc			

Total Pathway Hazard Index = 5.1E-2

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS (0 - 300 cm):
VAPOR AND DUST INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m ³ /kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m ³) (1) / (2)			
	Soil Conc. (mg/kg)	On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)	On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)
		Residential	Construction Worker	Commercial	None	Residential	Construction Worker	Commercial	None
BenzeneCA*	2.5E-3	1.5E+5		1.4E+5		1.6E-8		1.8E-8	
Toluene	1.8E-1	2.2E+5		2.0E+5		8.4E-7		9.2E-7	
Ethylbenzene	1.8E+0	3.7E+5		3.3E+5		5.0E-6		5.4E-6	
Xylene (mixed isomers)	1.4E+1	2.9E+5		2.7E+5		4.9E-5		5.3E-5	
TPH - Aliph >C21-C34	1.3E+4	6.1E+6		5.5E+6		2.1E-3		2.3E-3	
Cadmium	1.1E+1	1.9E+11		1.9E+11		5.7E-11		5.7E-11	
Chromium (III)	4.8E+1	1.9E+11		1.9E+11		2.6E-10		2.6E-10	
Lead*	7.3E+2	1.9E+11		1.9E+11		3.9E-9		3.9E-9	
Nickel	7.2E+1	1.9E+11		1.9E+11		3.8E-10		3.8E-10	
Zinc	5.8E+2	1.9E+11		1.9E+11		3.1E-9		3.1E-9	

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former J&R Auto Dismantlers
Site Location: 819 - 823 East 12th Street, Oakland, CA
Completed By: Mark Detterman

Date Completed: 1-Dec-01
Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SURFACE SOILS (0 - 300 cm):
VAPOR AND DUST INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)				5) Average Inhalation Exposure Concentration (mg/m ³) (3) X (4)			
	On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)	On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)
	Residential	Construction Worker	Commercial	None	Residential	Construction Worker	Commercial	None
BenzeneCA*	4.1E-1		2.4E-1		6.7E-9		4.4E-9	
Toluene	9.6E-1		6.8E-1		8.0E-7		6.3E-7	
Ethylbenzene	9.6E-1		6.8E-1		4.8E-6		3.7E-6	
Xylene (mixed isomers)	9.6E-1		6.8E-1		4.7E-5		3.6E-5	
TPH - Aliph >C21-C34	9.6E-1		6.8E-1		2.0E-3		1.6E-3	
Cadmium	4.1E-1		2.4E-1		2.3E-11		1.4E-11	
Chromium (III)	9.6E-1		6.8E-1		2.5E-10		1.8E-10	
Lead*	9.6E-1		6.8E-1		3.8E-9		2.7E-9	
Nickel	4.1E-1		2.4E-1		1.6E-10		9.4E-11	
Zinc	9.6E-1		6.8E-1		3.0E-9		2.1E-9	

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS (300 - 730 cm):

VAPOR INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m ³ /kg) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m ³) (1) / (2)		
	Soil Conc. (mg/kg)	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)
		Residential	Commercial	None	Residential	Commercial	None
BenzeneCA*	2.5E-3	9.8E+3	8.2E+3		2.6E-7	3.1E-7	
Toluene	1.8E-1	9.8E+3	8.2E+3		1.9E-5	2.2E-5	
Ethylbenzene	1.8E+0	9.8E+3	8.2E+3		1.9E-4	2.2E-4	
Xylene (mixed isomers)	1.4E+1	9.8E+3	8.2E+3		1.5E-3	1.8E-3	
TPH - Aliph >C21-C34	1.3E+4	9.8E+3	8.2E+3		1.3E+0	1.6E+0	
Cadmium	1.1E+1	NA	NA				
Chromium (III)	4.8E+1	NA	NA				
Lead*	7.3E+2	NA	NA				
Nickel	7.2E+1	NA	NA				
Zinc	5.8E+2	NA	NA				

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SUBSURFACE SOILS (300 - 730 cm):

VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m ³) (3) X (4)		
	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)
	Residential	Commercial	None	Residential	Commercial	None
BenzeneCA*	4.1E-1	2.4E-1		1.0E-7	7.5E-8	
Toluene	9.6E-1	6.8E-1		1.8E-5	1.5E-5	
Ethylbenzene	9.6E-1	6.8E-1		1.8E-4	1.5E-4	
Xylene (mixed isomers)	9.6E-1	6.8E-1		1.4E-3	1.2E-3	
TPH - Aliph >C21-C34	9.6E-1	6.8E-1		1.3E+0	1.1E+0	
Cadmium	4.1E-1	2.4E-1				
Chromium (III)	9.6E-1	6.8E-1				
Lead*	9.6E-1	6.8E-1				
Nickel	4.1E-1	2.4E-1				
Zinc	9.6E-1	6.8E-1				

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Detterman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR
INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m ³ /L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m ³) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)
		Residential	Commercial	None	Residential	Commercial	None
BenzeneCA*	1.7E+0	1.4E+7	1.4E+7		1.2E-7	1.2E-7	
Toluene	2.5E+0	1.4E+7	1.4E+7		1.8E-7	1.8E-7	
Ethylbenzene	7.9E-1	1.6E+7	1.6E+7		4.8E-8	4.8E-8	
Xylene (mixed isomers)	4.1E+0	1.6E+7	1.6E+7		2.6E-7	2.6E-7	
TPH - Aliph >C21-C34	2.0E+3	4.3E+3	4.3E+3		4.6E-1	4.6E-1	
Cadmium	0.0E+0	NA	NA				
Chromium (III)	0.0E+0	NA	NA				
Lead*	0.0E+0	NA	NA				
Nickel	0.0E+0	NA	NA				
Zinc	0.0E+0	NA	NA				

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: Former J&R Auto Dismantlers
Site Location: 819 - 823 East 12th Street, Oakland, CA
Completed By: Mark Detterman

Date Completed: 1-Dec-01
Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

GROUNDWATER: VAPOR

INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m ³) (3) X (4)		
	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)	On-site (0 cm)	Off-site 1 (765 cm)	Off-site 2 (0 cm)
	Residential	Commercial	None	Residential	Commercial	None
BenzeneCA*	4.1E-1	2.4E-1		5.0E-8	3.0E-8	
Toluene	9.6E-1	6.8E-1		1.7E-7	1.2E-7	
Ethylbenzene	9.6E-1	6.8E-1		4.6E-8	3.3E-8	
Xylene (mixed isomers)	9.6E-1	6.8E-1		2.5E-7	1.8E-7	
TPH - Aliph >C21-C34	9.6E-1	6.8E-1		4.5E-1	3.2E-1	
Cadmium	4.1E-1	2.4E-1				
Chromium (III)	9.6E-1	6.8E-1				
Lead*	9.6E-1	6.8E-1				
Nickel	4.1E-1	2.4E-1				
Zinc	9.6E-1	6.8E-1				

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: Former J&R Auto Dismantlers

Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Detterman

Date Completed: 1-Dec-01

Job ID: 201064

RBCA SITE ASSESSMENT

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TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m³)*(Sum average exposure concentrations from soil and groundwater routes.)*

Constituents of Concern	On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)
	Residential	Construction Worker	Commercial	None
BenzeneCA*	1.6E-7		1.1E-7	
Toluene	1.9E-5		1.6E-5	
Ethylbenzene	1.8E-4		1.6E-4	
Xylene (mixed isomers)	1.4E-3		1.2E-3	
TPH - Aliph >C21-C34	1.7E+0		1.4E+0	
Cadmium	2.3E-11		1.4E-11	
Chromium (III)	2.5E-10		1.8E-10	
Lead*	3.8E-9		2.7E-9	
Nickel	1.6E-10		9.4E-11	
Zinc	3.0E-9		2.1E-9	

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA
 Completed By: Mark Dettlerman

Date Completed: 1-Dec-01
 Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAYS ARE ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m ³)				(3) Inhalation Unit Risk Factor (μg/m ³) ⁻¹	(4) Individual COC Risk (2) x (3) x 1000			
		On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)		On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)
		Residential	Construction Worker	Commercial	None		Residential	Construction Worker	Commercial	None
BenzeneCA*	A	1.6E-7		1.1E-7		8.3E-6	1.3E-9		9.0E-10	
Toluene	D									
Ethylbenzene	D									
Xylene (mixed isomers)	D									
TPH - Aliph >C21-C34	D									
Cadmium	B1	2.3E-11		1.4E-11		1.8E-3	4.2E-11		2.5E-11	
Chromium (III)	-									
Lead*	D									
Nickel	A	1.6E-10		9.4E-11		4.8E-4	7.6E-11		4.5E-11	
Zinc	D									

Total Pathway Carcinogenic Risk = **1.5E-9** **9.7E-10**

Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Detterman
 Date Completed: 1-Dec-01

Job ID: 201064

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAYS ARE ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Exposure (mg/m ³)				(6) Inhalation Reference Conc. (mg/m ³)	(7) Individual COC Hazard Quotient (5) / (6)			
	On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)		On-site (0 cm)		Off-site 1 (765 cm)	Off-site 2 (0 cm)
	Residential	Construction Worker	Commercial	None		Residential	Construction Worker	Commercial	None
BenzeneCA*	3.8E-7		3.1E-7		6.0E-3	6.3E-5		5.1E-5	
Toluene	1.9E-5		1.6E-5		4.0E-1	4.7E-5		4.0E-5	
Ethylbenzene	1.8E-4		1.6E-4		1.0E+0	1.8E-4		1.6E-4	
Xylene (mixed isomers)	1.4E-3		1.2E-3		7.0E+0	2.1E-4		1.8E-4	
TPH - Aliph >C21-C34									
Cadmium	5.4E-11		3.9E-11		2.2E+1	2.5E-12		1.8E-12	
Chromium (III)									
Lead*									
Nickel									
Zinc									

Total Pathway Hazard Index =

5.0E-4		4.2E-4	
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Site Name: Former J&R Auto Dismantlers
 Site Location: 819 - 823 East 12th Street, Oakland, CA

Completed By: Mark Dettnerman
 Date Completed: 1-Dec-01

Job ID: 201064

RBCA SITE ASSESSMENT

User-Specified COC Data

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

CONSTITUENT	Representative COC Concentration			
	Groundwater		Soils (0 - 730 cm)	
	value (mg/L)	note	value (mg/kg)	note
BenzeneCA*	1.7E+0		2.5E-3	
Toluene	2.5E+0		1.8E-1	
Ethylbenzene	7.9E-1		1.8E+0	
Xylene (mixed isomers)	4.1E+0		1.4E+1	
TPH - Aliph >C21-C34	2.0E+3		1.3E+4	
Cadmium	0.0E+0	4 unfiltered gw samples	1.1E+1	
Chromium (III)	0.0E+0	4 unfiltered gw samples	4.8E+1	
Lead*	0.0E+0	unfilter. samples excluded	7.3E+2	
Nickel	0.0E+0	4 unfiltered gw samples	7.2E+1	
Zinc	0.0E+0	4 unfiltered gw samples	5.8E+2	

* = Chemical with user-specified data

Site Name: Former J&R Auto Dismantlers

Date Completed: 1-Dec-01

Site Location: 819 - 823 East 12th Street, Oakland, CA

Job ID: 201064

Completed By: Mark Detterman

RBCA SITE ASSESSMENT	
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Site Name: Former J&R Auto Dismantlers Completed By: Mark Detterman

Site Location: 819 - 823 East 12th Street, Oakland Date Completed: 1-Dec-01

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TIER 2 GROUNDWATER CONCENTRATION DATA SUMMARY
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CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/L)	No. of Samples	No. of Detects	Maximum Conc. (mg/L)	Mean Conc. (mg/L)	UCL on Mean Conc. (mg/L)
71-43-2	BenzeneCA*	1.0E-03	1	1	1.7E+00	1.7E+00	NA
108-88-3	Toluene	1.0E-03	1	1	2.5E+00	2.5E+00	NA
100-41-4	Ethylbenzene	1.0E-03	1	1	7.9E-01	7.9E-01	NA
1330-20-7	Xylene (mixed isomers)	1.0E-03	1	1	4.1E+00	4.1E+00	NA
0-00-0	TPH - Aliph >C21-C34	1.0E+00	1	1	2.0E+03	2.0E+03	NA
7440-43-9	Cadmium	5.0E-03	1	0	0.0E+00	0.0E+00	NA
16065-83-1	Chromium (III)	2.0E-02	1	0	0.0E+00	0.0E+00	NA
7439-92-1	Lead*	5.0E-03	1	0	0.0E+00	0.0E+00	NA
7440-02-0	Nickel	5.0E-02	1	0	0.0E+00	0.0E+00	NA
7440-66-6	Zinc	5.0E-02	1	0	0.0E+00	0.0E+00	NA

* = Chemical with user-specified data

Commands and Options				Site Name: Former J&R Auto Dismantlers		Job ID: 201064	
Return		Print Sheet		Help		Location: 819 - 823 East 12th Street, Oakland, CA: 1-Dec-01	
				Compl. By: Mark Detterman			

Groundwater Source Zone Concentration Calculator

UCL Percentile

Constituent	Detection Limit	No. of Samples	No. of Detects	Estimated Distribution of Data	Max. Conc.	Mean Conc.	UCL on Mean
	(mg/L)				(mg/L)	(mg/L)	(mg/L)
BenzeneCA*	1.0E-3	1	1	-	1.7E+0	1.7E+0	NA
Toluene	1.0E-3	1	1	-	2.5E+0	2.5E+0	NA
Ethylbenzene	1.0E-3	1	1	-	7.9E-1	7.9E-1	NA
Xylene (mixed isomers)	1.0E-3	1	1	-	4.1E+0	4.1E+0	NA
TPH - Aliph >C21-C34	1.0E+0	1	1	-	2.0E+3	2.0E+3	NA
Cadmium	5.0E-3	1	0	-	0.0E+0	0.0E+0	NA
Chromium (III)	2.0E-2	1	0	-	0.0E+0	0.0E+0	NA
Lead*	5.0E-3	1	0	-	0.0E+0	0.0E+0	NA
Nickel	5.0E-2	1	0	-	0.0E+0	0.0E+0	NA
Zinc	5.0E-2	1	0	-	0.0E+0	0.0E+0	NA

* = Chemical with user-specified data

RBCA Tool Kit for Chemical Releases, Version 1.3a

Enter Analytical Data from
Groundwater Source Zone
(up to 50 Data Points)

Analytical Data

	1	2	3	4	5	6	7	8	9	10	11	12	13
ID	B2-W	B3-W	B4-W	B5W	B6W	B7W	B8W						
Date	16-Sep-96	16-Sep-96	16-Sep-96	7-Aug-01	7-Aug-01	7-Aug-01	7-Aug-01						
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
							1.70E+0						
							2.50E+0						
							7.90E-1						
							4.10E+0						
							2.00E+3						
							<0.005						
							<0.02						
							<0.005						
							<0.05						
							<0.05						

RBCA Tool Kit for Chemical Releases, Version 1.3a

14	15	16	17	18	19	20	21	22	23	24	Analytical Data	
											25	26
<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>

RBCA Tool Kit for Chemical Releases, Version 1.3a

										Analytical Data		
27	28	29	30	31	32	33	34	35	36	37	38	39
<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>	<i>(mg/L)</i>

RBCA Tool Kit for Chemical Releases, Version 1.3a

40	41	42	43	44	45	46	47	48	49	50
(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)

RBCA SITE ASSESSMENT

Site Name: Former J&R Auto Dismantlers Completed By: Mark Detterman
 Site Location: 819 - 823 East 12th Street, Oakland Date Completed: 1-Dec-01

1 of 1

TIER 2 SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
		Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
CAS No.	Name						
71-43-2	BenzeneCA*	5.0E-03	3	0	0.0E+00	2.5E-03	2.5E-03
108-88-3	Toluene	5.0E-03	3	2	1.4E-01	6.4E-02	1.8E-01
100-41-4	Ethylbenzene	5.0E-03	3	3	1.4E+00	5.0E-01	1.8E+00
1330-20-7	Xylene (mixed isomers)	5.0E-03	3	3	1.1E+01	3.8E+00	1.4E+01
0-00-0	TPH - Aliph >C21-C34	1.0E+01	15	15	5.4E+04	6.4E+03	1.3E+04
7440-43-9	Cadmium	5.0E-01	15	7	5.2E+01	4.5E+00	1.1E+01
16065-83-1	Chromium (III)	5.0E-01	15	15	1.1E+02	3.9E+01	4.8E+01
7439-92-1	Lead*	3.0E+00	15	15	3.1E+03	3.7E+02	7.3E+02
7440-02-0	Nickel	2.0E+00	15	15	2.4E+02	4.7E+01	7.2E+01
7440-86-6	Zinc	1.0E+00	15	15	2.1E+03	3.2E+02	5.8E+02

* = Chemical with user-specified data

Commands and Options				Site Name: Former J&R Auto Dismantlers Job ID: 201064		
Return		Print Sheet		Help		
				Location: 819 - 823 East 12th Street, Oakland, CA 94612		
				Date: 1-Dec-01		
				Compl. By: Mark Detterman		

Soil Source Zone Concentration Calculator

UCL Percentile

Constituent	Detection Limit (mg/kg)	No. of Samples	No. of Detects	Estimated Distribution of Data	Mean Option		
					Max. Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean (mg/kg)
BenzeneCA*	5.0E-3	3	0	Normal	0.0E+0	2.5E-3	2.5E-3
Toluene	5.0E-3	3	2	Lognormal	1.4E-1	6.4E-2	1.8E-1
Ethylbenzene	5.0E-3	3	3	Lognormal	1.4E+0	5.0E-1	1.8E+0
Xylene (mixed isomers)	5.0E-3	3	3	Lognormal	1.1E+1	3.8E+0	1.4E+1
TPH - Aliph >C21-C34	1.0E+1	15	15	Lognormal	5.4E+4	6.4E+3	1.3E+4
Cadmium	5.0E-1	15	7	Lognormal	5.2E+1	4.5E+0	1.1E+1
Chromium (III)	5.0E-1	15	15	Normal	1.1E+2	3.9E+1	4.8E+1
Lead*	3.0E+0	15	15	Lognormal	3.1E+3	3.7E+2	7.3E+2
Nickel	2.0E+0	15	15	Lognormal	2.4E+2	4.7E+1	7.2E+1
Zinc	1.0E+0	15	15	Lognormal	2.1E+3	3.2E+2	5.8E+2

* = Chemical with user-specified data

RBCA Tool Kit for Chemical Releases, Version 1.3a

Enter Analytical Data from
Soil Source Zone
(up to 50 Data Points)

													Analytical Data	
													12	13
	1	2	3	4	5	6	7	8	9	10	11	12	13	
ID	B1-1			B2-1		B2-3	B3-1			B4-1		B4-3	B5-0.5	
Date	16-Sep-96			16-Sep-96		16-Sep-96	16-Sep-96			16-Sep-96		16-Sep-96	7-Aug-01	
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
	6.00E+2			4.40E+3		5.30E+3	1.90E+4			8.90E+1		3.40E+2	3.20E+1	
	7.20E-1			7.30E+0		<0.5	3.80E+0			6.00E-1		<0.5	<0.5	
	3.40E+1			4.00E+1		3.70E+1	4.00E+1			3.30E+1		4.00E+1	2.80E+1	
	2.70E+2			8.70E+2		8.20E+0	7.50E+2			8.30E+1		5.50E+0	1.60E+1	
	2.60E+1			3.90E+1		3.40E+1	4.30E+1			2.50E+1		4.30E+1	1.90E+1	
	3.20E+2			1.10E+3		4.10E+1	6.50E+2			7.70E+1		3.40E+1	4.30E+1	

RBCA Tool Kit for Chemical Releases, Version 1.3a

											Analytical Data	
14	15	16	17	18	19	20	21	22	23	24	25	26
			B6-0.5				B7-0.5				B7-14.5	B8B-0.5
			7-Aug-01				7-Aug-01				7-Aug-01	7-Aug-01
<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>
												<0.010
												5.00E-2
												3.00E-2
												2.40E-1
			2.60E+1				3.30E+2				2.40E+3	5.40E+4
			<0.5				9.50E-1				<0.5	5.20E+1
			3.20E+1				2.60E+1				3.00E+1	1.10E+2
			9.80E+0				2.70E+2				6.60E+0	3.10E+3
			2.30E+1				4.30E+1				2.70E+1	2.40E+2
			1.90E+1				2.20E+2				3.30E+1	2.10E+3

RBCA Tool Kit for Chemical Releases, Version 1.3a

										Analytical Data			
27	28	29	30	31	32	33	34	35	36	37	38	39	
B8B-5.5	B8B-10	B8B-15	B9-2										
7-Aug-01	7-Aug-01	7-Aug-01	7-Aug-01										
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
	<0.005	<0.100											
	<0.005	1.40E-1											
	5.80E-2	1.40E+0											
	1.10E-1	1.10E+1											
1.10E+3	6.00E+2	7.90E+3	5.40E+1										
<0.5	<0.5	5.70E-1	<0.5										
4.10E+1	3.30E+1	3.50E+1	2.80E+1										
1.20E+1	9.80E+0	7.40E+1	1.10E+1										
1.50E+1	6.40E+1	2.80E+1	3.00E+1										
2.30E+1	4.20E+1	4.30E+1	2.10E+1										

RBCA Tool Kit for Chemical Releases, Version 1.3a

40	41	42	43	44	45	46	47	48	49	50
<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>

RBCA SITE ASSESSMENT

Tier 2 Domenico Groundwater Modeling Summary

Site Name: Former J&R Auto Dism; Site Location: 819 - 823 East 12th Street, Oal Completed By: Mark Detterman

Date Completed: 1-Dec-01

1 OF 2

DOMENICO GROUNDWATER MODELING SUMMARY

OFF-SITE GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

SOILS LEACHING TO GROUNDWATER:

INGESTION

Constituents of Concern	1) Source Medium	2) Steady-state Exposure Concentration Groundwater: POE Conc. (mg/L)		3) POE Concentration Limit Groundwater: POE Conc. (mg/L)		4) Time to Reach POE Conc. Limit Conc. limit reached? ("■" if yes) ; Time (yr)	
	Soil Conc. (mg/kg)	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential
BenzeneCA*	2.5E-3	9.5E-4	3.4E-5	2.9E-3	8.5E-4	<input type="checkbox"/> NA	<input type="checkbox"/> NA
Toluene	1.8E-1	6.7E-3	9.3E-7	2.0E+1	7.3E+0	<input type="checkbox"/> NA	<input type="checkbox"/> NA
Ethylbenzene	1.8E+0	1.0E-1	8.4E-4	1.0E+1	3.7E+0	<input type="checkbox"/> NA	<input type="checkbox"/> NA
Xylene (mixed isomers)	1.4E+1	1.4E+0	2.7E-2	2.0E+2	7.3E+1	<input type="checkbox"/> NA	<input type="checkbox"/> NA
TPH - Aliph >C21-C34	1.3E+4	1.3E-15	1.9E-38	2.0E+2	7.3E+1	<input type="checkbox"/> NA	<input type="checkbox"/> NA
Cadmium	1.1E+1	4.4E-2	2.1E-3	5.1E-2	1.8E-2	<input type="checkbox"/> NA	<input type="checkbox"/> NA
Chromium (III)	4.8E+1	5.4E-15	8.1E-34	1.5E+2	5.5E+1	<input type="checkbox"/> NA	<input type="checkbox"/> NA
Lead*	7.3E+2					NA	NA
Nickel	7.2E+1	3.5E-1	1.7E-2	2.0E+0	7.3E-1	<input type="checkbox"/> NA	<input type="checkbox"/> NA
Zinc	5.8E+2	3.0E+0	1.4E-1	3.1E+1	1.1E+1	<input type="checkbox"/> NA	<input type="checkbox"/> NA

NOTE: POE = Point of exposure

RBCA SITE ASSESSMENT

Tier 2 Domenico Groundwater Modeling Summary

Site Name: Former J&R Auto Dism; Site Location: 819 - 823 East 12th Street, Oal Completed By: Mark Detterman

Date Completed: 1-Dec-01

2 OF 2

DOMENICO GROUNDWATER MODELING SUMMARY

OFF-SITE GROUNDWATER EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:

INGESTION

Constituents of Concern	1) Source Medium	2) Steady-state Exposure Concentration Groundwater: POE Conc. (mg/L)		3) POE Concentration Limit Groundwater: POE Conc. (mg/L)		4) Time to Reach POE Conc. Limit Conc reaches limit? ("■" If yes) : Time (yr)	
	Groundwater Conc. (mg/L)	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential	Off-site 1 (915 cm) Commercial	Off-site 2 (6100 cm) Residential
		BenzeneCA*	1.7E+0	1.3E+0	4.5E-2	2.9E-3	8.5E-4
Toluene	2.5E+0	3.5E-1	4.9E-5	2.0E+1	7.3E+0	□ NA	□ NA
Ethylbenzene	7.9E-1	4.2E-1	3.4E-3	1.0E+1	3.7E+0	□ NA	□ NA
Xylene (mixed isomers)	4.1E+0	2.6E+0	4.9E-2	2.0E+2	7.3E+1	□ NA	□ NA
TPH - Aliph >C21-C34	2.0E+3	3.2E-9	4.6E-32	2.0E+2	7.3E+1	□ NA	□ NA
Cadmium	0.0E+0	0.0E+0	0.0E+0	5.1E-2	1.8E-2	□ NA	□ NA
Chromium (III)	0.0E+0	0.0E+0	0.0E+0	1.5E+2	5.5E+1	□ NA	□ NA
Lead*	0.0E+0	0.0E+0	0.0E+0	9.0E+99	9.0E+99	□ NA	□ NA
Nickel	0.0E+0	0.0E+0	0.0E+0	2.0E+0	7.3E-1	□ NA	□ NA
Zinc	0.0E+0	0.0E+0	0.0E+0	3.1E+1	1.1E+1	□ NA	□ NA

NOTE: POE = Point of exposure

RBCA SITE ASSESSMENT

TIER 2 TRANSIENT DOMENICO ANALYSIS

Site Name: Former J&R Auto Dismantlers Completed By: Mark Detterman
 Site Location: 819 - 823 East 12th Street, Oakland, CA Date Completed: 1-Dec-01

Job ID: 201064

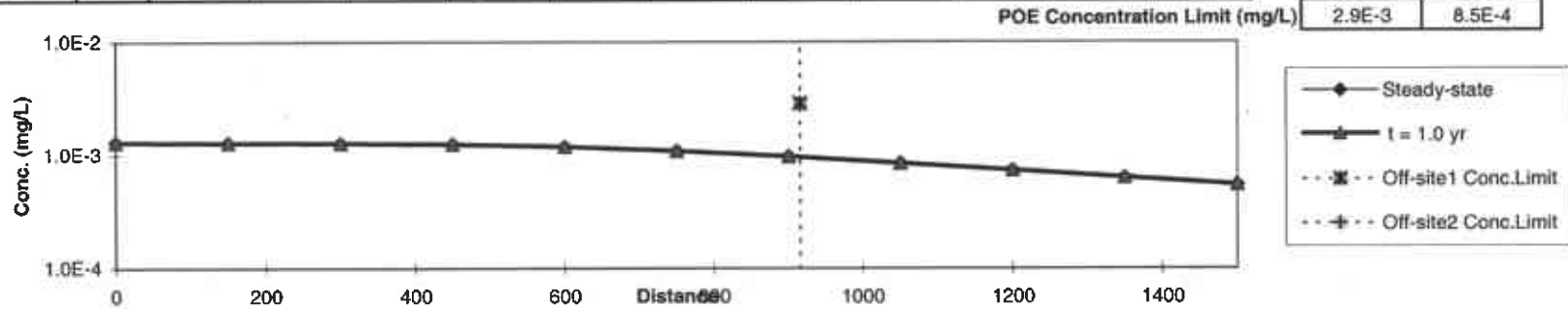
Constituent: BenzeneCA*
Source Medium: Affected Soils Leaching to Groundwater
Biodegradation: 1st Order

Concentration vs. Distance from Source
 (for given time)

Time (yr)

Distance (cm)		0	150	300	450	600	750	900	1050	1200	1350	1500
t = 1.0 yr	Conc. (mg/L)	1.3E-3	1.3E-3	1.3E-3	1.2E-3	1.2E-3	1.1E-3	9.6E-4	8.4E-4	7.3E-4	6.3E-4	5.5E-4
Steady-state	Conc. (mg/L)	1.3E-3	1.3E-3	1.3E-3	1.2E-3	1.2E-3	1.1E-3	9.6E-4	8.4E-4	7.3E-4	6.3E-4	5.5E-4

Off-site1	Off-site2
Commercial	Residential
915	6100
9.5E-4	1.5E-5
9.5E-4	3.4E-5
2.9E-3	8.5E-4



Concentration vs. Time
 (for given distance from source)

Distance (cm)

Time (yr)		0	3	6	9	12	15	18	21	24	27	30
x = 750 cm	Conc. (mg/L)	0.0E+0	1.1E-3	1.1E-3	1.1E-3	1.1E-3	1.1E-3	1.1E-3	1.1E-3	1.1E-3	1.1E-3	1.1E-3
Off-site1 (915 cm)	Conc. (mg/L)	0.0E+0	9.5E-4	9.5E-4	9.5E-4	9.5E-4	9.5E-4	9.5E-4	9.5E-4	9.5E-4	9.5E-4	9.5E-4
Off-site2 (6100 cm)	Conc. (mg/L)	0.0E+0	3.4E-5	3.4E-5	3.4E-5	3.4E-5	3.4E-5	3.4E-5	3.4E-5	3.4E-5	3.4E-5	3.4E-5

Time to Reach Conc. Limit (yr)

Off-site1	NA
Off-site2	NA

