BLYMYER
ENGINEERS, INC.
1829 Clement Avenue
Alameda, California 94501-1396
(510) 521-3773 FAX: (510) 865-2594

LETTER OF TRANSMITTAL

DATE October 22, 1998	BEI Job No. 98078
ATTENTION: Ms. Susan Hugo	
SUBJECT: 1370 Ocean Avenue	
Emeryville, California	

ACHCSA

1131 Harbor Bay Parkway, 2nd Floor

Alameda, CA 94502

Via Courier

We are sending you
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☐ Copy of letter
☐ Report
☐ Prints
☐ Plans
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☐ Specifications
☐ _____

Copies	Date	Number	Description
1	10/21/98		Modified report; *Modifications to Health Risk Assessment*

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REMARKS: For your use. A copy has also been forwarded to Ms. Madhulla Logan. Thanks. Please call with any questions.

COPY TO: File
Mr. Russell Vincent, Russell Vincent Construction
Ms. Madhulla Logan, ACHCSA

SIGNED: Mark Detterman

If enclosures are not as noted, kindly notify Blymyer Engineers, Inc. at once.

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BLYMYER
ENGINEERS, INC.

October 21, 1998
BEI Job No. 98078

Ms. Susan Hugo
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Subject: **Modifications to Health Risk Assessment**
1370 Ocean Avenue
Emeryville, California
STID # 6449

Dear Ms. Hugo:

Blymyer Engineers, Inc., at the request of Ms. Madhulla Logan of your office, has modified the input parameters contained in the letter report entitled *ASTM RBCA Health Risk Assessment*, dated August 24, 1998. Specifically, Ms. Logan requested the use of the mean rather than the 95% of the upper confidence level (UCL), both derived statistically from the available soil and groundwater analytical data generated at the site.

The following appendices correlate with the appendices contained in the referenced letter report. All references to the 95% UCL contained in the referenced report should be replaced with "mean" (e.g. Section 2.2 *Analytical Data Review*). This modification does not change the discussion in Section 3.6 *Representative COC Concentrations*.

As you will note both the Baseline Carcinogenic Risks and Baseline Toxic Effects decrease using the mean rather than the 95% UCL.

Additionally, per Ms. Logan's query, the Foundation Crack Thickness (under "building" parameters of the *Output Table 1* in Appendix C), was modified using site-specific data. The perimeter foundation and the concrete floor slab were observed by a representative of Blymyer Engineers in late August 1998. The largest "crack" was observed to be a 1-inch expansion joint filled with caulking down the center of the building (longest dimension). Although the foundation cracks could be argued to be both sides of the seam of contact between the concrete slab floor and the expansion joint filler (of minimal thickness), the full 1-inch thickness was used as a conservative measure.

1879 CLEMENT AVENUE ALAMEDA, CA 94501•1395 PHONE 510•521•3773 FAX 510•865•2594
3475 LENOX ROAD N.E. SUITE 400 ATLANTA, GA 30326 PHONE 404•467•1374 FAX 404•467•1374

Please call Mark Detterman at (510) 521-3773 with any questions or comments regarding this project.

Sincerely,

Blymyer Engineers, Inc.

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

And: _____
Michael S. Lewis
Vice President, Technical Services

Enclosures:

Appendix A:	*Representative COC Concentration In Source Media*, Output Files
Appendix B:	Building Parameter Modification Calculations
Appendix C:	Site-Specific Parameters *Output Table 1*
Appendix D:	*RBCA Chemical Database* Output Files
Appendix E:	*Baseline Risk Summary Table*, *Exposure Concentration and Intake Calculation* Tables, and *Tier 2 Pathway Risk Calculation* Tables
Appendix F:	SSTL Values for Surface, Subsurface, and Groundwater Pathways
Appendix G:	Cumulative Risk Worksheets for Onsite Receptors

c. Mr. Russell Vincent, Russel Vincent Construction
Ms. Madhulla Logan, ACHCSA

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Appendix A

Representative COC Concentration In Source Media

Output Files

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater value (mg/L)	note	in Surface Soil value (mg/kg)	note	in Subsurface Soil value (mg/kg)	note
Benzene - CA	4.7E-4	mean	5.6E-3	mean	5.6E-3	mean
Dichloroethene, 1,1-	1.6E-3	mean	4.7E-3	mean	4.7E-3	mean
Dichloroethene, cis-1,2-	1.4E-2	mean	4.7E-3	mean	4.7E-3	mean
Dichloroethene,1,2-trans-	2.4E-3	mean	4.7E-3	mean	4.7E-3	mean
Ethylbenzene	4.7E-4	mean	2.9E-2	mean	2.9E-2	mean
Methyl t-Butyl Ether	2.7E-2	mean	7.6E-2	mean	7.6E-2	mean
Tetrachloroethene	3.2E-3	mean	4.7E-3	mean	4.7E-3	mean
Toluene	4.7E-4	mean	2.4E-2	mean	2.4E-2	mean
Trichloroethene	6.0E-2	mean	4.7E-3	mean	4.7E-3	mean
Trichlorofluoromethane	2.7E-3	mean	4.7E-3	mean	4.7E-3	mean
Vinyl chloride	2.0E-3	mean	4.7E-3	mean	4.7E-3	mean
Xylene (mixed isomers)	5.3E-4	mean	4.4E-2	mean	4.4E-2	mean

Site Name: Ocean Avenue

Site Location: 1372 Ocean Avenue, Emeryville, CA

Site Name: Ocean Avenue | Completed By: Mark Detterman
Site Location: 1372 Ocean Avenue, Emeryville, C | Date Completed: 8/21/1998 | 1 of 1

TIER 2 SUBSURFACE SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	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)
71-43-2	Benzene - CA	5.0E-03	5	5	9.0E-03	5.6E-03	7.4E-03
75-35-4	Dichloroethene, 1,1-	5.0E-03	2	2	4.7E-03	4.7E-03	4.7E-03
156-59-2	Dichloroethene, cis-1,2-	5.0E-03	2	2	4.7E-03	4.7E-03	4.7E-03
156-60-5	Dichloroethene,1,2-trans-	5.0E-03	2	2	4.7E-03	4.7E-03	4.7E-03
100-41-4	Ethylbenzene	5.0E-03	5	5	5.2E-01	2.9E-02	3.1E-01
1634-04-4	Methyl t-Butyl Ether		5	5	1.9E-01	7.6E-02	1.4E-01
127-18-4	Tetrachloroethene	5.0E-03	2	2	4.7E-03	4.7E-03	4.7E-03
108-88-3	Toluene	5.0E-03	5	5	3.5E-01	2.4E-02	1.9E-01
79-01-6	Trichloroethene	5.0E-03	2	2	4.7E-03	4.7E-03	4.7E-03
75-69-4	Trichlorofluoromethane	5.0E-03	2	2	4.7E-03	4.7E-03	4.7E-03
75-01-4	Vinyl chloride	5.0E-03	2	2	4.7E-03	4.7E-03	4.7E-03
1330-20-7	Xylene (mixed isomers)	5.0E-03	5	5	1.4E+00	4.4E-02	8.4E-01

SCREEN 7.3
SUBSURFACE SOILS
CONCENTRATION
CALCULATOR

UCL Percentile

Mean

Analytical Data (Up to 50 Data Points)

	1	2	3	4	5	6	7	8	9	10	11
Calculated Distribution of Data	Default Detection Limit (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sample Name		S-5.5-B1	S-2-D1	S-6.5-SB1	S-7-SB1	S-11.5-SB1						
Date Sampled		4/10/97	4/10/97	10/10/97	10/10/97	10/10/97						
Normal	0.005	0.009	0.0047	0.0047	0.0047	0.0047						
Normal	0.005	0.0047			0.0047							
Normal	0.005	0.0047			0.0047							
Normal	0.005	0.0047			0.0047							
Lognormal	0.005	0.38	0.0047	0.52	0.0047	0.0047						
Normal	0	0.19	0.047	0.047	0.047	0.047						
Normal	0.005	0.0047			0.0047							
Lognormal	0.005	0.2	0.0047	0.35	0.0047	0.0047						
Normal	0.005	0.0047			0.0047							
Normal	0.005	0.0047			0.0047							
Normal	0.005	0.0047			0.0047							
Lognormal	0.005	1.2	0.0047	1.4	0.0047	0.0047						

Site Name: Ocean Avenue | Completed By: Mark Detterman
Site Location: 1372 Ocean Avenue, Emeryville | Date Completed: 8/21/1998 | 1 of 1

TIER 2 GROUNDWATER CONCENTRATION DATA SUMMARY

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	Benzene - CA	5.0E-04	4	4	4.7E-04	4.7E-04	4.7E-04
75-35-4	Dichloroethene, 1,1-	2.0E-03	4	4	2.8E-03	1.6E-03	2.7E-03
156-59-2	Dichloroethene, cis-1,2-	2.0E-03	4	4	1.7E-02	1.4E-02	1.8E-02
156-60-5	Dichloroethene,1,2-trans-	2.0E-03	4	4	2.8E-03	2.4E-03	2.7E-03
100-41-4	Ethylbenzene	5.0E-04	4	4	4.7E-04	4.7E-04	4.7E-04
1634-04-4	Methyl t-Butyl Ether	5.0E-03	4	4	4.7E-02	2.7E-02	5.4E-02
127-18-4	Tetrachloroethene	3.0E-03	4	4	6.0E-03	3.2E-03	5.6E-03
108-88-3	Toluene	5.0E-04	4	4	4.7E-04	4.7E-04	4.7E-04
79-01-6	Trichloroethene	2.0E-03	4	4	8.2E-02	6.0E-02	8.7E-02
75-69-4	Trichlorofluoromethane	2.0E-03	4	4	3.8E-03	2.7E-03	3.7E-03
75-01-4	Vinyl chloride	5.0E-04	4	4	3.0E-03	2.0E-03	2.9E-03
1330-20-7	Xylene (mixed isomers)	5.0E-04	4	4	6.9E-04	5.3E-04	6.5E-04

SCREEN 7.1
GROUNDWATER
CONCENTRATION
CALCULATOR

Choose UCL Percentile

Mean

Analytical Data (Up to 50 Data Points)

	1	2	3	4	5	6	7	8	9	10	11
Calculated Distribution of Data	Default Detection Limit (mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Well Name		W-B1	MW-1	MW-1	MW-1							
Date Sampled		4/10/97	10/19/97	3/6/98	6/21/98							
Normal	0.0005	0.00047	0.00047	0.00047	0.00047							
Normal	0.002	0.00123	0.00057	0.0028	0.0019							
Normal	0.002	0.0094	0.012	0.016	0.017							
Normal	0.002	0.0024	0.0022	0.0028	0.0021							
Normal	0.0005	0.00047	0.00047	0.00047	0.00047							
Normal	0.005	0.0085	0.047	0.047	0.0071							
Normal	0.003	0.00123	0.005	0.0028	0.0028							
Normal	0.0005	0.00047	0.00047	0.00047	0.00047							
Normal	0.002	0.04	0.041	0.092	0.078							
Normal	0.002	0.0027	0.0025	0.0098	0.0019							
Normal	0.0005	0.0015	0.0011	0.003	0.0022							
Normal	0.0005	0.00056	0.00047	0.00047	0.00047							

RBCA SITE ASSESSMENT | Input Screen 6.3

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Benzene - CA	
Dichloroethene, 1,1-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Methyl t-Butyl Ether	
Tetrachloroethene	
Toluene	
Trichloroethene	
Trichlorofluoromethane	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: Ocean Avenue Completed By: Mark Detterman

Site Location: 1372 Ocean Avenue, Emer Date Completed: 8/21/1998

RBCA SITE ASSESSMENT | Input Screen 9.4

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater	
	Residential Receptor	Comm./Ind. Receptor
Benzene - CA	1.0E+0	1.0E+0
Dichloroethene, 1,1-	1.0E+0	1.0E+0
Dichloroethene, cis-1,2-	1.0E+0	1.0E+0
Dichloroethene,1,2-trans-	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Methyl t-Butyl Ether	1.0E+0	1.0E+0
Tetrachloroethene	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Trichloroethene	1.0E+0	1.0E+0
Trichlorofluoromethane	1.0E+0	1.0E+0
Vinyl chloride	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA

Completed By: Mark Detterman
Date Completed: 8/21/1998

RBCA SITE ASSESSMENT | Input Screen 9.1

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Benzene - CA	
Dichloroethene, 1,1-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	228
Methyl t-Butyl Ether	
Tetrachloroethene	
Toluene	28
Trichloroethene	
Trichlorofluoromethane	
Vinyl chloride	
Xylene (mixed isomers)	360

Site Name: Ocean Avenue Completed By: Mark Detterman

Site Location: 1372 Ocean Avenue, Emery\ Date Completed: 8/21/1998

RBCA SITE ASSESSMENT

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Benzene - CA		
Dichloroethene, 1,1-		
Dichloroethene, cis-1,2-		
Dichloroethene,1,2-trans-		
Ethylbenzene		
Methyl t-Butyl Ether		
Tetrachloroethene		
Toluene		
Trichloroethene		
Trichlorofluoromethane		
Vinyl chloride		
Xylene (mixed isomers)		

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA

Completed By: Mark Detterman
Date Completed: 8/21/1998

Appendix B

Building Parameter Modification Calculations

Residential Building Volume/Area Ratio (cm):

This calculation utilizes the smallest unit of the proposed six unit redevelopment at the site, Unit 1, to obtain the lowest (most conservative) volume/area ratio possible.

$$16 \text{ ft} \times 23 \text{ ft} \times 20 \text{ ft (W x L x H)} = \frac{488 \text{ cm} \times 701 \text{ cm} \times 610 \text{ cm}}{488 \text{ cm} \times 701 \text{ cm}} = 610{:}1$$

Building Volume/Area Ratio Utilized in Modeling: 600 cm

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Ocean Avenue — Job Identification: 98078 — Software: GSI RBCA Spreadsheet
Site Location: 1372 Ocean Avenue, Emeryville — Date Completed: 8/21/98 — Version: 1.0.1
Completed By: Mark Detterman

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	***TRUE***			***TRUE***	
AAFd	Age adjustment on skin surface area	***TRUE***			***TRUE***	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	TRUE	FALSE	TRUE
S.v	Volatilization from Subsurface Soils	TRUE	FALSE	
GW.v	Volatilization from Groundwater	TRUE	FALSE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	FALSE	
GW.b	Vapors from Groundwater	TRUE	FALSE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	FALSE	
S.l	Leaching to Groundwater from all Soils	FALSE	FALSE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		FALSE		FALSE
S	Inhalation receptor (cm)		TRUE		FALSE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	***1.0E-06***
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	1.0E+00
Opt	Calculation Option (1, 2, or 3)	3	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***7.0E+04***	***2.6E+04***
W	Length of affect. soil parallel to wind (cm)	***4.6E+02***	***9.1E+01***
W.gw	Length of affect. soil parallel to groundwater (cm)	***4.6E+02***	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	***7.6E+01***	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	2.5E+03
Ugw.tr	Groundwater seepage velocity (cm/yr)	6.6E+03
Ks	Saturated hydraulic conductivity(cm/s)	
grad	Groundwater gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
phi.eff	Effective porosity in water-bearing unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	***1.1E+02***		
hv	Vadose zone thickness (cm)	***1.2E+02***		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	0.01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	***2.3E+02***		
Ls	Depth to top of affected subsurface soil (cm)	***1.1E+02***		
Lsubs	Thickness of affected subsurface soils (cm)	***7.6E+01***		
pH	Soil/groundwater pH	***7.5***		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	***6.0E+02***	***6.0E+02***
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	***2.5E+00***	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)		
ay	Transverse dispersivity (cm)		
az	Vertical dispersivity (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-2	Benzene - CA	O	78.1		9.30E-02		1.10E-05		1.58		5.29E-03	2.20E-01		9.52E+01		1.75E+03				
75-35-4	Dichloroethene, 1,1-	O	96.94		9.40E-02		9.50E-06		1.81		5.29E-02	2.20E+00		5.00E+02		4.00E+02				
156-59-2	Dichloroethene, cis-1,2-	C	96.936	4	7.36E-02	4	1.13E-05	4	1.38	8	3.19E-02	1.33E+00	4	2.00E+02	5	8.00E+02	5			
156-60-5	Dichloroethene,1,2-trans-	C	96.936	4	7.07E-02	4	1.19E-05	4	1.46	4	5.32E-03	2.21E-01	4	3.31E+02	4	6.00E+02	5			
100-41-4	Ethylbenzene	A	106.2	5	7.60E-02	A	8.50E-06	A	1.98	A	7.69E-03	3.20E-01	A	1.00E+01	4	1.52E+02	5			
1634-04-4	Methyl t-Butyl Ether	O	88.146	5	7.92E-02	6	9.41E-05	7	1.08	A	5.77E-04	2.40E-02		2.49E+02		4.80E+04	A			
127-18-4	Tetrachloroethene	C	165.83	4	7.20E-02	4	8.20E-06	4	2.42	29	2.90E-02	1.21E+00	4	1.90E+01	4	1.43E+02	4			
108-88-3	Toluene	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	A	6.25E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29			
79-01-6	Trichloroethene	C	131.4	23	8.18E-02	6	1.05E-04	7	1.26	11	1.00E-02	4.17E-01	10	5.80E+01	23	1.00E+03	23			
75-69-4	Trichlorofluoromethane	C	137.4	4	8.70E-02	4	9.70E-06	4	2.49	4	5.83E-02	2.42E+00	4	7.96E+02	4	2.47E+03	4			
75-01-4	Vinyl chloride	C	62.5	4	1.06E-01	4	1.23E-05	4	0.06	4	8.60E-02	3.58E+00	4	2.66E+03	4	2.54E+03	4			
1330-20-7	Xylene (mixed isomers)	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	A	6.97E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5			

Site Name: Ocean Avenue Site Location: 1372 Ocean Avenue, Emei Completed By: Mark Detterman Date Completed: 8/21/1998

Software version: 1.0.1

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-2	Benzene - CA			1.70E-03		1.00E-01		1.00E-01		A	TRUE
75-35-4	Dichloroethene, 1,1-	9.00E-03		9.00E-03		6.00E-02		1.80E-01			TRUE
156-59-2	Dichloroethene, cis-1,2-	1.00E-02	R	-		-		-		D	FALSE
156-60-5	Dichloroethene,1,2-trans-	2.00E-02	R	-		-		-			FALSE
100-41-4	Ethylbenzene	1.00E-01	A	2.86E-01	A	-		-		D	FALSE
1634-04-4	Methyl t-Butyl Ether	5.00E-03	R	8.57E-01	R	-		-			FALSE
127-18-4	Tetrachloroethene	1.00E-02	R	-		5.20E-02	R	2.03E-03	R	C-B2	TRUE
108-88-3	Toluene	2.00E-01	A,R	1.14E-01	A,R	-		-		D	FALSE
79-01-6	Trichloroethene	6.00E-03	R	-		1.10E-02	R	6.00E-03	R		TRUE
75-69-4	Trichlorofluoromethane	3.00E-01	R	2.00E-01	R	-		-			FALSE
75-01-4	Vinyl chloride	-		-		1.90E+00	R	3.00E-01	R	A	TRUE
1330-20-7	Xylene (mixed isomers)	2.00E+00	A,R	2.00E+00	A	-		-		D	FALSE

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, En | Completed By: Mark Detterman | Date Completed: 8/21/1998

Software version: 1.0.1

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) Saturated	Unsaturated	ref
71-43-2	Benzene - CA	1.00E-03		3.20E+00		1	0.1	0.0005		0.005				
75-35-4	Dichloroethene, 1,1-	6.00E-03		0.00E+00		1	0.1	0.0005		0.005				
156-59-2	Dichloroethene, cis-1,2-	7.00E-02	56 FR 3526 (30 Jan 91)			1	0.5	0.001	C	0.005	S			
156-60-5	Dichloroethene,1,2-trans-	1.00E-01	56 FR 3526 (30 Jan 91)			1	0.5	0.001	C	0.005	S			
100-41-4	Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.002	C	0.005	S	228	228	H
1634-04-4	Methyl t-Butyl Ether			1.44E+02	ACGIH	1	0.5					360	180	H
127-18-4	Tetrachloroethene	5.00E-03	56 FR 3526 (30 Jan 91)	1.70E+02	ACGIH	1	0.5	0.0005	C			720	720	H
108-88-3	Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	1	0.5	0.002	C	0.005	S	28	28	H
79-01-6	Trichloroethene	5.00E-03	52 FR 25690 (08 Jul 87)	2.69E+02	ACGIH	1	0.5	0.001	C	0.005	S	1653	1653	H
75-69-4	Trichlorofluoromethane			5.60E+03	OSHA	1	0.5	0.005	C			720	720	H
75-01-4	Vinyl chloride	2.00E-03	52 FR 25690 (08 Jul 87)	1.30E+01	ACGIH	1	0.5	0.002	C	0.01	S	2875	2875	H
1330-20-7	Xylene (mixed isomers)	1.00E+01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.005	C	0.005	S	360	360	H

Site Name: Ocean Avenue Site Location: 1372 Ocean Avenue, Emeryville, CA Completed By: Mark Detterman Date Completed: 8/21/1998

Software version: 1.0.1

RBCA SITE ASSESSMENT | Input Screen 6.3

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Benzene - CA	
Dichloroethene, 1,1-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	
Methyl t-Butyl Ether	
Tetrachloroethene	
Toluene	
Trichloroethene	
Trichlorofluoromethane	
Vinyl chloride	
Xylene (mixed isomers)	

Site Name: Ocean Avenue Completed By: Mark Detterman

Site Location: 1372 Ocean Avenue, Emer Date Completed: 8/21/1998

RBCA SITE ASSESSMENT | Input Screen 9.4

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater	
	Residential Receptor	Comm./Ind. Receptor
Benzene - CA	1.0E+0	1.0E+0
Dichloroethene, 1,1-	1.0E+0	1.0E+0
Dichloroethene, cis-1,2-	1.0E+0	1.0E+0
Dichloroethene,1,2-trans-	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Methyl t-Butyl Ether	1.0E+0	1.0E+0
Tetrachloroethene	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Trichloroethene	1.0E+0	1.0E+0
Trichlorofluoromethane	1.0E+0	1.0E+0
Vinyl chloride	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA

Completed By: Mark Detterman
Date Completed: 8/21/1998

RBCA SITE ASSESSMENT | Input Screen 9.1

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Benzene - CA	
Dichloroethene, 1,1-	
Dichloroethene, cis-1,2-	
Dichloroethene,1,2-trans-	
Ethylbenzene	228
Methyl t-Butyl Ether	
Tetrachloroethene	
Toluene	28
Trichloroethene	
Trichlorofluoromethane	
Vinyl chloride	
Xylene (mixed isomers)	360

Site Name: Ocean Avenue Completed By: Mark Detterman

Site Location: 1372 Ocean Avenue, Emeryv Date Completed: 8/21/1998

RBCA SITE ASSESSMENT

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Benzene - CA		
Dichloroethene, 1,1-		
Dichloroethene, cis-1,2-		
Dichloroethene,1,2-trans-		
Ethylbenzene		
Methyl t-Butyl Ether		
Tetrachloroethene		
Toluene		
Trichloroethene		
Trichlorofluoromethane		
Vinyl chloride		
Xylene (mixed isomers)		

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA

Completed By: Mark Detterman
Date Completed: 8/21/1998

Appendix E

Baseline Risk Summary Table,

Exposure Concentration and Intake Calculation Tables

and

Tier 2 Pathway Risk Calculation Tables

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.3**

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA
Completed By: Mark Detterman
Date Completed: 8/21/1998

TIER 2 BASELINE RISK SUMMARY TABLE

	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk Limit(s) Exceeded?	Hazard Quotient		Hazard Index		Toxicity Limit(s) Exceeded?
EXPOSURE PATHWAY	Maximum Value	Target Risk	Total Value	Target Risk		Maximum Value	Applicable Limit	Total Value	Applicable Limit	
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	7.9E-10	1.0E-6	1.4E-9	1.0E-6	☐	2.5E-6	1.0E+0	3.4E-6	1.0E+0	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	2.8E-7	1.0E-6	4.5E-7	1.0E-6	☐	1.1E-4	1.0E+0	1.6E-4	1.0E+0	☐
SOIL EXPOSURE PATHWAYS										
Complete:	8.1E-8	1.0E-6	8.6E-8	1.0E-6	☐	3.8E-4	1.0E+0	4.5E-4	1.0E+0	☐
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-6	■	NC	1.0E+0	NC	1.0E+0	■
CRITICAL EXPOSURE PATHWAY (Select Maximum Values From Complete Pathways)										
	2.8E-7	1.0E-6	4.5E-7	1.0E-6	☐	3.8E-4	1.0E+0	4.5E-4	1.0E+0	☐

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | 4 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor		3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2)		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day)		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4)	
Benzene - CA	5.6E-3								
Dichloroethene, 1,1-	4.7E-3								
Dichloroethene, cis-1,2-	4.7E-3								
Dichloroethene,1,2-trans-	4.7E-3								
Ethylbenzene	2.9E-2								
Methyl t-Butyl Ether	7.6E-3								
Tetrachloroethene	4.7E-3								
Toluene	2.4E-2								
Trichloroethene	4.7E-3								
Trichlorofluoromethane	4.7E-3								
Vinyl chloride	4.7E-3								
Xylene (mixed isomers)	4.4E-2								

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville | Completed By: Mark Detterman | Date Completed: 8/21/1998 | 5 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Residential		3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site Residential		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Residential		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4) On-Site Residential		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from subsurface & groundwater routes.) On-Site Residential	
Benzene - CA	4.7E-4	2.0E+3		2.4E-7		8.8E-2		2.1E-8		2.1E-8	
Dichloroethene, 1,1-	1.6E-3	3.3E+2		5.0E-6		8.8E-2		4.4E-7		4.4E-7	
Dichloroethene, cis-1,2-	1.4E-2	6.3E+2		2.2E-5		2.1E-1		4.4E-6		4.4E-6	
Dichloroethene,1,2-trans-	2.4E-3	2.2E+3		1.1E-6		2.1E-1		2.3E-7		2.3E-7	
Ethylbenzene	4.7E-4	1.9E+3		2.4E-7		2.1E-1		5.0E-8		5.0E-8	
Methyl t-Butyl Ether	2.7E-2	7.1E+2		3.9E-5		2.1E-1		7.9E-6		7.9E-6	
Tetrachloroethene	3.2E-3	7.3E+2		4.4E-6		8.8E-2		3.9E-7		3.9E-7	
Toluene	4.7E-4	2.0E+3		2.4E-7		2.1E-1		4.8E-8		4.8E-8	
Trichloroethene	6.0E-2	3.9E+2		1.6E-4		8.8E-2		1.4E-5		1.4E-5	
Trichlorofluoromethane	2.7E-3	3.2E+2		8.5E-6		2.1E-1		1.8E-6		1.8E-6	
Vinyl chloride	2.0E-3	1.8E+2		1.1E-5		8.8E-2		9.5E-7		9.5E-7	
Xylene (mixed isomers)	5.3E-4	2.1E+3		2.4E-7		2.1E-1		5.0E-8		5.0E-8	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | 2 OF 4

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential		(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential		TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential		(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	
Benzene - CA	A	2.1E-8		1.0E-1	2.1E-9		4.9E-8		1.7E-3	2.9E-5	
Dichloroethene, 1,1-		4.4E-7		1.8E-1	7.9E-8		1.0E-6		9.0E-3	1.1E-4	
Dichloroethene, cis-1,2-	D										
Dichloroethene,1,2-trans-											
Ethylbenzene	D						5.0E-8		2.9E-1	1.7E-7	
Methyl t-Butyl Ether							7.9E-6		8.6E-1	9.3E-6	
Tetrachloroethene	C-B2	3.9E-7		2.0E-3	7.9E-10						
Toluene	D						4.8E-8		1.1E-1	4.2E-7	
Trichloroethene		1.4E-5		6.0E-3	8.3E-8						
Trichlorofluoromethane							1.8E-6		2.0E-1	8.8E-6	
Vinyl chloride	A	9.5E-7		3.0E-1	2.8E-7						
Xylene (mixed isomers)	D						5.0E-8		2.0E+0	2.5E-8	

Total Pathway Carcinogenic Risk = 4.5E-7 | 0.0E+0

Total Pathway Hazard Index = 1.6E-4 | 0.0E+0

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 |

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS — ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND DUST INHALATION Constituents of Concern	Exposure Concentration 1) Source Medium Surface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor On-Site Residential		3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site Residential		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Residential		5) Average Daily Intake Rate (mg/kg-day) (3) X (4) On-Site Residential	
Benzene - CA	5.6E-3	7.2E+5		7.7E-9		1.2E-1		9.1E-10	
Dichloroethene, 1,1-	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Dichloroethene, cis-1,2-	4.7E-3	7.2E+5		6.5E-9		2.7E-1		1.8E-9	
Dichloroethene,1,2-trans-	4.7E-3	7.2E+5		6.5E-9		2.7E-1		1.8E-9	
Ethylbenzene	2.9E-2	7.2E+5		4.0E-8		2.7E-1		1.1E-8	
Methyl t-Butyl Ether	7.6E-2	7.2E+5		1.1E-7		2.7E-1		2.9E-8	
Tetrachloroethene	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Toluene	2.4E-2	7.2E+5		3.3E-8		2.7E-1		9.0E-9	
Trichloroethene	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Trichlorofluoromethane	4.7E-3	7.2E+5		6.5E-9		2.7E-1		1.8E-9	
Vinyl chloride	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Xylene (mixed isomers)	4.4E-2	7.2E+5		6.2E-8		2.7E-1		1.7E-8	

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | *2 OF 9*

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR Air EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Residential		3) Exposure Medium: Outdoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site Residential		4) Exposure Multiplier: ((IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Residential		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4) On-Site Residential	
Benzene - CA	5.6E-3	7.2E+5		7.7E-9		1.2E-1		9.1E-10	
Dichloroethene, 1,1-	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Dichloroethene, cis-1,2-	4.7E-3	7.2E+5		6.5E-9		2.7E-1		1.8E-9	
Dichloroethene,1,2-trans-	4.7E-3	7.2E+5		6.5E-9		2.7E-1		1.8E-9	
Ethylbenzene	2.9E-2	7.2E+5		4.0E-8		2.7E-1		1.1E-8	
Methyl t-Butyl Ether	7.6E-2	7.2E+5		1.1E-7		2.7E-1		2.9E-8	
Tetrachloroethene	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Toluene	2.4E-2	7.2E+5		3.3E-8		2.7E-1		9.0E-9	
Trichloroethene	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Trichlorofluoromethane	4.7E-3	7.2E+5		6.5E-9		2.7E-1		1.8E-9	
Vinyl chloride	4.7E-3	7.2E+5		6.5E-9		1.2E-1		7.7E-10	
Xylene (mixed isomers)	4.4E-2	7.2E+5		6.2E-8		2.7E-1		1.7E-8	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposue area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville | Completed By: Mark Detterman | Date Completed: 8/21/1998 | 3 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor — On-Site Residential		3) Exposure Medium — Outdoor Air: POE Conc. (mg/m^3) (1) / (2) — On-Site Residential		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day) — On-Site Residential		5) Average Daily Intake Rate (mg/kg-day) (3) X (4) — On-Site Residential		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface, subsurface & groundwater routes.) — On-Site Residential	
Benzene - CA	4.7E-4	2.3E+6		2.1E-10		1.2E-1		2.4E-11		1.8E-9	
Dichloroethene, 1,1-	1.6E-3	3.8E+5		4.3E-9		1.2E-1		5.0E-10		2.0E-9	
Dichloroethene, cis-1,2-	1.4E-2	7.3E+5		1.9E-8		2.7E-1		5.1E-9		8.7E-9	
Dichloroethene,1,2-trans-	2.4E-3	2.5E+6		9.5E-10		2.7E-1		2.6E-10		3.8E-9	
Ethylbenzene	4.7E-4	2.3E+6		2.1E-10		2.7E-1		5.7E-11		2.2E-8	
Methyl t-Butyl Ether	2.7E-2	6.6E+5		4.1E-8		2.7E-1		1.1E-8		6.9E-8	
Tetrachloroethene	3.2E-3	8.5E+5		3.8E-9		1.2E-1		4.4E-10		2.0E-9	
Toluene	4.7E-4	2.3E+6		2.0E-10		2.7E-1		5.6E-11		1.8E-8	
Trichloroethene	6.0E-2	4.4E+5		1.4E-7		1.2E-1		1.6E-8		1.8E-8	
Trichlorofluoromethane	2.7E-3	3.7E+5		7.3E-9		2.7E-1		2.0E-9		5.6E-9	
Vinyl chloride	2.0E-3	2.1E+5		9.2E-9		1.2E-1		1.1E-9		2.6E-9	
Xylene (mixed isomers)	5.3E-4	2.5E+6		2.1E-10		2.7E-1		5.8E-11		3.4E-8	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | *1 OF 4*

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ● (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential		(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential		TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential		(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	
Benzene - CA	A	1.8E-9		1.0E-1	1.8E-10		4.3E-9		1.7E-3	2.5E-6	
Dichloroethene, 1,1-		2.0E-9		1.8E-1	3.7E-10		4.8E-9		9.0E-3	5.3E-7	
Dichloroethene, cis-1,2-	D										
Dichloroethene,1,2-trans-											
Ethylbenzene	D						2.2E-8		2.9E-1	7.8E-8	
Methyl t-Butyl Ether							6.9E-8		8.6E-1	8.0E-8	
Tetrachloroethene	C-B2	2.0E-9		2.0E-3	4.0E-12						
Toluene	D						1.8E-8		1.1E-1	1.6E-7	
Trichloroethene		1.8E-8		6.0E-3	1.1E-10						
Trichlorofluoromethane							5.6E-9		2.0E-1	2.8E-8	
Vinyl chloride	A	2.6E-9		3.0E-1	7.9E-10						
Xylene (mixed isomers)	D						3.4E-8		2.0E+0	1.7E-8	

Total Pathway Carcinogenic Risk = **1.4E-9** **0.0E+0**

Total Pathway Hazard Index = **3.4E-6** **0.0E+0**

Site Name: Ocean Avenue Site Location: 1372 Ocean Avenue, Emeryville, CA Completed By: Mark Detterr Date Completed: 8/21/1998

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED = PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: Exposure Concentration

DERMAL CONTACT

Constituents of Concern	1) Source Medium: Surface Soil Conc. (mg/kg)	2) Exposure Multiplier {SAxAFxABSxCFxEFxED}/{BWxAT} (kg/kg-day): On-Site Residential	2) Exposure Multiplier: On-Site Commercial	3) Average Daily Intake Rate (mg/kg-day) (1) x (2): On-Site Residential	3) Average Daily Intake Rate: On-Site Commercial
Benzene - CA	5.6E-3		1.6E-6		9.1E-9
Dichloroethene, 1,1-	4.7E-3		1.6E-6		7.7E-9
Dichloroethene, cis-1,2-	4.7E-3		2.3E-5		1.1E-7
Dichloroethene,1,2-trans-	4.7E-3		2.3E-5		1.1E-7
Ethylbenzene	2.9E-2		2.3E-5		6.6E-7
Methyl t-Butyl Ether	7.6E-2		2.3E-5		1.7E-6
Tetrachloroethene	4.7E-3		8.2E-6		3.8E-8
Toluene	2.4E-2		2.3E-5		5.4E-7
Trichloroethene	4.7E-3		8.2E-6		3.8E-8
Trichlorofluoromethane	4.7E-3		2.3E-5		1.1E-7
Vinyl chloride	4.7E-3		8.2E-6		3.8E-8
Xylene (mixed isomers)	4.4E-2		2.3E-5		1.0E-6

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (mg/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryvill | Completed By: Mark Detterman | Date Completed: 8/21/1998 | 7 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: INGESTION	Exposure Concentration	2) Exposure Multiplier (IRxCFxEFxED)/(BWxAT) (kg/kg-day)		3) Average Daily Intake Rate (mg/kg-day) (1) x (2)		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.)	
	1) Source Medium						
Constituents of Concern	Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial
Benzene - CA	5.6E-3		9.2E-7		5.1E-9		1.4E-8
Dichloroethene, 1,1-	4.7E-3		9.2E-7		4.3E-9		1.2E-8
Dichloroethene, cis-1,2-	4.7E-3		2.6E-6		1.2E-8		1.2E-7
Dichloroethene,1,2-trans-	4.7E-3		2.6E-6		1.2E-8		1.2E-7
Ethylbenzene	2.9E-2		2.6E-6		7.4E-8		7.4E-7
Methyl t-Butyl Ether	7.6E-2		2.6E-6		1.9E-7		1.9E-6
Tetrachloroethene	4.7E-3		9.2E-7		4.3E-9		4.3E-8
Toluene	2.4E-2		2.6E-6		6.0E-8		6.0E-7
Trichloroethene	4.7E-3		9.2E-7		4.3E-9		4.3E-8
Trichlorofluoromethane	4.7E-3		2.6E-6		1.2E-8		1.2E-7
Vinyl chloride	4.7E-3		9.2E-7		4.3E-9		4.3E-8
Xylene (mixed isomers)	4.4E-2		2.6E-6		1.1E-7		1.1E-6

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (mg/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | 3 OF 4

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential	(4) Individual COC Risk (2) x (3) On-Site Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial
Benzene - CA	A		1.4E-8	1.0E-1		1.4E-9					
Dichloroethene, 1,1-			1.2E-8	6.0E-2		7.2E-10		3.4E-8	9.0E-3		3.7E-6
Dichloroethene, cis-1,2-	D							1.2E-7	1.0E-2		1.2E-5
Dichloroethene,1,2-trans-								1.2E-7	2.0E-2		6.0E-6
Ethylbenzene	D							7.4E-7	1.0E-1		7.4E-6
Methyl t-Butyl Ether								1.9E-6	5.0E-3		3.8E-4
Tetrachloroethene	C-B2		4.3E-8	5.2E-2		2.2E-9		1.2E-7	1.0E-2		1.2E-5
Toluene	D							6.0E-7	2.0E-1		3.0E-6
Trichloroethene			4.3E-8	1.1E-2		4.7E-10		1.2E-7	6.0E-3		2.0E-5
Trichlorofluoromethane								1.2E-7	3.0E-1		4.0E-7
Vinyl chloride	A		4.3E-8	1.9E+0		8.1E-8					
Xylene (mixed isomers)	D							1.1E-6	2.0E+0		5.7E-7
Total Pathway Carcinogenic Risk =					**0.0E+0**	**8.6E-8**	***Total Pathway Hazard Index =***			**0.0E+0**	**4.5E-4**

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | *8 OF 9*

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/ GROUNDWATER INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor		3) Exposure Medium: Groundwater: POE Conc. (mg/L) (1)/(2)		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (L/kg-day)		5) Average Daily Intake Rate: (mg/kg-day) (3) x (4)	
Benzene - CA	5.6E-3								
Dichloroethene, 1,1-	4.7E-3								
Dichloroethene, cis-1,2-	4.7E-3								
Dichloroethene,1,2-trans-	4.7E-3								
Ethylbenzene	2.9E-2								
Methyl t-Butyl Ether	7.6E-2								
Tetrachloroethene	4.7E-3								
Toluene	2.4E-2								
Trichloroethene	4.7E-3								
Trichlorofluoromethane	4.7E-3								
Vinyl chloride	4.7E-3								
Xylene (mixed isomers)	4.4E-2								

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body Weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | 9 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium — Groundwater Conc. (mg/L)	2) NAF Value (dim) — Receptor		3) Exposure Medium — Groundwater: POE Conc. (mg/L) (1)/(2)		4) Exposure Multiplier — (IRxEFxED)/(BWxAT) (L/kg-day)		5) Average Daily Intake Rate — (mg/kg-day) (3) x (4)		MAX. PATHWAY INTAKE (mg/kg-day) *(Maximum intake of active pathways soil leaching & groundwater routes.)*	
Benzene - CA	4.7E-4										
Dichloroethene, 1,1-	1.6E-3										
Dichloroethene, cis-1,2-	1.4E-2										
Dichloroethene,1,2-trans-	2.4E-3										
Ethylbenzene	4.7E-4										
Methyl t-Butyl Ether	2.7E-2										
Tetrachloroethene	3.2E-3										
Toluene	4.7E-4										
Trichloroethene	6.0E-2										
Trichlorofluoromethane	2.7E-3										
Vinyl chloride	2.0E-3										
Xylene (mixed isomers)	5.3E-4										

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Ocean Avenue | Site Location: 1372 Ocean Avenue, Emeryville, CA | Completed By: Mark Detterman | Date Completed: 8/21/1998 | *4 OF 4*

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ☒ (CHECKED IF PATHWAYS ARE ACTIVE)

		CARCINOGENIC RISK					TOXIC EFFECTS				
Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3)		(5) Total Toxicant Intake Rate (mg/kg/day)		(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6)	
Benzene - CA	A			1.0E-1							
Dichloroethene, 1,1-				6.0E-2					9.0E-3		
Dichloroethene, cis-1,2-	D								1.0E-2		
Dichloroethene,1,2-trans-									2.0E-2		
Ethylbenzene	D								1.0E-1		
Methyl t-Butyl Ether									5.0E-3		
Tetrachloroethene	C-B2			5.2E-2					1.0E-2		
Toluene	D								2.0E-1		
Trichloroethene				1.1E-2					6.0E-3		
Trichlorofluoromethane									3.0E-1		
Vinyl chloride	A			1.9E+0							
Xylene (mixed isomers)	D								2.0E+0		

Total Pathway Carcinogenic Risk = **0.0E+0** **0.0E+0**

Total Pathway Hazard Index = **0.0E+0** **0.0E+0**

Appendix F

SSTL Values for Surface, Subsurface, and Groundwater Pathways

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.1

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA

Completed By: Mark Detterman
Date Completed: 8/21/1998

SURFACE SOIL SSTL VALUES (< 2.5 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

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

CONSTITUENTS OF CONCERN		Representative Concentration		Soil Leaching to Groundwater			X Ingestion, Inhalation and Dermal Contact		X Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)		Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene - CA	5.6E-3	NA	NA	NA	6.1E+1	3.9E+0		1.3E+2	3.9E+0	☐	<1
75-35-4	Dichloroethene, 1,1-	4.7E-3	NA	NA	NA	3.4E+1	6.5E+0		1.8E+2	6.5E+0	☐	<1
156-59-2	Dichloroethene, cis-1,2-	4.7E-3	NA	NA	NA	>Res	>Res		>Res	>Res	☐	<1
156-60-5	Dichloroethene,1,2-trans-	4.7E-3	NA	NA	NA	>Res	>Res		>Res	>Res	☐	<1
100-41-4	Ethylbenzene	2.9E-2	NA	NA	NA	>Res	>Res		>Res	>Res	☐	<1
1634-04-4	Methyl t-Butyl Ether	7.6E-2	NA	NA	NA	>Res	2.0E+2		2.4E+2	2.0E+2	☐	<1
127-18-4	Tetrachloroethene	4.7E-3	NA	NA	NA	>Res	2.1E+0		6.4E+1	2.1E+0	☐	<1
108-88-3	Toluene	2.4E-2	NA	NA	NA	>Res	>Res		>Res	>Res	☐	<1
79-01-6	Trichloroethene	4.7E-3	NA	NA	NA	>Res	1.0E+1		3.0E+2	1.0E+1	☐	<1
75-69-4	Trichlorofluoromethane	4.7E-3	NA	NA	NA	>Res	>Res		>Res	>Res	☐	<1
75-01-4	Vinyl chloride	4.7E-3	NA	NA	NA	2.0E+1	5.8E-2		1.7E+0	5.8E-2	☐	<1
1330-20-7	Xylene (mixed isomers)	4.4E-2	NA	NA	NA	>Res	>Res		>Res	>Res	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

Software: GSI RBCA Spreadsheet
Version: 1.0.1
Serial: G-301-WWX-744

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA
Completed By: Mark Detterman
Date Completed: 8/21/1998

SUBSURFACE SOIL SSTL VALUES (> 2.5 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

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

CONSTITUENTS OF CONCERN		Representative Concentration		Soil Leaching to Groundwater				Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene - CA	5.6E-3	NA	NA	NA	NA	NA	6.1E+1	NA	6.1E+1	☐	<1
75-35-4	Dichloroethene, 1,1-	4.7E-3	NA	NA	NA	NA	NA	3.4E+1	NA	3.4E+1	☐	<1
156-59-2	Dichloroethene, cis-1,2-	4.7E-3	NA	NA	NA	NA	NA	NA	NA	>Res	☐	<1
156-60-5	Dichloroethene,1,2-trans-	4.7E-3	NA	NA	NA	NA	NA	NA	NA	>Res	☐	<1
100-41-4	Ethylbenzene	2.9E-2	NA	NA	NA	NA	NA	>Res	NA	>Res	☐	<1
1634-04-4	Methyl t-Butyl Ether	7.6E-2	NA	NA	NA	NA	NA	>Res	NA	>Res	☐	<1
127-18-4	Tetrachloroethene	4.7E-3	NA	NA	NA	NA	NA	>Res	NA	>Res	☐	<1
108-88-3	Toluene	2.4E-2	NA	NA	NA	NA	NA	>Res	NA	>Res	☐	<1
79-01-6	Trichloroethene	4.7E-3	NA	NA	NA	NA	NA	>Res	NA	>Res	☐	<1
75-69-4	Trichlorofluoromethane	4.7E-3	NA	NA	NA	NA	NA	>Res	NA	>Res	☐	<1
75-01-4	Vinyl chloride	4.7E-3	NA	NA	NA	NA	NA	2.0E+1	NA	2.0E+1	☐	<1
1330-20-7	Xylene (mixed isomers)	4.4E-2	NA	NA	NA	NA	NA	>Res	NA	>Res	☐	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 9.3**

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA

Completed By: Mark Detterman
Date Completed: 8/21/1998

GROUNDWATER SSTL VALUES

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

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

CONSTITUENTS OF CONCERN		Representative Concentration		Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene - CA	4.7E-4	NA	NA	NA	2.2E-1	NA	1.9E+2	NA	2.2E-1	☐	<1
75-35-4	Dichloroethene, 1,1-	1.6E-3	NA	NA	NA	2.1E-2	NA	1.8E+1	NA	2.1E-2	☐	<1
156-59-2	Dichloroethene, cis-1,2-	1.4E-2	NA	NA	NA	NA	NA	NA	NA	>Sol	☐	<1
156-60-5	Dichloroethene,1,2-trans-	2.4E-3	NA	NA	NA	NA	NA	NA	NA	>Sol	☐	<1
100-41-4	Ethylbenzene	4.7E-4	NA	NA	NA	>Sol	NA	>Sol	NA	>Sol	☐	<1
1634-04-4	Methyl t-Butyl Ether	2.7E-2	NA	NA	NA	3.0E+3	NA	>Sol	NA	3.0E+3	☐	<1
127-18-4	Tetrachloroethene	3.2E-3	NA	NA	NA	4.1E+0	NA	>Sol	NA	4.1E+0	☐	<1
108-88-3	Toluene	4.7E-4	NA	NA	NA	>Sol	NA	>Sol	NA	>Sol	☐	<1
79-01-6	Trichloroethene	6.0E-2	NA	NA	NA	7.3E-1	NA	6.3E+2	NA	7.3E-1	☐	<1
75-69-4	Trichlorofluoromethane	2.7E-3	NA	NA	NA	3.1E+2	NA	>Sol	NA	3.1E+2	☐	<1
75-01-4	Vinyl chloride	2.0E-3	NA	NA	NA	6.9E-3	NA	6.0E+0	NA	6.9E-3	☐	<1
1330-20-7	Xylene (mixed isomers)	5.3E-4	NA	NA	NA	>Sol	NA	>Sol	NA	>Sol	☐	<1

>Sol indicates risk-based target concentration greater than constituent solubility

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-301-WWX-744

Appendix G

Cumulative Risk Worksheets for Onsite Receptors

Site Name: Ocean Avenue
Site Location: 1372 Ocean Avenue, Emeryville, CA
Completed By: Mark Detterman
Date Completed: 8/21/1998

CUMULATIVE RISK WORKSHEET

CONSTITUENTS OF CONCERN		Representative Concentration			Proposed CRF			Resultant Target Concentration		
CAS No.	Name	Surface Soil (mg/kg)	Subsurface Soil	Groundwater (mg/L)	Surface Soil	Subsurface Soil	GW	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)	Groundwater (mg/L)
71-43-2	Benzene - CA	5.6E-3	5.6E-3	4.7E-4				5.6E-3	5.6E-3	4.7E-4
75-35-4	Dichloroethene, 1,1-	4.7E-3	4.7E-3	1.6E-3				4.7E-3	4.7E-3	1.6E-3
156-59-2	Dichloroethene, cis-1,2-	4.7E-3	4.7E-3	1.4E-2				4.7E-3	4.7E-3	1.4E-2
156-60-5	Dichloroethene,1,2-trans-	4.7E-3	4.7E-3	2.4E-3				4.7E-3	4.7E-3	2.4E-3
100-41-4	Ethylbenzene	2.9E-2	2.9E-2	4.7E-4				2.9E-2	2.9E-2	4.7E-4
1634-04-4	Methyl t-Butyl Ether	7.6E-2	7.6E-2	2.7E-2				7.6E-2	7.6E-2	2.7E-2
127-18-4	Tetrachloroethene	4.7E-3	4.7E-3	3.2E-3				4.7E-3	4.7E-3	3.2E-3
108-88-3	Toluene	2.4E-2	2.4E-2	4.7E-4				2.4E-2	2.4E-2	4.7E-4
79-01-6	Trichloroethene	4.7E-3	4.7E-3	6.0E-2				4.7E-3	4.7E-3	6.0E-2
75-69-4	Trichlorofluoromethane	4.7E-3	4.7E-3	2.7E-3				4.7E-3	4.7E-3	2.7E-3
75-01-4	Vinyl chloride	4.7E-3	4.7E-3	2.0E-3				4.7E-3	4.7E-3	2.0E-3
1330-20-7	Xylene (mixed isomers)	4.4E-2	4.4E-2	5.3E-4				4.4E-2	4.4E-2	5.3E-4

Cumulative Values:

Cumulative Risk Goals Exceeded?

☐ Yes ■ No

Site Name: Ocean Avenue
Completed By: Mark Detterman
Site Location: 1372 Ocean Avenue, Emeryville, CA
Date Completed: 8/21/1998

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-6 Target Hazard Index: 1.0E+0

ON-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air: Residential Exposure		Indoor Air: Residential Exposure		Soil: Commercial Exposure		Groundwater:	
		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		
CAS No.	Name	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	Benzene - CA	1.8E-10	2.5E-6	4.8E-8	7.9E-4	1.4E-9		NA	NA
75-35-4	Dichloroethene, 1,1-	3.7E-10	5.3E-7	1.5E-7	2.4E-4	7.2E-10	3.7E-6	NA	NA
156-59-2	Dichloroethene, cis-1,2-						1.2E-5	NA	NA
156-60-5	Dichloroethene,1,2-trans-						6.0E-6	NA	NA
100-41-4	Ethylbenzene		7.8E-8		2.4E-5		7.4E-6	NA	NA
1634-04-4	Methyl t-Butyl Ether		8.0E-8		3.0E-5		3.8E-4	NA	NA
127-18-4	Tetrachloroethene	4.0E-12		1.6E-9		2.2E-9	1.2E-5	NA	NA
108-88-3	Toluene		1.6E-7		4.8E-5		3.0E-6	NA	NA
79-01-6	Trichloroethene	1.1E-10		8.5E-8		4.7E-10	2.0E-5	NA	NA
75-69-4	Trichlorofluoromethane		2.8E-8		1.4E-5		4.0E-7	NA	NA
75-01-4	Vinyl chloride	7.9E-10		4.0E-7		8.1E-8		NA	NA
1330-20-7	Xylene (mixed isomers)		1.7E-8		5.2E-6		5.7E-7	NA	NA
	Cumulative Values:	**1.4E-9**	**3.4E-6**	**6.9E-7**	**1.1E-3**	**8.6E-8**	**4.5E-4**	**0.0E+0**	**0.0E+0**

■ indicates risk level exceeding target risk

Site Name: Ocean Avenue
Completed By: Mark Detterman
Site Location: 1372 Ocean Avenue, Emeryville, CA
Date Completed: 8/21/1998

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-6 Target Hazard Index: 1.0E+0

OFF-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air:		Groundwater:	
CAS No.	Name	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	Benzene - CA	NA	NA	NA	NA
75-35-4	Dichloroethene, 1,1-	NA	NA	NA	NA
156-59-2	Dichloroethene, cis-1,2-	NA	NA	NA	NA
156-60-5	Dichloroethene,1,2-trans-	NA	NA	NA	NA
100-41-4	Ethylbenzene	NA	NA	NA	NA
1634-04-4	Methyl t-Butyl Ether	NA	NA	NA	NA
127-18-4	Tetrachloroethene	NA	NA	NA	NA
108-88-3	Toluene	NA	NA	NA	NA
79-01-6	Trichloroethene	NA	NA	NA	NA
75-69-4	Trichlorofluoromethane	NA	NA	NA	NA
75-01-4	Vinyl chloride	NA	NA	NA	NA
1330-20-7	Xylene (mixed isomers)	NA	NA	NA	NA
	Cumulative Values:	0.0E+0	0.0E+0	0.0E+0	0.0E+0

■ indicates risk level exceeding target risk

Software: GSI RBCA Spreadsheet Serial: G-301-WWX-744

 Version: 1.0.1

The depth to first encountered groundwater as measured during the drilling of boring SB-1, was approximately 7.5 feet bgs. Depth to groundwater measurements in well MW-1 are compiled in Table 1 below.

TABLE 1
DEPTH TO GROUNDWATER IN WELL MW-1
(Measured From Top of Well Casing)
1372 Ocean Avenue
Emeryville, California

DATE	TIME OF DAY	DEPTH TO WATER
October 12, 1997	15:00	4.09 feet
October 19, 1997	14:00	4.38 feet
March 6, 1998	13:00	3.12 feet
June 21, 1998	9:30	4.38 feet
September 18, 1998	14:15	4.91 feet

GROUNDWATER SAMPLE COLLECTION AND LABORATORY ANALYSES

Groundwater Sample Collection

A groundwater sample was collected from well MW-1 on September 18, 1998. Field procedures used by International Geologic during well sampling procedures, including a well sampling data sheet, are presented in Attachment 1 to this report.

Analytical Laboratory Methods/Results

Laboratory analyses were performed at McCampbell Analytical, Inc., in Pacheco, California (DHS Certified Number 1644). The groundwater sample was analyzed for the following:

- TPHg, BTEX, and MTBE by EPA Test Method 8015/8020/5030.
- TPHd by EPA Test Method 8015/3550.
- VOCs by EPA Test Method 8010/601.

Laboratory results of the groundwater sample collected from well MW-1 are shown in Table 2 on the following page. The sample chain of custody record and laboratory data sheets are presented in Attachment 2.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
1372 Ocean Avenue
Emeryville, California

Compound	Sample Date 10/19/97	Sample Date 3/6/98	Sample Date 6/21/98	**Sample Date 9/18/98**
TPHg	<50	57 [a]	65 [ad]	**<50**
TPHd	120 [b]	120 [b]	180 [cd]	**82 [b]**
MTBE	<5.0	<5.0	7.1	**<5.0**
Benzene	<0.5	<0.5	<0.5	**<0.5**
Toluene	<0.5	<0.5	<0.5	**<0.5**
Ethylbenzene	<0.5	<0.5	<0.5	**<0.5**
Xylenes	<0.5	<0.5	<0.5	**<0.5**
1,1- Dichloroethene	0.57	<3.0	<2.0	**<3**
cis 1,2-Dichloroethene	12	16	17	**17** mcl=6
trans 1,2-Dichloroethene	2.2	<3.0	2.1	**<3**
Tetrachloroethene	6.0	<3.0	<3.0	**<3**
Trichloroethene	41	82	78	**86** mcl=5
Trichlorflouromethane	2.5	3.8	<2.0	**<3**
Vinyl Chloride	1.1	3.0	2.2	**3.4** mcl=0.5

Results expressed in parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline.
TPHd: Total petroleum hydrocarbons as diesel.
MTBE: Methyl-Tertiary-Butyl-Ether.
a: One to a few isolated peaks present
b: Diesel range compounds are significant; no recognizable pattern.
c: Oil range compounds are significant.
d: Liquid sample that contains approx. 5% sediment.