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916/638-2085
FAX: 916/638-8385

October 10, 2001

Mr. Tom Bauhs
Chevron Products Company
P.O. Box 6004
San Ramon, California 94583

Subject: ***Transmittal of RBCA-TPH and Well Search Results***
for Former Chevron Service Station No. 21-0208,
6006 International Blvd., Oakland, California

Dear Mr. Bauhs:

At the request of Chevron Products Company (Chevron), Delta Environmental Consultants, Inc. network associate Gettler-Ryan Inc. (GR) has prepared a Risk-Based Corrective Action (RBCA) with Total Petroleum Hydrocarbons as gasoline (TPHg) groundwater data and a well search map and table for the above referenced site. These documents were prepared in response to a verbal request on September 4 and October 4, 2001, from Ms. Eva Chu of the Alameda County Health Care Services (ACHCS).

A description of each of the attached requested items follows:

1) RBCA – GR performed a Tier 2 RBCA program evaluation on TPHg in groundwater beneath the site. The RBCA software divides TPH into 13 fractions of carbon chains, ranging from C-5 to C-35. The TPHg data collected from groundwater beneath the site was reported by the laboratory as ranging from C-6 to C-12. After conversations with chemists at Sequoia Laboratories, GR utilized the approximations that the reported TPHg concentrations were composed of 45% C-6 to C-8, 40% C-8 to C-10, and 15% C-10 to C-12. GR also operated under the assumption that all of the reported TPHg data is composed of the aromatic fraction of gasoline, since the aromatic fraction is considered to have a higher toxicity. GR input this data into the complete exposure pathways identified at the site.

   The RBCA program findings for the identified pathways are groundwater volatilization to outdoor and indoor air exposures, and groundwater exposure to the nearest sensitive receptor (industrial well located 1,700 feet southwest of the site). The assessed pathways were calculated to contain a Hazard Index Total Value of 2.3E-3, 5.1E-1 and 2.1E-5, respectively (Appendix A, Tier 2 Baseline Risk Summary-All Pathways Worksheet). Using the residential risk factor of 1.0E-6 and

site conditions, the site-specific target levels (SSTLs) were determined to not exceed established Tier 2 SSTLs (Appendix A, Tier 2 Groundwater SSTL Values).

According to the RBCA decision making process, no further work is warranted to protect against exposure via these pathways. Pertinent input and output data including site specific parameters used in the analysis are presented in Appendix A.

2) Well Search – The Alameda County Public Works Agency provided well search results for a 2,000 foot radius surrounding the site on October 5, 2001. The results indicate that three industrial wells are present between 1,700 and 2,200 feet from the site, to the south and southwest of the site. The locations of the three wells are presented on Figure 1. Information about the identified wells is presented in Table 1. Two of the wells (Map ID No. 2 and 3) are located in the presumed downgradient groundwater flow direction from the site (west/southwest). However, the closest well to the site is approximately 1,700 feet from the site. Additionally, these two wells draw their production water from depths of 300 and 1,025 feet below ground surface, respectively. This indicates that the supply water for these two wells originates from a deeper source than the shallow groundwater observed beneath the site.

This report and attachments contain well location and construction details obtained from water well drillers reports filed with DWR. California Water Code Section 13753 states that these reports are confidential and not for public use or inspection. Therefore, this report or its attachments should not be placed in files accessible to the general public.

If you have any questions or comments on the enclosed materials, please feel free to contact either of us at (707) 789-3255.

Delta Environmental Associates, Inc.
Network Associate Gettler-Ryan Inc.

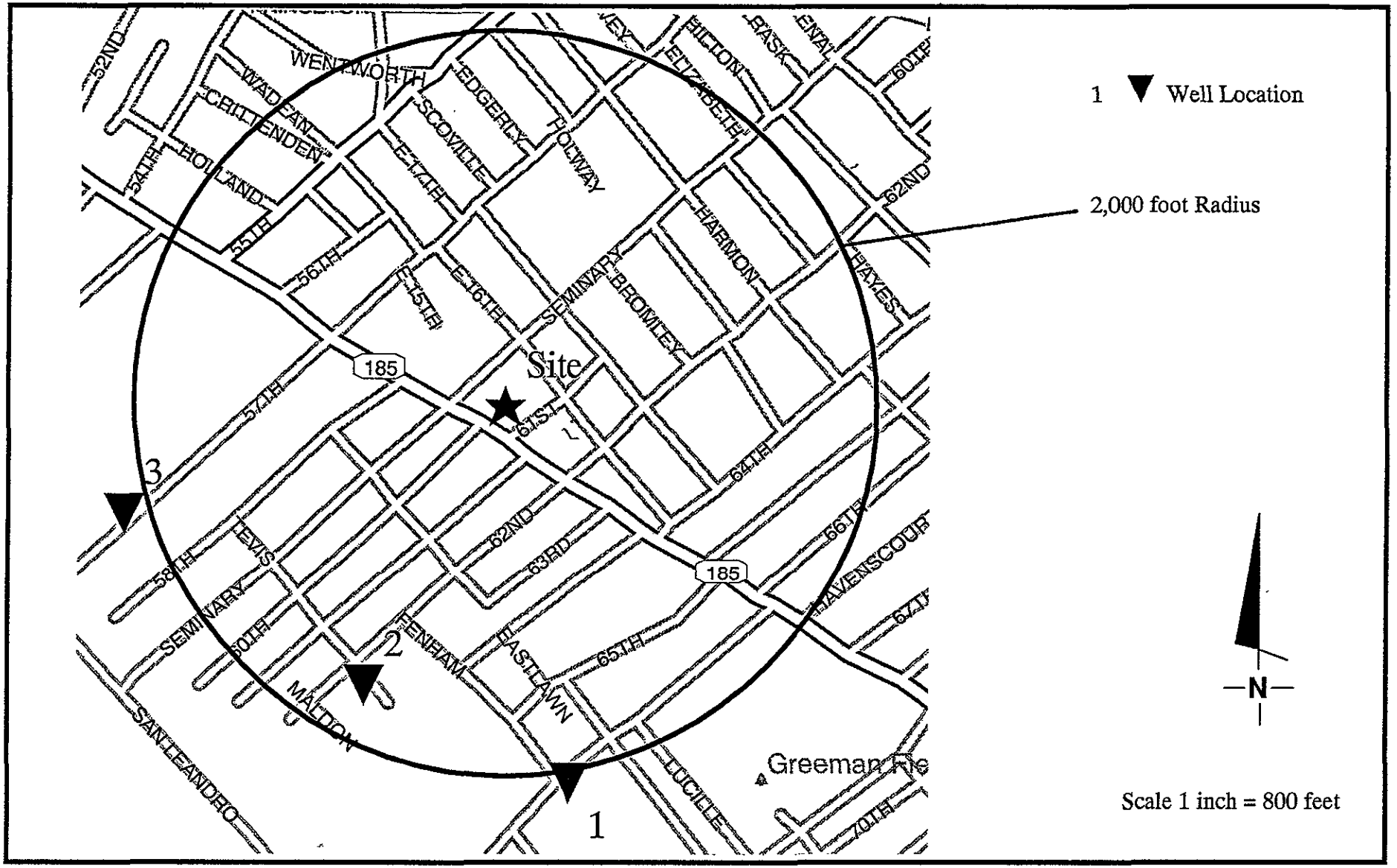
Jed A. Douglas
Project Geologist

David Herzog (916) 631-1300
x13

David J. Vossler
Project Manager

Attachments: Figure 1: Well Search Map
Table 1: Well Search Data
Appendix A: RBCA

cc: Ms. Eva Chu – Alameda County Health Care Services



Gettler - Ryan Inc.

6747 Sierra Ct., Suite J (925) 551-7555
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WELL SEARCH MAP
Former Chevron Service Station No. 21-0208
6006 International Boulevard
Oakland, California

FIGURE
1

Job Number
DG20208G.3C01

Date

TABLE 1 - WELL SEARCH DATA

Former Chevron Service Station No. 21-0208
6006 International Boulevard
Oakland, California

Map ID	Well Owner	Well Location	Well Use	Maximum Pumping Rate (gpm)	Year Installed	Depth (feet)	Screen Interval From (feet)	Screen Interval To (feet)	Well Diameter (inches)	DTW (feet)
1	General Electric	1034 66th Avenue	IND	-	-	71	-	-	-	-
2	K. D. Company	6235 Tevis Street	IND	-	-	300	-	-	8	-
3	Stokely-Van Kamps	1175 57th Avenue	IND	-	-	1025	-	-	18	-

Explanation

DTW = depth to water
gpm = gallons per minute
IND = industrial
- = information not available

APPENDIX A
RISK-BASED CORRECTIVE ACTION

Main Screen

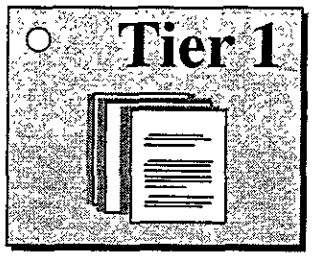
RBCA Tool Kit for Chemical Releases
Version 1.3a © 2000

1. Project Information

Site Name:	Former Chevron SS No. 21-0208		
Location:	6006 International Blvd., Oakland, CA		
Compl. By:	J. Douglas		
Date:	10-Oct-01	Job ID:	DG20208G.3C01

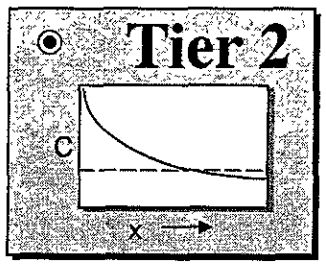
2. Which Type of RBCA Analysis? (?)

○ **Tier 1**



Generic Values
On-Site
Exposure

◉ **Tier 2**



Site-Specific Values
On- or Off-Site Exposure

3. Calculation Options (?)

Affects which input data are required

☑ ***Baseline Risks (Forward mode)***

☑ ***RBCA Cleanup Standards (Backward mode)***

4. RBCA Evaluation Process

Prepare Input Data

Data Complete? (■= yes, ■= no)

- ■□ **Exposure Pathways**
- ■□ **Constituents of Concern (COCs)**
- ■□ **Transport Models**
- ■□ **Soil Parameters**
- ■□ **GW Parameters**
- ■□ **Air Parameters**

Review Output

- **Exposure Flowchart**
- **COC Chem. Parameters**
- **Input Data Summary**
- **User-Spec. COC Data...**
- **Transient Domenico Analysis...**
- **Baseline Risks...**
- **Cleanup Standards...**

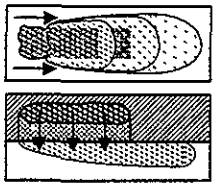
5. Commands and Options

New Site	**Load Data...**	**Save Data As...**	**Quit**
Print Sheet	**Set Units**	Custom Chem. Data...	***Help***

Exposure Pathway Identification

Site Name: Former Chevron SS No. 21-0208
Location: 6006 International Blvd., Oakland, CA
Compl. By: J. Douglas
Job ID: DG20208G.3C01 Date: 10-Oct-01

1. Groundwater Exposure



Groundwater Ingestion/ Surface Water Impact

Receptor Type:	None	Com.	None
	On-site	Off-site1	Off-site2

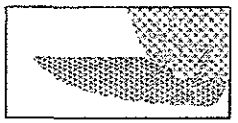
Source Media:

- [x] Affected Groundwater
- [ ] Affected Soils Leaching to Groundwater

Distance to GW receptors (ft)

On-site	Off-site1	Off-site2
[illegible]	1700	[illegible]
[illegible]	[illegible]	[illegible]

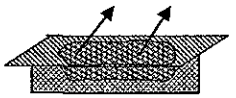
GW Discharge to Surface Water Exposure



- [ ] Swimming
- [ ] Fish Consumption
- [ ] Aquatic Life Protection

Enter ALP Criteria

2. Surface Soil Exposure

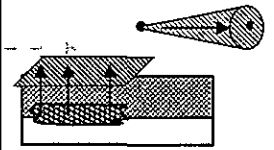


Direct Ingestion and Dermal Contact

Receptor Type:	None	No off-site receptors
	On-site	

Construction Worker [ ]

3. Air Exposure

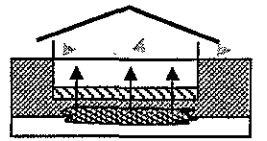


Volatilization and Particulates to Outdoor Air Inhalation

Receptor Type:	Res.	None	None
	On-site	Off-site1	Off-site2
	0	[illegible]	[illegible] (ft)

Construction worker [ ]

- [ ] Affected Soils--Volatilization to Ambient Outdoor Air
- [x] Affected Groundwater--Volatilization to Ambient Outdoor Air
- [ ] Affected Surface Soils--Particulates to Ambient Outdoor Air



Volatilization to Indoor Air Inhalation

Receptor Type:	Res.	No off-site receptors
	On-site	

- [ ] Affected Soils--Volatilization to Enclosed Space
- [x] Affected Groundwater--Volatilization to Enclosed Space

4. Commands and Options

Main Screen | Print Sheet | Set Units | *Help*

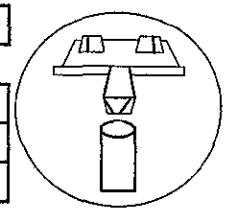
Exposure Factors & Target Risks | Exposure Flowchart

Exposure Factors and Target Risk Limits

Site Name: Former Chevron SS No. 21-0208
Location: 6006 International Blvd., Oakland, CA
Compl. By: J. Douglas
Job ID: DG20208G.3C01 Date: 10-Oct-01

1. Exposure Parameters

		Residential			Commercial	
	Age Adjustment?	Adult	(Age 0-6)	(Age 0-16)	Chronic	Construc.
Averaging time, carcinogens (yr)		70				
Averaging time, non-carcinogens (yr)		30			25	1
Body weight (kg)		70	15	35	70	
Exposure duration (yr)		30	6	16	25	1
Exposure frequency (days/yr)		350			250	180
Dermal exposure frequency (days/yr)		350			250	
Skin surface area, soil contact (cm^2)	☐	5800		2023	5800	5800
Soil dermal adherence factor ($mg/cm^2/day$)		1				
Water ingestion rate (L/day)		2			1	
Soil ingestion rate (mg/day)	☐	100	200		50	100
Swimming exposure time (hr/event)		3				
Swimming event frequency (events/yr)		12	12	12		
Swimming water ingestion rate (L/hr)	☐	0.05	0.5			
Skin surface area, swimming (cm^2)	☐	23000		8100		
Fish consumption rate (kg/day)		0.025				
Contaminated fish fraction (unitless)		1				



2. Risk Goal Calculation Options

- ○ Individual Constituent Risk Goals Only
- ◉ Individual and Cumulative Risk Goals

3. Target Health Risk Limits

	Individual	Cumulative
Target Risk (Class A/B carcins.)	1.0E-6	1.0E-5
Target Risk (Class C carcinogens)	1.0E-5	
Target Hazard Quotient	1.0E+0	
Target Hazard Index		1.0E+0

4. Commands and Options

Return to Exposure Pathways

Use Default Values

Print Sheet

Help

RBCA Tool Kit for Chemical Releases, Version 1.3a

Site Name: Former Chevron SS No. 21-0208 | Job ID: DG20208G.3C01
Location: 6006 International Blvd., Oakland, CA | Date: 10-Oct-01
Compl. By: J. Douglas

Commands and Options

Main Screen | Print Sheet | *Help*

Source Media Constituents of Concern (COCs)

Apply Raoult's Law ?

Selected COCs

COC Select: *Sort List:* ?

Add/Insert | Top | MoveUp
Delete | Bottom | MoveDown

Representative COC Concentration ?

Groundwater Source Zone

Enter Directly | ■□ Enter Site Data | Calculate | Enter Site Data

Selected COCs	*(mg/L)*	note		
TPH - Arom >C07-C08	2.5E+0			
TPH - Arom >C08-C10	2.2E+0			
TPH - Arom >C10-C12	8.5E-1			

Commands and Options

Return | Print Sheet | *Help*

Site Name: Former Chevron SS No. 2[illegible]8 DG20208G.3C01
Location: 6006 International Blvd., Oakland, CA Date: 10-Oct-01
Compl. By: J. Douglas

Groundwater Source Zone Concentration Calculator

Paste Defaults

UCL Percentile: 95%

Mean Option

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)*
TPH - Arom >C07-C08	#N/A	7	7	Lognormal	5.9E+0	3.6E-1	2.5E+0
TPH - Arom >C08-C10	#N/A	7	7	Lognormal	5.2E+0	3.3E-1	2.2E+0
TPH - Arom >C10-C12	5.0E-2	7	7	Lognormal	2.0E+0	1.4E-1	8.5E-1

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

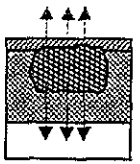
Analytical Data

	1	2	3	4	5	6	7	8	9	10	11	12	13
ID	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16	GP-17						
Date	17-Jul-01	17-Jul-01	18-Jul-01	18-Jul-01	18-Jul-01	18-Jul-01	18-Jul-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)*
	5.85E+0	2.88E-2	2.57E-2	3.65E+0	4.95E+0	4.37E-1	2.50E-2						
	5.20E+0	2.56E-2	2.28E-2	3.24E+0	4.40E+0	3.88E-1	2.50E-2						
	1.95E+0	9.60E-3	8.55E-3	1.22E+0	1.65E+0	1.46E-1	2.50E-2						

Transport Modeling Options

Site Name: Former Chevron SS No. 21-0208 Job ID: DG20208G.3C01
Location: 6006 International Blvd., Oakland, CA Date: 10-Oct-01
Compl. By: J. Douglas

1. Vertical Transport, Surface Soil Column



Outdoor Air Volatilization Factors (?)

- ○ [illegible]
- ◉ Combination surface soil/Johnson & Ettinger models
  Thickness of surface soil zone [3.28084] *(ft)*
- ○ User-specified VF from other model — Enter VF Values

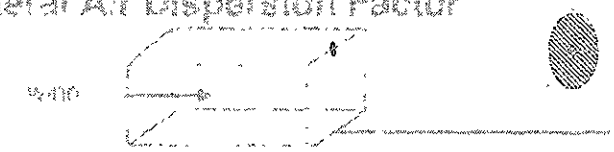
Indoor Air Volatilization Factors (?)

- ◉ Johnson & Ettinger model
- ○ User-specified VF from other model — Enter VF Values

Soil-to-Groundwater Leaching Factor

- ○ [illegible] (?)
  - ☐ [illegible]
  - ☐ [illegible] — Enter Decay Rates
- ○ [illegible] — Enter LF Values

2. Lateral Air Dispersion Factor

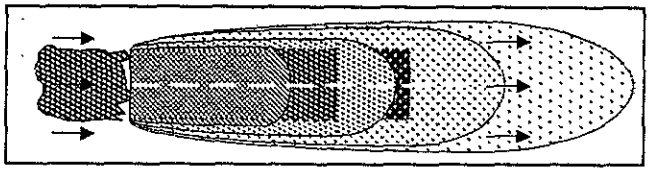


(?)

- ○ 3-D Gaussian dispersion model
- ○ User-Specified ADF

	Off-site 1	Off-site 2	
	1.00E+0	1.00E+0	(-)

3. Groundwater Dilution Attenuation Factor



Calculate DAF using Domenico Model (?)

- ○ Domenico equation with dispersion only (no biodegradation)
- ◉ Domenico equation first-order decay — Enter Decay Rates
- ○ Modified Domenico equation using electron acceptor superposition — Enter Site Data

Enter Directly — Biodegradation capacity [illegible] (mg/L)

— or —

User-Specified DAF Values

- ○ DAF values from other model or site data — Enter DAF Values

4. Commands and Options

Main Screen | Print Sheet | *Help*

Site-Specific Soil Parameters

Site Name: Former Chevron SS No. 21-0208 Job ID: DG20208G.3C01
Location: 6006 International Blvd., Oakland, CA Date: 10-Oct-01
Compl. By: J. Douglas

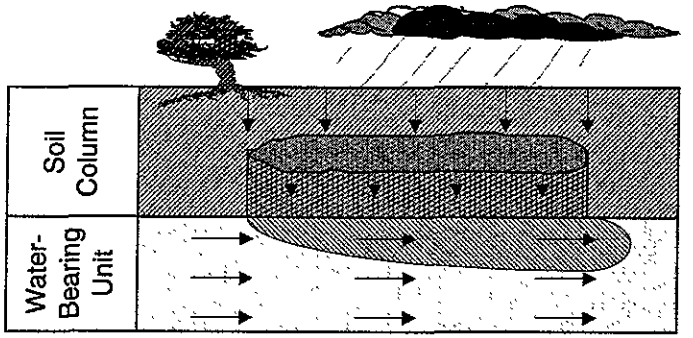
1. Soil Source Zone Characteristics

Hydrogeology

	General Case Construction	
Depth to water-bearing unit	7	(ft)
Capillary zone thickness	0.95144357	(ft)
Soil column thickness	6.04855643	(ft)

Affected Soil Zone

[illegible]		(ft)
[illegible]		(ft)
[illegible]		(ft^2)
[illegible]		(ft)
[illegible]		(ft)



2. Surface Soil Column

	Vadose Zone	Capillary Fringe	
Predominant USCS Soil Type	CL: Silty Clay		
or Enter Directly	or		
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	1.1E-16		(ft^2)
Capillary zone thickness	9.5E-1		(ft)

Net Rainfall Infiltration

Net infiltration rate		(cm/yr)
or NA	or	
Average annual precipitation		(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

Site-Specific Groundwater Parameters

Site Name: Former Chevron SS No. 21-0208 Job ID: DG20208G.3C01
Location: 6006 International Blvd., Oakland, CA Date: 10-Oct-01
Compl. By: J. Douglas

1. Water-Bearing Unit

Hydrogeology

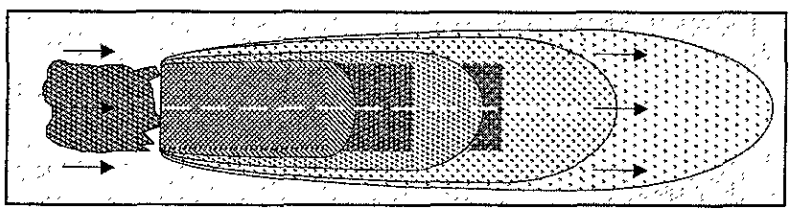
Groundwater Darcy velocity	6.9E+0	(cm/d)
Groundwater seepage velocity	1.8E+1	(cm/d)
or Enter Directly	↑ *or*	
Hydraulic conductivity	6.9E+2	(cm/d)
Hydraulic gradient	1.0E-2	(-)
Effective porosity	0.38	(-)

Sorption

Fraction organic carbon--saturated zone	0.001	(-)
Groundwater pH	6.20	(-)

2. Groundwater Source Zone

Groundwater plume width at source	147.6377953	(ft)
Plume (mixing zone) thickness at source	6.56167979	(ft)
or Calculate	↑ *or*	
[illegible]	10	(ft)
[illegible]		(ft)



3. Groundwater Dispersion

Model: ASTM Default

	GW Ingestion		Soil Leaching to GW		
	Off-site 1				
Distance to GW receptors	1700				(ft)
or Enter Directly	↓ *or*		*or*		
Longitudinal dispersivity	170				(ft)
Transverse dispersivity	56.1				(ft)
Vertical dispersivity	8.5				(ft)

[illegible] Groundwater Discharge to Surface Water

[illegible]

5. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | *Help*

Site-Specific Air Parameters

Site Name: Former Chevron SS No. 21-0208 Job ID: DG20208G.3C01
Location: 6006 International Blvd., Oakland, CA Date: 10-Oct-01
Compl. By: J. Douglas

1. Outdoor Air Pathway

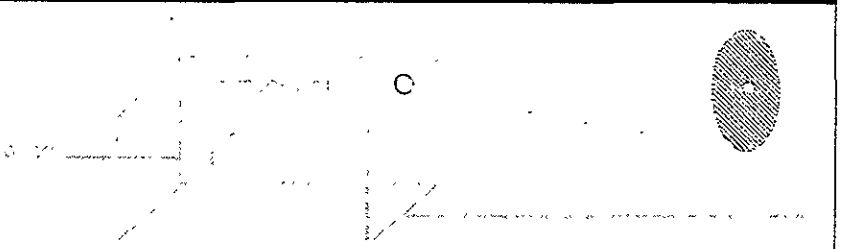
?

NA

or

Air Source Zone

Air mixing zone height	6.56167979	(ft)
Ambient air velocity in mixing zone	7.381889764	(ft/s)
[illegible]	6.0E-14	(g/cm^2/s)

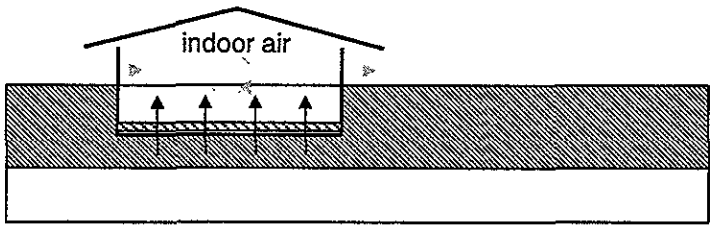


2. Indoor Air Pathway

?

Building Parameters

	Residential	Commercial	
Building volume/area ratio	6.56168	9.84252	(ft)
Foundation area	7625	753.474	(ft^2)
Foundation perimeter	684	111.648	(ft)
Building air exchange rate	1.4E-4	2.3E-4	(1/s)
Depth to bottom of foundation slab	0.49213	0.49213	(ft)
Convective air flow through cracks	0.0E+0	0.0E+0	(ft^3/s)
Foundation thickness	0.492125984		(ft)
Foundation crack fraction	0.01		(-)
Volumetric water content of cracks	0.12		(-)
Volumetric air content of cracks	0.26		(-)
Indoor/Outdoor differential pressure	0		(g/cm/s^2)



3. Commands and Options

Main Screen | Use Default Values | Print Sheet
Set Units | | Help

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: Former Chevron SS No 21-0208
Site Location: 6006 International Blvd., Oakland, CA

Completed By: J. Douglas
Date Completed: 10-Oct-01

Job ID: DG20208G.3C01

Exposure Parameters		Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Construc.
AT_c	Averaging time for carcinogens (yr)	70				
AT_n	Averaging time for non-carcinogens (yr)	30			25	1
BW	Body weight (kg)	70	15	35	70	
ED	Exposure duration (yr)	30	6	16	25	1
τ	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure frequency (days/yr)	350			250	180
EF_D	Exposure frequency for dermal exposure	350			250	
IR_w	Ingestion rate of water (L/day)	2			1	
IR_s	Ingestion rate of soil (mg/day)	100	200		50	100
SA	Skin surface area (dermal) (cm^2)	5800		2023	5800	5800
M	Soil to skin adherence factor	1				
ET_{swim}	Swimming exposure time (hr/event)	3				
EV_{swim}	Swimming event frequency (events/yr)	12	12	12		
IR_{swim}	Water ingestion while swimming (L/hr)	0.05	0.5			
SA_{swim}	Skin surface area for swimming (cm^2)	23000		8100		
IR_{fish}	Ingestion rate of fish (kg/yr)	0.025				
FI_{fish}	Contaminated fish fraction (unitless)	1				

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	Commercial	None
Soil Leaching to Groundwater Ingestion	None	None	None
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	None		
Outdoor Air:			
Particulates from Surface Soils	None	None	None
Volatilization from Soils	None	None	None
Volatilization from Groundwater	Residential	None	None
Indoor Air:			
Volatilization from Subsurface Soils	None	NA	NA
Volatilization from Groundwater	Residential	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	NA	1700	NA	(ft)
Soil leaching to groundwater receptor	NA	NA	NA	(ft)
Outdoor air inhalation receptor	0	NA	NA	(ft)

Target Health Risk Values		Individual	Cumulative
TR_{ab}	Target Risk (class A&B carcinogens)	1.0E-6	1.0E-5
TR_c	Target Risk (class C carcinogens)	1.0E-5	
THQ	Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	1.0E+0

Modeling Options	
RBCA tier	Tier 2
Outdoor air volatilization model	Surface & subsurface models
Indoor air volatilization model	Johnson & Ettinger model
Soil leaching model	NA
Use soil attenuation model (SAM) for leachate?	NA
Air dilution factor	NA
Groundwater dilution-attenuation factor	Domenico model w/ biodeg.

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	0.0E+0	NA	(ft^2)
W	Length of source-zone area parallel to wind	0.0E+0	NA	(ft)
W_{gw}	Length of source-zone area parallel to GW flow	NA		(ft)
U_{air}	Ambient air velocity in mixing zone	7.4E+0		(ft/s)
δ_{air}	Air mixing zone height	6.6E+0		(ft)
P_a	Areal particulate emission rate	NA		(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	NA		(ft)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	Capillary zone thickness	9.5E-1			(ft)
h_v	Vadose zone thickness	8.0E+0			(ft)
ρ_s	Soil bulk density	1.7E+0			(g/cm^3)
f_{oc}	Fraction organic carbon	1.0E-2			(-)
θ_T	Soil total porosity	3.6E-1			(-)
K_{vs}	Vertical hydraulic conductivity	8.6E-3			(cm/d)
k_v	Vapor permeability	1.1E-16			(ft^2)
L_{gw}	Depth to groundwater	7.0E+0			(ft)
L_s	Depth to top of affected soils	NA			(ft)
L_{base}	Depth to base of affected soils	NA			(ft)
L_{subs}	Thickness of affected soils	NA			(ft)
pH	Soil/groundwater pH	6.8E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.35	0.34	0.12	(-)
θ_a	Volumetric air content	0.01	0.02	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	6.56E+0	NA	(ft)
A_b	Foundation area	7.63E+3	NA	(ft^2)
X_{crk}	Foundation perimeter	6.84E+2	NA	(ft)
ER	Building air exchange rate	1.40E-4	NA	(1/s)
L_{crk}	Foundation thickness	4.92E-1	NA	(ft)
Z_{crk}	Depth to bottom of foundation slab	4.92E-1	NA	(ft)
η	Foundation crack fraction	1.00E-2	NA	(-)
dP	Indoor/outdoor differential pressure	0.00E+0	NA	(g/cm/s^2)
Q_s	Convective air flow through slab	0.00E+0	NA	(ft^3/s)

Groundwater Parameters		Value	(Units)
δ_{gw}	Groundwater mixing zone depth	NA	(ft)
I	Net groundwater infiltration rate	NA	(cm/yr)
U_{gw}	Groundwater Darcy velocity	6.9E+0	(cm/d)
V_{gw}	Groundwater seepage velocity	1.8E+1	(cm/d)
K_s	Saturated hydraulic conductivity	6.9E+2	(cm/d)
i	Groundwater gradient	1.0E-2	(-)
S_w	Width of groundwater source zone	1.5E+2	(ft)
S_d	Depth of groundwater source zone	6.6E+0	(ft)
θ_{eff}	Effective porosity in water-bearing unit	3.8E-1	(-)
f_{oc-sat}	Fraction organic carbon in water-bearing unit	1.0E-3	(-)
pH_{sat}	Groundwater pH	6.2E+0	(-)
	Biodegradation considered?	1st Order	

Transport Parameters		Off-site 1	Off-site 2	Off-site 1	Off-site 2	(Units)
Lateral Groundwater Transport		Groundwater Ingestion		Soil Leaching to GW		
α_x	Longitudinal dispersivity	1.7E+2	NA	NA	NA	(ft)
α_y	Transverse dispersivity	5.6E+1	NA	NA	NA	(ft)
α_z	Vertical dispersivity	8.5E+0	NA	NA	NA	(ft)
Lateral Outdoor Air Transport		Soil to Outdoor Air Inhal.		GW to Outdoor Air Inhal.		
σ_y	Transverse dispersion coefficient	NA	NA	NA	NA	(ft)
σ_z	Vertical dispersion coefficient	NA	NA	NA	NA	(ft)
ADF	Air dispersion factor	NA	NA	NA	NA	(-)

Surface Water Parameters		Off-site 2	(Units)
Q_{sw}	Surface water flowrate	NA	(ft^3/s)
W_{pl}	Width of GW plume at SW discharge	NA	(ft)
δ_{pl}	Thickness of GW plume at SW discharge	NA	(ft)
DF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

CHEMICAL DATA FOR SELECTED COCs

Physical Property Data

Constituent	CAS Number	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	Diffusion Coefficients in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(L/kg)	partition	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
TPH - Arom >C07-C08	0-00-0	T	92	T	1.00E-01	T	1.00E-05	T	2.40	Koc	T	6.72E-03	2.77E-01	T	2.89E+01	-	5.20E+02	T	-	-	-
TPH - Arom >C08-C10	0-00-0	T	120	T	1.00E-01	T	1.00E-05	T	3.20	Koc	T	1.16E-02	4.80E-01	T	4.79E+00	-	6.50E+01	T	-	-	-
TPH - Arom >C10-C12	0-00-0	T	130	T	1.00E-01	T	1.00E-05	T	3.40	Koc	T	3.28E-03	1.35E-01	T	4.79E-01	-	2.50E+01	T	-	-	-

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA

Completed By: J. Douglas
Date Completed: 10-Oct-01

Job ID: DG20208G.3C01

CHEMICAL DATA FOR SELECTED COCs

Toxicity Data

Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Reference Dose (mg/kg/day) Dermal RfD_dermal	ref	Reference Conc. (mg/m3) Inhalation RfC_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Slope Factors 1/(mg/kg/day) Dermal SF_dermal	ref	Unit Risk Factor 1/(µg/m3) Inhalation URF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
TPH - Arom >C07-C08	2.00E-01	T	-	-	4.00E-01	T	-	-	-	-	-	-	D	FALSE
TPH - Arom >C08-C10	4.00E-02	T	-	-	2.00E-01	T	-	-	-	-	-	-	D	FALSE
TPH - Arom >C10-C12	4.00E-02	T	-	-	2.00E-01	T	-	-	-	-	-	-	D	FALSE

Site Name: Former Chevron SS

Site Location: 6006 Internatio

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level MCL (mg/L)	ref	Time-Weighted Average Workplace Criteria TWA (mg/m3)	ref	Aquatic Life Prot. Criteria AQL (mg/L)	ref	Biocon-centration Factor (L-wat/kg-fish)
TPH - Arom >C07-C08	-	-	-	-	-	-	1
TPH - Arom >C08-C10	-	-	-	-	-	-	1
TPH - Arom >C10-C12	-	-	-	-	-	-	1

Site Name: Former Chevron SS

Site Location: 6006 Internatio

CHEMICAL DATA FOR SELECTED COCs

Miscellaneous Chemical Data

Constituent	Dermal Relative Absorp. Factor (unitless)	Water Dermal Permeability Data: Dermal Permeability Coeff. (cm/hr)	Lag time for Dermal Exposure (hr)	Critical Exposure Time (hr)	Relative Contr of Derm Perm Coeff (unitless)	Water/Skin Derm Adsorp Factor (cm/event)	ref	Detection Limits: Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days): Saturated	Unsaturated	ref
TPH - Arom >C07-C08	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH - Arom >C08-C10	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH - Arom >C10-C12	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-

Site Name: Former Chevron SS

Site Location: 6006 Internatio

RBCA SITE ASSESSMENT | **User-Specified COC Data**

CONSTITUENT HALF-LIFE VALUES

CONSTITUENT	Saturated Zone Half-Life (days)	Unsaturated Zone Half-Life (days)
TPH - Arom >C07-C08	1000	1000
TPH - Arom >C08-C10	1000	1000
TPH - Arom >C10-C12	1000	1000

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

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

SOILS : VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	1) Source Medium Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor None	3) Exposure Medium Indoor Air POE Conc. (mg/m^3) (1) / (2) None	4) Exposure Multiplier (EFxED)/(ATx365) (unitless) None	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) None
TPH - Arom >C07-C08					
TPH - Arom >C08-C10					
TPH - Arom >C10-C12					

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 Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
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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

Exposure Concentration

Constituents of Concern	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 (EFxED)/(ATx365) (unitless) Residential	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) Residential
TPH - Arom >C07-C08	2.5E+0	4.9E+1	5.1E-2	9.6E-1	4.8E-2
TPH - Arom >C08-C10	2.2E+0	3.1E+1	7.1E-2	9.6E-1	6.8E-2
TPH - Arom >C10-C12	8.5E-1	8.6E+1	9.9E-3	9.6E-1	9.5E-3

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 Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

Constituents of Concern	TOTAL PATHWAY EXPOSURE (mg/m^3) *(Sum average exposure concentrations from soil and groundwater routes.)* Residential
TPH - Arom >C07-C08	4.8E-2
TPH - Arom >C08-C10	6.8E-2
TPH - Arom >C10-C12	9.5E-3

Site Name: Former Chevron SS No. 21-0208 Date Completed: 10-Oct-01
Site Location: 6006 International Blvd., Oakland, C Job ID: DG20208G.3C01
Completed By: J. Douglas

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

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

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m^3) Residential	(3) Inhalation Unit Risk Factor (µg/m^3)^-1	(4) Individual COC Risk (2) x (3) x 1000 Residential
		CARCINOGENIC RISK		
TPH - Arom >C07-C08	D			
TPH - Arom >C08-C10	D			
TPH - Arom >C10-C12	D			

Total Pathway Carcinogenic Risk =

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

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

	TOXIC EFFECTS		
	(5) Total Toxicant Exposure (mg/m^3)	(6) Inhalation Reference Concentration (mg/m^3)	(7) Individual COC Hazard Quotient (5) / (6)
Constituents of Concern	Residential		Residential
TPH - Arom >C07-C08	4.8E-2	4.0E-1	1.2E-1
TPH - Arom >C08-C10	6.8E-2	2.0E-1	3.4E-1
TPH - Arom >C10-C12	9.5E-3	2.0E-1	4.8E-2

Total Pathway Hazard Index = **5.1E-1**

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

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

SURFACE SOILS (0 - 3.3 ft):

VAPOR AND DUST INHALATION

	1) Source Medium	2) NAF Value (m^3/kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)			
		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
Constituents of Concern	Soil Conc. (mg/kg)	None	Construction Worker	None	None	None	Construction Worker	None	None
TPH - Arom >C07-C08									
TPH - Arom >C08-C10									
TPH - Arom >C10-C12									

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SURFACE SOILS (0 - 3.3 ft):

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 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
	None	Construction Worker	None	None	None	Construction Worker	None	None
TPH - Arom >C07-C08								
TPH - Arom >C08-C10								
TPH - Arom >C10-C12								

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
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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 (3.3 - 9.8 ft):

VAPOR INHALATION

	1) Source Medium	2) NAF Value (m^3/kg) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
Constituents of Concern	Soil Conc. (mg/kg)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)
		None	None	None	None	None	None
TPH - Arom >C07-C08							
TPH - Arom >C08-C10							
TPH - Arom >C10-C12							

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
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Date Completed: 10-Oct-01
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SUBSURFACE SOILS (3.3 - 9.8 ft):

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 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)
	None	None	None	None	None	None
TPH - Arom >C07-C08						
TPH - Arom >C08-C10						
TPH - Arom >C10-C12						

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

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 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Arom >C07-C08	2.5E+0	1.0E+4			2.4E-4		
TPH - Arom >C08-C10	2.2E+0	6.9E+3			3.2E-4		
TPH - Arom >C10-C12	8.5E-1	1.6E+4			5.2E-5		

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

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 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Arom >C07-C08	9.6E-1			2.3E-4		
TPH - Arom >C08-C10	9.6E-1			3.0E-4		
TPH - Arom >C10-C12	9.6E-1			5.0E-5		

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m^3)

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

Constituents of Concern	On-site (0 ft) Residential	On-site (0 ft) Construction Worker	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Arom >C07-C08	2.3E-4			
TPH - Arom >C08-C10	3.0E-4			
TPH - Arom >C10-C12	5.0E-5			

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

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 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
		Residential	Construction Worker	None	None		Residential	Construction Worker	None	None
TPH - Arom >C07-C08	D									
TPH - Arom >C08-C10	D									
TPH - Arom >C10-C12	D									
Total Pathway Carcinogenic Risk =										

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA

Completed By: J. Douglas
Date Completed: 10-Oct-01

Job ID: DG20208G.3C01

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 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
	Residential	Construction Worker	None	None		Residential	Construction Worker	None	None
TPH - Arom >C07-C08	2.3E-4				4.0E-1	5.7E-4			
TPH - Arom >C08-C10	3.0E-4				2.0E-1	1.5E-3			
TPH - Arom >C10-C12	5.0E-5				2.0E-1	2.5E-4			
Total Pathway Hazard Index =						**2.3E-3**			

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA

Completed By: J. Douglas
Date Completed: 10-Oct-01

Job ID: DG20208G.3C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SOILS : LEACHING TO GROUNDWATER INGESTION

	1) Source Medium	2) NAF Value (L/kg) Receptor			3) Exposure Medium Groundwater: POE Conc. (mg/L) (1)/(2)		
Constituents of Concern	Soil Conc. (mg/kg)	On-site (0 ft) None	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) None	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Arom >C07-C08							
TPH - Arom >C08-C10							
TPH - Arom >C10-C12							

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

SOILS : LEACHING TO 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 ft) None	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) None	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Arom >C07-C08						
TPH - Arom >C08-C10						
TPH - Arom >C10-C12						

NOTE: AT = Averaging time (days) ED = Exposure duration (yr) IR = Ingestion rate (mg/day)
BW = Body weight (kg) EF = Exposure frequency (days/yr)

Site Name: Former Chevron SS No. 21-0208 Completed By: J. Douglas Job ID: DG20208G.3
Site Location: 6006 International Blvd., Oakland, CA Date Completed: 10-Oct-01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

	1) Source Medium	2) NAF Value (unitless) Receptor			3) Exposure Medium Groundwater: POE Conc. (mg/L) (1)/(2)		
Constituents of Concern	Groundwater Conc. (mg/L)	On-site (0 ft) None	Off-site 1 (1700 ft) Commercial	Off-site 2 (0 ft) None	On-site (0 ft) None	Off-site 1 (1700 ft) Commercial	Off-site 2 (0 ft) None
TPH - Arom >C07-C08	2.5E+0		6.0E+3			4.1E-4	
TPH - Arom >C08-C10	2.2E+0		1.4E+6			1.6E-6	
TPH - Arom >C10-C12	8.5E-1		2.2E+7			4.0E-8	

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

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
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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 ft) None	Off-site 1 (1700 ft) Commercial	Off-site 2 (0 ft) None	On-site (0 ft) None	Off-site 1 (1700 ft) Commercial	Off-site 2 (0 ft) None
TPH - Arom >C07-C08		9.8E-3			4.0E-6	
TPH - Arom >C08-C10		9.8E-3			1.6E-8	
TPH - Arom >C10-C12		9.8E-3			3.9E-10	

NOTE: AT = Averaging time (days) ED = Exposure duration (yr) IR = Ingestion rate (mg/day)
BW = Body weight (kg) EF = Exposure frequency (days/yr)

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA

Completed By: J. Douglas
Date Completed: 10-Oct-01

Job ID: DG20208G.3

RBCA SITE ASSESSMENT

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 ft) None	Off-site 1 Commercial	Off-site 2 None
TPH - Arom >C07-C08		4.0E-6	
TPH - Arom >C08-C10		1.6E-8	
TPH - Arom >C10-C12		3.9E-10	

Site Name: Former Chevron SS No. 21-0208
.3C Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

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 ft) None	Off-site 1 Commercial	Off-site 2 None		On-site (0 ft) None	Off-site 1 Commercial	Off-site 2 None
TPH - Arom >C07-C08	D							
TPH - Arom >C08-C10	D							
TPH - Arom >C10-C12	D							
Total Pathway Carcinogenic Risk =								

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
Completed By: J. Douglas

Date Completed: 10-Oct-01
Job ID: DG20208G.3C01

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 ft) None	Off-site 1 Commercial	Off-site 2 None		On-site (0 ft) None	Off-site 1 Commercial	Off-site 2 None
TPH - Arom >C07-C08		4.0E-6		2.0E-1		2.0E-5	
TPH - Arom >C08-C10		1.6E-8		4.0E-2		3.9E-7	
TPH - Arom >C10-C12		3.9E-10		4.0E-2		9.7E-9	
Total Pathway Hazard Index =						**2.1E-5**	

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA
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RBCA SITE ASSESSMENT

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA

Completed By: J. Douglas
Date Completed: 10-Oct-01

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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	X Groundwater Ingestion			X GW Vol. to Indoor Air	X Groundwater Volatilization to Outdoor Air			Applicable SSTL	SSTL Exceeded ?	Required CRF
			On-site (0 ft)	Off-site 1 (1700 ft)	Off-site 2 (0 ft)	On-site (0 ft)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)			Only if "yes" left
CAS No.	Name	(mg/L)	None	Commercial	None	Residential	Residential	None	None	(mg/L)	"■" if yes	
0-00-0	TPH - Arom >C07-C08	2.5E+0	NA	>5.2E+2	NA	2.0E+1	>5.2E+2	NA	NA	2.0E+1	☐	<1
0-00-0	TPH - Arom >C08-C10	2.2E+0	NA	>6.5E+1	NA	6.4E+0	>6.5E+1	NA	NA	6.4E+0	☐	<1
0-00-0	TPH - Arom >C10-C12	8.5E-1	NA	>2.5E+1	NA	1.8E+1	>2.5E+1	NA	NA	1.8E+1	☐	<1

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

RBCA SITE ASSESSMENT

Baseline Risk Summary-All Pathways

Site Name: Former Chevron SS No. 21-0208
Site Location: 6006 International Blvd., Oakland, CA

Completed By: J. Douglas
Date Completed: 10-Oct-01

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK: Individual COC Risk – Maximum Value	Individual COC Risk – Target Risk	Cumulative COC Risk – Total Value	Cumulative COC Risk – Target Risk	Risk Limit(s) Exceeded?	BASELINE TOXIC EFFECTS: Hazard Quotient – Maximum Value	Hazard Quotient – Applicable Limit	Hazard Index – Total Value	Hazard Index – Applicable Limit	Toxicity Limit(s) Exceeded?
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	1.5E-3	1.0E+0	2.3E-3	1.0E+0	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	3.4E-1	1.0E+0	5.1E-1	1.0E+0	☐
SOIL EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	2.0E-5	1.0E+0	2.1E-5	1.0E+0	☐
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐
CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)										
	NC	***1.0E-6***	***NC***	***1.0E-5***	☐	***3.4E-1***	***1.0E+0***	***5.1E-1***	***1.0E+0***	☐
	Outdoor Air		***Outdoor Air***			***Indoor Air***		***Indoor Air***		