CAMBRIA

March 11, 2004

RO 233

Mr. Amir K. Gholami, REHS
Alameda County Environmental Health Services (ACEHS)
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: **Formal Request for Review for Site Closure**
Chevron Service Station 9-4612
3616 San Leandro Street
Oakland, California

Dear Mr. Gholami,

On behalf of Chevron Environmental Management Company (ChevronTexaco), Cambria Environmental Technology, Inc. (Cambria) submits this letter in regard to the former Chevron station 9-4612 located at 3616 San Leandro Street in Oakland, California.

The following is a list of the documents submitted to the Alameda County Health Care Services (ACHCS). A copy is attached for your reference.

- *June 13, 2002 Delta Environmental (Delta) on behalf of ChevronTexaco submitted a Risk-Based Corrective Action Evaluation (RBCA) to Mr. Barney Chan.*

In response to a letter from ACEHS dated March 15, 2001, Delta advanced hand auger borings and Geoprobe® borings to evaluate human health risk at the site. Based on the results of this and previous investigations, residual hydrocarbons are delineated and restricted to the area around the former gasoline underground storage tanks (USTs). However, the presence of methyl tertiary butyl ether (MTBE) suggested a more recent release, which initiated the RBCA. No response has been received as of this date regarding the review of the RBCA supporting closure of this site. This letter serves as a formal request for the Alameda County Environmental Services to review the RBCA and the site for closure. If this request has not received a response in 60 days, Cambria reserves the right to petition this to the State Water Quality Control Board for closure.

Cambria Environmental Technology, Inc.

4111 Citrus Avenue
Suite 9
Rocklin, CA 95677
Tel (916) 630-1855
Fax (916) 630-1856

If you have any questions or comments, please contact Bruce Eppler at (916) 630-1855 ext.102.

Sincerely,
Cambria Environmental Technology, Inc.

Kiersten Connor
Staff Scientist

Bruce Eppler
Senior Project Geologist

cc: Ms. Karen Streich (cover only), Chevron Environmental Management Company, P.O. Box 6004, San Ramon, CA 94583-0804
Mr. Chuck Headlee (cover only), Alameda County Regional Water Quality Control Board, 1515 Clay Street #1400, Oakland, CA 94612

Attachments: June 13, 2002 Risk-Based Corrective Action Evaluation

4249 [redacted]

Delta
Environmental
Consultants, Inc.

JUN 18 2002

3164 Gold Camp Drive
Suite 200
Rancho Cordova, California 95670-6021
916/638-2085
FAX: 916/638-8385

June 13, 2002

Mr. Barney Chan
Alameda County Health Care Services Agency-Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: *Risk-Based Corrective Action Evaluation*
Former Chevron Service Station No. 9-4612
3616 San Leandro Street, Oakland, California
Report No. DG94612G.4C01

Mr. Chan:

At the request of Chevron Products Company (Chevron), Delta Environmental Consultants, Inc. network associate Gettler-Ryan Inc. (GR) is submitting this report to document the results of implementation of the Risk-Based Corrective Action (RBCA) planning process, as described in ASTM E2081-00 "Standard Guide for Risk-Based Corrective Action". This Tier 2 RBCA was conducted with site-specific data from the former Chevron service station located at 3616 San Leandro Street in Oakland, California. This RBCA was [redacted]. The site is currently developed and utilized for commercial businesses. The purpose of this work was to evaluate whether the residual hydrocarbons in the site soils and groundwater pose a risk to human health. This report describes site conditions and the RBCA model results for the site (Groundwater Services, Inc. RBCA Toolkit for Chemical Releases, version 1.3a).

Risk-Based Corrective Action (RBCA)

Tier 1 of the RBCA process involves comparison of the site constituent concentrations to generic Risk-Based Screening Levels (RBSL) to evaluate whether further evaluation and/or active remediation is warranted. RBSL values are derived from standard exposure equations and reasonable maximum exposure (RME) estimates per U.S. EPA guidelines. RBSL concentrations are designed to be protective of human health even if exposure occurs directly within the onsite area of impacted soil or groundwater, and inherently provides conservative estimates of potential threats to human health and the environment. According to the RBCA process, if Tier 1 limits are not exceeded, the user may proceed directly to compliance monitoring and/or no further action. However, if these defined screening levels are exceeded, the affected media may be addressed by: 1) remediating to the generic Tier 1 limits, if practicable; 2) conducting Tier 2 evaluation to develop site-specific remediation goals; or 3) implement an interim remedial action to abate risk "hot spots". Tier 2 analysis evaluates baseline risks both on and offsite, utilizing site specific soil, groundwater and air parameters. Additionally, Tier 2 analyses allow the use of transport models in calculating risks and cleanup standards related to offsite receptors, and utilizes Site Specific Target Levels (SSTL). The SSTL is a chemical of concern (COC) concentration limit (clean-up level) in the source medium derived by multiplying the risk-based exposure limit at the point of exposure by the natural attenuation factor for the exposure pathway.

Site Parameters

Complete exposure pathways are those that could pose a reasonable potential for contaminant contact with human or environmental receptors. Under Tier 2 RBCA, both onsite and offsite receptors apply. For the purpose of this Tier 2 evaluation, a residential exposure pathway with a risk factor of 1.0E-6 was evaluated for the site. Groundwater beneath and in the site vicinity is not used for drinking water purposes, however, groundwater ingestion and subsurface soil leaching to groundwater (ingestion) exposure pathways were evaluated for a worst case scenario. The following risk pathways were evaluated: subsurface soil and groundwater volatilization to indoor and outdoor air inhalation; ingestion and dermal contact from groundwater, surficial and subsurface soils; and construction worker exposure to soil and air.

Where available, site specific physical data were used in this RBCA evaluation. Site-specific parameters included [illegible] groundwater gradient (0.02 ft/ft), thickness of affected subsurface soil (5.5 ft), groundwater flow direction (south), and source zone volume width (100 ft). The depth of groundwater is estimated to be approximately 10 feet below ground surface (GR First Quarter Event of February 11, 2001, Groundwater Monitoring and Sampling Report). Where appropriate and consistent with site conditions, default values were used. The Chemicals of Concern (COC) were evaluated with a conservative 95% Upper Control Limit (UCL) factor as well as the California adjusted oral slope factor for benzene (0.1) for this RBCA analysis. TPHg was evaluated by inputting the reported TPHg values from soil and groundwater into the aromatic fraction C08-C10. TPHd (weathered) was evaluated by dividing the total amount of TPHd into the following fractions for input: 20% C12-16 aliphatic; 55% C16-21 aliphatic; 15% C16-21 aromatic; and 10% C21-35 aromatic (Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 5, June 1999).

Results of RBCA Analysis

Based on information from previous site investigations and current groundwater monitoring and sampling data, the Tier 2 RBCA program evaluated the complete exposure pathways identified at the site. The RBCA program findings for the identified pathways are: 1) outdoor and indoor air exposures with cumulative risk factors of 2.1E-9 and 1.0E-7; 2) soil exposure with a cumulative risk factor of 1.4E-9; and 3) groundwater ingestion with a cumulative risk factor of 8.7E-5 (Appendix A, Tier 2 Baseline Risk Summary Table). Using the residential risk factor of 1.0E-5 and site conditions, the SSTLs for BTEX, MtBE, TPHg and TPHd were determined to be below established Tier 2 SSTLs (Appendix A, SSTL Values) for all pathways except the groundwater ingestion pathway. Pertinent input and output data including site specific parameters used in the analysis are presented in Appendix A.

Conclusions And Recommendations

GR performed the RBCA evaluation for the assessment and response to petroleum hydrocarbons in the subsurface soil and groundwater beneath the subject site. A Tier 2 evaluation was performed utilizing available site specific data. The results of these analyses confirm that current site conditions do not exceed

the calculated Tier 2 SSTLs specific to the site (Appendix A), except with respect to the groundwater ingestion pathway. Since a service station is no longer present at the site, it is anticipated that dissolved concentrations of petroleum hydrocarbons will continue to attenuate over time, thereby also lowering the associated risk over time.

According to the RBCA decision making process, further work would be warranted to protect against human exposure via the groundwater ingestion pathway, if residential homes were constructed with shallow drinking water wells. However, since the groundwater beneath the site is neither currently utilized nor expected to be utilized in the future for drinking water purposes, and the fact that the site is currently developed for commercial use, GR is of the opinion that no further work is warranted at the site. Based on the RBCA program and findings presented in this report, and that the groundwater beneath and in the vicinity of the site is not used for drinking water purposes, it is GR's opinion that the site should be considered for case closure.

If you have any questions or comments on the enclosed materials please feel free to contact us at (916) 631-1314.

DELTA ENVIRONMENTAL CONSULTANTS, INC.
Network Associate GETTLER-RYAN INC.

Geoffrey D. Risse
Project Geologist

David W. Herzog
Senior Geologist
R.G. 7211

Attachments

Figure 1: Site Location Map
Figure 2: Site Plan
Appendix A: Tier 2 RBCA Input/Output Data

CC: Ms. Karen Streich, Chevron Products Company, P.O. Box 6004, San Ramon, CA 94583
Mr. Jim Brownell, Delta Environmental Consultants Inc., 3164 Gold Camp Dr. Ste. 200, Rancho Cordova, CA 95670

DG94612G.4C01

Source: National Geographic California Seamless USGS Topographic Maps on CD-ROM.

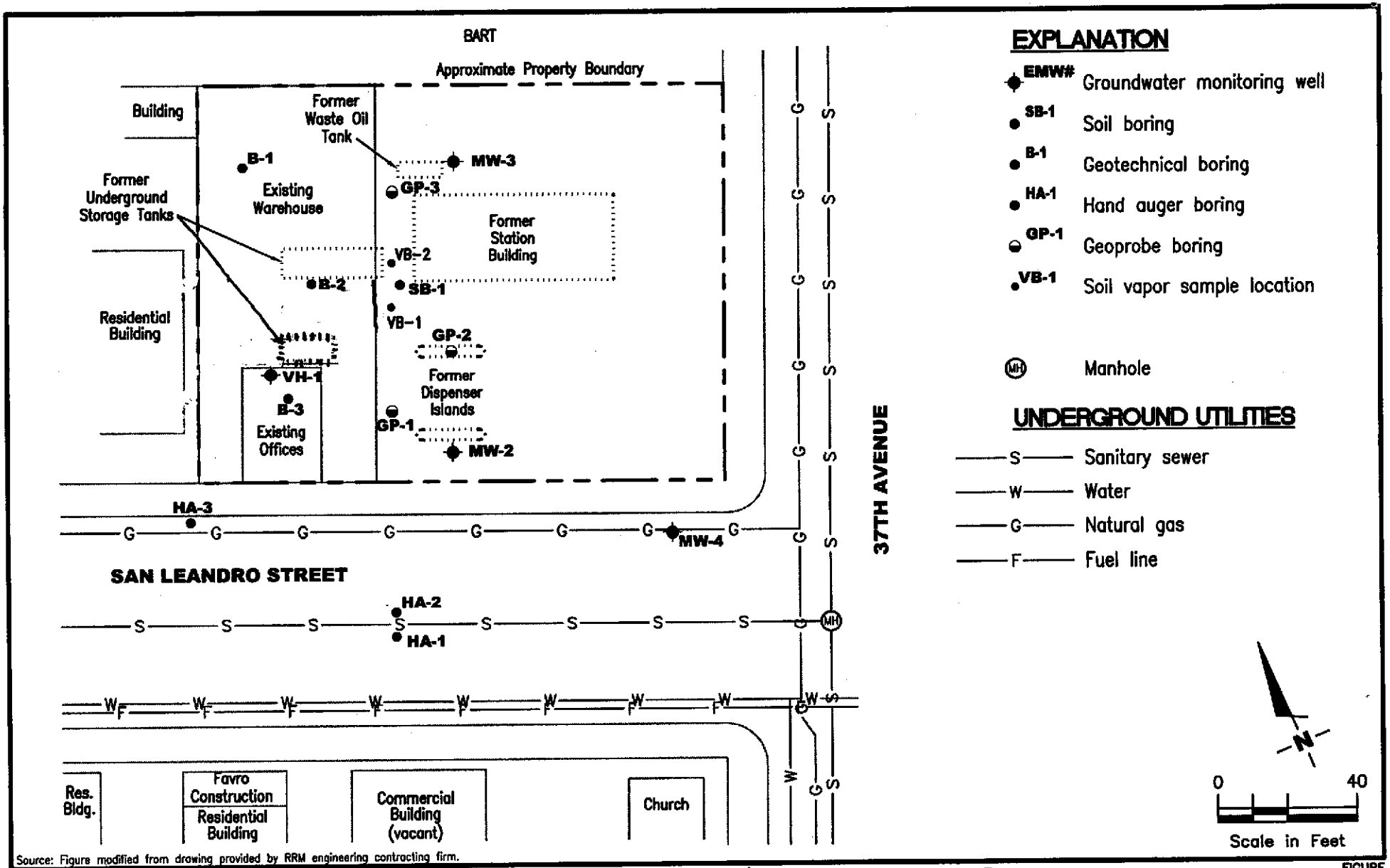
GETTLER - RYAN INC.
6747 Sierra Ct., Suite J
Dublin, CA 94568 (925) 551-7555

VICINITY MAP
Former Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

FIGURE
1

PROJECT NUMBER	REVIEWED BY	DATE	REVISED DATE
DG94612G.4C01		3/02	

FILE NAME: P:\ENVIRO\CHEVRON\9-4612\VIC-9-4612.DWG | Layout Tab: Vic Map



Source: Figure modified from drawing provided by RRM engineering contracting firm.

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6747 Sierra Ct., Suite J
Dublin, CA 94568
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SITE PLAN/SAMPLE LOCATION MAP
Former Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

FIGURE
2

PROJECT NUMBER	REVIEWED BY	DATE	REVISED DATE
DG94612G.4C01		3/02	

FILE NAME: P:\ENVIRO\CHEVRON\9-4612\A02-9-4612.DWG | Layout Tab: Sampling Rpt. 3-02

Main Screen

RBCA Tool Kit for Chemical Releases
Version 1.3a © 2000

1. Project Information

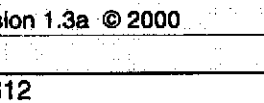
Site Name:	Former Chevron SS No. 9-4612		
Location:	3616 San Leandro Street		
Compl. By:	J. Douglas		
Date:	17-May-02	Job ID:	DG94612G.4C01

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...

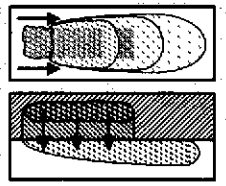
5. Commands and Options

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. 9-4612
Location: 3616 San Leandro Street
Compl. By: J. Douglas
Job ID: DG94612G.4C01 Date: 17-May-02

1. Groundwater Exposure



Groundwater Ingestion/ Surface Water Impact

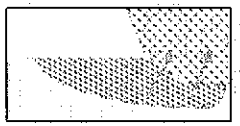
Receptor Type:	Res.	None	None
	On-site	Off-site1	Off-site2

Source Media:

Distance to GW receptors

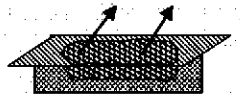
	On-site	Off-site1	Off-site2	
☑ Affected Groundwater	0	0	0	*(ft)*
☑ Affected Soils Leaching to Groundwater	0	0	0	*(ft)*

GW Discharge to Surface Water Exposure



☐ Swimming
☐ Fish Consumption
☐ Aquatic Life Protection
Enter ALP Criteria

2. Surface Soil Exposure

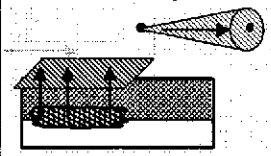


Direct Ingestion and Dermal Contact

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

Construction Worker ☑

3. Air Exposure

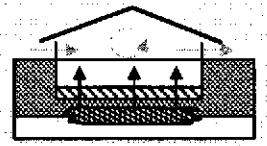


Volatilization and Particulates to Outdoor Air Inhalation

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

Construction worker ☑

☑ Affected Soils--Volatilization to Ambient Outdoor Air
☑ 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
☑ Affected Groundwater--Volatilization to Enclosed Space

4. Commands and Options

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

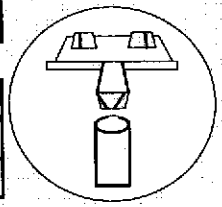
■□ Exposure Factors & Target Risks | Exposure Flowchart

Exposure Factors and Target Risk Limits

Site Name: Former Chevron SS No. 9-4612
Location: 3616 San Leandro Street
Compl. By: J. Douglas
Job ID: DG94612G.4C01 Date: 17-May-02

1. Exposure Parameters

	Age Adjustment?	Residential Adult	Residential (Age 0-6)	Residential (Age 0-16)	Commercial Chronic	Commercial 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-5	1.0E-5
Target Risk (Class C carcinogens)	1.0E-5	
Target Hazard Quotient	1.0E+0	
Target Hazard Index		1.0E+0

For noncarcinogens 1.0E-6

4. Commands and Options

Return to Exposure Pathways

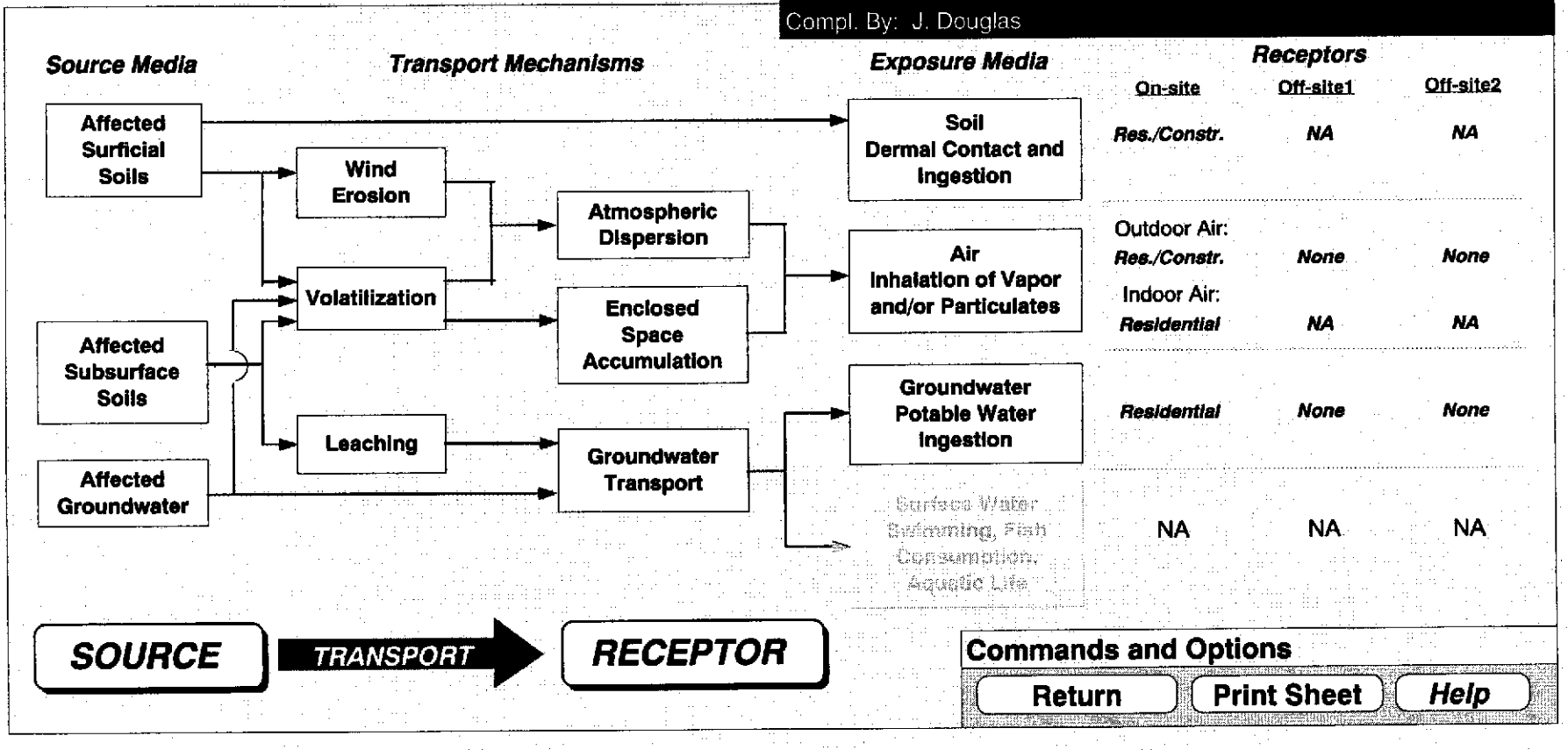
Use Default Values

Print Sheet

Help

Exposure Pathway Flowchart

Site Name: Former Chevron SS No. 9-4612 Job ID: DG94612G.4C01
Location: 3616 San Leandro Street Date: 17-May-02
Compl. By: J. Douglas



Commands and Options

Return | Print Sheet | Help

Commands and Options

Return | Print Sheet | Help

Site Name: Former Chevron SS No.[illegible]2DG94612G.4C01
Location: 3616 San Leandro Street Date: 17-May-02
Compl. By: J. Douglas

Soil Source Zone Concentration Calculator

UCL Percentile: 95%

Paste Defaults | Mean Option

Constituent	Detection Limit (mg/kg)	No. of Samples	No. of Detects	Estimated Distribution of Data	Max. Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean (mg/kg)
Benzene*	5.0E-3	11	11	Normal	2.5E-3	2.5E-3	2.5E-3
Toluene	5.0E-3	11	11	Normal	9.8E-3	3.2E-3	4.4E-3
Ethylbenzene	5.0E-3	11	11	Lognormal	1.6E-2	3.0E-3	4.0E-3
Xylene (mixed isomers)	5.0E-3	11	11	Lognormal	8.9E-2	4.2E-3	7.7E-3
Methyl t-Butyl ether	5.0E-2	11	11	Normal	1.0E-1	9.3E-2	1.1E-1
TPH - Arom >C08-C10	1.0E+0	9	9	Normal	5.0E-1	5.0E-1	5.0E-1
TPH - Aliph >C12-C16	1.0E+0	1	1	-	5.0E-1	5.0E-1	NA
TPH - Aliph >C16-C21	1.0E+0	1	1	-	5.0E-1	5.0E-1	NA
TPH - Arom >C16-C21	1.0E+0	1	1	-	5.0E-1	5.0E-1	NA
TPH - Arom >C21-C35	1.0E+0	1	1	-	5.0E-1	5.0E-1	NA

* = Chemical with user-specified data

.005 ppm
.05

(sub) **Enter Analytical Data from**
Soil Source Zone Benzene?
(up to 50 Data Points)

Analytical Data

	1	2	3	4	5	6	7	8	9	10	11	12	13
ID	GP1-6	GP1-9	GP2-6	GP2-8.5	GP3-5.5	GP3-8.5	HA1-5	HA2-5	HA3-5	MW2-5	MW3-5		
Date	3-Jul-01	3-Jul-01	3-Jul-01	3-Jul-01	3-Jul-01	3-Jul-01	5-Mar-02	5-Mar-02	5-Mar-02	1-Feb-93	1-Feb-93		
	(mg/kg)	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*	*(mg/kg)*
Y2d1	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3		
	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	9.80E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3		
	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	1.60E-2	2.50E-3	2.50E-3	2.50E-3	2.50E-3		
	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	8.90E-2	7.50E-3	7.50E-3	2.50E-3	2.50E-3		
	1.00E-1	1.00E-1	1.00E-1	1.00E-1	1.00E-1	1.00E-1	2.50E-2	1.00E-1	1.00E-1	1.00E-1	1.00E-1		
	5.00E-1	5.00E-1	5.00E-1	5.00E-1	5.00E-1	5.00E-1	5.00E-1	5.00E-1	5.00E-1				
	5.00E-1												
	5.00E-1												
	5.00E-1												
	5.00E-1												

Commands and Options

Return | Print Sheet | Help

Site Name: Former Chevron SS No. 9-4612 ID: DG94612G.4C01
Location: 3616 San Leandro Street Date: 17-May-02
Compl. By: J. Douglas

Groundwater Source Zone Concentration Calculator

UCL Percentile: 95%

Paste Defaults | Mean Option

Constituent	Detection Limit (mg/L)	No. of Samples	No. of Detects	Estimated Distribution of Data	Max. Conc. (mg/L)	Mean Conc. (mg/L)	UCL on Mean (mg/L)
Benzene*	5.0E-4	12	12	Normal	1.2E-1	5.2E-2	7.4E-2
Toluene	5.0E-4	12	12	Normal	2.3E-2	9.5E-3	1.3E-2
Ethylbenzene	5.0E-4	12	12	Lognormal	3.0E-2	5.7E-3	1.2E-2
Xylene (mixed isomers)	1.5E-3	12	12	Normal	4.2E-2	1.5E-2	2.2E-2
Methyl t-Butyl ether	2.5E-3	12	12	Normal	1.4E-1	7.7E-2	9.4E-2
TPH - Arom >C08-C10	5.0E-2	12	12	Normal	7.0E+0	3.1E+0	4.2E+0
TPH - Aliph >C12-C16	5.0E-2	4	4	Normal	2.8E-1	1.7E-1	2.7E-1
TPH - Aliph >C16-C21	5.0E-2	4	4	Normal	7.7E-1	4.6E-1	7.4E-1
TPH - Arom >C16-C21	5.0E-2	4	4	Normal	2.1E-1	1.3E-1	2.0E-1
TPH - Arom >C21-C35	5.0E-2	4	4	Normal	1.4E-1	8.4E-2	1.3E-1

* = Chemical with user-specified data

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

Analytical Data

	1	2	3	4	5	6	7	8	9	10	11	12	13
ID	VH-1	VH-1	VH-1	VH-1	MW-2	MW-2	MW-2	MW-2	MW-3	MW-3	MW-3	MW-3	
Date	12-Nov-01	6-Aug-01	7-May-01	11-Feb-02	12-Nov-01	6-Aug-01	7-May-01	11-Feb-02	12-Nov-01	6-Aug-01	7-May-01	11-Feb-02	
	(mg/L)	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)* (120 ppm)	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*
	1.20E-3	6.70E-2	1.00E-1	3.30E-2	2.90E-2	1.20E-1	1.20E-1	4.30E-2	3.60E-3	3.90E-2	6.10E-2	1.00E-2	
	2.50E-4	6.10E-3	8.20E-3	2.50E-3	5.00E-3	1.00E-2	1.50E-2	1.50E-2	2.30E-2	1.40E-2	1.20E-2	2.50E-3	
	2.50E-4	2.10E-3	1.00E-2	6.30E-3	2.70E-2	2.80E-2	3.00E-2	2.40E-2	2.30E-3	1.30E-3	5.00E-3	4.20E-3	
	7.50E-4	7.10E-3	7.90E-3	3.80E-3	2.20E-2	3.30E-2	4.20E-2	2.70E-2	5.60E-3	5.60E-3	2.00E-2	5.50E-3	
	6.10E-2	1.40E-1	1.10E-1	5.20E-2	9.80E-2	1.10E-1	8.80E-2	8.60E-2	4.60E-2	4.30E-2	4.90E-2	4.20E-2	
	2.20E-1	1.00E+0	1.80E+0	1.70E+0	7.00E+0	3.70E+0	4.70E+0	5.90E+0	3.10E+0	1.60E+0	2.80E+0	4.00E+0	
									2.80E-1	1.74E-1	7.80E-2	1.40E-1	
									7.70E-1	4.79E-1	2.15E-1	3.85E-1	
									2.10E-1	1.31E-1	5.85E-2	1.05E-1	
									1.40E-1	8.70E-2	3.90E-2	7.00E-2	

RBCA Tool Kit for Chemical Releases, Version 1.3a

Site Name: Former Chevron SS No. 9-4612 | Job ID: DG94612G.4C01
Location: 3616 San Leandro Street | Date: 17-May-02
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 ?

Selected COCs	Groundwater Source Zone (mg/L) 95% UCL	Groundwater Source Zone note	Soil Source Zone (mg/kg) ½ DL	Soil Source Zone note	Mole Fraction in Source Material (-)
Benzene*	7.4E-2		2.5E-3		
Toluene	1.3E-2		4.4E-3		
Ethylbenzene	1.2E-2		4.0E-3		
Xylene (mixed isomers)	2.2E-2		7.7E-3		
Methyl t-Butyl ether	9.4E-2		1.1E-1		
TPH - Arom >C08-C10	4.2E+0		5.0E-1		
TPH - Aliph >C12-C16	2.7E-1		5.0E-1		
TPH - Aliph >C16-C21	7.4E-1		5.0E-1		
TPH - Arom >C16-C21	2.0E-1		5.0E-1		
TPH - Arom >C21-C35	1.3E-1		5.0E-1		

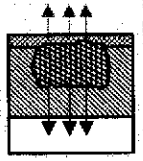
Enter Directly | Enter Site Data

* = Chemical with user-specified data

Transport Modeling Options

Site Name: Former Chevron SS No. 9-4612 Job ID: DG94612G.4C01
Location: 3616 San Leandro Street Date: 17-May-02
Compl. By: J. Douglas

1. Vertical Transport, Surface Soil Column



Outdoor Air Volatilization Factors (?)

- ○ Surface soil volatilization model only
- ◉ 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 (?)

- ◉ ASTM Model
  - ☑ Apply Soil Attenuation Model (SAM)
  - ☐ Allow first-order biodecay
  - Enter Decay Rates
- ○ User-specified LF from other model — Enter LF Values

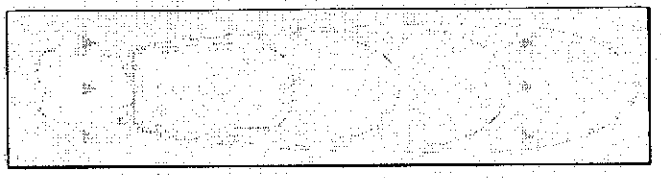
2. Lateral Air Dispersion Factor

(?)

- ○ 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: NC *(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. 9-4612 | Job ID: DG94612G.4C01
Location: 3616 San Leandro Street | Date: 17-May-02
Compl. By: J. Douglas

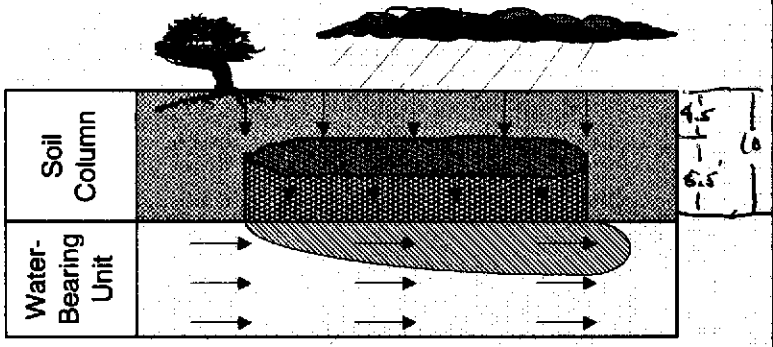
1. Soil Source Zone Characteristics

Hydrogeology

	General Case Construction	
Depth to water-bearing unit	10	(ft)
Capillary zone thickness	0.885826772	(ft)
Soil column thickness	9.114173228	(ft)

Affected Soil Zone

Depth to top of affected soils	4.5		(ft)
Depth to base of affected soils	10		(ft)
Affected soil area	4900	4900	(ft^2)
Length of affected soil parallel to assumed wind direction	40	40	(ft)
Length of affected soil parallel to assumed GW flow direction	85		(ft)



2. Surface Soil Column

	Vadose Zone	Capillary Fringe	
Predominant USCS Soil Type	MH: Clayey Silt		
or Enter Directly			
Total porosity	0.36		(-)
Volumetric water content	0.24	0.324	(-)
Volumetric air content	0.12	0.036	(-)
Dry bulk density	1.7		(kg/L)
Vertical hydraulic conductivity	8.6E-1		(cm/d)
Vapor permeability	1.1E-14		(ft^2)
Capillary zone thickness	8.9E-1		(ft)

Net Rainfall Infiltration

Net infiltration estimate	30	(cm/yr)
or Calculate		
Average annual precipitation		(cm/yr)

Partitioning Parameters

Fraction organic carbon	0.01	(-)
Soil/water pH	8.06	(-)

3. Commands and Options

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

Site-Specific Groundwater Parameters

Site Name: Former Chevron SS No. 9-4612 Job ID: DG94612G.4C01
Location: 3616 San Leandro Street Date: 17-May-02
Compl. By: J. Douglas

1. Water-Bearing Unit

Hydrogeology

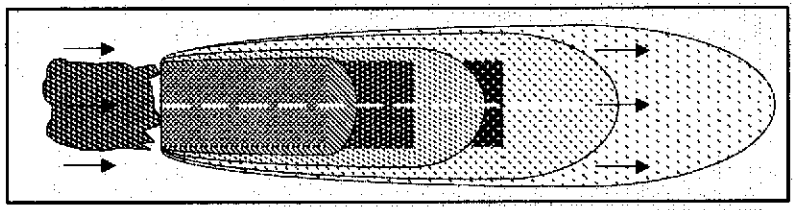
Groundwater Darcy velocity	1.4E+1	(cm/d)
Groundwater seepage velocity	3.6E+1	(cm/d)
or Enter Directly	↑ *or*	
Hydraulic conductivity	6.9E+2	(cm/d)
Hydraulic gradient	2.0E-2	(-)
Effective porosity	0.38	(-)

Sorption

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

2. Groundwater Source Zone

Groundwater plume width at source	100	(ft)
Plume (mixing zone) thickness at source	6.56167979	(ft)
or Calculate	↑ *or*	
Saturated thickness	10	(ft)
Length of source zone		(ft)



3. Groundwater Dispersion

Model:

	GW Ingestion		Soil Leaching to GW	
	Off-site 1	Off-site 2	Off-site 1	Off-site 2
Distance to GW receptors	0	0	0	0 (ft)
or NA	↓ *or*	↓	↓ *or*	↓
Longitudinal dispersivity				(ft)
Transverse dispersivity				(ft)
Vertical dispersivity				(ft)

4. Groundwater Discharge to Surface Water

	Off-site 2	
Distance to GW/SW discharge point	NA	(ft)
Plume width at GW/SW discharge	0	(ft)
Plume thickness at GW/SW discharge	0	(ft)
Surface water flowrate at GW/SW discharge	0.0E+0	(ft^3/s)

5. Commands and Options

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

Site-Specific Air Parameters

Site Name: Former Chevron SS No. 9-4612 Job ID: DG94612G.4C01
Location: 3616 San Leandro Street Date: 17-May-02
Compl. By: J. Douglas

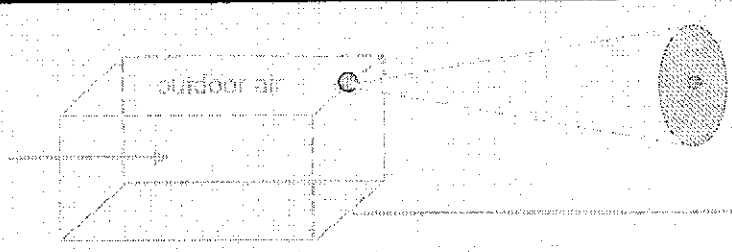
1. Outdoor Air Pathway

Dispersion to Air

	Off-site 1	Off-site 2	
Distance to offsite air receptor			(ft)
or NA		or	
Horizontal dispersivity			(ft)
Vertical dispersivity			(ft)

Air Source Zone

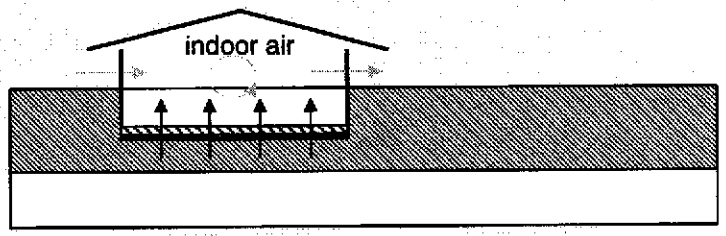
Air mixing zone height	6.56167979	*(ft)*
Ambient air velocity in mixing zone	7.381889764	*(ft/s)*
Areal particulate emission flux	6.9E-14	*(g/cm^2/s)*



2. Indoor Air Pathway

Building Parameters

	Residential	Commercial	
Building volume/area ratio	6.56168	0.84252	*(ft)*
Foundation area	753.474	753.474	*(ft^2)*
Foundation perimeter	111.549	111.549	*(ft)*
Building air exchange rate	1.4E-3	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 | **Baseline Risk Summary-All Pathways**

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

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:	2.1E-9	1.0E-5	2.1E-9	1.0E-5	☐	3.4E-3	1.0E+0	3.8E-3	1.0E+0	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	1.0E-7	1.0E-5	1.0E-7	1.0E-5	☐	1.7E-1	1.0E+0	1.9E-1	1.0E+0	☐
SOIL EXPOSURE PATHWAYS										
Complete:	1.4E-9	1.0E-5	1.4E-9	1.0E-5	☐	5.4E-4	1.0E+0	1.5E-3	1.0E+0	☐
[redacted]										
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐

CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)

[redacted]								
	Groundwater	***Groundwater***		***Groundwater***	***Groundwater***	

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
Benzene*	71-43-2	A	78.1	PS	8.80E-02	PS	9.80E-06	PS	1.77	Koc	PS	5.55E-03	2.29E-01	PS	9.52E+01	PS	1.75E+03	PS	-	-	-
Toluene	108-88-3	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	Koc	A	6.30E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29	-	-	-
Ethylbenzene	100-41-4	A	106.2	PS	7.50E-02	PS	7.80E-06	PS	2.56	Koc	PS	7.88E-03	3.25E-01	PS	1.00E+01	PS	1.69E+02	PS	-	-	-
Xylene (mixed isomers)	1330-20-7	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	Koc	A	7.03E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5	-	-	-
Methyl t-Butyl ether	1634-04-4	O	88.146	5	7.92E-02	6	9.41E-05	7	1.08	Koc	A	5.77E-04	2.36E-02	-	2.49E+02	-	4.80E+04	A	-	-	-
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 - Aliph >C12-C16	0-00-0	T	200	T	1.00E-01	T	1.00E-05	T	6.70	Koc	T	1.26E+01	5.21E+02	T	3.65E-02	-	7.60E-04	T	-	-	-
TPH - Aliph >C16-C21	0-00-0	T	270	T	1.00E-01	T	1.00E-05	T	8.80	Koc	T	1.19E+02	4.90E+03	T	8.36E-04	-	2.50E-06	T	-	-	-
TPH - Arom >C16-C21	0-00-0	T	190	T	1.00E-01	T	1.00E-05	T	4.20	Koc	T	3.22E-04	1.33E-02	T	8.36E-04	-	6.50E-01	T	-	-	-
TPH - Arom >C21-C35	0-00-0	T	240	T	1.00E-01	T	1.00E-05	T	5.10	Koc	T	1.60E-05	6.60E-04	T	3.34E-07	-	6.60E-03	T	-	-	-

* = Chemical with user-specified data

Site Name: Former Chevron SS No. 9-4612

Site Location: 3616 San Leandro Street

Completed By: J. Douglas

Date Completed: 17-May-02

Job ID: DG94612G.4C01

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 ?
Benzene*	3.00E-03	R	-	-	5.95E-03	R	1.00E-01	PS	2.99E-02	TX	8.29E-06	PS	A	TRUE
Toluene	2.00E-01	A,R	1.60E-01	TX	4.00E-01	A,R	-	-	-	-	-	-	D	FALSE
Ethylbenzene	1.00E-01	PS	9.70E-02	TX	1.00E+00	PS	-	-	-	-	-	-	D	FALSE
Xylene (mixed isomers)	2.00E+00	A,R	1.84E+00	TX	7.00E+00	A	-	-	-	-	-	-	D	FALSE
Methyl t-Butyl ether	1.00E-02	31	8.00E-03	TX	3.00E+00	R	-	-	-	-	-	-	-	FALSE
TPH - Arom >C08-C10	4.00E-02	T	-	-	2.00E-01	T	-	-	-	-	-	-	D	FALSE
TPH - Aliph >C12-C16	1.00E-01	T	-	-	1.00E+00	T	-	-	-	-	-	-	D	FALSE
TPH - Aliph >C16-C21	2.00E+00	T	-	-	-	T	-	-	-	-	-	-	D	FALSE
TPH - Arom >C16-C21	3.00E-02	T	-	-	-	T	-	-	-	-	-	-	D	FALSE
TPH - Arom >C21-C35	3.00E-02	T	-	-	-	T	-	-	-	-	-	-	D	FALSE

* = Chemical with user-specifiec

Site Name: Former Chevron SS

Site Location: 3616 San Lear

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)
Benzene*	5.00E-04	-	3.25E+00	-	-	-	12.6
Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	-	-	70
Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.35E+02	PS	-	-	1
Xylene (mixed isomers)	1.00E+01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	-	-	1
Methyl t-Butyl ether	-	-	6.00E+01	NIOSH	-	-	1
TPH - Arom >C08-C10	-	-	-	-	-	-	1
TPH - Aliph >C12-C16	-	-	-	-	-	-	1
TPH - Aliph >C16-C21	-	-	-	-	-	-	1
TPH - Arom >C16-C21	-	-	-	-	-	-	1
TPH - Arom >C21-C35	-	-	-	-	-	-	1

* = Chemical with user-specifiec

Site Name: Former Chevron SS

Site Location: 3616 San Lear

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
Benzene*	0.5	0.021	0.26	0.63	0.013	7.3E-2	D	0.002	S	0.005	S	720	720	H
Toluene	0.5	0.045	0.32	0.77	0.054	1.6E-1	D	0.002	S	0.005	S	28	28	H
Ethylbenzene	0.5	0.074	0.39	1.3	0.14	2.7E-1	D	0.002	S	0.005	S	228	228	H
Xylene (mixed isomers)	0.5	0.08	0.39	1.4	0.16	2.9E-1	D	0.005	S	0.005	S	360	360	H
Methyl t-Butyl ether	0.5	-	-	-	-	-	-	-	-	-	-	360	180	H
TPH - Arom >C08-C10	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH - Aliph >C12-C16	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH - Aliph >C16-C21	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH - Arom >C16-C21	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH - Arom >C21-C35	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-

* = Chemical with user-specifiec

Site Name: Former Chevron SS

Site Location: 3616 San Lear

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4C01

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	Residential	None	None
Soil Leaching to Groundwater Ingestion	Residential	None	None
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	Res./Constr.		
Outdoor Air:			
Particulates from Surface Soils	Res./Constr.	None	None
Volatilization from Soils	Res./Constr.	None	None
Volatilization from Groundwater	Residential	None	None
Indoor Air:			
Volatilization from Subsurface Soils	Residential	NA	NA
Volatilization from Groundwater	Residential	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	0	NA	NA	(ft)
Soil leaching to groundwater receptor	0	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-5	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	ASTM leaching model
Use soil attenuation model (SAM) for leachate?	Yes
Air dilution factor	NA
Groundwater dilution-attenuation factor	NA

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	4.9E+3	4.9E+3	(ft^2)
W	Length of source-zone area parallel to wind	4.0E+1	4.0E+1	(ft)
W_{gw}	Length of source-zone area parallel to GW flow	8.5E+1		(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	6.9E-14		(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	3.3E+0		(ft)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	Capillary zone thickness	8.9E-1			(ft)
h_v	Vadose zone thickness	9.1E+0			(ft)
ρ_b	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-1			(cm/d)
k_v	Vapor permeability	1.1E-14			(ft^2)
L_{gw}	Depth to groundwater	1.0E+1			(ft)
L_s	Depth to top of affected soils	4.5E+0			(ft)
L_{base}	Depth to base of affected soils	1.0E+1			(ft)
L_{subs}	Thickness of affected soils	5.5E+0			(ft)
pH	Soil/groundwater pH	8.1E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.324	0.24	0.12	(-)
θ_a	Volumetric air content	0.036	0.12	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	6.56E+0	NA	(ft)
A_b	Foundation area	7.53E+2	NA	(ft^2)
X_{crk}	Foundation perimeter	1.12E+2	NA	(ft)
ER	Building air exchange rate	1.40E-3	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	6.6E+0	(ft)
I_f	Net groundwater infiltration rate	3.0E+1	(cm/yr)
U_{gw}	Groundwater Darcy velocity	1.4E+1	(cm/d)
V_{gw}	Groundwater seepage velocity	3.6E+1	(cm/d)
K_s	Saturated hydraulic conductivity	NA	(cm/d)
i	Groundwater gradient	NA	(-)
S_w	Width of groundwater source zone	NA	(ft)
S_d	Depth of groundwater source zone	NA	(ft)
θ_{eff}	Effective porosity in water-bearing unit	NA	(-)
f_{oc-sat}	Fraction organic carbon in water-bearing unit	NA	(-)
pH_{sat}	Groundwater pH	NA	(-)
	Biodegradation considered?	NA	

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	NA	NA	NA	NA	(ft)
α_y	Transverse dispersivity	NA	NA	NA	NA	(ft)
α_z	Vertical dispersivity	NA	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)
UF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

RBCA SITE ASSESSMENT

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4C01

SOIL (4.5 - 10 ft) SSTL VALUES

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

Groundwater DAF Option:

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	Soil Leaching to Groundwater Ingestion			X	Soil Vol. to Indoor Air	X	Soil Volatilization and Surface Soil Particulates to Outdoor Air				X	Surface Soil Inhalation, Ingestion,Dermal Contact		Applicable SSTL	SSTL Exceeded ?	Required CRF
				On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)		On-site (0 ft)		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)		On-site (0 ft)				Only if "yes" left
CAS No.	Name	(mg/kg)		Residential	None	None		Residential		Residential	Construction Worker	None	None		Residential	Construction Worker	(mg/kg)	"■" If yes	
71-43-2	Benzene*	2.5E-3		8.8E-2	NA	NA		2.7E+0		3.6E+2	>1.3E+3	NA	NA		1.8E+1	1.0E+2	8.8E-2	☐	<1
108-88-3	Toluene	4.4E-3		1.5E+2	NA	NA		3.9E+2		>7.8E+2	>7.8E+2	NA	NA		3.9E+3	5.5E+3	1.5E+2	☐	<1
100-41-4	Ethylbenzene	4.0E-3		1.9E+2	NA	NA		>6.4E+2		>6.4E+2	>6.4E+2	NA	NA		2.4E+3	3.3E+3	1.9E+2	☐	<1
1330-20-7	Xylene (mixed isomers)	7.7E-3		>5.1E+2	NA	NA		>5.1E+2		>5.1E+2	>5.1E+2	NA	NA		4.5E+4	6.3E+4	4.5E+4	☐	<1
1634-04-4	Methyl t-Butyl ether	1.1E-1		1.3E+0	NA	NA		4.0E+3		>1.3E+4	>1.3E+4	NA	NA		2.0E+2	2.8E+2	1.3E+0	☐	<1
0-00-0	TPH - Arom >C08-C10	5.0E-1		3.2E+2	NA	NA		7.8E+2		>1.0E+3	>1.0E+3	NA	NA		9.7E+2	1.4E+3	3.2E+2	☐	<1
0-00-0	TPH - Aliph >C12-C16	5.0E-1		>3.8E+1	NA	NA		>3.8E+1		>3.8E+1	>3.8E+1	NA	NA		2.4E+3	3.4E+3	2.4E+3	☐	<1
0-00-0	TPH - Aliph >C16-C21	5.0E-1		>1.6E+1	NA	NA		NC		NC	NC	NA	NA		NC	NC	>1.6E+1	☐	NA
0-00-0	TPH - Arom >C16-C21	5.0E-1		>1.0E+2	NA	NA		NC		NC	NC	NA	NA		NC	NC	>1.0E+2	☐	NA
0-00-0	TPH - Arom >C21-C35	5.0E-1		>8.3E+0	NA	NA		NC		NC	NC	NA	NA		NC	NC	>8.3E+0	☐	NA

* = Chemical with user-specified data

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

RBCA SITE ASSESSMENT

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4C01

GROUNDWATER SSTL VALUES

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

Groundwater DAF Option:

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 (0 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)	Residential	None	None	Residential	Residential	None	None	(mg/L)	"■" if yes	
71-43-2	Benzene*	7.4E-2	8.5E-3	NA	NA	7.8E+0	3.7E+2	NA	NA	8.5E-3	■	8.7E+0
108-88-3	Toluene	1.3E-2	7.3E+0	NA	NA	>5.2E+2	>5.2E+2	NA	NA	7.3E+0	☐	<1
100-41-4	Ethylbenzene	1.2E-2	3.7E+0	NA	NA	>1.7E+2	>1.7E+2	NA	NA	3.7E+0	☐	<1
1330-20-7	Xylene (mixed isomers)	2.2E-2	7.3E+1	NA	NA	>2.0E+2	>2.0E+2	NA	NA	7.3E+1	☐	<1
1634-04-4	Methyl t-Butyl ether	9.4E-2	3.7E-1	NA	NA	2.3E+4	>4.8E+4	NA	NA	3.7E-1	☐	<1
0-00-0	TPH - Arom >C08-C10	4.2E+0	1.5E+0	NA	NA	>6.5E+1	>6.5E+1	NA	NA	1.5E+0	■	2.9E+0
0-00-0	TPH - Aliph >C12-C16	2.7E-1	>7.6E-4	NA	NA	>7.6E-4	>7.6E-4	NA	NA	>7.6E-4	☐	NA
0-00-0	TPH - Aliph >C16-C21	7.4E-1	>2.5E-6	NA	NA	NC	NC	NA	NA	>2.5E-6	☐	NA
0-00-0	TPH - Arom >C16-C21	2.0E-1	>6.5E-1	NA	NA	NC	NC	NA	NA	>6.5E-1	☐	NA
0-00-0	TPH - Arom >C21-C35	1.3E-1	>6.6E-3	NA	NA	NC	NC	NA	NA	>6.6E-3	☐	NA

* = Chemical with user-specified data

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

RBCA SITE ASSESSMENT | **TPH Criteria SSTL Worksheet**

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4C01

CALCULATION OF SSTL VALUES FOR TPH

CONSTITUENTS OF CONCERN		Mass Fractions		Representative Concentrations		Calculated Concentration Limits		Applicable SSTL Values	
		Soil	Groundwater	Soil	Groundwater	Residual Soil Concentration	Solubility	Soils (4.5 - 10 ft)	Groundwater
CAS No.	Name	(-)	(-)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)	(mg/kg)	(mg/L)
0-00-0	TPH - Arom >C08-C10	2.0E-1	6.0E-1	5.0E-1	4.2E+0	1.0E+3	6.5E+1	3.2E+2	1.5E+0
0-00-0	TPH - Aliph >C12-C16	2.0E-1	8.0E-2	5.0E-1	2.7E-1	3.8E+1	7.6E-4	2.4E+3	>7.6E-4
0-00-0	TPH - Aliph >C16-C21	2.0E-1	2.2E-1	5.0E-1	7.4E-1	1.6E+1	2.5E-6	>1.6E+1	>2.5E-6
0-00-0	TPH - Arom >C16-C21	2.0E-1	6.0E-2	5.0E-1	2.0E-1	1.0E+2	6.5E-1	>1.0E+2	>6.5E-1
0-00-0	TPH - Arom >C21-C35	2.0E-1	4.0E-2	5.0E-1	1.3E-1	8.3E+0	6.6E-3	>8.3E+0	>6.6E-3
* = Chemical with user-specified data									
	Total	1.0E+0	1.0E+0	2.5E+0	5.5E+0		Total TPH SSTL value	1.6E+3	2.1E+0

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

RBCA SITE ASSESSMENT	Cumulative Risk Worksheet

Site Name: Former Chevron SS No. 9-4612 | Completed By: J. Douglas | Job ID: DG94612G.4C01

Site Location: 3616 San Leandro Street | Date Completed: 17-May-02 | *1 OF 3*

CUMULATIVE RISK WORKSHEET

CONSTITUENTS OF CONCERN		Representative Concentration		Proposed CRF		Resultant Target Concentration	
CAS No.	Name	Soil (mg/kg)	Groundwater (mg/L)	Soil	GW	Soil (mg/kg)	Groundwater (mg/L)
71-43-2	Benzene*	2.5E-3	7.4E-2			2.5E-3	7.4E-2
108-88-3	Toluene	4.4E-3	1.3E-2			4.4E-3	1.3E-2
100-41-4	Ethylbenzene	4.0E-3	1.2E-2			4.0E-3	1.2E-2
1330-20-7	Xylene (mixed isomers)	7.7E-3	2.2E-2			7.7E-3	2.2E-2
1634-04-4	Methyl t-Butyl ether	1.1E-1	9.4E-2			1.1E-1	9.4E-2
0-00-0	TPH - Arom >C08-C10	5.0E-1	4.2E+0			5.0E-1	4.2E+0
0-00-0	TPH - Aliph >C12-C16	5.0E-1	2.7E-1			5.0E-1	2.7E-1
0-00-0	TPH - Aliph >C16-C21	5.0E-1	7.4E-1			5.0E-1	7.4E-1
0-00-0	TPH - Arom >C16-C21	5.0E-1	2.0E-1			5.0E-1	2.0E-1
0-00-0	TPH - Arom >C21-C35	5.0E-1	1.3E-1			5.0E-1	1.3E-1

Cumulative Values:

RBCA SITE ASSESSMENT | **Cumulative Risk Worksheet**

Site Name: Former Chevron SS No. 9-4612 | Site Name: Former Chevron SS No. 9-4612 | Completed By: J. Douglas | Job ID: DG94612G.4C01

Site Location: 3616 San Leandro Street | Site Location: 3616 San Leandro Street | Date Completed: 17-May-02 | *2 OF 3*

CUMULATIVE RISK WORKSHEET

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

ON-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure: Residential Target Risk: 1.0E-5 / 1.0E-5	Outdoor Air Exposure: Residential Target HQ: 1.0E+0	Indoor Air Exposure: Residential Target Risk: 1.0E-5 / 1.0E-5	Indoor Air Exposure: Residential Target HQ: 1.0E+0	Soil Exposure: Residential Target Risk: 1.0E-5 / 1.0E-5	Soil Exposure: Residential Target HQ: 1.0E+0	Groundwater Exposure: Residential Target Risk: 1.0E-5 / 1.0E-5	Groundwater Exposure: Residential 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*	2.1E-9	9.8E-5	1.0E-7	4.9E-3	1.4E-9	3.4E-5	[redacted]	6.8E-1
108-88-3	Toluene		3.4E-7		2.4E-5		1.1E-6		1.8E-3
100-41-4	Ethylbenzene		1.3E-7		7.0E-6		1.7E-6		3.3E-3
1330-20-7	Xylene (mixed isomers)		3.2E-8		1.9E-6		1.7E-7		3.0E-4
1634-04-4	Methyl t-Butyl ether		4.0E-7		3.0E-5		5.4E-4		2.6E-1
0-00-0	TPH - Arom >C08-C10		3.2E-4		1.5E-2		5.1E-4		2.9E+0
0-00-0	TPH - Aliph >C12-C16		3.4E-3		1.7E-1		2.1E-4		7.3E-2
0-00-0	TPH - Aliph >C16-C21						1.3E-6		1.0E-2
0-00-0	TPH - Arom >C16-C21						8.9E-5		1.8E-1
0-00-0	TPH - Arom >C21-C35						8.9E-5		1.2E-1
	Cumulative Values:	**2.1E-9**	**3.8E-3**	**1.0E-7**	**1.9E-1**	**1.4E-9**	**1.5E-3**	[redacted] ■	**4.2E+0** ■

■ Indicates risk level exceeding target risk

RBCA SITE ASSESSMENT | **Cumulative Risk Worksheet**

Site Name: Former Chevron SS No. 9-4612 | Site Name: Former Chevron SS No. 9-4612 | Completed By: J. Douglas | Job ID: DG94612G.4C01

Site Location: 3616 San Leandro Street | Site Location: 3616 San Leandro Street | Date Completed: 17-May-02 | ***3 OF 3***

CUMULATIVE RISK WORKSHEET

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

Groundwater DAF Option: FALSE

OFF-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure:				Groundwater Exposure:			
		None		None		None		None	
		Target Risk: 1.0E-5 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-5 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-5 / 1.0E-5	Target HQ: 1.0E+0	Target Risk: 1.0E-5 / 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*								
108-88-3	Toluene								
100-41-4	Ethylbenzene								
1330-20-7	Xylene (mixed isomers)								
1634-04-4	Methyl t-Butyl ether								
0-00-0	TPH - Arom >C08-C10								
0-00-0	TPH - Aliph >C12-C16								
0-00-0	TPH - Aliph >C16-C21								
0-00-0	TPH - Arom >C16-C21								
0-00-0	TPH - Arom >C21-C35								
Cumulative Values:		**0.0E+0**	**0.0E+0**	**0.0E+0**	**0.0E+0**	**0.0E+0**	**0.0E+0**	**0.0E+0**	**0.0E+0**

■ indicates risk level exceeding target risk

RBCA SITE ASSESSMENT

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	1) Source Medium	2) NAF Value (m^3/kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)			
	Soil Conc. (mg/kg)	On-site (0 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
Benzene*	2.5E-3								
Toluene	4.4E-3								
Ethylbenzene	4.0E-3								
Xylene (mixed isomers)	7.7E-3								
Methyl t-Butyl ether	1.1E-1								
TPH - Arom >C08-C10	5.0E-1								
TPH - Aliph >C12-C16	5.0E-1								
TPH - Aliph >C16-C21	5.0E-1								
TPH - Arom >C16-C21	5.0E-1								
TPH - Arom >C21-C35	5.0E-1								

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SURFACE SOILS:

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)
	Residential	Construction Worker	None	None	Residential	Construction Worker	None	None
Benzene*								
Toluene								
Ethylbenzene								
Xylene (mixed isomers)								
Methyl t-Butyl ether								
TPH - Arom >C08-C10								
TPH - Aliph >C12-C16								
TPH - Aliph >C16-C21								
TPH - Arom >C16-C21								
TPH - Arom >C21-C35								

* = Chemical with user-specified data

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

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

SUBSURFACE SOILS (4.5 - 10 ft):
VAPOR INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Soil Conc. (mg/kg)	On-site (0 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
Benzene*	2.5E-3	1.2E+5			2.0E-8		
Toluene	4.4E-3	1.2E+5			3.6E-8		
Ethylbenzene	4.0E-3	1.2E+5			3.3E-8		
Xylene (mixed isomers)	7.7E-3	1.2E+5			6.3E-8		
Methyl t-Butyl ether	1.1E-1	1.2E+5			8.6E-7		
TPH - Arom >C08-C10	5.0E-1	2.5E+5			2.0E-6		
TPH - Aliph >C12-C16	5.0E-1	7.4E+5			6.8E-7		
TPH - Aliph >C16-C21	5.0E-1	9.8E+6			5.1E-8		
TPH - Arom >C16-C21	5.0E-1	8.5E+7			5.9E-9		
TPH - Arom >C21-C35	5.0E-1	5.8E+9			8.7E-11		

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SUBSURFACE SOILS (4.5 - 10 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) 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
Benzene*	4.1E-1			8.4E-9		
Toluene	9.6E-1			3.4E-8		
Ethylbenzene	9.6E-1			3.1E-8		
Xylene (mixed isomers)	9.6E-1			6.0E-8		
Methyl t-Butyl ether	9.6E-1			8.3E-7		
TPH - Arom >C08-C10	9.6E-1			1.9E-6		
TPH - Aliph >C12-C16	9.6E-1			6.5E-7		
TPH - Aliph >C16-C21	9.6E-1			4.9E-8		
TPH - Arom >C16-C21	9.6E-1			5.6E-9		
TPH - Arom >C21-C35	9.6E-1			8.3E-11		

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

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 (0 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2): On-site (0 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
Benzene*	7.4E-2	1.3E+5			5.9E-7		
Toluene	1.3E-2	1.2E+5			1.1E-7		
Ethylbenzene	1.2E-2	1.2E+5			1.0E-7		
Xylene (mixed isomers)	2.2E-2	1.3E+5			1.7E-7		
Methyl t-Butyl ether	9.4E-2	2.4E+5			3.9E-7		
TPH - Arom >C08-C10	4.2E+0	6.6E+4			6.4E-5		
TPH - Aliph >C12-C16	2.7E-1	7.6E+1			3.5E-3		
TPH - Aliph >C16-C21	7.4E-1	8.0E+0			9.2E-2		
TPH - Arom >C16-C21	2.0E-1	6.4E+5			3.2E-7		
TPH - Arom >C21-C35	1.3E-1	3.9E+6			3.4E-8		

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

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
Benzene*	4.1E-1			2.4E-7		
Toluene	9.6E-1			1.0E-7		
Ethylbenzene	9.6E-1			1.0E-7		
Xylene (mixed isomers)	9.6E-1			1.6E-7		
Methyl t-Butyl ether	9.6E-1			3.7E-7		
TPH - Arom >C08-C10	9.6E-1			6.1E-5		
TPH - Aliph >C12-C16	9.6E-1			3.4E-3		
TPH - Aliph >C16-C21	9.6E-1			8.8E-2		
TPH - Arom >C16-C21	9.6E-1			3.0E-7		
TPH - Arom >C21-C35	9.6E-1			3.3E-8		

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m^3)

(Sum average expososure 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
Benzene*	2.5E-7			
Toluene	1.4E-7			
Ethylbenzene	1.3E-7			
Xylene (mixed isomers)	2.2E-7			
Methyl t-Butyl ether	1.2E-6			
TPH - Arom >C08-C10	6.3E-5			
TPH - Aliph >C12-C16	3.4E-3			
TPH - Aliph >C16-C21	8.8E-2			
TPH - Arom >C16-C21	3.1E-7			
TPH - Arom >C21-C35	3.3E-8			

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

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
Benzene*	A	2.5E-7				8.3E-6	2.1E-9			
Toluene	D									
Ethylbenzene	D									
Xylene (mixed isomers)	D									
Methyl t-Butyl ether	-									
TPH - Arom >C08-C10	D									
TPH - Aliph >C12-C16	D									
TPH - Aliph >C16-C21	D									
TPH - Arom >C16-C21	D									
TPH - Arom >C21-C35	D									

Total Pathway Carcinogenic Risk = **2.1E-9**

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4C01

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
Benzene*	5.9E-7				6.0E-3	9.8E-5			
Toluene	1.4E-7				4.0E-1	3.4E-7			
Ethylbenzene	1.3E-7				1.0E+0	1.3E-7			
Xylene (mixed isomers)	2.2E-7				7.0E+0	3.2E-8			
Methyl t-Butyl ether	1.2E-6				3.0E+0	4.0E-7			
TPH - Arom >C08-C10	6.3E-5				2.0E-1	3.2E-4			
TPH - Aliph >C12-C16	3.4E-3				1.0E+0	3.4E-3			
TPH - Aliph >C16-C21									
TPH - Arom >C16-C21									
TPH - Arom >C21-C35									
Total Pathway Hazard Index =						**3.8E-3**			

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

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

SOILS (4.5 - 10 ft): VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	1) Source Medium Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) 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
Benzene*	2.5E-3	9.3E+2	2.7E-6	4.1E-1	1.1E-6
Toluene	4.4E-3	9.3E+2	4.7E-6	9.6E-1	4.5E-6
Ethylbenzene	4.0E-3	1.7E+3	2.3E-6	9.6E-1	2.2E-6
Xylene (mixed isomers)	7.7E-3	1.4E+3	5.6E-6	9.6E-1	5.4E-6
Methyl t-Butyl ether	1.1E-1	1.3E+3	8.2E-5	9.6E-1	7.9E-5
TPH - Arom >C08-C10	5.0E-1	3.7E+3	1.3E-4	9.6E-1	1.3E-4
TPH - Aliph >C12-C16	5.0E-1	1.1E+4	4.6E-5	9.6E-1	4.5E-5
TPH - Aliph >C16-C21	5.0E-1	1.4E+5	3.5E-6	9.6E-1	3.3E-6
TPH - Arom >C16-C21	5.0E-1	1.3E+6	3.9E-7	9.6E-1	3.7E-7
TPH - Arom >C21-C35	5.0E-1	1.5E+8	3.4E-9	9.6E-1	3.3E-9

* = Chemical with user-specified data

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

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
Benzene*	7.4E-2	2.6E+3	2.8E-5	4.1E-1	1.2E-5
Toluene	1.3E-2	2.5E+3	5.1E-6	9.6E-1	4.9E-6
Ethylbenzene	1.2E-2	2.4E+3	5.0E-6	9.6E-1	4.8E-6
Xylene (mixed isomers)	2.2E-2	2.7E+3	8.2E-6	9.6E-1	7.8E-6
Methyl t-Butyl ether	9.4E-2	7.4E+3	1.3E-5	9.6E-1	1.2E-5
TPH - Arom >C08-C10	4.2E+0	1.4E+3	3.1E-3	9.6E-1	3.0E-3
TPH - Aliph >C12-C16	2.7E-1	1.5E+0	1.7E-1	9.6E-1	1.7E-1
TPH - Aliph >C16-C21	7.4E-1	1.6E-1	4.5E+0	9.6E-1	4.3E+0
TPH - Arom >C16-C21	2.0E-1	1.6E+4	1.2E-5	9.6E-1	1.2E-5
TPH - Arom >C21-C35	1.3E-1	1.6E+5	8.6E-7	9.6E-1	8.3E-7

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. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

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
Benzene*	1.3E-5
Toluene	9.4E-6
Ethylbenzene	7.0E-6
Xylene (mixed isomers)	1.3E-5
Methyl t-Butyl ether	9.1E-5
TPH - Arom >C08-C10	3.1E-3
TPH - Aliph >C12-C16	1.7E-1
TPH - Aliph >C16-C21	4.3E+0
TPH - Arom >C16-C21	1.2E-5
TPH - Arom >C21-C35	8.3E-7

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

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		
Benzene*	A	1.3E-5	8.3E-6	1.0E-7
Toluene	D			
Ethylbenzene	D			
Xylene (mixed isomers)	D			
Methyl t-Butyl ether	-			
TPH - Arom >C08-C10	D			
TPH - Aliph >C12-C16	D			
TPH - Aliph >C16-C21	D			
TPH - Arom >C16-C21	D			
TPH - Arom >C21-C35	D			

Total Pathway Carcinogenic Risk = **1.0E-7**

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

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
Benzene*	2.9E-5	6.0E-3	4.9E-3
Toluene	9.4E-6	4.0E-1	2.4E-5
Ethylbenzene	7.0E-6	1.0E+0	7.0E-6
Xylene (mixed isomers)	1.3E-5	7.0E+0	1.9E-6
Methyl t-Butyl ether	9.1E-5	3.0E+0	3.0E-5
TPH - Arom >C08-C10	3.1E-3	2.0E-1	1.5E-2
TPH - Aliph >C12-C16	1.7E-1	1.0E+0	1.7E-1
TPH - Aliph >C16-C21			
TPH - Arom >C16-C21			
TPH - Arom >C21-C35			

Total Pathway Hazard Index = **1.9E-1**

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

Site Name: Former Chevron SS No. 9-4612 Site Location: 3616 San Leandro Street Completed By: J. Douglas Date Completed: 17-May-02 *1 OF 1*

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAY ■ **(CHECKED IF PATHWAY IS ACTIVE)**

SURFACE SOILS OR SEDIMENTS:
ON-SITE INGESTION AND DERMAL CONTACT

Constituents of Concern	1) Source/Exposure Medium	2) Exposure Multiplier (IR+SAxMxRAF)xEFxED/(BWxAT) (kg/kg/day)		3) Average Daily Intake Rate (mg/kg/day) (1) x (2)	
	Surface Soil Conc. (mg/kg)	Residential	Construction Worker	Residential	Construction Worker
Benzene*	2.5E-3	1.8E-5	4.2E-7	4.4E-8	1.0E-9
Toluene	4.4E-3	4.1E-5	2.9E-5	1.8E-7	1.3E-7
Ethylbenzene	4.0E-3	4.1E-5	2.9E-5	1.7E-7	1.2E-7
Xylene (mixed isomers)	7.7E-3	4.1E-5	2.9E-5	3.2E-7	2.2E-7
Methyl t-Butyl ether	1.1E-1	4.1E-5	2.9E-5	4.3E-6	3.1E-6
TPH - Arom >C08-C10	5.0E-1	4.1E-5	2.9E-5	2.1E-5	1.5E-5
TPH - Aliph >C12-C16	5.0E-1	4.1E-5	2.9E-5	2.1E-5	1.5E-5
TPH - Aliph >C16-C21	5.0E-1	5.3E-6	3.5E-6	2.7E-6	1.8E-6
TPH - Arom >C16-C21	5.0E-1	5.3E-6	3.5E-6	2.7E-6	1.8E-6
TPH - Arom >C21-C35	5.0E-1	5.3E-6	3.5E-6	2.7E-6	1.8E-6

NOTE: RAF = Relative absorption factor (-) AT = Averaging time (days) ED = Exposure duration (yrs) IR = Soil ingestion rate (mg/day)
M = Adherence factor (mg/cm^2) BW = Body weight (kg) EF = Exposure frequencey (days/yr) SA = Skin exposure area (cm^2/day)

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas
Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY ■ (CHECKED IF PATHWAY IS ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)				(3) Slope Factor (mg/kg/day)^-1		(4) Individual COC Risk	
		(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(2a)x(3a) + (2b)x(3b)	(2c)x(3a) + (2d)x(3b)
		Residential		Construction Worker				Residential	Construction Worker
Benzene*	A	1.5E-9	4.3E-8	2.5E-11	1.0E-9	1.0E-1	3.0E-2	1.4E-9	3.3E-11
Toluene	D								
Ethylbenzene	D								
Xylene (mixed isomers)	D								
Methyl t-Butyl ether	-								
TPH - Arom >C08-C10	D								
TPH - Aliph >C12-C16	D								
TPH - Aliph >C16-C21	D								
TPH - Arom >C16-C21	D								
TPH - Arom >C21-C35	D								

* No dermal slope factor available--oral slope factor used.

Total Pathway Carcinogenic Risk = **1.4E-9** | **3.3E-11**

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY ■ (CHECKED IF PATHWAY IS ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Intake Rate (mg/kg/day)				(6) Oral Reference Dose (mg/kg-day)		(7) Individual COC Hazard Quotient	
	(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(5a)/(6a) + (5b)/(6b)	(5c)/(6a) + (5d)/(6b)
	Residential		Construction Worker				Residential	Construction Worker
Benzene*	3.4E-9	9.9E-8	1.8E-9	7.1E-8	3.0E-3	3.0E-3*	3.4E-5	2.4E-5
Toluene	6.0E-9	1.7E-7	3.1E-9	1.2E-7	2.0E-1	1.6E-1	1.1E-6	7.9E-7
Ethylbenzene	5.5E-9	1.6E-7	2.8E-9	1.1E-7	1.0E-1	9.7E-2	1.7E-6	1.2E-6
Xylene (mixed isomers)	1.1E-8	3.1E-7	5.4E-9	2.2E-7	2.0E+0	1.8E+0	1.7E-7	1.2E-7
Methyl t-Butyl ether	1.4E-7	4.2E-6	7.4E-8	3.0E-6	1.0E-2	8.0E-3	5.4E-4	3.8E-4
TPH - Arom >C08-C10	6.8E-7	2.0E-5	3.5E-7	1.4E-5	4.0E-2	4.0E-2*	5.1E-4	3.6E-4
TPH - Aliph >C12-C16	6.8E-7	2.0E-5	3.5E-7	1.4E-5	1.0E-1	1.0E-1*	2.1E-4	1.5E-4
TPH - Aliph >C16-C21	6.8E-7	2.0E-6	3.5E-7	1.4E-6	2.0E+0	2.0E+0*	1.3E-6	8.9E-7
TPH - Arom >C16-C21	6.8E-7	2.0E-6	3.5E-7	1.4E-6	3.0E-2	3.0E-2*	8.9E-5	5.9E-5
TPH - Arom >C21-C35	6.8E-7	2.0E-6	3.5E-7	1.4E-6	3.0E-2	3.0E-2*	8.9E-5	5.9E-5

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

Total Pathway Hazard Index = **1.5E-3** | **1.0E-3**

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

SOILS (4.5 - 10 ft): 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) 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
Benzene*	2.5E-3	1.0E+1			2.4E-4		
Toluene	4.4E-3	2.1E+1			2.1E-4		
Ethylbenzene	4.0E-3	5.3E+1			7.6E-5		
Xylene (mixed isomers)	7.7E-3	3.6E+1			2.2E-4		
Methyl t-Butyl ether	1.1E-1	3.7E+0			2.9E-2		
TPH - Arom >C08-C10	5.0E-1	2.2E+2			2.2E-3		
TPH - Aliph >C12-C16	5.0E-1	7.0E+5			7.2E-7		
TPH - Aliph >C16-C21	5.0E-1	8.8E+7			5.7E-9		
TPH - Arom >C16-C21	5.0E-1	2.2E+3			2.3E-4		
TPH - Arom >C21-C35	5.0E-1	1.7E+4			2.9E-5		

* = Chemical with user-specified data

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

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

SOILS (4.5 - 10 ft): 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) 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
Benzene*	1.2E-2			2.8E-6		
Toluene	2.7E-2			5.7E-6		
Ethylbenzene	2.7E-2			2.1E-6		
Xylene (mixed isomers)	2.7E-2			5.9E-6		
Methyl t-Butyl ether	2.7E-2			7.9E-4		
TPH - Arom >C08-C10	2.7E-2			6.2E-5		
TPH - Aliph >C12-C16	2.7E-2			2.0E-8		
TPH - Aliph >C16-C21	2.7E-2			1.6E-10		
TPH - Arom >C16-C21	2.7E-2			6.2E-6		
TPH - Arom >C21-C35	2.7E-2			7.8E-7		

* = Chemical with user-specified data

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. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4

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) 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
Benzene*	7.4E-2	1.0E+0			7.4E-2		
Toluene	1.3E-2	1.0E+0			1.3E-2		
Ethylbenzene	1.2E-2	1.0E+0			1.2E-2		
Xylene (mixed isomers)	2.2E-2	1.0E+0			2.2E-2		
Methyl t-Butyl ether	9.4E-2	1.0E+0			9.4E-2		
TPH - Arom >C08-C10	4.2E+0	1.0E+0			4.2E+0		
TPH - Aliph >C12-C16	2.7E-1	1.0E+0			2.7E-1		
TPH - Aliph >C16-C21	7.4E-1	1.0E+0			7.4E-1		
TPH - Arom >C16-C21	2.0E-1	1.0E+0			2.0E-1		
TPH - Arom >C21-C35	1.3E-1	1.0E+0			1.3E-1		

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

Site Name: Former Chevron SS No. 9-4612
ICI Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

GROUNDWATER INGESTION (cont'd)

	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg/day)			5) Average Daily Intake Rate (mg/kg/day) (3) x (4)		
Constituents of Concern	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
Benzene*	1.2E-2			8.7E-4		
Toluene	2.7E-2			3.5E-4		
Ethylbenzene	2.7E-2			3.3E-4		
Xylene (mixed isomers)	2.7E-2			6.0E-4		
Methyl t-Butyl ether	2.7E-2			2.6E-3		
TPH - Arom >C08-C10	2.7E-2			1.1E-1		
TPH - Aliph >C12-C16	2.7E-2			7.3E-3		
TPH - Aliph >C16-C21	2.7E-2			2.0E-2		
TPH - Arom >C16-C21	2.7E-2			5.5E-3		
TPH - Arom >C21-C35	2.7E-2			3.7E-3		

* = Chemical with user-specified data

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. 9-4612
Site Location: 3616 San Leandro Street

Completed By: J. Douglas
Date Completed: 17-May-02

Job ID: DG94612G.4

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) Residential	Off-site 1 None	Off-site 2 None
Benzene*	8.7E-4		
Toluene	3.5E-4		
Ethylbenzene	3.3E-4		
Xylene (mixed isomers)	6.0E-4		
Methyl t-Butyl ether	2.6E-3		
TPH - Arom >C08-C10	1.1E-1		
TPH - Aliph >C12-C16	7.3E-3		
TPH - Aliph >C16-C21	2.0E-2		
TPH - Arom >C16-C21	5.5E-3		
TPH - Arom >C21-C35	3.7E-3		

* = Chemical with user-specified data

Site Name: Former Chevron SS No. 9-4612
4C Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

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) Residential	Off-site 1 None	Off-site 2 None		On-site (0 ft) Residential	Off-site 1 None	Off-site 2 None
Benzene*	A	8.7E-4			1.0E-1	8.7E-5		
Toluene	D							
Ethylbenzene	D							
Xylene (mixed isomers)	D							
Methyl t-Butyl ether	-							
TPH - Arom >C08-C10	D							
TPH - Aliph >C12-C16	D							
TPH - Aliph >C16-C21	D							
TPH - Arom >C16-C21	D							
TPH - Arom >C21-C35	D							
Total Pathway Carcinogenic Risk =						**8.7E-5**		

Site Name: Former Chevron SS No. 9-4612
Site Location: 3616 San Leandro Street
Completed By: J. Douglas

Date Completed: 17-May-02
Job ID: DG94612G.4C01

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

	TOXIC EFFECTS						
	(5) Maximum Toxicant Intake Rate (mg/kg/day)			(6) Oral Reference Dose (mg/kg/day)	(7) Individual COC Hazard Quotient (5) / (6)		
Constituents of Concern	On-site (0 ft) Residential	Off-site 1 None	Off-site 2 None		On-site (0 ft) Residential	Off-site 1 None	Off-site 2 None
Benzene*	2.0E-3			3.0E-3	6.8E-1		
Toluene	3.5E-4			2.0E-1	1.8E-3		
Ethylbenzene	3.3E-4			1.0E-1	3.3E-3		
Xylene (mixed isomers)	6.0E-4			2.0E+0	3.0E-4		
Methyl t-Butyl ether	2.6E-3			1.0E-2	2.6E-1		
TPH - Arom >C08-C10	1.1E-1			4.0E-2	2.9E+0		
TPH - Aliph >C12-C16	7.3E-3			1.0E-1	7.3E-2		
TPH - Aliph >C16-C21	2.0E-2			2.0E+0	1.0E-2		
TPH - Arom >C16-C21	5.5E-3			3.0E-2	1.8E-1		
TPH - Arom >C21-C35	3.7E-3			3.0E-2	1.2E-1		
Total Pathway Hazard Index =					**4.2E+0**		

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