



May 17, 2001

Ms. Eva Chu
Alameda County
Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA. 94502-6577

Subject: Addendum to Risk-Based Corrective Action
Tier-2 Analyses

Chevron Service Station No. 9-5542
7007 San Ramon Road
Dublin, California
Delta Project No. DG95-542

Dear Ms. Chu:

Enclosed please find an Addendum to Risk-Based Corrective Action Tier-2 Analyses for the subject site prepared by Delta Environmental Consultants. This report addresses the Alameda County Health Care Services concerns expressed in electronic and phone conversations conducted between December 2000 and February 2001.

If you have questions or comments regarding this report, please contact me at (916) 638-2765 or Tom Bauhs of Chevron at (925) 842-8898.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

James Brownell

James R. Brownell, R.G.
Portfolio Manager

JRB (Rpt002.9-5542.doc)
Enclosures

cc: Tom Bauhs - Chevron Products Company

RO-206

what is vertical hydr. conductivity?

3164 Gold Camp Drive
Suite 200
Rancho Cordova, CA 95670-6021
U.S.A.
916/638-2085
FAX: 916/638-8385

- fraction organic carbon again was not changed from % to fraction. should be 2.9×10^{-3} in spreadsheet
- RBCA based on 10^{-5} risk - OK for commercial scenario
- Re-run RBCA for 10^{-6} risk, changing organic carbon, too, to determine if deed restriction is warranted.
- Do graph of conc vs time vs GWC to see when instead of decreasing conc at sites in 1st RBCA
- Address residual TPH conc in soil - Done for soil to 10'
- what about at 22'?

MAY 21 2001

**ADDENDUM TO RISK-BASED CORRECTIVE ACTION
TIER-2 ANALYSES**

Chevron Service Station No. 9-5542
7007 San Ramon Road
Dublin, California

Prepared for:

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

May 17, 2001

Prepared by:

Delta Environmental Consultants, Inc.
3164 Gold Camp Drive, Suite 200
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J. William Speth
Project Manager





Michael A. Berrington, R.G.
California Registered Geologist
No. 7124

TABLE OF CONTENTS

1.0 INTRODUCTION	2
2.0 REVISED RISK-BASED CORRECTIVE ACTION	3
3.0 RECOMMENDATIONS	5
4.0 LIMITATIONS	5
5.0 REFERENCES	6

TABLES

Table 1	RBCA Tier-2 Defaults and Site Specific Data
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FIGURES

Figure 1	Site Location Map
Figure 2	Site Map

APPENDECIES

Appendix A	Revised RBCA Tier-2 Analysis Input and output
Appendix B	Copy of Geotechnical Laboratory Report from Gettler-Ryan Inc. Sampling of Borings B3 and B4

ADDENDUM TO RISK-BASED CORRECTIVE ACTION TIER-2 ANALYSES

1.0 INTRODUCTION

Delta Environmental Consultants, Inc. (Delta) has been authorized by Chevron Products Company (Chevron) to review investigative work conducted at Chevron Service Station No. 9-5542, located at 7007 San Ramon Road, Dublin, Alameda County, California (Figure 1) and to prepare an addendum to the *Site Closure Request Using Risk-Based Corrective Action Analysis and Appendix-B Guidelines* dated December 30, 2000, prepared by Delta. The addendum was prepared in response to electronic and telephone conversations conducted between December 2000 and February 2001 between Delta and the Alameda County Health Care Services (ACHCS) regarding clarification of data used in the Risk Based Corrective Action (RBCA) model.

The following is a list of action items requested by the Alameda County Health Care Services:

1. Do not use soil data from MW-2, MW-3, B4 or P1 through P6 because they are not within the source area.
2. Include soil data for Sidewall-1 through Sidewall-3 collected from tank excavation on February 1998, and from samples WoM at 8.5 and 10.5 feet bsg. These samples are within the source area.
3. Do not use groundwater data from monitoring wells MW-2 or MW-6. These wells are not within the hydrocarbon-impacted plume.
4. Highlight/bold non-default parameters. Where or how, were non-default parameters selected. In particular, ambient air velocity in mixing zone, fraction organic carbon, soil total porosity, volumetric water content in capillary and vadose zones, volumetric air content in capillary and vadose zones, net groundwater infiltration rate, saturated hydraulic conductivity, and fraction organic carbon in water bearing unit.
5. Use only metric units (use cm/yr or m/yr for net groundwater infiltration rate).
6. Volumetric water content in the vadose zone appears too high. The vadose zone number was the same as that in the capillary fringe. It is not expected that the vadose zone would have as

ADDENDUM to CORRECTIVE ACTION PLAN

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California
Delta Project No. DG95-442
Page 3

much water as the capillary fringe. Oakland's RBCA used 0.25, and the RWQCB used 0.15 for this value. Please explain how you came up with 0.322.

7. The fraction organic carbon Delta used was 0.29. Whereas Oakland used 0.005 and RWQCB used 0.006. Please explain where your number 0.29 came from.
8. Your evaluation of soil leaching to groundwater assumed that a receptor is 30,480 cm from the source. This should only be used if you are trying to determine if the fuel release would impact a drinking water source about 300 meters from the site when the plume has not stabilized. This is not the case at this site. The plume is stable at 7007 San Ramon. This pathway may not need to be evaluated, as the only complete pathways are volatilization to indoor and outdoor air for on- and offsite buildings.
9. TPHg in soil should also be compared with the RWQCB's RBSLs (500ppm for residential, and 1000ppm for commercial scenarios) to determine risk and potential nuisance/odor. The RWQCB's numbers were determined using the Massachusetts' study.

2.0 REVISED RISK-BASED CORRECTIVE ACTION

The data for the risk-based corrective action analyses was modified to reflect revisions requested during conversations with ACHCS. These revisions are discussed as follows:

1. Soil samples collected from borings MW-2, MW-3, B4 or product line samples P1 through P6 were not used in calculating representative soil concentrations.
2. The soil samples collected from the sidewalls identified as Sidewall-1 through Sidewall-3 and samples from the former used oil tank basin identified as WoM-8.5 and WoM-10.5 were used to calculate representative soil concentrations.
3. The groundwater samples collected from monitoring wells MW-2 and MW-6 were removed from the analyses.

ADDENDUM to CORRECTIVE ACTION PLAN

Chevron Station No. 9-5542

7007 San Ramon Road

Dublin, California

Delta Project No. DG95-442

Page 4

4. The Groundwater Services, Inc. RBCA Tool Kit for Chemical Releases versions newer than version 1.01 do not allow non-default parameters to either be highlighted or placed in bold. Site specific data is tabulated in Table 1. A printout of each input screen is included in Appendix A.
5. Units of measurements were changed to metric.
6. During a hydrogeologic investigation conducted by Gettler-Ryan Inc. in June 1996, soil samples collected from borings B3 and B4 were submitted for geotechnical analyses. Soil samples were analyzed for dry/wet bulk density (gm/cc), percent total porosity, volumetric gas content, volumetric water content, Unified Soil Classification System soil type and percent fraction organic carbon.
7. Site specific geotechnical analytical results were used to modify the default parameters for dry bulk density (1.805 kg/L), percent total porosity (0.323), volumetric water content in capillary fringe (0.322) and vadose zone (0.322), volumetric air content in capillary zone (0.001) and vadose zone (0.001) and percent fraction organic carbon in soil (0.0029). The volumetric water content in the capillary fringe was kept at the default of 0.12, the volumetric air content in the capillary fringe was kept at the default of 0.203 and the fraction organic carbon was set to 0.0029, which is the average of the laboratory reported values (the value of 0.29 was inadvertently used in the previous RBCA for fraction of organic carbon because it was not converted to a percent value). A copy of the laboratory report for the geotechnical soil results is included in Appendix B.
8. Upon further evaluation, Delta agrees with ACHCS that the soil leaching groundwater pathway is not a complete pathway and therefore, has not been included in the revised RBCA. Complete exposure pathways for the site are groundwater volatilization to outdoor air (ambient), groundwater volatilization to indoor air, soil volatilization to ambient air and soil volatilization to indoor air. The exposure pathway for the surface soil exposure for construction work was added based on the Application of Risk-Based Screening Levels and Decision Making to Site with Impacted Soil and Groundwater (RWQCB, August 2000), which defines surface soil extending 3 meters below surface grade (or 10 feet). All

ADDENDUM to CORRECTIVE ACTION PLAN

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California
Delta Project No. DG95-442
Page 5

Representative concentrations were below their respective site-specific target levels (SSTLS) for each chemical of concern (COC).

9. Concentrations of total petroleum hydrocarbons (TPH) as gasoline in soil samples collected onsite between 1.5 feet and 10 feet below surface grade (bsg) ranged between 0.55 mg/kg to 18 mg/kg. These concentrations are below the Risk-Based Screening Levels (RBSLs) for residential and industrial/commercial land use which are 500 mg/kg and 1,000 mg/kg, respectively. Based on review of all soil samples collected at the site, impacted soil is primarily located below 10 feet bsg (3 meters). Residual concentrations of TPH as gasoline or TPH as diesel from the former unauthorized release do not appear to pose a significant odor or nuisance problem to future industrial or commercial land use. If excavation activities were to occur in the future in the vicinity of the former tank basin and product distribution lines, a risk management plan would be needed to identify potential risk and potential exposure to residual petroleum hydrocarbon constituents.

3.0 RECOMMENDATIONS

Active remedial action does not appear to be warranted at this time. Natural attenuation and passive biodegradation have shown a decrease in hydrocarbon concentrations over time and have shown to be best available technologies for remediating the remaining hydrocarbon impacted soil and groundwater at this site. Based on the information supplied in this report, Delta recommends a finding of "no further action" be issued for this site.

not really

4.0 LIMITATIONS

The interpretations contained in this report represent our professional opinions and are based, in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

ADDENDUM to CORRECTIVE ACTION PLAN

Chevron Station No. 9-4377
214 West Third Street
Santa Rosa, California
Delta Project No. DG94-377
Page 6

5.0 REFERENCES

Conner, J.A., et al., Tier 2 RBCA Guidance Manual for Risk Based Corrective Action, Groundwater Services, Inc. 1995.

Delta Environmental Consultants, Inc. December 6, 2000, "Site Closure Request Using Risk-Based Correction Action Analysis and Appendix-B Guidelines" 30 December 2000.

California Regional Water Quality Control Board, San Francisco Bay Region. Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater. Interim Final August 2000.

is vertical hydraulic conductivity same as infiltration rate through
vulcanizene? default in Oakland RBCA is 6 cm/yr in sandy clay
and ASTM RBCA is 30 cm/yr

TABLE 1

RBCA TIER-2
 DEFAULTS and SITE SPECIFIC DATA

Chevron Station No. 9-5542
 7007 San Ramon Road
 Dublin, California

Parameters	Default Value	Site Specific Value
Hydrology		
Depth to water-bearing unit (cm)	300	579.12
Capillary zone thickness (cm)	5	70.104
Soil column thickness (cm)	295	509.016
Affected Soils		
Surficial soil depth (cm)	300	100
Depth to uppermost affected soil (cm)	0	99.9744
Depth to base of affected soil (cm)	300	579.12
Contaminated soil area (cm ²)	20,000,000	10,000,000
Length of affected soil parallel to assumed wind direction (cm)	4500	2499.4
Length of affected soil parallel to groundwater flow direction (cm)	N/A	N/A
Surface Soil Column		
Total porosity	0.38	0.323
Volumetric water content vadose zone	0.12	0.12
Volumetric water content capillary fringe	0.342	0.322
Volumetric air content vadose zone	0.26	0.203
Volumetric air content capillary fringe	0.038	0.001
Dry bulk density (Kg/L)	1.7	1.805
Vertical hydraulic conductivity (m/d)	860	8.3
Vapor permeability (cm ²)	0.00000001	0.00000001
Capillary zone thickness (cm)	5	7
Partitioning Parameters		
Fraction organic carbon	0.01	0.0029
Soil/water pH	6.8	6.5
Groundwater Source Zone		
Groundwater plume width at source (cm)	4500	1219.2
Outdoor Air Pathway		
Air mixing zone height (cm)	200	200
Ambient air velocity in mixing zone (cm/s)	225	225
Building Parameters (Indoor Air Pathway)		
Building volume/area ratio (cm)	300	300
Foundation area (cm ²)	700,000	1,553,339

are these suppose to be same?

TABLE 1**RBCA TIER-2
DEFAULTS and SITE SPECIFIC DATA**

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Parameters	Default Value	Site Specific Value
Foundation perimeter (cm)	3,400	5,974.08
Building air exchange rate (1/s)	0.00023	0.00046
Depth to bottom of foundation slab (cm)	15	15
Convective air flow through cracks (cm ³ /s)	0	0
Foundation thickness (cm)	15	15
Foundation crack fraction	0.01	0.01
Volumetric water content of cracks	0.12	0.12
Volumetric air content of cracks	0.26	0.26
Indoor/Outdoor differential pressure (g/cm/s ²)	0	0



R.1 W.

GENERAL NOTES:
 BASE MAP FROM U.S.G.S.
 DUBLIN, CA
 7.5 MINUTE TOPOGRAPHIC
 PHOTOREVISED 1980



QUADRANGLE LOCATION

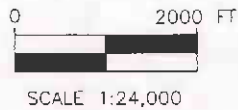
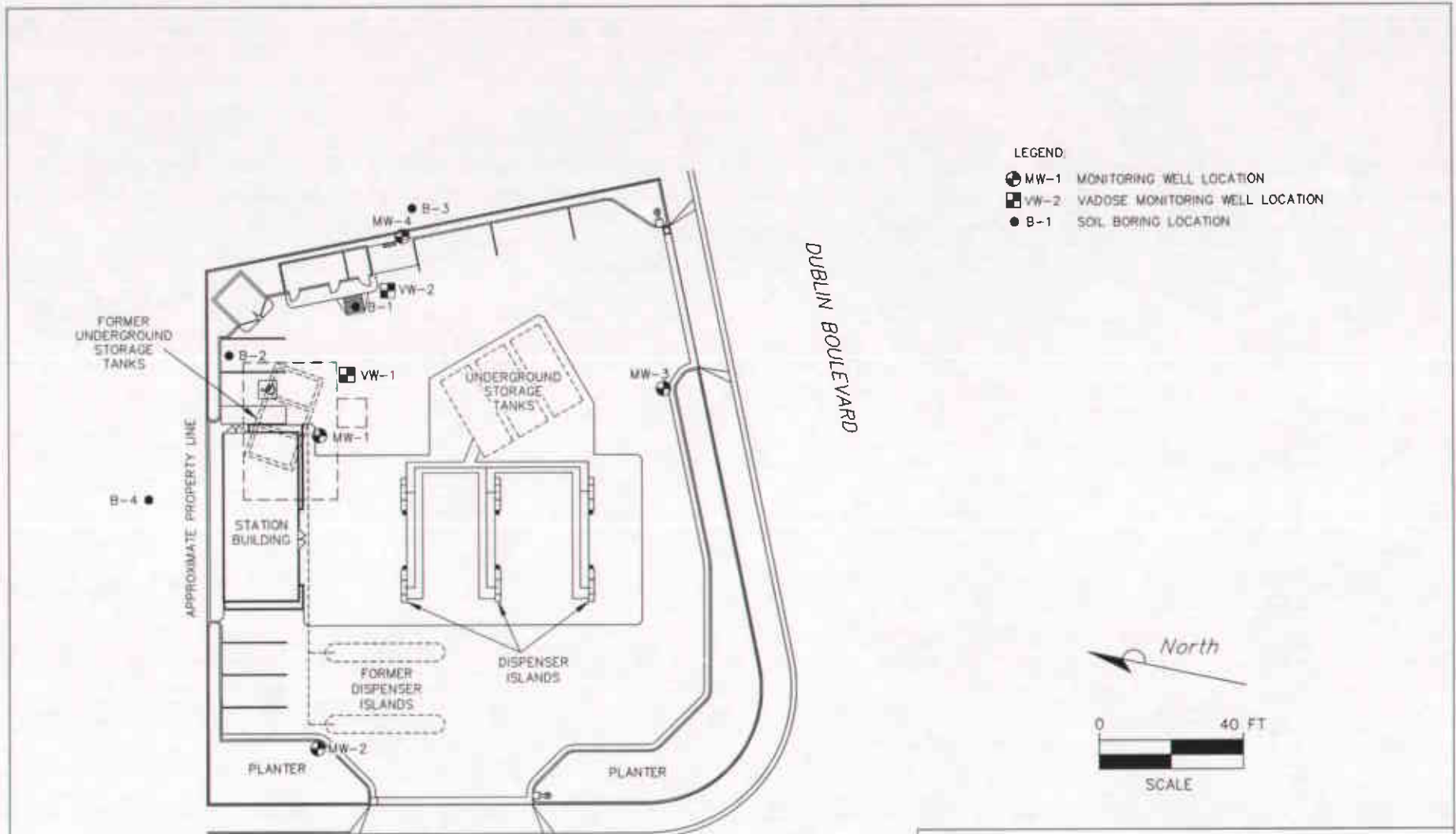


FIGURE 1
 SITE LOCATION MAP
 CHEVRON SERVICE STATION NO. 9-5542
 7007 SAN RAMON ROAD
 DUBLIN, CA.

PROJECT NO. DG95-542	DRAWN BY M.L. 8/10/00
FILE NO. DG95542A	PREPARED BY JWS
REVISION NO. 1	REVIEWED BY





- LEGEND:
- MW-1 MONITORING WELL LOCATION
 - VW-2 VADOSE MONITORING WELL LOCATION
 - B-1 SOIL BORING LOCATION

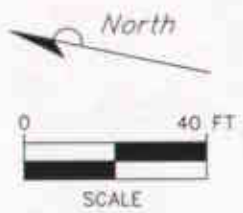


FIGURE 2
 SITE MAP
 CHEVRON SERVICE STATION NO. 9-5542
 7007 SAN RAMON ROAD
 DUBLIN, CA.

PROJECT NO. 0095-542	DRAWN BY M.L. 7/28/00
FILE NO. 0095542B	PREPARED BY JWS
REVISION NO. 1	REVIEWED BY



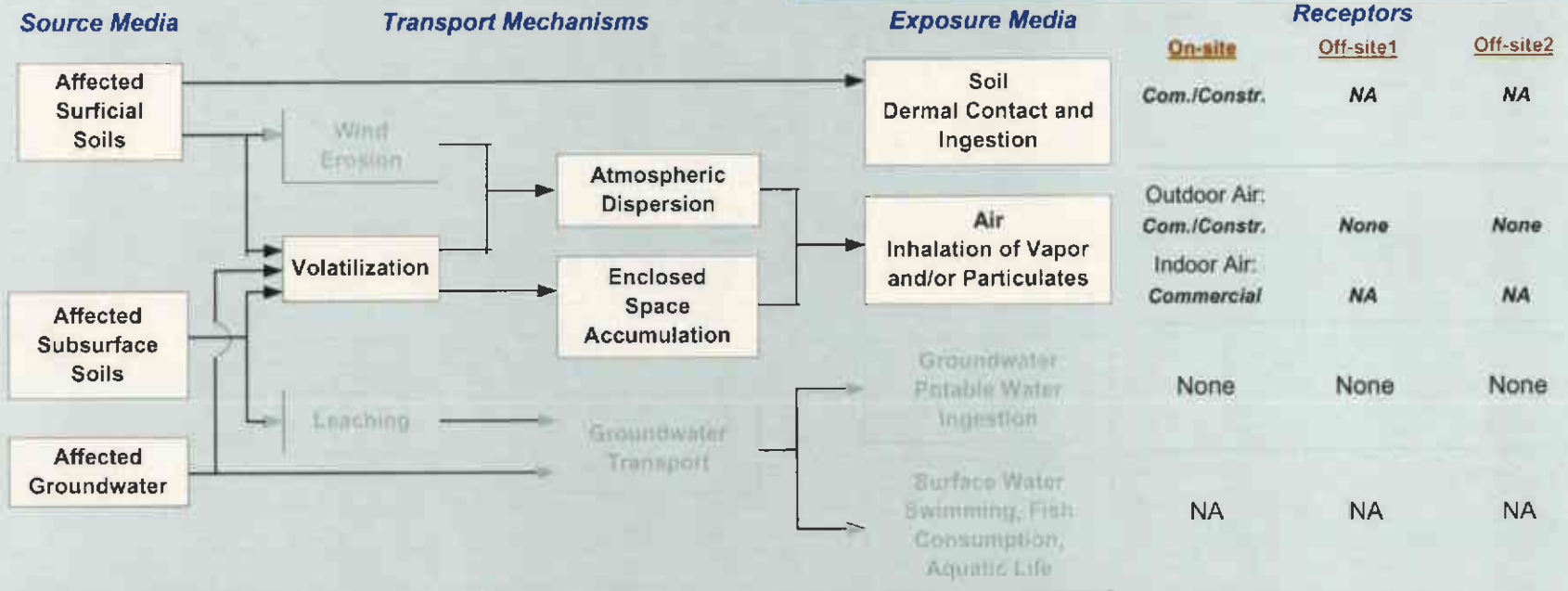
NOTE: FORMER PUMP ISLANDS LOCATED FROM A BLAIN TECH SERVICES HAND SKETCH DRAWING

APPENDIX A

**Revised Risk Based Corrective Action Plan Tier-2 Analyses
Input and Output**

Exposure Pathway Flowchart

Site Name: Chevron Station No. 9-5542 Job ID: DG95-542
 Location: 7007 San Ramon Road, Dublin, Ca Date: 19-Jul-00
 Compl. By: Delta Environmental Consultants, Inc.

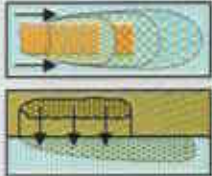


Commands and Options

Main Screen Print Sheet Help

Exposure Pathway Identification

1. Groundwater Exposure



**Groundwater Ingestion/
Surface Water Impact**

Receptor: None ▼ None ▼ None ▼
 Type: On-site Off-site1 Off-site2

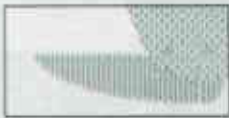
Source Media:

- Affected Groundwater
- Affected Soils Leaching to Groundwater

Distance to GW receptors

0	57912	0	(cm)
On-site	Off-site1	Off-site2	
0	57912	0	(cm)

GW Discharge to Surface Water Exposure



- Swimming
- Fish Consumption
- Aquatic Life Protection

Enter ALP Criteria

2. Surface Soil Exposure

**Direct Ingestion
and Dermal Contact**



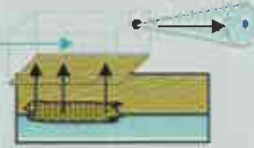
Receptor: Com. ▼ No off-site receptors
 Type: On-site

Construction Worker

Site Name: Chevron Station No. 9-5542
 Location: 7007 San Ramon Road, Dublin, Ca
 Compl. By: Delta Environmental Consultants, Inc.
 Job ID: DG95-542 Date: 19-Jul-00

3. Air Exposure

**Volatilization and Particulates
to Outdoor Air Inhalation**



Receptor: Com. ▼ None ▼ None ▼
 Type: On-site Off-site1 Off-site2
 0 0 0 (cm)

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: Com. ▼ No off-site receptors
 Type: 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

Transport Modeling Options

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 (cm)
- User-specified VF from other model Enter VF Values



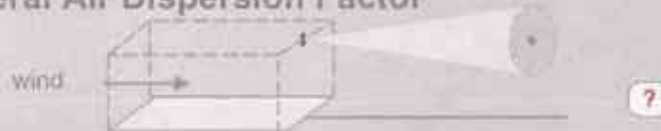
Indoor Air Volatilization Factors ?

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

Soil-to-Groundwater Leaching Factor ?

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

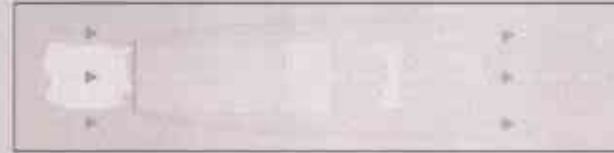
2. Lateral Air Dispersion Factor



- 3-D Gaussian dispersion model
- User-Specified ADF
- Off-site 1
- Off-site 2 (-)

Site Name: Chevron Station No. 9-5542 Job ID: DG95-542
 Location: 7007 San Ramon Road, Dublin, Ca Date: 19-Jul-00
 Compl. By: Delta Environmental Consultants, Inc.

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 (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

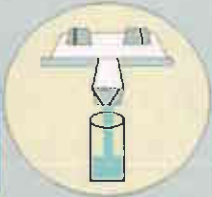
Help

Exposure Factors and Target Risk Limits

1. Exposure Parameters

Age Adjustment? **Residential** **Commercial**
 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)	<input type="checkbox"/> 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)	<input type="checkbox"/> 100	200	50	100
Swimming exposure time (hr/event)	3			
Swimming event frequency (events/yr)	12	12	12	
Swimming water ingestion rate (L/hr)	<input type="checkbox"/> 0.05	0.5		
Skin surface area, swimming (cm ²)	<input type="checkbox"/> 23000	8100		
Fish consumption rate (kg/day)	0.025			
Contaminated fish fraction (unitless)	1			



Site Name: Chevron Station No. 9-5542
 Location: 7007 San Ramon Road, Dublin, Ca
 Compl. By: Delta Environmental Consultants, Inc.
 Job ID: DG95-542 Date: 19-Jul-00

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 carcin.)	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

4. Commands and Options

Return to Exposure Pathways

Use Default Values **Print Sheet** **Help**

CHEMICAL DATA FOR SELECTED COCs

Physical Property Data

Constituent	CAS Number	type	Molecular Weight (g/mole)		Diffusion Coefficients				log (Koc) or log(Kd) (@ 20 - 25 C)			Henry's Law Constant (@ 20 - 25 C)			Vapor Pressure (@ 20 - 25 C) (mm Hg)		Solubility (@ 20 - 25 C) (mg/L)			acid pKa	base pKb	ref	
			MW	ref	Dair (cm2/s)	ref	Dwat (cm2/s)	ref	log(L/Kg)	partition	ref	mol	(unitless)	ref	ref	ref	ref	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	2.38E-02	-	2.49E+02	-	4.80E+04	A	-	-	-	-	-

* = Chemical with user-specified data

Site Name: Chevron Station No. 9-5542

Completed By: Delta Environmental Consultants, Inc.

Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca

Date Completed: 19-Jul-00

CHEMICAL DATA FOR SELECTED COCs	Toxicity Data
--	----------------------

Constituent	Reference Dose (mg/kg/day)				Reference Conc (mg/m3)				Slope Factors 1/(mg/kg/day)						Unit Risk Factor 1/(µg/m3)		EPA Weight of Evidence	Is Constituent Carcinogenic ?
	Oral		Dermal		Inhalation		Oral		Dermal		Inhalation		Inhalation					
	RfD	ref	RfD	ref	RfC	ref	SF	ref	SF	ref	URF	ref	URF	ref				
Benzene*	3.00E-03	R	-	-	5.95E-03	R	1.00E-01	PS	1.00E-01	PS	8.29E-06	PS	A	TRUE				
Toluene*	2.00E-01	-	1.60E-01	0.16	4.00E-01	-	-	-	-	-	-	-	D	FALSE				
Ethylbenzene*	1.00E-01	PS	9.70E-02	0.1	1.00E+00	PS	-	-	-	-	-	-	D	FALSE				
Xylene (mixed isomers)*	2.00E+00	-	1.64E+00	1.64	7.00E+00	A	-	-	-	-	-	-	D	FALSE				
Methyl t-Butyl ether*	1.00E-02	31	8.00E-03	0.01	3.00E+00	R	-	-	-	-	-	-	-	FALSE				

* = Chemical with user-specific

Site Name: Chevron Station No

Site Location: 7007 San Ram

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level		Time-Weighted Average Workplace Criteria		Aquatic Life Prot. Criteria		Bioconcentration Factor (L-wat/kg-fish)
	MCL (mg/L)	ref	TWA (mg/m3)	ref	AQL (mg/L)	ref	
Benzene*	1.00E-03	52 FR 25690	3.25E+00	-	-	-	12.6
Toluene*	4.20E-02	52 FR 25690	1.47E+02	ACGIH	-	-	70
Ethylbenzene*	2.90E-02	52 FR 25690	4.35E+02	-	-	-	1
Xylene (mixed isomers)*	1.70E-02	52 FR 25690	4.34E+02	ACGIH	-	-	1
Methyl t-Butyl ether*	5.00E-03	-	6.00E+01	NIOSH	-	-	1

* = Chemical with user-specific

Site Name: Chevron Station No

Site Location: 7007 San Ram

CHEMICAL DATA FOR SELECTED COCs	Miscellaneous Chemical Data
--	------------------------------------

Constituent	Water Dermal Permeability Data													
	Dermal Relative Absorp. Factor (unitless)	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		Half Life (First-Order Decay) (days)				
								Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Saturated	Unsaturated	ref
Benzene*	0.5	0.021	0.26	0.63	0.013	7.3E-2	D	0.0005	S	0.005	S	720	720	H
Toluene*	0.5	0.045	0.32	0.77	0.054	1.6E-1	D	0.0005	S	0.005	S	28	28	H
Ethylbenzene*	0.5	0.074	0.39	1.3	0.14	2.7E-1	D	0.0005	S	0.005	S	228	228	H
Xylene (mixed isomers)*	0.5	0.08	0.39	1.4	0.16	2.9E-1	D	0.0005	S	0.005	S	360	360	H
Methyl t-Butyl ether*	0.5	-	-	-	-	-	-	0.0025	-	0.025	-	360	180	H

* = Chemical with user-specific

Site Name: Chevron Station No

Site Location: 7007 San Ram

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: Chevron Station No. 9-5542
 Site Location: 7007 San Ramon Road, Dublin, Ca

Completed By: Delta Environmental Consultants, Inc.
 Date Completed: 19-Jul-00

Job ID: DGI05-542

1 OF 1

Exposure Parameters	Residential			Commercial/Industrial	
	Adult	(1-6yrs)	(1-15 yrs)	Chronic	Construc.
AT _c	70				
AT _n	30			25	1
BW	70	15	35	70	
ED	30	6	16	25	1
τ	30			25	1
EF	350			250	180
EF _D	350			250	
IR _w	2			1	
IR _s	100	200		50	100
SA	5800		2023	5800	5800
M	1				
ET _{swim}	3				
EV _{swim}	12	12			
IR _{swim}	0.05	0.5			
SA _{swim}	23000		8100		
IR _{fish}	0.025				
F _{fish}	1				

Surface Parameters	General	Construction	Units
A	9.5E+6	9.5E+6	(m ²)
W	2.5E+1	4.0E+3	(cm)
W _{sw}	NA	NA	(cm)
U _{amb}	2.3E+2		(m/s)
h _{mix}	2.0E+2		(cm)
P _a	NA		(g/cm ³ ·2/s)
L _{so}	1.0E+2		(cm)

Surface Soil Column Parameters	Value	Units
h _{cap}	7.0E+1	(cm)
h _v	5.1E+2	(cm)
ρ _s	1.8E+0	(g/cm ³)
f _{oc}	1.2E-1	(-)
φ _t	3.2E-1	(-)
K _{vs}	8.3E+0	(m/d)
k _v	1.0E-8	(cm ² /d)
L _{gw}	5.8E+2	(cm)
L _s	1.0E+2	(cm)
L _{soil}	5.8E+2	(cm)
L _{soil}	4.8E+2	(cm)
pH	6.5E+0	(-)
θ _w	0.322	(-)
θ _a	0.001	(-)

capillary vadose foundation

Building Parameters	Residential	Commercial	Units
V _b	NA	1.55E+2	(cm)
A _b	NA	1.55E+6	(m ²)
X _{cm}	NA	5.97E+3	(cm)
ER	NA	4.60E-4	(1/s)
L _{ext}	NA	1.50E+1	(cm)
Z _{ext}	NA	1.50E+1	(cm)
η	NA	1.00E-2	(-)
ΔP	NA	0.00E+0	(g/cm ³ ·2)
U _c	NA	0.00E+0	(cm ² /3/s)

Groundwater Parameters	Value	Units
h _{gw}	NA	(cm)
I _g	NA	(m/yr)
U _{gw}	NA	(m/d)
V _{gw}	NA	(m/d)
K _s	NA	(m/d)
i	NA	(-)
S _w	NA	(cm)
S _d	NA	(cm)
θ _{se}	NA	(-)
f _{oc-gw}	NA	(-)
pH _{gw}	NA	(-)
Biodegradation considered?	NA	(-)

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	None	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	Com./Constr.		
Outdoor Air:			
Particulates from Surface Soils	None	None	None
Volatilization from Soils	Com./Constr.	None	None
Volatilization from Groundwater	Commercial	None	None
Indoor Air:			
Volatilization from Subsurface Soils	Commercial	NA	NA
Volatilization from Groundwater	Commercial	NA	NA

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

Target Health Risk Values	Individual	Cumulative
TR ₁₀₀ Target Risk (class A&B carcinogens)	1.0E-5	1.0E-6
TR ₁₀ Target Risk (class C carcinogens)	1.0E-6	
THQ Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	1.0E+0

Modeling Options	Tier 2
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	NA

Transport Parameters	Off-site 1	Off-site 2	Off-site 1	Off-site 2	Units
Lateral Groundwater Transport					
α _x Longitudinal dispersivity	NA	NA	NA	NA	(cm)
α _y Transverse dispersivity	NA	NA	NA	NA	(cm)
α _z Vertical dispersivity	NA	NA	NA	NA	(cm)
Lateral Outdoor Air Transport					
α _x Transverse dispersion coefficient	NA	NA	NA	NA	(cm)
α _z Vertical dispersion coefficient	NA	NA	NA	NA	(cm)
ADF Air dispersion factor	NA	NA	NA	NA	(-)

Surface Water Parameters	Off-site 2	Units
Q _{sw} Surface water flow rate	NA	(m ³ /3/s)
W _{sw} Width of GW plume at SW discharge	NA	(cm)
h _{sw} Thickness of GW plume at SW discharge	NA	(cm)
L _{sw} Groundwater-to-surface water dilution factor	NA	(-)

NOTE: NA = Not applicable

Commands and Options				Site Name: Chevron Station No. 9-5542		Job ID: DG95-542	
Return		Print Sheet		Help		Location: 7007 San Ramon Road, Dublin, Ca	
						Date: 19-Jul-00	
						Compl. By: Delta Environmental Consultants, Inc.	

Groundwater Source Zone Concentration Calculator

UCL Percentile

<i>Constituent</i>	Detection Limit (mg/L)	No. of Samples	No. of Detects	Estimated Distribution of Data	Mean Option		
					Max. Conc. (mg/L)	Mean Conc. (mg/L)	UCL on Mean (mg/L)
Benzene*	5.0E-4	20	15	Lognormal	1.0E+1	2.2E+0	3.5E+0
Toluene*	5.0E-4	20	16	Lognormal	1.5E+1	2.2E+0	4.1E+0
Ethylbenzene*	5.0E-4	20	15	Lognormal	1.9E+0	4.7E-1	7.2E-1
Xylene (mixed isomers)*	5.0E-4	20	16	Lognormal	8.5E+0	1.6E+0	2.6E+0
Methyl t-Butyl ether*	5.0E-3	20	18	Lognormal	1.0E+0	1.3E-1	2.2E-1

* = Chemical with user-specified data

RBCA Tool Kit for Chemical Releases, Version 1.3

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	MW-1	MW-1	MW-1	MW-1					MW-3	MW-3	MW-3	MW-3	MW-4
Date	1-Oct-97	12-Sep-98	29-Sep-99	17-Mar-00					29-Mar-98	12-Sep-98	26-Mar-99	29-Sep-99	10-Jun-97
	(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)
	8.40E+0	1.00E+1	6.50E-2	1.02E+1					8.40E-4	nd	nd	9.75E-4	2.90E+0
	1.20E+1	1.30E+1	4.88E-2	1.53E+1					1.40E-3	nd	3.49E-2	5.80E-4	7.90E-1
	1.20E+0	1.70E+0	1.24E-2	1.89E+0					1.30E-3	nd	8.48E-4	nd	7.50E-1
	5.70E+0	7.60E+0	4.37E-2	8.54E+0					6.80E-4	nd	1.36E-3	6.18E-3	1.70E+0
	2.50E-1	1.43E-1	8.00E-3	1.00E+0					1.00E-1	5.40E-3	5.68E-3	nd	5.00E-2

RBCA Tool Kit for Chemical Releases, Version 1.3

												Analytical Data	
14	15	16	17	18	19	20	21	22	23	24	25	26	
MW-4	MW-4	MW-4					MW-9	MW-9	MW-9	MW-9	MW-10	MW-10	
1-Oct-97	29-Sep-99	17-Mar-00					12-Sep-98	26-Mar-99	29-Sep-99	17-Mar-00	12-Sep-98	26-Mar-99	
(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)	
3.60E+0	3.77E+0	2.56E+0					9.00E-1	4.41E-1	4.55E-1	5.10E-1	nd	nd	
1.40E+0	8.44E-1	9.42E-1					6.60E-3	1.07E-3	1.00E-3	5.00E-3	nd	nd	
1.30E+0	1.29E+0	6.88E-1					1.50E-1	1.21E-1	6.65E-2	1.46E-1	nd	nd	
2.70E+0	2.97E+0	1.98E+0					4.40E-1	1.35E-1	4.66E-2	5.28E-1	nd	nd	
2.50E-2	2.50E-1	5.00E-1					6.80E-3	3.36E-2	1.00E-1	5.00E-2	3.80E-3	4.15E-3	

RBCA Tool Kit for Chemical Releases, Version 1.3

Analytical Data												
27	28	29	30	31	32	33	34	35	36	37	38	39
MW-10	MW-10											
29-Sep-99	17-Mar-00											
(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)
5.47E-1	nd											
5.00E-3	nd											
7.96E-2	nd											
4.95E-2	nd											
5.00E-2	nd											

RBCA Tool Kit for Chemical Releases, Version 1.3

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

Commands and Options

Site Name: Chevron Station No. 9-5542 Job ID: DG95-542

Return

Print Sheet

Help

Location: 7007 San Ramon Road, Dublin, CaDate: 19-Jul-00

Compl. By: Delta Environmental Consultants, Inc.

UCL
 Percentile

<i>Constituent</i>	Detection Limit	No. of Samples	No. of Detects	Estimated Distribution of Data	Max. Conc.	Mean Conc.	UCL on Mean
	<i>(mg/kg)</i>				<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>
Benzene*	5.0E-3	17	10	Lognormal	1.8E+1	1.1E+0	3.0E+0
Toluene*	5.0E-3	17	8	Lognormal	2.5E+0	2.6E-1	5.3E-1
Ethylbenzene*	5.0E-3	17	7	Lognormal	2.5E+0	1.9E-1	4.5E-1
Xylene (mixed isomers)*	5.0E-3	17	11	Lognormal	1.5E+1	1.3E+0	2.8E+0
Methyl t-Butyl ether*	2.5E-2	1	0	-	0.0E+0	0.0E+0	NA

* = Chemical with user-specified data

RBCA Tool Kit for Chemical Releases, Version 1.3

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

Analytical Data													
	1	2	3	4	5	6	7	8	9	10	11	12	13
ID	AF-16	BF-16	CF-15	sidewall-1	sidewall-2	sidewall-3	VW-1-5	VW-1-14	VW-1-14.5	VW-2-5	VW-2-10	VW-2-15	B-1-5.5
Date	13-Feb-90	13-Feb-90	13-Feb-90	13-Feb-90	13-Feb-90	13-Feb-90	24-Nov-92	24-Nov-92	24-Nov-92	25-Nov-92	25-Nov-92	25-Nov-92	8-Jun-94
	(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)
	2.60E-1	4.60E-2	1.20E-1	2.20E-2	2.50E-1	1.80E+1	nd	nd	nd	nd	6.00E-3	nd	nd
	2.50E+0	4.00E-1	4.00E-1	1.30E-2	nd	8.90E-1	nd	nd	5.80E-2	nd	nd	nd	nd
	2.50E+0	1.30E-1	1.10E-1	2.30E-2	nd	4.00E-1	nd	nd	2.90E-2	nd	nd	nd	nd
	1.50E+1	1.20E+0	1.10E+0	7.00E-2	6.80E-3	2.80E+0	nd	nd	1.40E+0	nd	nd	9.00E-3	nd

RBCA Tool Kit for Chemical Releases, Version 1.3

											Analytical Data	
14	15	16	17	18	19	20	21	22	23	24	25	26
B-1-10.5	B-1-15.5	WoM-8.5	WoM-10.5									
8-Jun-94	8-Jun-94	13-Feb-90	13-Feb-90									
<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>
nd	8.10E-2	4.60E-3	2.50E-1									
nd	1.90E-1	1.90E-2	nd									
nd	2.00E-2	nd	nd									
nd	1.30E-1	4.90E-1	2.00E-2									
				nd								

Site-Specific Soil Parameters

1. Soil Source Zone Characteristics ?

Hydrogeology

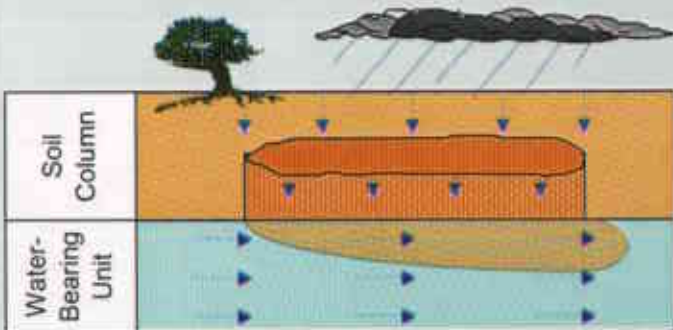
General Case Construction

Depth to water-bearing unit: (cm)
 Capillary zone thickness: (cm)
 Soil column thickness: (cm)

Affected Soil Zone

Depth to top of affected soils: (cm)
 Depth to base of affected soils: (cm)
 Affected soil area: (cm²)
 Length of affected soil parallel to assumed wind direction: (cm)

Length of affected soil parallel to assumed GW flow direction: (cm)



Site Name: Chevron Station No. 9-5542

Job ID: DG95-542

Location: 7007 San Ramon Road, Dublin, Ca

Date: 19-Jul-00

Compl. By: Delta Environmental Consultants, Inc.

2. Surface Soil Column ?

Vadose Zone Capillary Fringe

Predominant USCS Soil Type

or

Total porosity: (-)
 Volumetric water content: (-)
 Volumetric air content: (-)
 Dry bulk density: (kg/L)
 Vertical hydraulic conductivity: (m/d)
 Vapor permeability: (cm²)
 Capillary zone thickness: (cm)

Net Rainfall Infiltration

Net infiltration estimate:

or

NA

Average annual precipitation:

Partitioning Parameters

Fraction organic carbon: (-)
 Soil/water pH: (-)

3. Commands and Options

Site-Specific Groundwater Parameters

1. Water-Bearing Unit ?

Hydrogeology

Groundwater Darcy velocity (m/d)

Groundwater seepage velocity (m/d)

or ↑ or ↓

Hydraulic conductivity (m/d)

Hydraulic gradient (-)

Effective porosity (-)

Sorption

Fraction organic carbon-saturated zone (-)

Groundwater pH (-)

2. Groundwater Source Zone ?

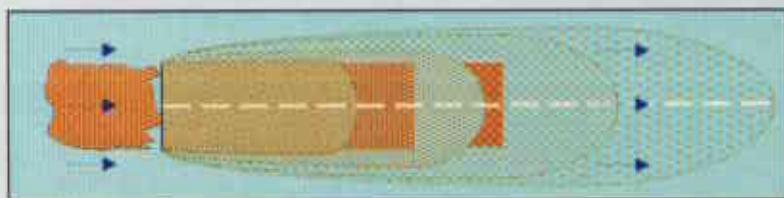
Groundwater plume width at source (cm)

Plume (mixing zone) thickness at source (cm)

or ↑ or ↓

Saturated thickness (cm)

Length of source zone (cm)



Site Name: Chevron Station No. 9-5542 Job ID: DG95-542

Location: 700/ San Ramon Road, Dublin, Ca Date: 19-Jul-00

Compl. By: Delta Environmental Consultants, Inc.

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 (cm)

or ↓ or ↓ ↓ or ↓

Longitudinal dispersivity (cm)

Transverse dispersivity (cm)

Vertical dispersivity (cm)

4. Groundwater Discharge to Surface Water ?

Distance to GW/SW discharge point (cm)

Plume width at GW/SW discharge (cm)

Plume thickness at GW/SW discharge (cm)

Surface water flowrate at GW/SW discharge (cm³/s)

5. Commands and Options

Main Screen

Use Default Values

Print Sheet

Set Units

Help

Site-Specific Air Parameters

1. Outdoor Air Pathway

Dispersion in Air

Distance to closest air receptor

Off-site 1: (m)
Off-site 2: (m)

or

Horizontal dispersivity

(m) or (m)

Vertical dispersivity

(m)

Air Source Zone

Air mixing zone height

(cm)

Ambient air velocity in mixing zone

(cm/s)

Aerial particulate emission flux

(g/cm²/s)

2. Indoor Air Pathway

Building Parameters

Building volume/area ratio

Residential	Commercial
<input type="text" value="200"/>	<input type="text" value="300"/> (cm)

Foundation area

(cm²)

Foundation perimeter

(cm)

Building air exchange rate

(1/s)

Depth to bottom of foundation slab

(cm)

Convective air flow through cracks

(cm³/s)

Foundation thickness

(cm)

Foundation crack fraction

(-)

Volumetric water content of cracks

(-)

Volumetric air content of cracks

(-)

Indoor/Outdoor differential pressure

(g/cm³)

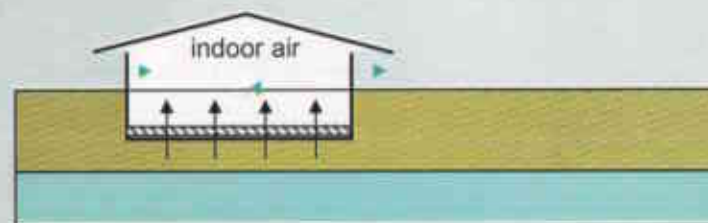
Site Name: Chevron Station No. 9-5542

Job ID: DG95-542

Location: 7007 San Ramon Road, Dublin, Ca

Date: 19-Jul-00

Compl. By: Delta Environmental Consultants, Inc.



3. Commands and Options

Main Screen

Use Default Values

Print Sheet

Set Units

Help

RBCA SITE ASSESSMENT	Baseline Risk Summary-All Pathways
-----------------------------	---

Site Name: Chevron Station No. 9-5542
 Site Location: 7007 San Ramon Road, Dublin, Ca

Completed By: Delta Environmental Consultants, Inc.
 Date Completed: 19-Jul-00

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk Limit(s) Exceeded?	Hazard Quotient		Hazard Index		Toxicity Limit(s) Exceeded?
	Maximum Value	Target Risk	Total Value	Target Risk		Maximum Value	Applicable Limit	Total Value	Applicable Limit	
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	3.7E-7	1.0E-5	3.7E-7	1.0E-5	<input type="checkbox"/>	2.1E-2	1.0E+0	2.1E-2	1.0E+0	<input type="checkbox"/>
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	7.3E-6	1.0E-5	7.3E-6	1.0E-5	<input type="checkbox"/>	4.1E-1	1.0E+0	4.1E-1	1.0E+0	<input type="checkbox"/>
SOIL EXPOSURE PATHWAYS										
Complete:	3.1E-6	1.0E-5	3.1E-6	1.0E-5	<input type="checkbox"/>	2.9E-2	1.0E+0	2.9E-2	1.0E+0	<input type="checkbox"/>
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	<input type="checkbox"/>	NA	NA	NA	NA	<input type="checkbox"/>
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	<input type="checkbox"/>	NA	NA	NA	NA	<input type="checkbox"/>
CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)										
	7.3E-6	1.0E-5	7.3E-6	1.0E-5	<input type="checkbox"/>	4.1E-1	1.0E+0	4.1E-1	1.0E+0	<input type="checkbox"/>
	<i>Indoor Air</i>		<i>Indoor Air</i>			<i>Indoor Air</i>		<i>Indoor Air</i>		

RBCA SITE ASSESSMENT

Site Name: Chevron Station No. 9-5542

Completed By: Delta Environmental Consultants, Inc.

Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca

Date Completed: 19-Jul-00

1 OF 1

SOIL (100 - 579 cm) 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)

CAS No.	Name	Representative Concentration (mg/kg)	Soil Leaching to Groundwater Ingestion / Discharge to Surface Water			X	Soil Vol. to Indoor Air	X	Soil Volatilization to Outdoor Air			X	Surface Soil Inhalation, Ingestion/Dermal Contact		Applicable SSTL (mg/kg)	SSTL Exceeded? *Y* if yes	Regard OP? Only if "yes" left
			On-site (0 cm)	Off-site 1 (579-12 cm)	Off-site 2 (0 cm)	On-site (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)	On-site (0 cm)							
			None	None	None	Commercial	Commercial	Construction Worker	None	None	Commercial	Construction Worker					
71-43-2	Benzene*	3.0E+0	NA	NA	NA	5.2E+0	X	8.1E+1	>1.0E+4	NA	NA	9.7E+0	1.4E+2	5.2E+0	<input type="checkbox"/>	<1	
108-88-3	Toluene*	5.3E-1	NA	NA	NA	1.3E+3	X	>8.4E+3	>8.4E+3	NA	NA	5.6E+3	7.6E+3	1.3E+3	<input type="checkbox"/>	<1	
100-41-4	Ethylbenzene*	4.5E-1	NA	NA	NA	>7.4E+3	X	>7.4E+3	>7.4E+3	NA	NA	3.4E+3	4.6E+3	3.4E+3	<input type="checkbox"/>	<1	
1330-20-7	Xylene (mixed isomers)*	2.8E+0	NA	NA	NA	>5.7E+3	X	>5.7E+3	>5.7E+3	NA	NA	6.4E+4	8.7E+4	6.4E+4	<input type="checkbox"/>	<1	
1634-04-4	Methyl t-Butyl ether*	0.0E+0	NA	NA	NA	1.0E+4	X	>7.3E+4	>7.3E+4	NA	NA	2.8E+2	3.8E+2	2.8E+2	<input type="checkbox"/>	<1	

* = Chemical with user-specified data

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

RBCA SITE ASSESSMENT

Site Name: Chevron Station No. 9-5542

Completed By: Delta Environmental Consultants, Inc.

Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca

Date Completed: 19-Jul-00

1 OF 1

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 (mg/L)	Groundwater Ingestion / Discharge to Surface Water			X	GW Vol. to Indoor Air	X	Groundwater Volatilization to Outdoor Air			Applicable SSTL (mg/L)	SSTL Exceeded? * if yes	Required CRF Only if "yes" left
			On-site (0 cm)	Off-site 1 (57912 cm)	Off-site 2 (0 cm)	On-site (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)					
71-43-2	Benzene*	3.5E+0	NA	NA	NA	2.3E+1	>1.8E+3	NA	NA	2.3E+1	<input type="checkbox"/>	<1		
108-88-3	Toluene*	4.1E+0	NA	NA	NA	>5.2E+2	>5.2E+2	NA	NA	>5.2E+2	<input type="checkbox"/>	NA		
100-41-4	Ethylbenzene*	7.2E-1	NA	NA	NA	>1.7E+2	>1.7E+2	NA	NA	>1.7E+2	<input type="checkbox"/>	NA		
1330-20-7	Xylene (mixed isomers)*	2.6E+0	NA	NA	NA	>2.0E+2	>2.0E+2	NA	NA	>2.0E+2	<input type="checkbox"/>	NA		
1634-04-4	Methyl t-Butyl ether*	2.2E-1	NA	NA	NA	1.2E+4	>4.8E+4	NA	NA	1.2E+4	<input type="checkbox"/>	<1		

* = Chemical with user-specified data

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

APPENDIX B

**Copy of Geotechnical Laboratory Report
From Gettler-Ryan Inc. Sampling of Borings B3 and B4**



Gettler Ryan/Geostrategies 8747 Sierra Court Suite G Dublin, CA 94568	Client Proj. ID: Chevron 9-5542, Dublin Lab Proj. ID: 9606885	Sampled: 06/12/96 Received: 06/14/96 Analyzed: see below Reported: 12/02/96
Attention: Barbara Sieminski		

LABORATORY ANALYSIS

Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9606885-01 Sample Desc: SOLID,B3-8				
Bulk Density	mg/L	06/21/96	0.020	Attached 0.49 Attached
Fraction Organic Carbon	%			
Porosity	-			
Lab No: 9606885-02 Sample Desc: SOLID,B3-12				
Bulk Density	mg/L	06/21/96	0.020	Attached 0.21 Attached
Fraction Organic Carbon	%			
Porosity	-			
Lab No: 9606885-03 Sample Desc: SOLID,B3-16				
Bulk Density	mg/L	06/21/96	0.020	Attached 0.12 Attached
Fraction Organic Carbon	%			
Porosity	-			
Lab No: 9606885-04 Sample Desc: SOLID,B3-18				
Bulk Density	mg/L	06/21/96	0.020	Attached 0.13 Attached
Fraction Organic Carbon	%			
Porosity	-			
Lab No: 9606885-06 Sample Desc: SOLID,B4-6				
Bulk Density	mg/L	06/21/96	0.020	Attached 0.67 Attached
Fraction Organic Carbon	%			
Porosity	-			

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210


Mike Gregory
Project Manager





**Sequoia
Analytical**

680 Chesapeake Drive
404 N. Wiget Lane
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Redwood City, CA 94063
Walnut Creek, CA 94598
Sacramento, CA 95834

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Gettler Ryan/Geostrategies
6747 Sierra Court Suite G
Dublin, CA 94568

Client Proj. ID: Chevron 9-5542, Dublin

Lab Proj. ID: 9606885

Sampled: 06/12/96
Received: 06/14/96
Analyzed: see below

Attention: Barbara Sieminski

Reported: 12/02/96

LABORATORY ANALYSIS

Analyte	Units	Date Analyzed	Detection Limit	Sample Results
Lab No: 9606885-07 Sample Desc: SOLID,B4-12				
Bulk Density	mg/L			Attached
Fraction Organic Carbon	%	06/21/96	0.020	0.21
Porosity	-			Attached
Lab No: 9606885-08 Sample Desc: SOLID,B4-18				
Fraction Organic Carbon	%	06/21/96	0.020	0.21

Handwritten: X= 0.21

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL - ELAP #1210

Mike Gregory
Mike Gregory
Project Manager





Sequoia Analytical
SA Project No. 9606885

CL File No. 57111-96172

Geotechnical Analysis Results

Sample ID	Bulk Density		Total Porosity %	Volumetric Gas V_{gas}/V_{bulk}	Volumetric Water V_{water}/V_{bulk}	Description
	Dry gm/cc	Wet gm/cc				
B3-6	1.65	2.03	38.0	0.0003	0.3796	Clay tan v silty
B3-12	1.87	2.17	30.2	0.0076	0.3016	Clay tan vf-fgr sd v silty
B3-16	1.87	2.17	29.9	0.0007	0.2982	Sand tan vf-fgr v silty v clay
B3-18	1.81	2.13	32.3	0.0005	0.3226	Silt tan vfgr sd v clay
B4-6	1.76	2.10	33.6	0.0010	0.3351	Clay tan vfgr sd v silty
B4-12	1.87	2.17	30.1	0.0004	0.3002	Sand tan vf-gran v silty v cly

Volumetric gas = gas volume/sample bulk volume

Volumetric water = water volume/sample bulk volume

Total porosity and bulk densities were determined as described in API RP-40, API Recommended Practice for Core-Analysis Procedure, 1960.



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Gettler Ryan/Geostrategies
6747 Sierra Court Suite G
Dublin, CA 94568
Attention: Barbara Sieminski

Client Proj. ID: Chevron 9-5542, Dublin

Received: 06/14/96

Lab Proj. ID: 9606885

Reported: 12/02/96

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of _____ pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

For sample: #5 (TPHGBW) the detection limit was raised by a factor of 1000

POC note: these data were re-reported at a lower detection limit on 12/01/96.

SEQUOIA ANALYTICAL


Mike Gregory
Project Manager

Page: 1



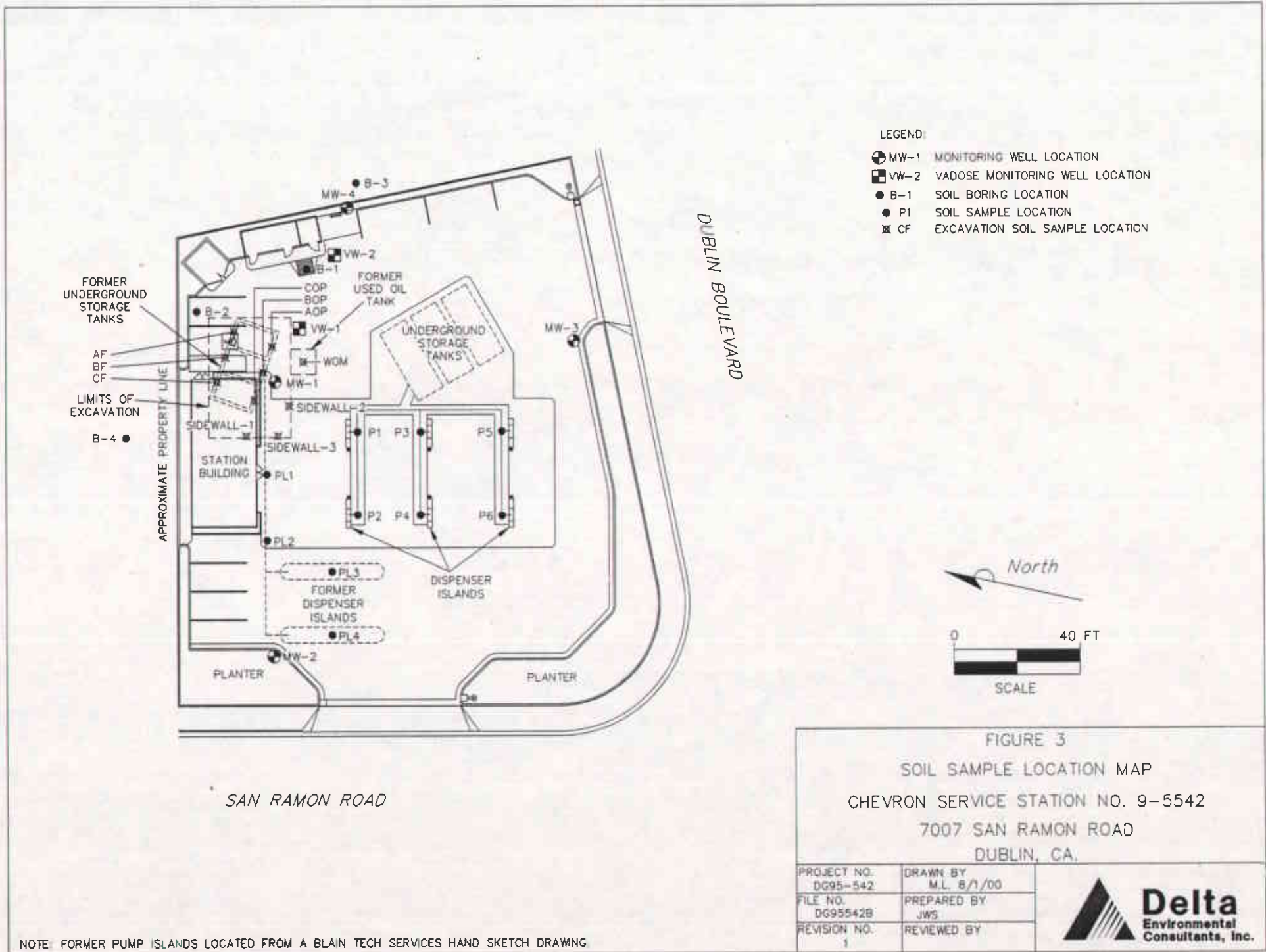


TABLE 1

CUMULATIVE SOIL ANALYTICAL RESULTS FROM UST AND PRODUCT LINE REMOVAL

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	MTBE (mg/kg)	TOG (mg/kg)	VOCs (mg/kg)	Semi-VOCs (mg/kg)
AP	16.0	02/13/90	0.26	2.5	2.5	15	190	NA	NA	NA	NA
Aop	22.0	02/13/90	60	219	69	355	3,100	NA	NA	NA	NA
BF	16.0	02/13/90	0.046	0.4	0.13	1.2	8.6	NA	NA	NA	NA
Bop	22.0	02/14/90	20	98	33	160	1,300	NA	NA	NA	NA
CF	15.0	02/13/90	0.12	0.4	0.11	1.1	12	NA	NA	NA	NA
Cop	22.0	02/13/90	3.0	5.0	0.5	3.0	18	NA	NA	NA	NA
Sidewall-1	13.5	02/13/90	0.022	0.013	0.023	0.07	1.1	NA	NA	NA	NA
Sidewall-2	8.3	02/13/90	<0.005	<0.005	<0.005	0.0068	<0.5	NA	NA	NA	NA
Sidewall-3	7.5	02/13/90	0.27	0.89	0.4	2.8	18	NA	NA	NA	NA
WoM	8.5	02/13/90	0.0046	0.019	<0.005	0.49	0.55	NA	12	ND	ND
WoM	10.5	02/13/90	<0.005	<0.005	<0.005	0.02	<0.5	NA	12	ND	ND
PL1	1.5	02/08/90	0.85	0.017	0.2	1.2	9.0	NA	NA	NA	NA
PL2	3.0	02/08/90	<0.005	<0.005	<0.005	0.012	<0.5	NA	NA	NA	NA
PL3	3.0	02/08/90	0.0095	0.011	0.16	0.15	3.9	NA	NA	NA	NA
PL4	3.0	02/08/90	<0.005	<0.005	0.16	0.072	2.8	NA	NA	NA	NA
P1	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P2	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P3	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P4	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P5	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P6	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA

TABLE 1

CUMULATIVE SOIL ANALYTICAL RESULTS FROM UST AND PRODUCT LINE REMOVAL

Chevron Station No. 9-5542

7007 San Ramon Road

Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Antimony (mg/kg)	Arsenic (mg/kg)	Beryllium (mg/kg)	Cadium (mg/kg)	Chromiu		Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
							m (mg/kg)	Copper (mg/kg)							
WoM	8.5	02/13/90	<25	140	<1	<3	8	21	15	0.02	23	<50	<5	25	19
WoM	10.5	02/13/90	<25	85	<1	<3	5	16	12	<0.02	16	<50	<5	20	17

TPH = Total petroleum hydrocarbons using EPA Method 8015 Modified, or DHS-LUFT Method.

Ft = Feet below surface grade.

mg/kg = milligrams per kilogram.

TOG = Total oil and grease.

VOC's = Volatile organic compounds.

Semi-VOC's = Semi volatile organic compounds.

TABLE 2

CUMULATIVE SOIL ANALYTICAL RESULTS FROM DRILLING

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	TPH as diesel (mg/kg)	TOG (mg/kg)
MW-1	25.0	03/27/90	38	150	34	180	1,300	NA	NA
	30.0	03/27/90	1	4	4	18	270	NA	NA
MW-2	15.0	03/26/90	<0.005	<0.005	<0.005	<0.005	<10	NA	NA
MW-3	15.0	03/26/90	<0.005	<0.005	<0.005	<0.015	<10	NA	NA
	20.0	03/26/90	<0.005	0.01	0.01	0.12	<10	NA	NA
	25.0	03/26/90	<0.005	0.02	0.05	0.28	51	NA	NA
MW-4	15.0	03/28/90	NA	NA	NA	NA	<10	<10	NA
	20.0	03/28/90	NA	NA	NA	NA	<10	<10	NA
	25.0	03/28/90	2.7	23	5.6	46	<10	<10	39
MW-5	28.5	06/11/91	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
MW-6	26.0	06/12/91	0.006	0.006	0.06	0.12	5	NA	NA
MW-7	26.0	06/11/91	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
MW-8	20.0	12/06/91	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
MW-9	24.5	06/08/94	0.07	0.11	0.58	3.4	<1.0	NA	NA
	33.5	06/09/94	0.038	<0.005	<0.005	0.008	<1.0	NA	NA
VW-1	5.0	11/24/92	<0.005	0.006	<0.005	<0.005	<1.0	NA	NA
	14.0	11/24/92	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	14.5	11/24/92	<0.005	0.058	0.029	1.4	2	NA	NA
	19.5	11/24/92	0.081	5.6	3.4	20	250	NA	NA
	24.0	11/24/92	2.4	60	15	99	990	NA	NA
	27.0	11/24/92	2.0	15	5.4	27	230	NA	NA
	31.0	11/24/92	<0.005	0.73	1	3.9	130	NA	NA
VW-2	5.0	11/25/92	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	10.0	11/25/92	0.006	<0.005	<0.005	<0.005	<1.0	NA	NA
	15.0	11/25/92	<0.005	<0.005	<0.005	0.009	<1.0	NA	NA
	20.0	11/25/92	0.65	8.1	2.6	13	220	NA	NA
	25.0	11/25/92	2.7	23	9	49	650	NA	NA
	30.0	11/25/92	0.07	0.001	0.012	0.025	1	NA	NA
B-1	5.5	06/08/94	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	10.5	06/08/94	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	15.5	06/08/94	0.081	0.19	0.02	0.13	2	NA	NA
	20.5	06/08/94	5.3	72	23	120	1,600	NA	NA

TABLE 2

CUMULATIVE SOIL ANALYTICAL RESULTS FROM DRILLING

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	TPH as diesel (mg/kg)	TOG (mg/kg)
B-2	20.5	06/08/94	0.06	0.026	0.031	0.19	2	NA	NA
	23.5	06/08/94	0.13	0.037	0.12	0.83	8	NA	NA
B3	6.0	06/12/96	NA	NA	NA	NA	NA	NA	NA
	12.0	06/12/96	NA	NA	NA	NA	NA	NA	NA
	16.0	06/12/96	NA	NA	NA	NA	NA	NA	NA
	18.0	06/12/96	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
B4	6.0	05/04/92	NA	NA	NA	NA	NA	NA	NA
	12.0	05/04/92	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	18.0	05/04/92	NA	NA	NA	NA	NA	NA	NA

METALS

Sample ID	Sample Depth (ft)	Sample Date	Cadium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)
MW-4	15.0	03/28/90	<3	26	37	39
	20.0	03/28/90	<3	25	41	44
	25.0	03/28/90	<3	13	26	28
MW-5	28.5	06/11/91	NA	NA	<10	NA
MW-6	26.0	06/12/91	NA	NA	<10	NA
MW-7	26.0	06/12/91	NA	NA	<10	NA

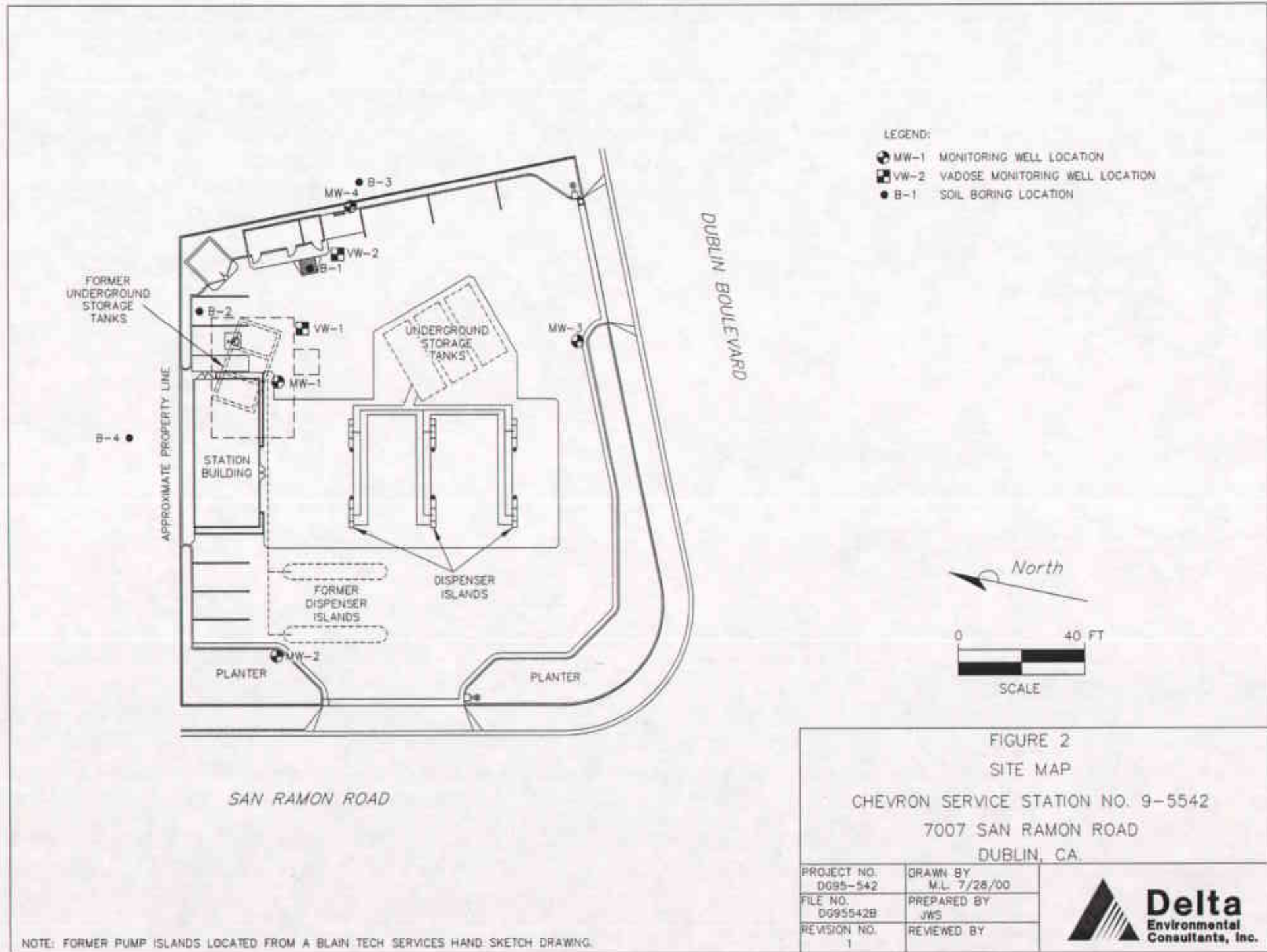
TPH = Total petroleum hydrocarbons using EPA Method 8015 Modified, or DHS-LUFT Method.

TOG = Total oil and grease.

mg/kg = milligrams per kilogram.

Ft = Feet below surface grade.

NA = Not analyzed.



LEGEND:

- MW-1 MONITORING WELL LOCATION
- VW-2 VADOSE MONITORING WELL LOCATION
- B-1 SOIL BORING LOCATION

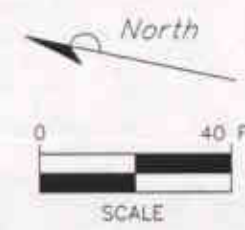


FIGURE 2
SITE MAP

CHEVRON SERVICE STATION NO. 9-5542
7007 SAN RAMON ROAD
DUBLIN, CA.

PROJECT NO. DG95-542	DRAWN BY M.L. 7/28/00
FILE NO. DG95542B	PREPARED BY JWS
REVISION NO. 1	REVIEWED BY



NOTE: FORMER PUMP ISLANDS LOCATED FROM A BLAIN TECH SERVICES HAND SKETCH DRAWING.