PACIFIC
ENVIRONMENTAL
GROUP, INC.

AN IT COMPANY

ENVIRONMENTAL PROTECTION
98 DEC -8 AM 9:35

Date: December 3, 1998
Project: 340-083.9A

See notes inside

12/14/98 - Spoke w/ K Winemiller. He will send specs; collect clean soil for physical parameters; & use Summa canisters.
Verbal approval of WP.
- Consider collected soil samples at ~3'-4' bgs so there is soil data from Vadose zone for input into RBCA

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

We have enclosed:

Copies	Description
1	Work Plan for Soil Vapor Sampling (PEG, December, 3, 1998)
1	DRAFT RBCA Tier 1/Tier 2 Evaluation

For your:
- X Use
- ___ Approval
- ___ Review
- ___ Information

New contact is Andrey Mone at PEG.

Comments:

Keith Winemiller

2025 Gateway Place, Suite 440 • San Jose, California 95110-1006 (408) 441-7500 FAX (408) 441-7539

PACIFIC
ENVIRONMENTAL
GROUP, INC.

AN ETI COMPANY

Krissy Flesoras -

December 3, 1998, 1998
Project 340-083.9A

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

Re: **Work Plan for Soil Vapor Sampling**
Former Texaco Service Station/Current 7-11 Store
930 Springtown Boulevard at Lassen Road
Livermore, California

Dear Ms. Chu:

On behalf of Equiva Services LLC (Equiva), Pacific Environmental Group, Inc. (PEG) has prepared this work plan to perform soil vapor sampling at the site referenced above. The purpose of this work is to collect additional site-specific data that will be used to revise the *Risk-Based Corrective Action (RBCA) Analysis* (Kaprealian Engineering Inc., October 31, 1997). This analysis will be updated using current analytical data and revised to evaluate the potential health risk to residents from the indoor inhalation of petroleum hydrocarbons that could volatilize from the residual petroleum hydrocarbons at the site. The Alameda County Health Care Services Agency (ACHCSA) has verbally proposed to grant unrestricted site closure provided a RBCA analysis determines there is no increased potential health risk from this exposure pathway/setting. The proposed scope of work and schedule follows.

SCOPE OF WORK

Site Health and Safety

A Certified Industrial Hygienist or other qualified professional will prepare a site-specific health and safety plan that describes known and potential hazards and emergency response procedures. All personnel involved in performing work on site during the investigation and remediation activities will review the plan before the beginning of each day of field activities. The plan will remain on site throughout the duration of work. This plan may be modified if warranted by site conditions.

Underground Utility Clearance

Prior to the commencement of any subsurface work, PEG will mark the proposed area and notify Underground Service Alert of the impending subsurface activities.

Sampling Locations

Three soil vapor sampling borings are proposed, and their locations are shown on Figure 1. One boring will be located in the vicinity of each of the following wells: Wells MW-A, MW-B, and MW-1. These locations were selected because they represent the areas containing the highest concentrations of residual petroleum hydrocarbons in soil and/or groundwater at the site. Thus, these locations provide the greatest level of conservatism for potential health risk estimation. A soil sample will also be collected from each soil vapor boring for physical soil analyses. Extend boring to GW. Log boring. Screen w/ P.I.D. SS w/ highest PID reading submitted for lab analysis.

Sampling Procedures

The soil vapor samples will be collected by inserting a hand driven sampling probe approximately 3 feet below ground surface. The sampling probe will consist of a hollow stem tube perforated at one end. A vacuum will then be applied to the hollow stem tube and approximately 5 to 10 tube volumes of air will be evacuated from the pipe so that no atmospheric air is included in the vapor sample. After this is completed, a 1-liter Tedlar bag sample of the soil vapor will be collected. All Tedlar bags will be kept out of the direct sunlight in order to preserve the bag's integrity.

Probe specs need tight seal to prevent mixing w/ ambient air

Collection Summa canisters

Soil samples for physical analysis will be retained in brass rings, capped with Teflon® sheets and plastic end caps, then sealed and labeled in plastic bags. All samples will be immediately placed in an ice chest (at approximately 4 degrees Celsius) until delivered to the analytical laboratory courier.

Where will soil samples be collected? (from 'clean' vadose zone)

All soil vapor and soil samples will be accompanied by the appropriate chain-of-custody documentation.

Laboratory Analyses

Only laboratories that are certified by the State of California will be used to analyze the samples.

The soil vapor samples will be analyzed by EPA Method 8015 (modified) for total petroleum hydrocarbons calculated as gasoline, and by EPA Method 8020 for benzene, toluene, ethylbenzene, and total xylenes.

The soil samples will be analyzed by American Society for Testing and Materials (ASTM) Method 584 for falling head permeability, soil bulk density, soil moisture, soil pH, and by ASTM Method D-2974 for fraction of organic carbon.

Soil Boring Abandonment

The soil vapor borings will be abandoned in accordance with all applicable State of California and Alameda County regulations. Immediately upon completion of drilling and sampling activities, the soil vapor borings will be permanently abandoned. The abandonment procedure will consist of backfilling each boring using concrete to match existing site conditions.

Report Preparation

A report summarizing all field activities and results will be completed following receipt of the analytical data. A revised RBCA analysis will then be completed using the data collected from this investigation.

SCHEDULE

Equiva proposes to complete all field work within 30 days following approval of this work plan by ACHCSA, and to submit a report and revised RBCA analysis within 30 days following receipt of all analytical data.

If you have any questions or comments regarding this site, please contact me at your convenience at (408) 441-7500.

Sincerely,

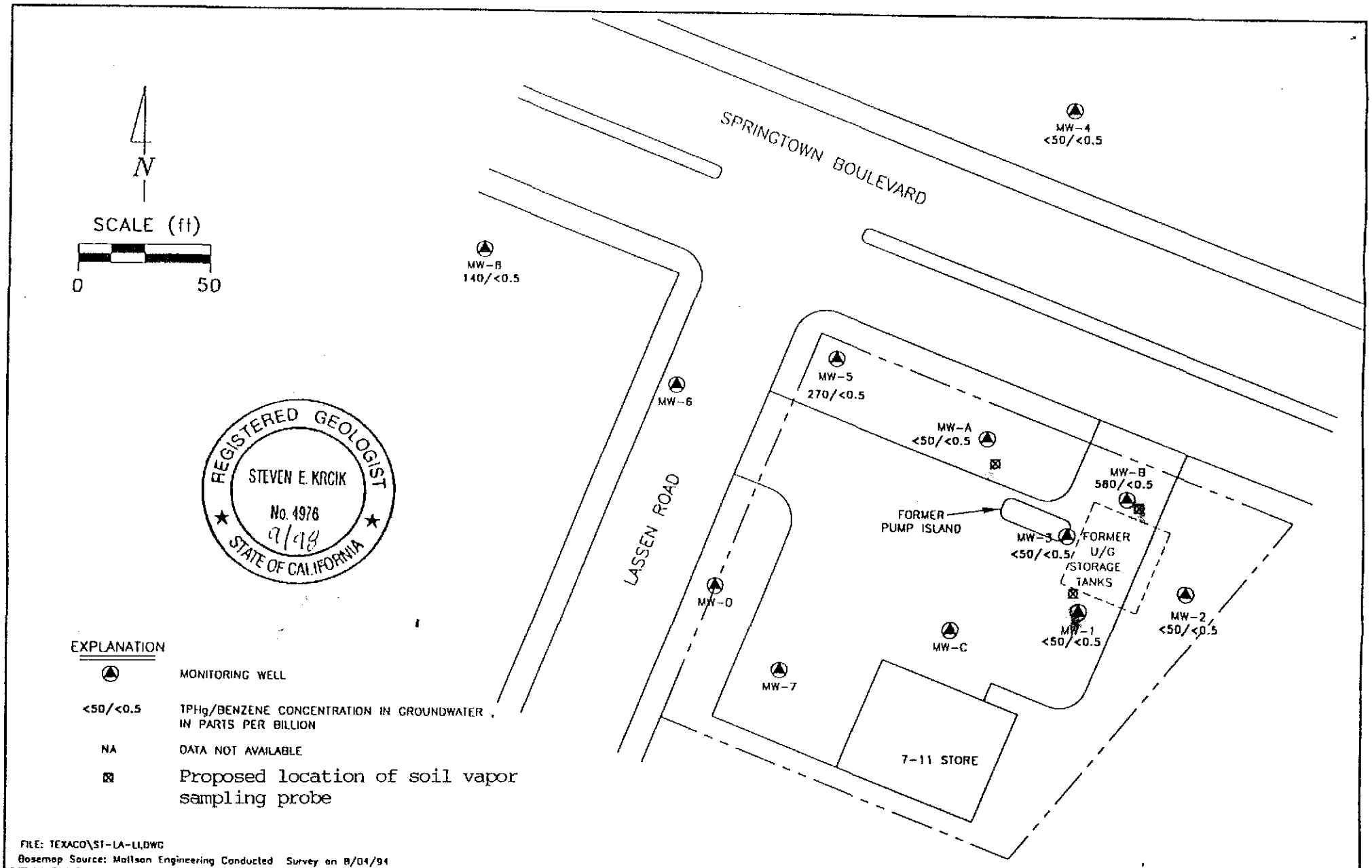
Pacific Environmental Group, Inc.

Keith Winemiller, P.E.
Project Engineer

Audrey Moore

Attachment: Figure 1 - Site Map

cc: Ms. Karen Petryna, Equiva Services LLC, 108 Cutting Boulevard, Richmond, CA 94804
Mr. Bob DeNinno, The Southland Corporation, 1022 S. W. Greenburg Road, Suite 470
Portland, OR 97223



EXPLANATION

▲	MONITORING WELL
<50/<0.5	TPHg/BENZENE CONCENTRATION IN GROUNDWATER IN PARTS PER BILLION
NA	DATA NOT AVAILABLE
⊠	Proposed location of soil vapor sampling probe

FILE: TEXACO\ST-LA-LI.DWG
Basemap Source: Mattson Engineering Conducted Survey on 8/04/94

PREPARED BY

RRM
engineering contracting firm

Former Texaco Service Station
930 Springtown Boulevard/Lassen Road
Livermore, California

SITE MAP

FIGURE:
1
PROJECT:
DAC04

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Former Texaco SS | Job Identification: 340-083.9A | Software: GSI RBCA Spreadsheet
Site Location: 930 Springtown Blvd., Livermore | Date Completed: 11/1/98 | Version: 1.0.1
Completed By: PEG

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

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

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

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

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

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	2.2E+06	***2.3E+06***
W	Length of affect. soil parallel-to-wind-(cm)	1.5E+03	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm	1.5E+03	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	1.0E+02	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

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

Soil	Definition (Units)	Value	capillary	vadose	foundation
hc	Capillary zone thickness (cm)	***5.2E+01***			
hv	Vadose zone thickness (cm)	***3.0E+02***			
rho	Soil density (g/cm^3)	1.7			
foc	Fraction of organic carbon in vadose zone	0.01			
phi	Soil porosity in vadose zone	0.38			
Lgw	Depth to groundwater (cm)	***3.5E+02***			
Ls	Depth to top of affected subsurface soil (cm)	1.0E+02			
Lsubs	Thickness of affected subsurface soils (cm)	2.0E+02			
pH	Soil/groundwater pH	6.5			
phi.w	Volumetric water content		0.342	0.12	0.12
phi.a	Volumetric air content		0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

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

340/083/9A/RBCA3.xls

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-2	Benzene	A	78.1	5	9.30E-02	A	1.10E-05	A	1.58	A	5.29E-03	2.20E-01	A	9.52E+01	4	1.75E+03	A			
0-00-0	Benzene-CA	O	78.1		9.30E-02		1.10E-05		1.58		5.29E-03	2.20E-01		9.52E+01		1.75E+03				
100-41-4	Ethylbenzene	A	106.2	5	7.60E-02	A	8.50E-06	A	1.98	A	7.69E-03	3.20E-01	A	1.00E+01	4	1.52E+02	5			
1634-04-4	Methyl t-Butyl Ether	O	88.146	5	7.92E-02	6	9.41E-05	7	1.08	A	5.77E-04	2.40E-02		2.49E+02		4.80E+04	A			
108-88-3	Toluene	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	A	6.25E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29			
1330-20-7	Xylene (mixed isomers)	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	A	6.97E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5			

Site Name: Former Texaco SS Site Location: 930 Springtown Blvd., Li Completed By: PEG Date Completed: 11/1/1998

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Toxicity Data

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-2	Benzene	-		1.70E-03	R	2.90E-02	A	2.90E-02	A	A	TRUE
0-00-0	Benzene-CA			1.70E-03		1.00E-01		1.00E-01		A	TRUE
100-41-4	Ethylbenzene	1.00E-01	A	2.86E-01	A	-		-		D	FALSE
1634-04-4	Methyl t-Butyl Ether	5.00E-03	R	8.57E-01	R	-		-			FALSE
108-88-3	Toluene	2.00E-01	A,R	1.14E-01	A,R	-		-		D	FALSE
1330-20-7	Xylene (mixed isomers)	2.00E+00	A,R	2.00E+00	A	-		-		D	FALSE

Site Name: Former Texaco SS Site Location: 930 Springtown Blvd., Completed By: PEG Date Completed: 11/1/1998

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	Maximum Contaminant Level reference	Permissible Exposure Limit PEL/TLV (mg/m3)	PEL/TLV ref	Relative Absorption Factors Oral	Relative Absorption Factors Dermal	Detection Limits Groundwater (mg/L)	Groundwater ref	Detection Limits Soil (mg/kg)	Soil ref	Half Life (First-Order Decay) (days) Saturated	Half Life (First-Order Decay) (days) Unsaturated	Half Life ref
71-43-2	Benzene	5.00E-03	52 FR 25690	3.20E+00	OSHA	1	0.5	0.002	C	0.005	S	720	720	H
0-00-0	Benzene-CA	5.00E-03		3.20E+00		1	0.5	0.002		0.005		720	720	
100-41-4	Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.002	C	0.005	S	228	228	H
1634-04-4	Methyl t-Butyl Ether			1.44E+02	ACGIH	1	0.5					360	180	H
108-88-3	Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	1	0.5	0.002	C	0.005	S	28	28	H
1330-20-7	Xylene (mixed isomers)	1.00E+01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.005	C	0.005	S	360	360	H

Site Name: Former Texaco SS Site Location: 930 Springtown Blvd., Livermore, CA Completed By: PEG Date Completed: 11/1/1998

Software version: 1.0.1

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater value (mg/L)	note	in Surface Soil value (mg/kg)	note	in Subsurface Soil value (mg/kg)	note
Benzene	5.1E-3	UCL			5.9E-1	UCL
Benzene-CA	5.1E-3	UCL			5.9E-1	UCL
Ethylbenzene	1.3E-2	UCL			1.8E+0	UCL
Methyl t-Butyl Ether	3.6E-2	UCL			#DIV/0!	
Toluene	1.2E-2	UCL			1.6E+0	UCL
Xylene (mixed isomers)	3.2E-2	UCL			8.9E+0	UCL

Site Name: Former Texaco SS
Site Location: 930 Springtown Blvd., Livermore, CA

Completed By: PEG
Date Completed: 11/1/1998

Site Name: Former Texaco SS
Site Location: 930 Springtown Blvd., Livermor

Completed By: PEG
Date Completed: 11/1/1998

TIER 2 GROUNDWATER CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/L)	No. of Samples	No. of Detects	Maximum Conc. (mg/L)	Mean Conc. (mg/L)	UCL on Mean Conc. (mg/L)
71-43-2	Benzene		16	16	3.1E-01	2.1E-03	5.1E-03
0-00-0	Benzene-CA		16	16	3.1E-01	2.1E-03	5.1E-03
100-41-4	Ethylbenzene		16	16	1.8E+00	4.1E-03	1.3E-02
1634-04-4	Methyl t-Butyl Ether		16	16	1.3E+00	1.8E-02	3.6E-02
108-88-3	Toluene		16	16	2.6E+00	3.9E-03	1.2E-02
1330-20-7	Xylene (mixed isomers)		16	16	4.8E+00	8.8E-03	3.2E-02

SCREEN 7.1 GROUNDWATER CONCENTRATION CALCULATOR

Choose UCL Percentile

90%

Analytical Data (Up to 50 Data Points)

	1	2	3	4	5	6	7	8	9	10	11
Calculated Distribution of Data	Default Detection Limit	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
		Well Name	MW-a	MW-A	MW-A	MW-A	MW-B	MW-B	MW-B	MW-B	MW-1	MW-1	MW-2
		Date Sampled	10/31/97	2/6/98	5/19/98	7/31/98	10/31/97	2/6/98	5/19/98	7/31/98	2/6/98	7/31/98	2/6/98
Lognormal	0.002		0.021	0.0021	0.31	0.00025	0.13	0.01	0.2	0.00025	0.00025	0.00025	0.00025
Lognormal	0.002		0.021	0.00211	0.31	0.00025	0.13	0.01	0.2	0.00025	0.00025	0.00025	0.00025
Lognormal	0.002		0.2	0.055	1.8	0.00025	1.2	0.072	0.41	0.00025	0.00025	0.00025	0.00025
Lognormal	0		0.035	0.015	1.3	0.00125	0.4	0.04	0.57	0.007	0.015	0.015	0.015
Lognormal	0.002		0.048	0.004	0.38	0.00025	2.6	0.12	0.9	0.00025	0.00025	0.00025	0.00025
Lognormal	0.005		0.43	0.077	3.7	0.00025	4.8	0.2	1.6	0.00025	0.00025	0.00025	0.0014

12	13	14	15	16	17	18
(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW-2	MW-3	MW-3			MW-5	MW-5
7/31/98	2/6/98	7/31/98			2/6/98	7/31/98
0.00025	0.0015	0.00025			0.0015	0.00025
0.00025	0.0015	0.00025			0.0015	0.00025
0.00025	0.00077	0.00025			0.00077	0.00025
0.00125	0.015	0.00125			0.015	0.00125
0.00025	0.0028	0.00025			0.0028	0.00025
0.00025	0.0086	0.00025			0.0086	0.00025

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: Former Texaco SS
Site Location: 930 Springtown Blvd., Livermore, CA

Completed By: PEG
Date Completed: 11/1/1998

GROUNDWATER SSTL VALUES

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 1

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

CONSTITUENTS OF CONCERN		Representative Concentration	Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	5.1E-3	NA	NA	NA	1.3E-1	NA	NA	NA	1.3E-1	☐	<1
0-00-0	Benzene-CA	5.1E-3	NA	NA	NA	3.8E-2	NA	NA	NA	3.8E-2	☐	<1
100-41-4	Ethylbenzene	1.3E-2	NA	NA	NA	>Sol	NA	NA	NA	>Sol	☐	<1
1634-04-4	Methyl t-Butyl Ether	3.6E-2	NA	NA	NA	1.7E+3	NA	NA	NA	1.7E+3	☐	<1
108-88-3	Toluene	1.2E-2	NA	NA	NA	1.9E+2	NA	NA	NA	1.9E+2	☐	<1
1330-20-7	Xylene (mixed isomers)	3.2E-2	NA	NA	NA	>Sol	NA	NA	NA	>Sol	☐	<1

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

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: g-309-oex-828

Site Name: Former Texaco SS
Site Location: 930 Springtown Blvd., Livermore,
Completed By: PEG
Date Completed: 11/1/1998

TIER 2 SUBSURFACE SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
71-43-2	Benzene		30	30	2.7E+01	2.7E-01	5.9E-01
0-00-0	Benzene-CA		30	30	2.7E+01	2.7E-01	5.9E-01
100-41-4	Ethylbenzene		30	30	1.9E+02	7.9E-01	1.8E+00
1634-04-4	Methyl t-Butyl Ether		0	0	0.0E+00	#DIV/0!	#DIV/0!
108-88-3	Toluene		30	30	8.6E+01	6.9E-01	1.6E+00
1330-20-7	Xylene (mixed isomers)		28	28	3.1E+02	3.2E+00	8.9E+00

Serial: g-309-oex-828
Software: GSI RBCA Spreadsheet
Version: 1.0.1

subsurface soil results should be from vadose zone

SCREEN 7.3
SUBSURFACE SOILS
CONCENTRATION
CALCULATOR

UCL Percentile
90%

Analytical Data (Up to 50 Data Points)

	1	2	3	4	5	6	7	8	9	10	11
Calculated Distribution of Data	Default Detection Limit (mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sample Name		A/15	B/15	bottom	north	south	east	west	5c/14	6b/10.5	SB 1D	SB 1E
Date Sampled												
Lognormal	0.005	27	0.15	0.58	0	0	0.02	0	0.03	0.002	0	4
Lognormal	0.005	27	0.15	0.58	0	0	0.02	0	0.03	0.002	0	4
Lognormal	0.005	190	0.97	0.24	0	0	0.02	0	0.025	0.005	0	0
#DIV/0!	0											
Lognormal	0.005	86	0.83	0.41	0	0	0.01	0	0.07	0.003	0	19
Lognormal	0.005	310	3.1	0.0009	0	0	0.01	0			0	24

12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
(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)	(mg/kg)	(mg/kg)	(mg/kg)
SB-1E	SB-1G	SB-1H	SB-2A	SB-2C	SB-2D	MW7C	MW-7D	MW7F	MW8C	MW8D	MW8E	EW1	EW1	EW1	EW1
0	0	0	0	0	0	0	0	0	0	0	0	0	6.6	0.017	0
0	0	0	0	0	0	0	0	0	0	0	0	0	6.6	0.017	0
10	0	5	0	0	0	0	0	0	0	0	0	0	15	0.05	0
0	0	0	0	0	0	0	0	0	0	0	0	0	21	0.051	0
0	0	15	0	0	0	0	0	0	0	0	0	0	50	0.21	0

28 *29* *30*

(mg/kg)	(mg/kg)	(mg/kg)
VW1	VE1	VE1
7.1	2.9	0.007
7.1	2.9	0.007
13	14	0
22	15	0.029
56	53	0

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: Former Texaco SS
Site Location: 930 Springtown Blvd., Livermore, CA

Completed By: PEG
Date Completed: 11/1/1998

SUBSURFACE SOIL SSTL VALUES (> 3.3 FT BGS)

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

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 1

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

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	5.9E-1	NA	NA	NA	3.0E-2	NA	NA	NA	3.0E-2	■	1.9E+01
0-00-0	Benzene-CA	5.9E-1	NA	NA	NA	8.8E-3	NA	NA	NA	8.8E-3	■	6.7E+01
100-41-4	Ethylbenzene	1.8E+0	NA	NA	NA	1.1E+2	NA	NA	NA	1.1E+2	☐	<1
1634-04-4	Methyl t-Butyl Ether	#DIV/0!	NA	NA	NA	3.2E+2	NA	NA	NA	3.2E+2	☒	#DIV/0!
108-88-3	Toluene	1.6E+0	NA	NA	NA	4.3E+1	NA	NA	NA	4.3E+1	☐	<1
1330-20-7	Xylene (mixed isomers)	8.9E+0	NA	NA	NA	>Res	NA	NA	NA	>Res	☐	<1

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

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: g-309-oex-828