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August 25, 2003

Mr. Barney Chan
Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-9335

Subject: *Response to Email Regarding Closure Questions, Dated June 30, 2003*
Former Chevron Service Station No. 9-4587
609 Oak Street, Oakland, California 94607
Delta Project No.DG94-587

Dear Mr. Chan:

Delta Environmental Consultants, Inc. (Delta) has been authorized by Chevron Products Company (Chevron) to prepare a response to your questions expressed in your June 30, 2003, e-mail, included in Enclosure A. We have addressed each of your two questions below.

1) *Utilities along 6th Street and Oak Street*. As we discussed over the telephone on July 2, 2003, it is Delta's professional opinion that water quality data are sufficient to demonstrate that migration of petroleum hydrocarbons along utility corridors has not been an issue. The results of long-term, off-site groundwater monitoring and sampling show it is unlikely that offsite migration of liquid-phase petroleum hydrocarbons have occurred. Furthermore, these results show that offsite migration of dissolved-phase petroleum hydrocarbons have not been significant. Three off-site groundwater monitoring wells (C4 – C6) were installed in 1989 and one (C7) was installed in 1991. All are located down-gradient of the site: Two placed strategically in the right-of-way for Oak Street and two in the right-of-way for 6th Street. Any migration of LPH in conduits would have been toward one or both of these streets. Furthermore, such migration would likely have been a source for dissolved-phase impacts approaching concentrations similar to the onsite wells. No such impacts occurred in the strategically configured off-site groundwater monitoring well network.

2) *Risk Assessment for Residential Land Use*. According to your June 30, 2003, e-mail, in order for the subject property to obtain "unrestricted land use" closure from Alameda County Public Health, the site risk assessment needed to be revised to consider benzene volatilization in soil to indoor air for a

residential land use target risk (10-6) as opposed to commercial land use target risk (10-5), which had previously been reported by Terra Vac (Risk Assessment and Threshold Limits, August 20, 1997).

Revisions to the risk assessment were prepared by Delta and are presented here. The revised risk assessment utilizes current site soil conditions. Only soil samples at locations still known to exist (not remediated by soil vapor extraction or overexcavation) were utilized to calculate a representative benzene concentration in subsurface soil (<10 feet). Table 1 summarizes the soil sample laboratory chemical analyses results for benzene, toluene, ethylbenzene, and total xylenes. Figure 1 presents the sample locations.

The representative benzene concentration in soil was calculated using the Groundwater Services, Inc. RBCA Tool Kit for Chemical Releases, Version 1.3a Guidance Manual software. The soil samples utilized to calculate the representative benzene concentration in soil are summarized in Enclosure B. The 95 percent Upper Confidence Limit of the arithmetic mean concentration was selected as the representative concentration. The representative benzene concentration in subsurface soil remaining at the site is 0.1 milligrams per kilogram (mg/kg). Using the San Francisco Bay Regional Water Quality Control Board's Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater, Interim Final, dated December 2001, for benzene in subsurface soil where groundwater is not a current or potential source of drinking water, the allowable risk based screening level (RBSL) for residential land use is 0.18 mg/kg. A copy of Table D from the SFBRWQCB RBCA document is included in Enclosure C.

Based on current known site conditions, these findings indicate that the site poses a minimal risk to human health and the environment if it is developed for residential or commercial land use in the future. It is Delta's professional opinion that no further action is warranted and Delta's recommendation that the site be granted closure for unrestricted land use.

The interpretations contained in this document 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 hydrogeology and engineering practices at this time and location. Other than this, no warranty is implied or intended.

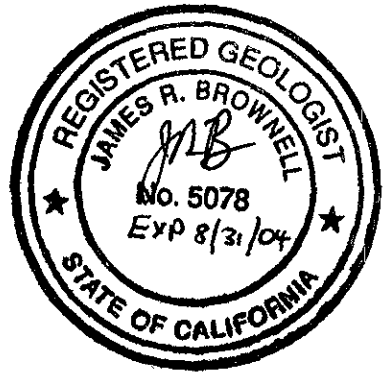
If you have any questions concerning this project, please contact me at (916) 638-2765.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

James R Brownell

James R. Brownell, R.G.
Project Manager
California Registered Geologist No. 5078



JRB (LRP005.9-4587 June 30 Closure Questions)
Enclosures

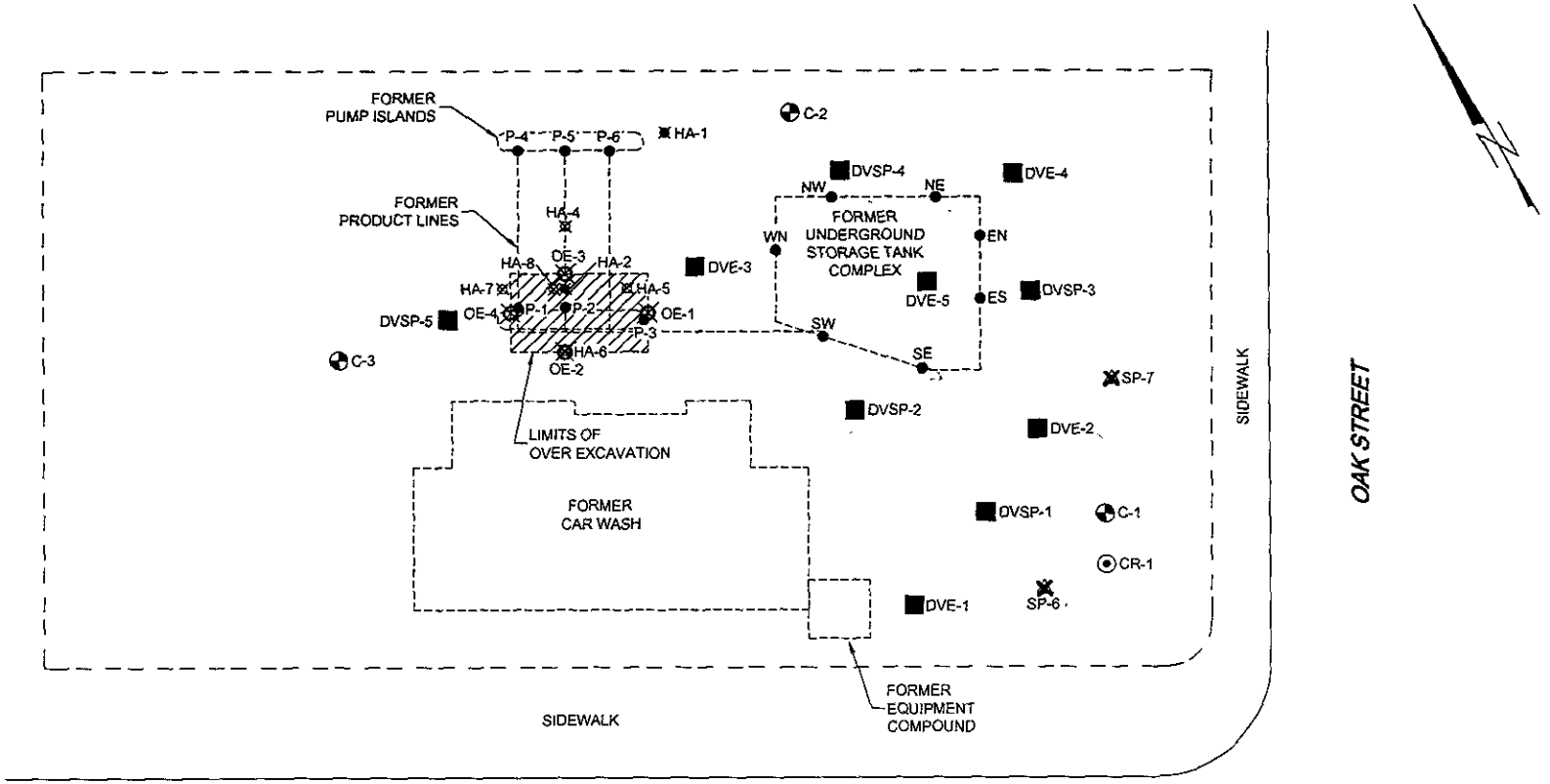
Cc: Ms. Karen Streich – Chevron Products Company
Mr. Andrew T. Mortl – Glynn & Finley
Mr. Chuck Headlee – San Francisco Bay Regional Water Quality Control Board
Mr. A. Guidotti, #1 Bates Boulevard, Orinda, CA 94563

TABLE 1
SOIL SAMPLE LABORATORY ANALYTICAL RESULTS
REVISED RISK ASSESSMENT
AUGUST 25, 2003

Former Chevron Service Station No. 9-4587
609 Oak Street, Oakland, CA

Sample Location	Date Collected	Depth Collected (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)
CR-1	09/19/90	5.0	0.025	0.025	0.025	0.025
P-4	10/17/94	2.5	0.36	4.4	<0.005	0.043
P-5	10/17/94	2.5	<0.005	<0.005	<0.005	<0.005
P-6	10/17/94	3.0	0.021	0.042	0.091	0.16
DVSP-4	07/10/95	5.5	<0.005	<0.005	<0.005	<0.005
SP7	12/20/95	4.7	<0.005	<0.005	<0.005	<0.005
HA-1	06/12/97	5.0	<0.005	<0.005	<0.005	<0.005
HA-1	06/12/97	7.0	<0.005	<0.005	<0.005	<0.005
HA-2	06/12/97	7.0	2.1	2.1	2.1	7.5
HA-4	09/13/02	2.5	<0.005	<0.005	<0.005	0.056
HA-4	09/13/02	5.0	2.1	92	50	310
HA-4	09/13/02	7.5	1.9	100	76	550
OE-1	01/29/03	8.5	0.025	0.025	0.025	0.025
OE-2	01/29/03	8.5	0.025	0.025	0.025	0.025
OE-3	01/29/03	8.5	0.31	0.025	0.29	1.4
OE-4	01/29/03	8.5	0.025	0.025	0.025	0.025

mg/kg = Milligrams per kilogram.



LEGEND.

C-1	MONITORING WELL LOCATION
DVE-1	ABANDONED VAPOR EXTRACTION WELL LOCATION
SP-7	ABANDONED AIR SPARGE WELL LOCATION
DVSP-1	DUAL COMPLETION WELL LOCATION
P-1	SOIL SAMPLE LOCATION
HA-1	HAND AUGER SOIL BORING LOCATION
HA-4	HAND AUGER SOIL BORING LOCATION (9/13/02)
OE-1	OVER EXCAVATION SOIL SAMPLE COLLECTED AT 8.5' BELOW SURFACE GRADE BY DELTA ENVIRONMENTAL ON 1/29/03

0 30 FT

APPROX. SCALE

FIGURE 1

POST-OVER-EXCAVATION SOIL SAMPLE LOCATION MAP

FORMER CHEVRON STATION NO. 9-4587
609 OAK STREET
OAKLAND, CA.

PROJECT NO. DG94-587	DRAWN BY M L 2/11/03
FILE NO. DG94587B	PREPARED BY MAB
REVISION NO 3	REVIEWED BY

Delta Environmental Consultants, Inc.

ENCLOSURE A

Copy of June 30, 2003
E-mail from Alameda County Environmental Health

Jim Brownell

From: Chan, Barney, Env. Health

Sent: Monday, June 30, 2003 4:43 PM

To: 'Jim Brownell' (E-mail)

Subject: 609 Oak St., Oakland 94607 Closure Request

Jim: I took a look at your June 4, 2003 response letter. Could you clarify the following:

- What utilities exist along 6th St and Oak St and what is the depth of their invert? Could dissolved TPH have migrated preferentially in the conduits? How does the depth of water compare with the depth of the utility inverts? The lack of impact in on and offsite wells doesn't eliminate the possibility of preferential pathway migration.
- The SSTL presented in the TerraVac report (1997) present the SSTL for benzene as 4.1 ppm for subsurface soil (>3') and for a target risk of 10-5 and soil volatilization to indoor air for a commercial exposure pathway. The question we have is that in order to close the site for unrestricted land use, you need to determine the RBSL or SSTL for residential exposure (even though surface soil concentrations may be low). Note, the Water Board considers surface soils as those <10'bgs.

Call me if you have any questions.

Barney M. Chan
Hazardous Materials Specialist
Alameda County Environmental Health
510-567-6765

ENCLOSURE B

RBCA Site Assessment
Former Chevron No. 9-4587
609 Oak Street, Oakland, CA

RBCA SITE ASSESSMENT

Site Name: Former Chevron 9-4587
Site Location: 609 oak St., Oakland, CA

Completed By: M. Berrington
Date Completed: 30-Jul-03

1 of 1

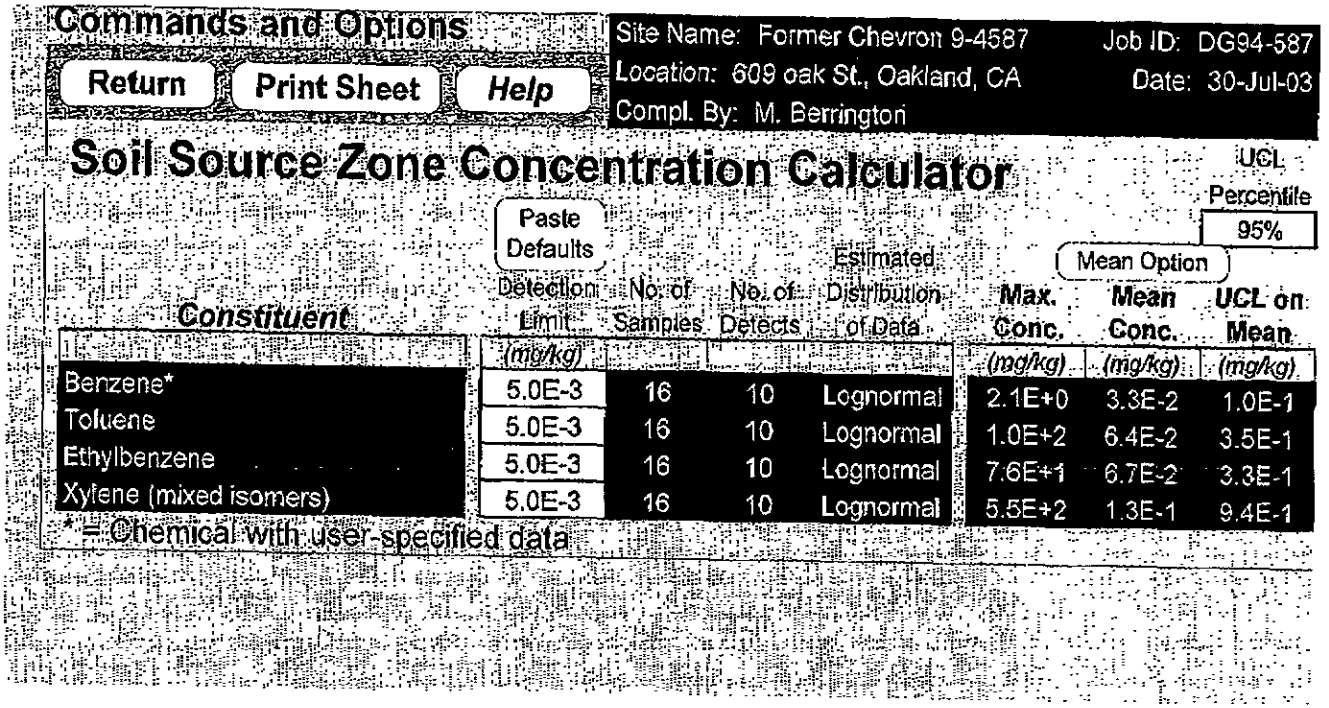
Physical Property Data

TIER 2 SOIL CONCENTRATION DATA SUMMARY

Constituent	CAS Number	type	Molecular Weight (g/mole)	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) 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														

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*	5.0E-03	16	10	2.1E+00	3.3E-02	1.0E-01
108-88-3	Toluene*	5.0E-03	16	10	1.0E+02	6.4E-02	3.5E-01
100-41-4	Ethylbenzene*	5.0E-03	16	10	7.6E+01	6.7E-02	3.3E-01
1330-20-7	Xylene (mixed isomers)*	5.0E-03	16	10	5.5E+02	1.3E-01	9.4E-01

* = Chemical with user-specified data



Commands and Options

Return | Print Sheet | Help

Site Name: Former Chevron 9-4587 — Job ID: DG94-587
Location: 609 oak St., Oakland, CA — Date: 30-Jul-03
Compl. By: M. Berrington

Soil Source Zone Concentration Calculator

Paste Defaults

UCL Percentile: 95%

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	16	10	Lognormal	2.1E+0	3.3E-2	1.0E-1
Toluene	5.0E-3	16	10	Lognormal	1.0E+2	6.4E-2	3.5E-1
Ethylbenzene	5.0E-3	16	10	Lognormal	7.6E+1	6.7E-2	3.3E-1
Xylene (mixed isomers)	5.0E-3	16	10	Lognormal	5.5E+2	1.3E-1	9.4E-1

* = Chemical with user-specified data

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	HA-4-S-2.5	HA-4-S-5.0	HA-4-S-7.5	OE-1-8.5	OE-2-8.5	OE-3-2.5	OE-4-8.5	CR-1-5	P-4-2.5	P-5-2.5	P-6-2.5	DVSP4-5.5	SP7-4.7
Date	13-Sep-02	13-Sep-02	29-Jan-03	29-Jan-03	29-Jan-03	29-Jan-03	29-Jan-03	19-Sep-90	17-Oct-94	17-Oct-94	17-Oct-94	10-Jul-95	20-Dec-95
	(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)*
	nd	2.10E+0	1.90E+0	2.50E-2	2.50E-2	3.10E-1	2.50E-2	2.50E-2	3.60E-1	nd	2.10E-2	nd	nd
	nd	9.20E+1	1.00E+2	2.50E-2	2.50E-2	2.50E-2	2.50E-2	2.50E-2	4.40E+0	nd	4.20E-2	nd	nd
	nd	5.00E+1	7.60E+1	2.50E-2	2.50E-2	2.90E-1	2.50E-2	2.50E-2	2.30E+0	nd	9.10E-2	nd	nd
	nd	3.10E+2	5.50E+2	2.50E-2	2.50E-2	1.40E+0	2.50E-2	2.50E-2	3.30E+1	nd	1.60E-1	nd	nd

HA2-7

Analytical Data

14	15	16	17	18	19	20	21	22	23	24	25	26
HA1-5	HA1-7	HA3-7										
12-Jun-97	12-Jun-97	12-Jun-97										
(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)*
nd	nd	2.10E+0										
nd	nd	2.10E+1										
nd	nd	7.50E+0										
nd	nd	5.20E+1										

ENCLOSURE C

San Francisco Regional Water Quality Control Board
Table D of RBCA Document
RBSL for Benzene in Subsurface Soil

TABLE D. SUBSURFACE SOIL (> 3m bgs) AND GROUNDWATER RISK-BASED SCREENING LEVELS (RBSLs)
(Groundwater IS NOT a Current or Potential Source of Drinking Water)

	SUBSURFACE SOIL RBSLs		GROUNDWATER RBSLs	
CHEMICAL PARAMETER	Residential Land Use Permitted (mg/kg)	Commercial/ Industrial Land Use Only (mg/kg)	Drinking Water Resource NOT Threatened (ug/L)	Elevated Threat To Surface Water (ug/L)
ACENAPHTHENE	16	16	23	-
ACENAPHTHYLENE	120	120	280	-
ACETONE	0.51	0.51	1500	-
ALDRIN	0.95	0.95	0.13	0.00014
ANTHRACENE	2.9	2.9	0.73	-
ANTIMONY	210	210	30	-
ARSENIC	13	13	36	-
BARIUM	2400	2400	3.9	-
BENZENE	0.18	0.39	46	-
BENZO(a)ANTHRACENE	12	12	0.027	0.049
BENZO(b)FLUORANTHENE	12	12	7.0	0.049
BENZO(k)FLUORANTHENE	12	12	0.40	0.049
BENZO(g,h,i)PERYLENE	5.3	5.3	0.02	-
BENZO(a)PYRENE	1.2	1.2	0.014	-
BERYLLIUM	95	95	5.1	-
BIPHENYL, 1,1-	6.5	6.5	5.0	-
BIS(2-CHLOROETHYL)ETHER	0.015 (1.6)	0.061 (1.6)	122	1.4
BIS(2-CHLOROISOPROPYL)ETHER	1.3	1.3	122	-
BIS(2-ETHYLHEXYL)PHTHALATE	530	530	32	5.9
BORON	23000	23000	1.6	-
BROMODICHLOROMETHANE	0.025 (0.95)	0.098 (4.0)	420 (6400)	-
BROMOFORM	110	110	5100	360
BROMOMETHANE	13	1.1 (3.0)	320	-
CADMIUM	33	33	1.1	-
CARBON TETRACHLORIDE	0.021 (0.059)	0.074 (0.25)	9.8	4.4
CHLORDANE	15	15	0.004	0.00059
CHLOROANILINE, p-	0.11	0.11	10	-
CHLOROBENZENE	3.0	3.0	50	-
CHLOROETHANE	0.85	0.85	12	-
CHLOROFORM	0.17 (0.66)	0.58 (0.88)	28	470
CHLOROMETHANE	0.49	0.87 (1.7)	5.6 (130)	-
CHLOROPHENOL, 2-	0.12	0.12	1.8	400
CHROMIUM (Total - assumes 1/6 ratio Cr6/Cr3)	13	13	180	-
CHROMIUM III	2500	5000	180	-
CHROMIUM VI	18	1.8	11	-
CHRYSENE	4.7	4.7	0.07	0.049
COBALT	2500	5000	3.0	-
COPPER	2500	5000	3.1	-
CYANIDE (Free)	500	1000	1.0	-
DIBENZO(a,h)ANTHTRACENE	3.5	3.5	0.25	0.049
DIBROMOCHLOROMETHANE	79	79	6400	-
1,2-DIBROMO-3-CHLOROPROPANE	0.001	0.001	0.20	-
DIBROMOETHANE, 1,2-	0.014 (0.56)	0.052 (0.56)	84 (280)	-
DICHLOROBENZENE, 1,2-	1.0	1.0	14	-
DICHLOROBENZENE, 1,3-	5.3	5.3	71	-