RO 434

not on list
Not AGS

Delta
Environmental
Consultants, Inc.

Solving environment-related business problems worldwide

3164 Gold Camp Drive • Suite 200
Rancho Cordova, California 95670 USA

916.638.2085 800.477.7411
Fax 916.638.8385

www.deltaenv.com

Alameda County
SEP 07 2005
Environmental Health

August 30, 2005

Mr. Amir Gholami
Alameda County Health Agency
Division of Hazardous Materials
Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Subject: ***Temporary Monitoring Wells Installation for Remedial Action Plan Implementation***
Tesoro Site No. 67076 (Former Beacon Station No. 3604)
1619 First St.,
Livermore, CA
Delta Project No. D004-076

Dear Mr. Gholami:

Delta Environmental Consultants, Inc., (Delta), has been authorized by Tesoro Environmental Resources Petroleum Company, Inc., (Tesoro) to implement the *Multiphase Pilot Testing Work Plan,* dated July 21, 2004. The location of the site is shown on Figure 1 (Site Location Map). Delta installed two temporary monitoring wells (TP-1 and TP-2) at the site on June 23, 2005. These two wells are part of the pre-construction activities for pilot testing at the site. A site plan and location of the temporary wells are shown on Figure 2 (Site Map).

Two Temporary Monitoring Wells for Multi-Phase Extraction Pilot Testing

Mitchell Drilling Environmental Corporation of Eureka, California installed the two temporary monitoring wells, TP-1 and TP-2 (Figure 2) on June 23, 2005 using a truck-mounted hollow stem auger drilling rig. The locations were outlined in the field for Underground Service Alert (USA). USA then notified applicable utilities in the area to mark the location of their buried service lines. Once cleared by USA, each drilling location was cleared to 5-feet below ground surface (bgs) prior to drilling. The well TP-1 was installed 10 feet down gradient and TP-2 was installed 20 feet up gradient of vapor well VW-2 (Figure 2). Both wells were constructed using Schedule 40 poly-vinyl chloride (PVC) piping with a slotted screen size of 0.020-inches. The screen intervals for both wells were placed from 28 feet to 43 feet bgs. Number 3 Monterey Sand was used to fill the annular space from 24 to 43 feet bgs. Copies of the boring logs and well construction details are presented in Enclosure A. A 2-foot Bentonite chip seal from 22 to 24 feet bgs was hydrated and left to equilibriate for an hour before grouting. The grout was mixed in a 55 gallon drum and was poured into the annular space. An eight-inch, traffic-rated wellbox was installed flush with the ground surface. Five drums of soil and decon water were left on site for disposal pending contracting of a suitable waste hauler. Field methods and procedures are provided in Enclosure B.

Groundwater Levels

Depth to groundwater was initially encountered at 35-feet bgs in both wells. Static groundwater levels were measured approximately one week after installation and were recorded as 29.58 feet bgs for TP-1 and 29.27 feet bgs for TP-2.

Soil Samples

Soil samples were collected using the methods and procedures outlined in section 2.3 of Enclosure B and sent to Kiff Analytical, a California-certified laboratory in Davis, California. Four samples from each boring collected at 10 foot intervals bgs. were analyzed for total petroleum hydrocarbons in the gasoline range (TPHg), benzene, toluene, ethyl-benzene, and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), 1,2-Dichloroehane (1,2-DCA), and 1,2-Dibromoehane (1,2-DBA) using EPA Method 8260. Based on the field results one sample was tested for total lead using EPA Method 8010. Results from the analyses are presented in Table 1, Soil Sample Analytical Report. Seven samples are being held at the laboratory until further notice.

Petroleum hydrocarbons concentrations were below laboratory reporting limits in the soil samples collected at 10 and 20 feet bgs from both TP-1 and TP-2. TPHg was detected in the samples collected at 40 feet bgs from TP-1 and at 30 and 40 feet bgs from TP-2. The highest reported concentration of TPHg was reported in the soil sample collected at 40 feet bgs from TP-1 at 5,800 milligrams per kilogram (mg/Kg). MTBE, benzene, toluene, ethylbenzene and total zylenes were also detected at various concentrations from the samples collected at 30 and 40 feet bgs from both TP-1 and TP-2. Analytical results are summarized in Table 1, and the laboratory reports are presented in Enclosure C.

Permits

A copy of the signed Health and Safety Site Plan is included in Enclosure D and the well permit from the Zone 7 Water Agency is in Enclosure E.

Remarks

The recommendations contained within this report represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently acceptable industry standards. This report is based upon a specific scope of work requested by the client. The contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by the contract or outlined in this report were performed. This report is intended only for the use of Delta's client and anyone else specifically listed on this report. Delta will not, and cannot be liable for unauthorized reliance by any other third party. Other than contained in this paragraph, Delta makes no express or limited warranty as to the contents of this report.

If you have any questions, please contact John Smith at (916) 503-1266.

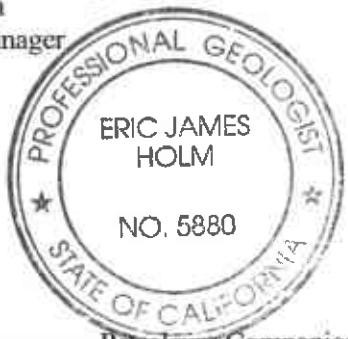
Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

Deborah Shulman
Staff Geologist

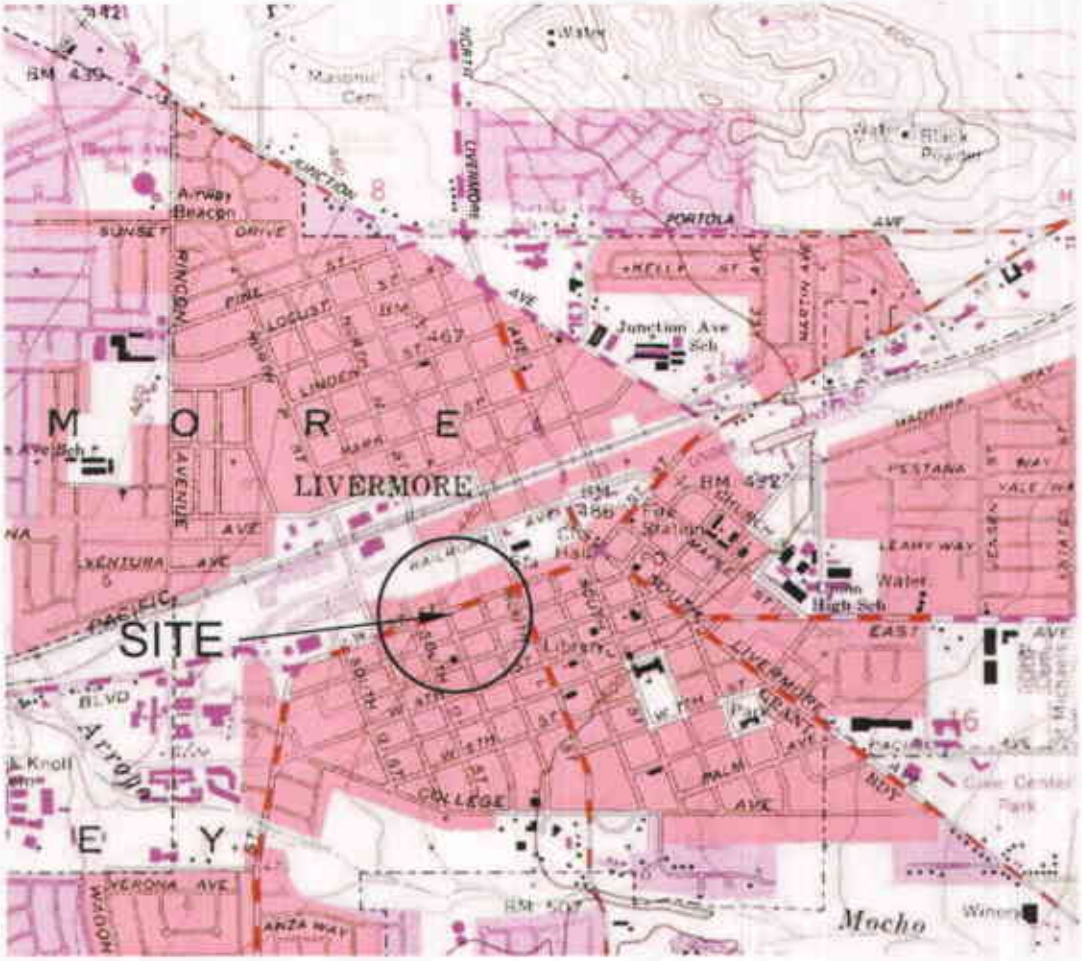
John Smith
Project Manager

Eric J. Holm
California Professional Geologist No. 5880



Enclosures

cc: Mr. Jeffrey Baker, Tesoro Environmental Resources Petroleum Companies, Inc.
Chuck Miller, Agoura USA Petroleum
Brian Kelleher, Kelleher and Associates
Bettie Graham, Regional Water Quality Control Board, San Francisco Bay Region
Michael P. Purchase, Arctos Environmetnal



GENERAL NOTES:
BASE MAP FROM U.S.G.S.
LIVERMORE
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

SCALE 1:24,000

FIGURE 1

SITE LOCATION MAP

TESORO SITE NO. 67076
FORMER BEACON STATION NO. 604
1619 WEST FIRST STREET
LIVERMORE, CA.

PROJECT NO. D004-076	DRAWN BY REG 6/18/04
FILE NO. TS-67076-FIG1	PREPARED BY BAB
REVISION NO. -	REVIEWED BY

Delta Environmental Consultants, Inc.

LEGEND

Property line

Groundwater monitoring well

Vapor extraction well

Temporary monitoring well

SOURCE: Doulos Environmental, Inc. site plan. Wells resurveyed by Advanced Geomatic Engineering on 1/22/02. MW-8, MW-9, MW-10 installed on September 2, 2003.

MW-9

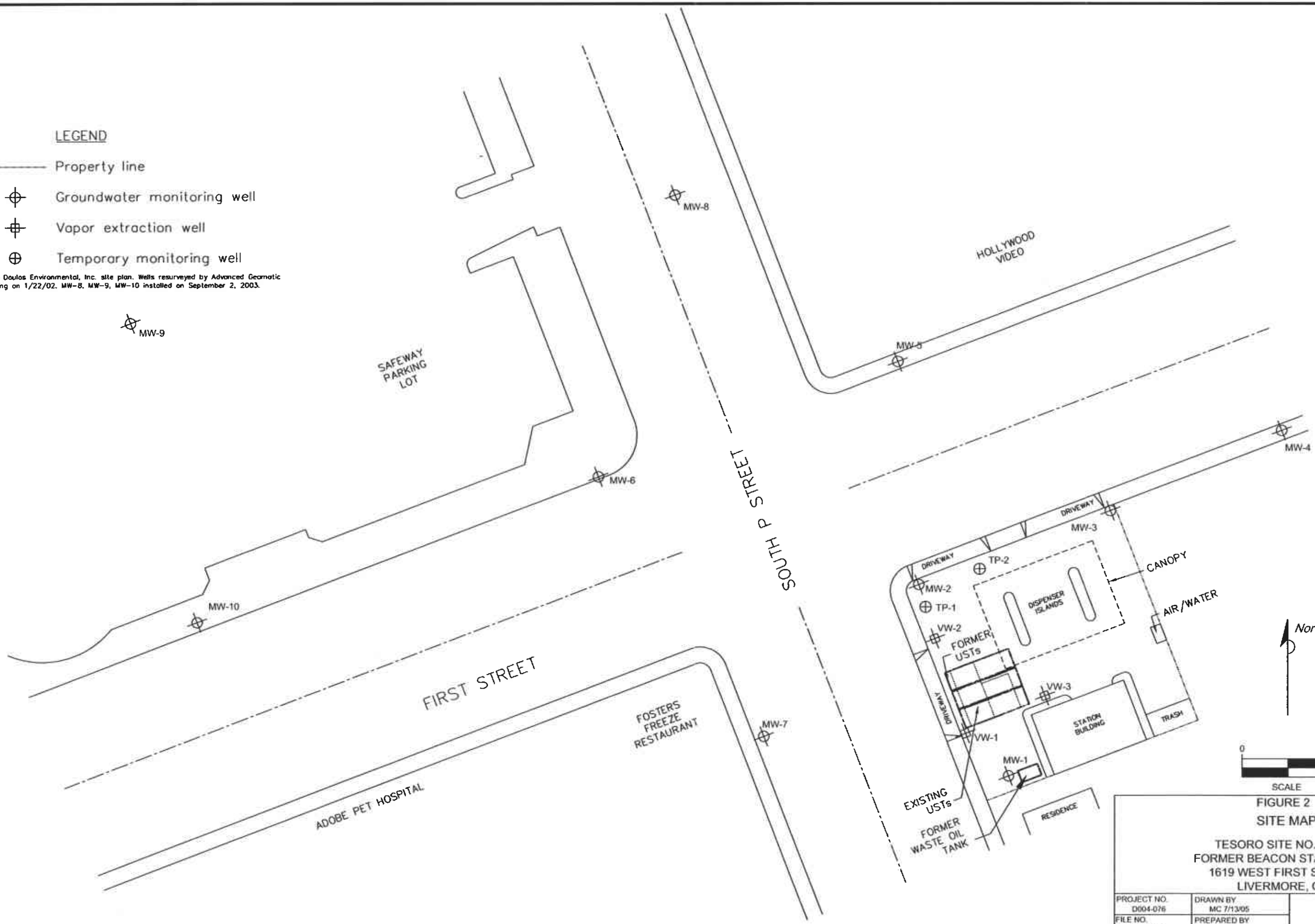


FIGURE 2

SITE MAP

TESORO SITE NO. 67076
FORMER BEACON STATION 604
1619 WEST FIRST STREET
LIVERMORE, CA

PROJECT NO. D004-076	DRAWN BY MC 7/13/05
FILE NO. TS-67076	PREPARED BY DS
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.

Table 1
Soil Sample Analytical Report
Tesoro No. 67076
1619 First Street
Livermore, California

Soil Boring	Date	Depth	TPH-G	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	DIPE	ETBE	TAME	TBA	1,2 EDC	1,2 EDB	Total Lead
		(feet)	*(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)*
TP-1	6/23/2005	10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
		20	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
		30	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	**0.012**	<0.0050	<0.0050	<0.0050	**0.0073**	<0.0050	<0.0050	--
		40	**5800**	**35**	**210**	**110**	**480**	<0.25	<0.25	<0.25	<0.25	<7.0	<0.25	<0.25	5.71
TP-2	6/23/2005	10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
		20	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
		30	**15**	**0.054**	**0.023**	**0.22**	**0.42**	**2.2**	<0.0050	<0.0050	**0.039**	1.0	<0.0050	<0.0050	--
		40	**9.8**	**0.20**	<0.025	**0.25**	**0.32**	**4.2**	<0.025	<0.025	<0.025	0.44	<0.025	<0.025	--

Explanationydrocarbons in the gasoline range
MTBE = Methyl tertiary butyl ether
TBA = Tertiary butyl alcohol
TAME = Tertiary amyl methyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary butyl ether
EDC = 1,2-Dichloroethane
EDB = 1,2-Dibromoethane
(mg/Kg) = miligrams per kilogram
j= For the samples collected from AS-1 at 5 feet and MW-12 at 15 feet, the lab reported that some of the MTBE may have been converted to

ENCLOSURE A

Soil Boring Logs / Well Construction Diagrams

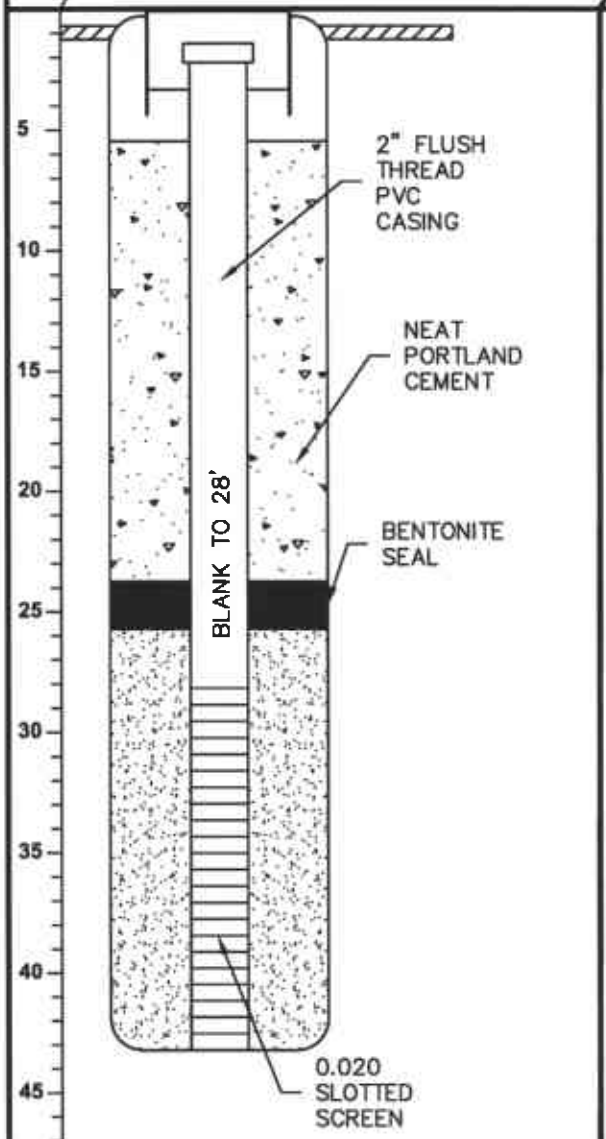
Delta Environmental Consultants, Inc.

BORING LOG

PROJECT NO.: D004–076
LOCATION: 1619 FIRST AVENUE LIVERMORE, CA
DATE DRILLED: 6/23/05
CLIENT: TESORO

LOGGED BY: DJS
DRILLER: MDE
HOLE DIAMETER: 8"
DRILLING METHOD: HOLLOW STEM
SAMPLING METHOD: SPLIT SPOON

BORING/WELL # **TP-1**



PID READING (PPM)	PENETRATION (BLOWS/6")	DEPTH (FT.)	LITHOLOGY/DESCRIPTION
			CONCRETE SURFACE 8" THICK CLEARED TO 4'
0	10/16/28	5	GW/GM- CLAYEY SILT WITH GRAVELS; ORANGEY BROWN, GRAVELS RANGE FROM <1cm TO 4cm, 75% GRAVEL, SLIGHTLY MOIST
0	5/11/15	10	GW/GM- SAME AS ABOVE
0.1	4/8/13	15	GW/GM- CLAYEY SILT WITH GRAVELS; ORANGE AND BROWN CLAYEY, SILT GRAVELS RANGE FROM <1cm TO 2cm, 90% GRAVELS, MOSTLY DECOMPOSING, SLIGHTLY MOIST, NO ODOR
2.6	6/8/15	20	GP/GM- CLAYEY SILT WITH SMALL (≤1cm) GRAVELS SLIGHTLY MOIST, YELLOWY BROWN/ ORANGEY BROWN, SLIGHT ODOR
110	4/6/10	25	MH- CLAYEY SILT; ORANGEY BROWN, OLIVE GREEN SPOTS, (2mm), SLIGHTLY MOIST, ODOR
11.4	5/7/10	30	SC- CLAYEY SAND; ORANGEY BROWN WITH OLIVE LENSES, MEDIUM GRAINED SAND, FATTY CLAY, SLIGHTLY MOIST, NO ODOR, 70% SAND
321	5/8/14	35	SC- CLAYEY SAND, OLIVE/GRAYISH BROWN, SMALL GRAVELS (≤1cm) WET, SOFT CLAY, STRONG ODOR
2,253	6/9/11	40	SW/SC- CLAYEY SAND; WELL GRADED, COBBLES UP TO 5cm, GREEN AND OLIVE BROWN, IN COLOR, WET, 10% COBBLES, 60% SAND, VERY STRONG ODOR
			TERMINATED AT 43'

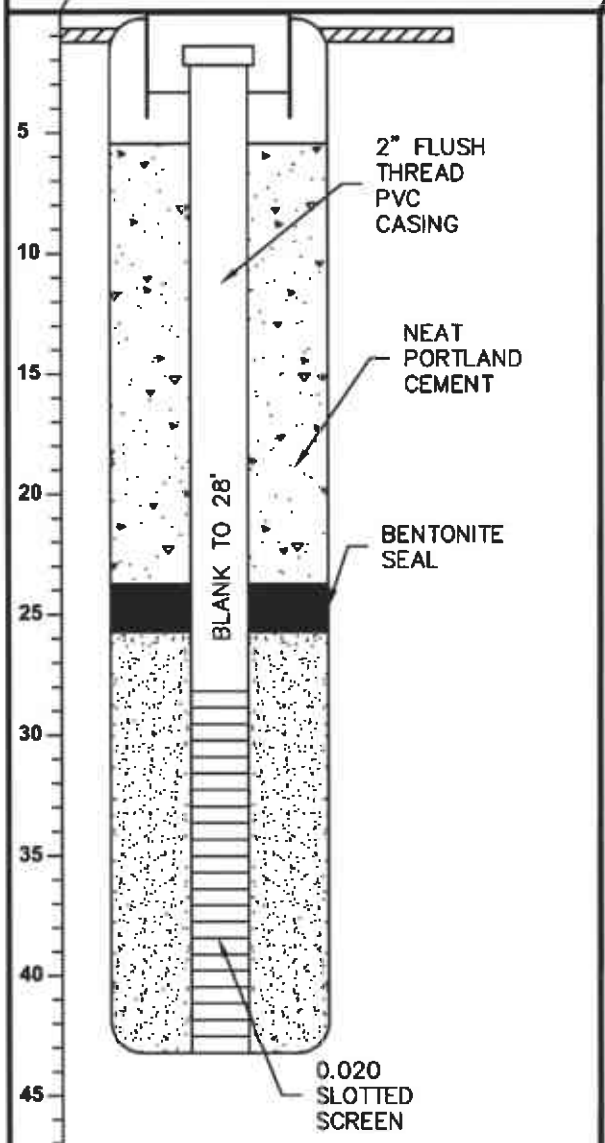
Delta Environmental Consultants, Inc.

BORING LOG

PROJECT NO.: D004-076
LOCATION: 1619 FIRST AVENUE, LIVERMORE, CA
DATE DRILLED: 6/23/05
CLIENT: TESORO

LOGGED BY: DJS
DRILLER: MDE
HOLE DIAMETER: 8"
DRILLING METHOD: HOLLOW STEM
SAMPLING METHOD: SPLIT SPOON

BORING/WELL #
TP-2
PAGE 1 OF 1



DEPTH (FT.)	PID READING (PPM)	PENETRATION (BLOWS/6")	DEPTH (FT.)	LITHOLOGY/DESCRIPTION
				CONCRETE SURFACE 8" THICK CLEARED TO 4'
5	0	50/6	5	SM- UNCONSOLIDATED SILTY SAND AND GRAVEL; DRY, COBBLES UP TO 5cm, NO ODOR
10	0	5/6/9	10	SM- SAME AS ABOVE; COBBLES, UP TO 2cm, NO ODOR
15	0.0	7/8/13	15	SM- SAME AS ABOVE, NO ODOR
20	0	4/5/7	20	MH- CLAYEY SILT; LIGHT BROWN, SOFT, LOW PLASTICITY, SLIGHTLY MOIST, NO ODOR
25	10.8	5/8/10	25	MH- SAME AS ABOVE WITH SMALL GRAVELS ≤ 1cm DRY, NO ODOR
30	268	6/9/11	30	MH- CLAYEY SILT; SMALL GRAVELS (≤ 1cm) MOIST 15% GRAVELS, STRONG ODOR
35	288	4/9/16	35	GW- GRAVEL; UNCONSOLIDATED, SATURATED, SUBANGULAR PEBBLES RANGE FROM SILT TO 6cm VERY STRONG ODOR
40	485	7/11/17	40	CH- SANDY CLAY; GRAVELS RANGE FROM 1cm TO 5cm, 80% CLAY, SATURATED, SLIGHT ODOR
				TERMINATED AT 43'

1.0 METHODS AND PROCEDURES

1.1 Health and Safety Plan

Field work performed by Delta and Delta's subcontractors at the site is conducted according to guidelines established in a Site Health and Safety Plan (SHSP). The SHSP is a document which describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. A copy of the SHSP is at the site and available for reference by appropriate parties during work at the site.

1.2 Locating Underground Utilities

Prior to commencement of work on-site, Delta researches the location of underground utilities with the assistance of Underground Service Alert (USA). USA contacts the owners of the various utilities in the vicinity of the site to have the utility owners mark the locations of their underground utilities. Work associated with the boring and monitoring well installation is preceded by manual hand augering to a minimum depth of 5 feet below surface grade (bsg) to avoid contact with underground utilities.

1.3 Soil Sampling and Contamination Reduction

Soil borings and soil sampling are performed under the direction of a Delta geologist. Soil borings are advanced using a truck-mounted hollow-stem auger drill rig.

To reduce the chances of cross-contamination between boreholes, all downhole drilling equipment is steam-cleaned between each boring. To reduce cross-contamination between samples, the split-barrel sampler is washed in a soap solution and double-rinsed between each sampling event.

Soil sampling beyond 5 feet bsg is conducted in accordance with ASTM 1586-84. Using this procedure, a 2-inch outside-diameter split-barrel sampler or a 2-inch inside-diameter California-type sampler is driven into the soil by a 140-pound weight falling 30-inches. After an initial set of 6-inches, the number of blows required to drive the sampler an additional 12-inches (known as penetration resistance or the "N" value) is recorded. The N value is used as an empirical measure of the relative density of cohesionless soils and the consistency of cohesive soils.

Upon recovery, a portion of the soil sample is placed into a plastic bag and sealed for later screening with a photoionization detector (PID). Another portion of the soil sample is used for classification and description. That part of the soil sample collected in the leading brass tube within the California-type sampler is stored at approximately 4°C for transport to the laboratory.

1.4 Soil Classification

As the samples are obtained in the field, they are classified by the geologist in accordance with the Unified Soil Classification System (USCS), Visual/Manual Method. Representative portions of the samples are then retained for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata, the N value, and pertinent information regarding the method of maintaining and advancing the borehole are made.

1.5 Soil Sample Screening/hNu Portable Photoionization Detector Method

After the soil sample plastic bags are brought to ambient temperature, the headspace vapors of the soil sample in the bag are screened with a PID equipped with a 10.2 eV lamp. The sample corner of the bag is opened and the detector probe immediately placed within the headspace. The highest observed reading is recorded.

2.0 ANALYTICAL PROCEDURES

Selected soil samples submitted to the laboratory are analyzed for benzene, toluene, ethylbenzene, total xylenes, total petroleum hydrocarbons in the gasoline range using USEPA Method 8260B. Also, the soil samples were analyzed for the oxygenates methyl tertiary butyl ether, tertiary butyl alcohol, tertiary amyl methyl ether, di-isopropyl ether, and ethyl tertiary butyl ether using USEPA Method 8260B.

3.0 QUALITY ASSURANCE PLAN

This section describes the field and analytical procedures to be followed throughout the investigation.

3.1 General Sample Collection and Handling Procedures

Proper collection and handling are essential to ensure the quality of a sample. Each sample is collected in a suitable container, preserved correctly for the intended analysis, and stored prior to analysis for no longer than the maximum allowable holding time. Details on the procedures for collection and handling of soil samples used on this project can be found in Section 1.0 (Methods).

3.2 Sample Identification and Chain-of-Custody Procedures

Sample identification and chain-of-custody procedures ensure sample integrity and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis has a label affixed to identify the job number, sampler, date and time of sample collection, and a sample number unique to that sample. This information, in addition to a description of the sample, field measurements made, sampling methodology, names of on-site personnel, and any other pertinent field observations, are recorded on the borehole log or in the field records. Samples are analyzed by a California-certified laboratory.

A chain-of-custody form is used to record possession of the sample from time of collection to its arrival at the laboratory. When the samples are shipped, the person in custody of them relinquish as the samples by signing the chain-of-custody form and noting the time. The sample-control officer at the laboratory verifies sample integrity and confirm that it was collected in the proper container, preserved correctly, and that there is an adequate volume for analysis.

If these conditions are met, the sample is assigned a unique log number for identification throughout analysis and reporting. The log number is recorded on the chain-of-custody form and in the legally-required log book maintained by the laboratory in the laboratory. The sample description, date received, client's name, and other relevant information is also be recorded.

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Jim Brownell
Delta Environmental Consultants, Inc.
3164 Gold Camp Drive, Suite 200
Rancho Cordova, CA 95670

Subject : 8 Soil Samples
Project Name : Livermore
Project Number : D004-076

Dear Mr. Brownell,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Subject : 8 Soil Samples
Project Name : Livermore
Project Number : D004-076

Case Narrative

Tert-Butanol results for samples TP2-30 and TP2-35 may be biased slightly high and are flagged with a 'J'. A fraction of MtBE (up to 5%) converts to Tert-Butanol during the analysis of soil samples. We consider this conversion effect to be mathematically significant in samples that contain MtBE/Tert-Butanol in ratios of over 3:1.

Approved By: Joel Kiff

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP1-10** Matrix : Soil Lab Number : 44506-01
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Methyl-t-butyl ether (MTBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	6/28/2005
1,2-Dichloroethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	92.4		% Recovery	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	113		% Recovery	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	99.8		% Recovery	EPA 8260B	6/28/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP1-20** Matrix : Soil Lab Number : 44506-02
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Methyl-t-butyl ether (MTBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	6/28/2005
1,2-Dichloroethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	105		% Recovery	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	93.8		% Recovery	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	115		% Recovery	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	99.1		% Recovery	EPA 8260B	6/28/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP1-30** Matrix : Soil Lab Number : 44506-03
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Methyl-t-butyl ether (MTBE)	**0.012**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	**0.0073**	0.0050	mg/Kg	EPA 8260B	6/28/2005
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	6/28/2005
1,2-Dichloroethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	95.2		% Recovery	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	114		% Recovery	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	6/28/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP1-40** Matrix : Soil Lab Number : 44506-04
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**35**	0.25	mg/Kg	EPA 8260B	6/28/2005
Toluene	**210**	1.5	mg/Kg	EPA 8260B	6/29/2005
Ethylbenzene	**110**	0.25	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	**480**	1.5	mg/Kg	EPA 8260B	6/29/2005
Methyl-t-butyl ether (MTBE)	**< 0.25**	0.25	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.25**	0.25	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	**< 0.25**	0.25	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	**< 0.25**	0.25	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	**< 7.0**	7.0	mg/Kg	EPA 8260B	6/29/2005
TPH as Gasoline	**5800**	150	mg/Kg	EPA 8260B	6/29/2005
1,2-Dichloroethane	**< 0.25**	0.25	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	**< 0.25**	0.25	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	85.4		% Recovery	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	98.3		% Recovery	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	88.3		% Recovery	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	83.1		% Recovery	EPA 8260B	6/28/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP2-10** Matrix : Soil Lab Number : 44506-05
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Methyl-t-butyl ether (MTBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	6/28/2005
1,2-Dichloroethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	91.6		% Recovery	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	113		% Recovery	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	99.5		% Recovery	EPA 8260B	6/28/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP2-20** Matrix : Soil Lab Number : 44506-06
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Methyl-t-butyl ether (MTBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
TPH as Gasoline	**< 1.0**	1.0	mg/Kg	EPA 8260B	6/28/2005
1,2-Dichloroethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	92.9		% Recovery	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	115		% Recovery	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	106		% Recovery	EPA 8260B	6/28/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP2-30** Matrix : Soil Lab Number : 44506-07
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**0.054**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Toluene	**0.023**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Ethylbenzene	**0.22**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Total Xylenes	**0.42**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Methyl-t-butyl ether (MTBE)	**2.2**	0.025	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Ethyl-t-butyl ether (ETBE)	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Tert-amyl methyl ether (TAME)	**0.039**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Tert-Butanol	**1.0 J**	0.025	mg/Kg	EPA 8260B	6/29/2005
TPH as Gasoline	**15**	1.0	mg/Kg	EPA 8260B	6/29/2005
1,2-Dichloroethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/29/2005
1,2-Dibromoethane	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	6/29/2005
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	6/29/2005
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	6/29/2005
Dibromofluoromethane (Surr)	107		% Recovery	EPA 8260B	6/29/2005
1,2-Dichloroethane-d4 (Surr)	99.4		% Recovery	EPA 8260B	6/29/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 44506
Date : 7/1/2005

Project Name : **Livermore**
Project Number : **D004-076**

Sample : **TP2-35** Matrix : Soil Lab Number : 44506-08
Sample Date :6/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**0.20**	0.025	mg/Kg	EPA 8260B	6/28/2005
Toluene	**< 0.025**	0.025	mg/Kg	EPA 8260B	6/28/2005
Ethylbenzene	**0.25**	0.025	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	**0.32**	0.025	mg/Kg	EPA 8260B	6/28/2005
Methyl-t-butyl ether (MTBE)	**4.2**	0.025	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	**< 0.025**	0.025	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	**< 0.025**	0.025	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	**< 0.025**	0.025	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	**0.44 J**	0.15	mg/Kg	EPA 8260B	6/28/2005
TPH as Gasoline	**9.8**	2.5	mg/Kg	EPA 8260B	6/28/2005
1,2-Dichloroethane	**< 0.025**	0.025	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	**< 0.025**	0.025	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	94.4		% Recovery	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	96.1		% Recovery	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	108		% Recovery	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	6/28/2005

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

Report Number : 44506

Date : 7/1/2005

QC Report : Method Blank Data

Project Name : **Livermore**

Project Number : **D004-076**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Methyl-t-butyl ether (MTBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Diisopropyl ether (DIPE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Ethyl-t-butyl ether (ETBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Tert-amyl methyl ether (TAME)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	6/27/2005
1,2-Dichloroethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
1,2-Dibromoethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/27/2005
Toluene - d8 (Surr)	101		%	EPA 8260B	6/27/2005
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	6/27/2005
Dibromofluoromethane (Surr)	110		%	EPA 8260B	6/27/2005
1,2-Dichloroethane-d4 (Surr)	103		%	EPA 8260B	6/27/2005
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Methyl-t-butyl ether (MTBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Diisopropyl ether (DIPE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Ethyl-t-butyl ether (ETBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-amyl methyl ether (TAME)	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	6/28/2005
1,2-Dichloroethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
1,2-Dibromoethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	6/28/2005
Toluene - d8 (Surr)	103		%	EPA 8260B	6/28/2005
4-Bromofluorobenzene (Surr)	98.7		%	EPA 8260B	6/28/2005
Dibromofluoromethane (Surr)	106		%	EPA 8260B	6/28/2005
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	6/28/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St. Suite 300 Davis. CA 95616 530-297-4800

Report Number : 44506

Date : 7/1/2005

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Livermore**

Project Number : **D004-076**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	44507-03	<0.0050	0.0391	0.0391	0.0344	0.0346	mg/Kg	EPA 8260B	6/27/05	87.8	88.7	0.987	70-130	25
Toluene	44507-03	<0.0050	0.0391	0.0391	0.0347	0.0355	mg/Kg	EPA 8260B	6/27/05	88.8	90.9	2.34	70-130	25
Tert-Butanol	44507-03	<0.0050	0.196	0.195	0.176	0.173	mg/Kg	EPA 8260B	6/27/05	89.7	88.5	1.39	70-130	25
Methyl-t-Butyl Ether	44507-03	<0.0050	0.0391	0.0391	0.0285	0.0288	mg/Kg	EPA 8260B	6/27/05	72.7	73.8	1.43	70-130	25
Benzene	44425-04	<0.0050	0.0376	0.0390	0.0330	0.0367	mg/Kg	EPA 8260B	6/28/05	87.8	94.2	7.00	70-130	25
Toluene	44425-04	<0.0050	0.0376	0.0390	0.0311	0.0351	mg/Kg	EPA 8260B	6/28/05	82.6	90.1	8.63	70-130	25
Tert-Butanol	44425-04	<0.0050	0.188	0.195	0.162	0.182	mg/Kg	EPA 8260B	6/28/05	86.0	93.1	7.94	70-130	25
Methyl-t-Butyl Ether	44425-04	<0.0050	0.0376	0.0390	0.0334	0.0373	mg/Kg	EPA 8260B	6/28/05	88.8	95.8	7.56	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 44506

Date : 7/1/2005

QC Report : Laboratory Control Sample (LCS)

Project Name : **Livermore**

Project Number : **D004-076**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	0.0388	mg/Kg	EPA 8260B	6/27/05	91.3	70-130
Toluene	0.0388	mg/Kg	EPA 8260B	6/27/05	92.9	70-130
Tert-Butanol	0.194	mg/Kg	EPA 8260B	6/27/05	99.2	70-130
Methyl-t-Butyl Ether	0.0388	mg/Kg	EPA 8260B	6/27/05	75.7	70-130
Benzene	0.0371	mg/Kg	EPA 8260B	6/28/05	98.3	70-130
Toluene	0.0371	mg/Kg	EPA 8260B	6/28/05	97.2	70-130
Tert-Butanol	0.186	mg/Kg	EPA 8260B	6/28/05	89.3	70-130
Methyl-t-Butyl Ether	0.0371	mg/Kg	EPA 8260B	6/28/05	91.4	70-130

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St. Suite 300 Davis, CA 95616 530-297-4800

Calscience
Environmental
Laboratories, Inc.

July 01, 2005

Joel Kiff
Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Subject: **Calscience Work Order No.: 05-06-1742**
Client Reference: Livermore

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/28/2005 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Kiff Analytical		Date Received:	06/28/05
2795 2nd Street, Suite 300		Work Order No:	05-06-1742
Davis, CA 95616-6593		Preparation:	EPA 3050B
		Method:	EPA 6010B

Project: Livermore

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
TP1-40	**05-06-1742-1**	**06/23/05**	**Solid**	**06/28/05**	**06/29/05**	**050628L01**

Parameter	Result	RL	DF	Qual	Units
Lead	5.71	0.50	1		mg/kg

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**097-01-002-6,527**	**N/A**	**Solid**	**06/28/05**	**06/28/05**	**050628L01**

Parameter	Result	RL	DF	Qual	Units
Lead	ND	0.500	1		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Kiff Analytical
2795 2nd Street, Suite 300
Davis, CA 95616-6593

Date Received: 06/28/05
Work Order No: 05-06-1742
Preparation: EPA 3050B
Method: EPA 6010B

Project Livermore

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
05-06-1705-3	**Solid**	**ICP 3300**	**06/28/05**	**06/29/05**	**050628S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	79	75	75-125	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

Kiff Analytical	Date Received: N/A
2795 2nd Street, Suite 300	Work Order No: 05-06-1742
Davis, CA 95616-6593	Preparation: EPA 3050B
	Method: EPA 6010B

Project: Livermore

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
097-01-002-6,527	**Solid**	**ICP 3300**	**06/28/05**	**050628-I-01**	**050628L01**

Parameter	Conc Added	Conc Recovered	LCS %Rec	%Rec CL	Qualifiers
Lead	25.0	24.7	99	80-120	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 05-06-1742

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike or Matrix Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

KIFF ANALYTICAL LLC

2795 Second Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Cal Science Environmental
7440 Lincoln Way
Garden Grove, CA 92841
714-895-5494

Lab No. 1742

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF to): Troy Turpen	Geotracker COELT EDD REPORT? __ YES _X_ NO
Company/Address: Kiff Analytical, LLC	Sampling Company Log Code:
Phone No.:	FAX No.:
Global ID:	
Project Number: D004-076	P.O. No.: 44506
EDF Deliverable to (Email Address):	
Project Name: Livermore	E-mail address: inbox@kiffanalytical.com
Project Address:	

Sample Designation	Sampling Date	Sampling Time	Container: Glass Jar	Container: Poly	Container: Amber	Container: Sleeve	Container: Tedlar	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Preservative: NONE	Preservative: $Na_2S_2O_3$	Matrix: WATER	Matrix: SOIL	Matrix: AIR	Analysis Request: Total Lead	Date Due:	For Lab Use Only
TP1 - 40	6/23/05		1							X	X			X		X	July 1, 2005	X

Relinquished by: Kiff Analytical	Date 062705	Time 1830	Received by:	Remarks:
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date 6-28-05	Time 8:15	Received by Laboratory:	Bill to: Accounts Payable

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 05 - 06 - 1742

Cooler 1 **of** 1

SAMPLE RECEIPT FORM

CLIENT: KIFF ANALYTICAL **DATE:** 6-28-05

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

3.7 °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: WB

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: ✓ No (Not Intact) : _____ Not Applicable (N/A): _____

Initial: WB

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)			✓
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: WB

COMMENTS:

KIFF ANALYTICAL LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Lab No. 44506 Page 1 of 2

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Jim Brownell
Company/Address: Delta Env 3164 Gold Camp Dr Suite 200 Rancho Cordova, CA
Phone No.: FAX No.:
Project Number: D004-076
P.O. No:
Project Name: Livermore
Project Address: 1619 First Ave Livermore, CA

California EDF Report? ☐ Yes ☐ No
Recommended but not mandatory to complete this section:
Sampling Company Log Code:
Global ID:
EDF Deliverable To (Email Address):
Sampler Signature:

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Container: SLEEVE	Preservative: HCl	Preservative: HNO_3	Preservative: ICE	Preservative: NONE	Matrix: WATER	Matrix: SOIL	BTEX (8021B)	BTEX/TPH Gas/MTBE (8021B/M8015)	TPH as Diesel (M8015)	TPH as Motor Oil (M8015)	TPH Gas/BTEX/MTBE (8260B)	5 Oxygenates/TPH Gas/BTEX (8260B)	7 Oxygenates/TPH Gas/BTEX (8260B)	5 Oxygenates (8260B)	7 Oxygenates (8260B)	Lead Scav. (1,2 DCA & 1,2 EDB - 8260B)	EPA 8260B (Full List)	Volatile Halocarbons (EPA 8260B)	Lead (7421/239.2) TOTAL (X) W.E.T. (X)	TAT: 12 hr/24 hr/48 hr/72 hr/1 wk	For Lab Use Only
TP1-10	6/23/05			X			X			X						X				X				X	01
TP1-20																									02
TP1-30																									03
TP1-40																							X		04
TP2-10																									05
TP2-20																									06
TP2-30																									07
TP2-35																									08

Relinquished by:	Date	Time	Received by:
	6/24/05	1733	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	062405	1733	

Remarks: **Sample Receipt**
Temp °C 4 Therm. ID# 3
Initial KF
Date 062405 Time 1733
Coolant present: Yes / No

Bill to:

Distribution: White - Lab, Pink - Originator

Forms/coc 121001.fh9

KIFF ANALYTICAL LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Lab No. 44506 Page 2 of 2

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Jim Brownell
Company/Address: Delta Env. 3164 Gold Camp Dr, Suite 200 Rancho Cordova, CA
Phone No.: FAX No.:
Project Number: D004-076 P.O. No:
Project Name: Livermore #
Project Address: 1619 First Ave Livermore, CA

California EDF Report? ☐ Yes ☐ No
Recommended but not mandatory to complete this section:
Sampling Company Log Code:
Global ID:
EDF Deliverable To (Email Address):
Sampler Signature:

Sample Designation	Sampling Date	Sampling Time	Container: 40 ml VOA	Container: SLEEVE	Preservative: HCl	Preservative: HNO_3	Preservative: ICE	Preservative: NONE	Matrix: WATER	Matrix: SOIL	Analysis Request: BTEX (8021B)	BTEX/TPH Gas/MTBE (8021B/M8015)	TPH as Diesel (M8015)	TPH as Motor Oil (M8015)	TPH Gas/BTEX/MTBE (8260B)	5 Oxygenates/TPH Gas/BTEX (8260B)	7 Oxygenates/TPH Gas/BTEX (8260B)	5 Oxygenates (8260B)	7 Oxygenates (8260B)	Lead Scav. (1,2 DCA & 1,2 EDB - 8260B)	EPA 8260B (Full List)	Volatile Halocarbons (EPA 8260B)	Lead (7421/239.2) TOTAL (X) W.E.T. (X)	Hold	TAT: 12 hr/24 hr/48 hr/72 hr/1 wk	For Lab Use Only
TP1-5	6/23/05			X			X			X														X		09
TP1-15																										10
TP1-25																										11
TP2-05																										12
TP2-15																										13
TP2-25																										14
TP2-35																										
TP1-35																										15

Sample Receipt
Temp °C 4 Therm. ID# 3
Initial KT
Date 062405 Time 1733
Coolant present: (Yes) / No

Relinquished by	Date	Time	Received by:
	6/24/05	1758	
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	062405	1733	KW Kiff Analytical

Remarks: HOLD SAMPLES UNTIL NOTIFIED

Bill to:

Distribution: White - Lab, Pink - Originator

Forms/coc 121001.fh9

Delta Environmental Consultants, Inc.

SITE HEALTH AND SAFETY PLAN PETROLEUM CLASS III

- The Project Manager or Site Safety Officer (SSO) must review the Site Health and Safety Plan (SHSP) with all members of the field crew, including Delta employees and subcontractors, ***prior to beginning all field work.***
- All field team members working in the contamination zone, or who may be exposed during the course of their work, shall have completed OSHA 40-hour HAZWOPER and annual refresher training (29 CFR 1910.120), CPR and First Aid training. ***Documentation of training shall be readily available.***
- Each Delta team member must review, sign and date the SHSP and the Acknowledgement Agreement on page 15.
- Each subcontractor employee and visitor must review the SHSP and sign, date, and describe their affiliation on page 16.
- Signed plan is kept in the field for duration of project and returned to the project file upon completion of field activities.
- SHSP shall be revised or rewritten if site activities are changed significantly, if areas of differing hazard are involved, or as information about contaminants and hazards changes. Changing conditions may justify either increasing or decreasing SHSP restrictions and action levels, depending upon the additional information generated.

I. GENERAL INFORMATION

DELTA PROJECT NUMBER	**D004-076**		
Client:	Tesoro	Site Owner:	
Site Name:	# 67076	Client Claim/PO Number:	
Site Address:	1619 West First Street, Livermore, CA		
Project Manager:	Scott Graham		
Plan Prepared by:	Scott Graham	Date:	5/16/05
Approved by:		Date:	
Revised by:		Date:	
Revision Approved by:		Date:	

Place date(s) in appropriate box(es) for current phase(s) of site activities.

Site Activities	Soil Borings	Monitoring Well Installation	Tank Removal	Soil Excavation	Recovery Well Installation	Pilot Tests	Treatment System Construction	Soil and Ground Water Sampling	LNAPL Recovery	O&M
Site Assessment		X						X		
Remedial Investigation						X				
Site Remediation Activities										

II. EMERGENCY CONTINGENCY PLAN

A. LOCAL EMERGENCY TELEPHONE NUMBERS (provide area code):

Can 911 be used at this site? Yes [X] No [ ] If yes, be certain it is activated and enhanced.

Since cellular telephones may not reach a local 911 operator, also supply the following information.

Ambulance	(510) 818-1400	Fire Department	(925) 551-6868
Hospital Emergency Room	(925) 275-9200	Police Department	(925) 371-4900
Poison Control Center	(415) 502-6000	HazMat Response Unit	(408) 748-0055
(List utility companies as	( )		( )
appropriate)	( )		( )

B. EMERGENCY ROUTES:

Hospital* Name: San Ramon Regional Medical Center Phone number: (925) 275-9200

Hospital Address: 6001 Norris Canyon Road, San Ramon, CA

Directions to nearest hospital: Travel west on I-580 (7.3 miles) to I-680 North. Travel 5 miles on I-680 and take the Bollinger Canyon Road exit, turn Right on Bollinger Canyon Road (go 0.8 miles), turn Left on Alcosta Blvd (go 0.9 miles), Hospital is on the right.

*** Hospital should be notified immediately if an injury occurs which requires medical attention.**

Estimated driving distance: 15.4 miles Estimated driving time: 20 minutes

Does hospital accept chemically contaminated patients? Yes [X] No [ ]

INCLUDE HIGHLIGHTED HOSPITAL ROUTE(S) ON SITE MAP AS LAST PAGE OF SITE HEALTH & SAFETY PLAN.

C. SITE RESOURCES:

If no, identify closest available resource with directions.

Water supply available on site:	Yes		No		Bathrooms available on site:	Yes		No	
Telephone available on site:	Yes		No		Electricity available on site:	Yes		No	
Other resources available on site:	Yes		No		If "yes", identify:				

D. EMERGENCY CONTACTS:

			PHONE NUMBER (provide area codes) Work	24-hr. Contact
1.	Project Manager:	Scott Graham	(916) 503-1273	(916) 715-3230
2.	Unit Manager:	Jim Brownell	(916) 638-2765	(916) 715-2919
3.	Health and Safety Sr. Specialists:		( )	( )
4.	Site Contact:		( )	( )
5.	Client Contact	Jeff Baker	(253) 896-8708	( )
6.	Applicable Regulatory Agency:	Alameda County	(510) 567-6719	( )
7.	Site Owner:		( )	( )

E. PROJECT HEALTH AND SAFETY TEAM:

Team Members (list)

Project Manager: Scott Graham

Public Information: Jim Brownell

Delta on-site Personnel: (On-site personnel Are responsible for Delta site health and safety.) Scott Graham, Jason Mata, Deborah Shulman, Todd Shelton, John Smith

Delta Site Safety Officer:

PROJECT TEAM OSHA TRAINING RECORDS

Name	40 Hr Training Date	8-Hr Refresher Date	Site Supervisor Training Date
Jason Mata	05/05/04		
Deborah Shulman	11/19/04		
Todd Shelton		07/21/04	
Scott Graham	05/17/95	06/03/04	08/15/04
John Smith	1992	08/21/04	

F. PERIMETER ESTABLISHMENT:

Map/Sketch attached:	Yes	X	No		**Site secured:**	Yes	X	No	
Perimeter identified:	Yes	X	No		**Zone(s) of Contamination identified:**	Yes	X	No	

Prevailing wind direction, if known (evacuation route and meeting location must be upwind or crosswind):

PRIMARY EVACUATION ROUTE AND MEETING LOCATION: **To be determined in field**

SECONDARY EVACUATION ROUTE AND MEETING LOCATION:

G. WORK ZONES:

An exclusion zone, contamination reduction zone and support zone will be identified for each site or site activity. The Exclusion Zone will be marked with yellow **CAUTION** tape, barricades and\or cones (each cone must be a minimum of 3-ft in height-not including the flag extension, total min. 42-inches), as needed. No person will be allowed in the exclusion zone or contamination reduction zone without approval from the Delta Site Safety Officer.

H. SITE SECURITY:

When work scheduling requires that an excavation be left open overnight, security fencing will be erected to restrict access to the site or work zones described in Section II.G.

I. SITE MAP: Attach at end of completed Site Health and Safety Plan. Include highlight route to nearest hospital.

III. SITE CHARACTERIZATION

A. Summary of Previous Site Investigation(s):

B. Source of Previous Site Investigation Information:

C. General Facility Description:

Gasoline Service Station [X] Refinery [ ] Bulk Terminal [ ] Other:

Description: Active [X] Years has the site been operating: [ ] Closed/Abandoned [ ]

Site Activities (operations on-site, products, raw materials used, etc.):

Was the site used by previous owners?: Yes [ ] No [ ]

Describe previous site activity:

Surface cover on-site includes:

[ ]	Soil/bare ground	[ ]	Clay caps	[ ]	Plastic cover
[ ]	Grass	[X]	Paving/asphalt	[ ]	Water bodies
[ ]	Woods	[ ]	Swamp	[ ]	Brush/scrub
[X]	Buildings	[ ]	Unpaved roads	[ ]	Other

Approximate site surface area: ____ 10,000 sq. ft. or ____ acres

Percentage of surface area: paved ____ %; 100 % bare soil ____ %; vegetated ____ %; under water ____ %

Potential for dust generation on-site: High [ ] Medium [ ] Low [ ]

Any site access restrictions: Yes [ ] No [X] Please list:

Fenced/locked [ ] Posting (signs) [ ] Security guards [ ]

Evidence of public access to the site? Yes [ ] No [ ]

If "yes," describe:

D. Regulatory Contacts:

Are regulatory agencies involved with the site (Y/N)? Federal? [ ] State? [ ] Local? [X]

Name	Agency	Phone (incl. area code)
Bob Schultz	Alameda County	( )
		( )
		( )
		( )

IV. WASTE CHARACTERIZATION

A. Waste/Contaminant Type(s)

Characteristic(s):

[X]	Liquid	[ ]	Soil	[ ]	Solid	[ ]	Sludge	[ ]	Gas
[ ]	Corrosive	[ ]	Ignitable	[ ]	Radioactive	[ ]	Explosive	[ ]	Flammable
[ ]	Volatile	[ ]	Toxic	[ ]	Reactive	[ ]	Unknown	[ ]	Other

B. Major Spills/Releases:

Type	Date	Chemical	Quantity	Impacted Media*

(*air, surface water, soil, or ground water)

Free Product: Yes [ ] No [X] Dissolved: Yes [X] No [ ]

Have removal actions occurred? Yes [ ] No [X]

If "yes," describe: _____

Is there evidence that contaminants present could cause vapor problems in structures on-site?

Yes [ ] No [X] If "yes," is building mechanically ventilated? Yes [ ] No [ ]

Exhaust Ventilation: _____ General Building Ventilation: _____

C. Chemicals/Waste Stored On-site (including petroleum products):

		How Many?	Size?	Chemical?
[ ]	Drums			
[ ]	Tanks			
[ ]	Vats			
[ ]	Surface impoundments			
[ ]	Pits/landfills			
[ ]	Other			

Identify all chemical products Delta will use or store on site:

Liquinox

Gasoline contaminated groundwater

Material Safety Data Sheets (MSDSs) are **required** for site chemicals. Please indicate where MSDSs can be found for this site:

[X] MSDS Log/Binder (In Field) [ ] Attached (Additional Info. Optional)

V. REMEDIATION SYSTEM INFORMATION (complete when applicable)

Has system been installed? Yes [ ] No [X]

Describe: _____

_____

_____

Enclosed per codes?	Yes	[ ]	No	[ ]
Ventilated?	Yes	[ ]	No	[ ]
If "Yes," Explosion-proof?	Yes	[ ]	No	[ ]
Blower systems on a timer?	Yes	[ ]	No	[ ]

Have sound level surveys been conducted on site? Yes [ ] No [ ]

If "Yes," record range of survey results and approximate distance from source:

dBA	Source	Distance from Source	Date

Check all energy sources on the remediation site:

[ ]	Electrical	[ ]	Mechanical	[ ]	Other (describe) _____
[ ]	Thermal	[ ]	Hydraulic		
[ ]	Chemical	[ ]	Pneumatic		

NOTE: If there is more than **1 energy source** on site, ***written, equipment-specific Lockout/Tagout Procedures are required!***

Written Lockout/Tagout Procedure required? Yes [ ] No [ ] Where is it located? _____

VI. HAZARD EVALUATION

Identify all chemicals that are present or are suspected of being present on site and list their maximum concentrations in soil/water. Information on hazardous properties is listed in **Appendix A.** For chemicals not shown in **Appendix A**, enter the hazardous property information in the spaces provided and attach a Material Safety Data Sheet. See notes below.

Chemical Name	*TLV/PEL (2002)*	Maximum Concentration in Soil (*P*)	Maximum Concentration in Water (*P*)	Health Hazards/ Comments
Gasoline	*300 ppm*	mg/kg	16,000 ug/l (ppb)	Irritant (skin, eye, mucous membranes), CNS narcotic
Toluene	*50 ppm* 200 ppm	mg/kg	ug/l (ppb)	Severe irritant (skin, eye), reproductive toxin, CNS narcotic
Xylene	*100 ppm* 100 ppm	mg/kg	ug/l (ppb)	Irritant (skin, eye, nose, throat), reproductive toxin, CNS narcotic
Benzene	*0.5 ppm* 1 ppm	mg/kg	1,900 ug/l (ppb)	Severe irritant (skin, eye), reproductive toxin, CNS narcotic, carcinogen
Ethylbenzene	*100 ppm* 100 ppm	mg/kg	ug/l (ppb)	Irritant (eye, skin, mucous membranes), mutagenic, acute CNS effects
Total BTEX	None Estab.	mg/kg	ug/l (ppb)	
Total Lead (elemental)	*0.05 mg/m^3* 0.05 mg/m^3	mg/kg	ug/l (ppb)	Carcinogen, neurotoxic
MTBE	*50 ppm*	mg/kg	3,600 ug/l (ppb)	Irritant
Naphthalene	*10 ppm* 10 ppm	mg/kg	ug/l (ppb)	Irritant (eye, skin)
Kerosene	*15 ppm*	mg/kg	ug/l (ppb)	Irritant, CNS narcotic
Diesel Fuel	*15 ppm*	mg/kg	ug/l (ppb)	Possible carcinogen, possible mutagen

(*P*) = results pending; (NA) = not analyzed; **For "Free Product/LNAPL use the soluble limit at STP.**

Potential Hazards (check boxes that apply to the site):

x	corroded containers		open lagoons		underground tanks		air stack emissions
	overhead electric lines		visible leachate		surface tanks		visible on-site releases
	visible soil contamination		odors		observed tanks		visible off-site releases
	observed free product		dust		confined spaces		visible on-site erosion
	underground utilities		open pits		excess debris		on-site surface water contamination
	building contamination		no hazards	x	High Traffic issues		off-site surface water contamination

VII. PERSONAL PROTECTION & MONITORING EQUIPMENT GUIDELINES

A. PERSONAL PROTECTION:

Level of Protection: B [ ] C [ ] D [X] (with modifications) Modifications: _____

1. **All personnel working on Delta sites must wear hardhats, neon traffic safety vests, and safety shoes. Personnel working in the Exclusion Zone must also wear eye\face, and hand PPE appropriate to the task.**

2. (e.g. Nitrile, etc) gloves and tyvek/saranex suit should be worn if contact with contaminated water or soil is likely.

3. Hearing protection must be worn if noise levels prevent normal conversation at a distance of three feet.

4. No smoking, eating, or drinking is allowed in the exclusion or contamination reduction zones. **No Smoking anywhere on site.**

5. No Delta personnel shall conduct a confined space entry. In addition, No personnel shall approach any excavation area where there is danger of a wall collapse.

6. Respiratory protection is dependent on conditions listed below Section VII.B.3.

B. SURVEILLANCE EQUIPMENT AND MATERIALS:

1. Calibration: A qualified individual will calibrate before and after field activities the photoionization detector (PID) or flame ionization detector (FID).

2. Frequency: The breathing zone of Delta employees on-site will be monitored every hour (at a minimum) and recorded in the Delta field book. Monitoring should be conducted during tasks that may result in exposure to vapors.

3. Instrumentation

Instrument	Breathing Zone Reading	Action Taken
Photoionization detector (PID) or Flame ionization detector (FID)	Total Org.Vapors Bkgrd - 2 ppm 2 - 50 ppm 50 - 500 ppm >500 ppm	**Level D.** Work may continue. **Level D.** Collect benzene detector tubes. **Level C.** Air-purifying respirator with organic vapor canisters. Collect benzene detector tubes. **Leave area.** Contact Health & Safety Sr. Specialist.
Explosion Meter	< 10% of LEL 10 - 20% of LEL > 20% of LEL	**Work may continue. Evaluate inhalation potential.** **Work may continue. Eliminate all ignition sources, Reduce the concentration &increase monitoring** frequency, consider use of ventilation. **Work must stop until LEL is Below 10%!**
Oxygen Meter	< 19.5% O_2 19.5% to 23.5% O_2 >23.5% O_2	**Leave area.** Re-enter only with SCBA. **Work may continue.** Investigate causes of changes above/below 21%. **Work must stop.** Ventilate before returning and retest atmosphere. O_2-rich atmospheres pose explosion hazards.

Table continued on next page

Instrument	Breathing Zone Reading	Action Taken
Hydrogen Sulfide (H_2S) Colorimetric Tubes or Monitors- - Some states with high regional H_2S have special, local monitoring requirements.	0-5 ppm 5-10 ppm >10 ppm	**Continue working.** **Requires Level B** including supplied air respirator or SCBA. Increase monitoring frequency. Contact Health & Safety Sr. Specialist. Supplied air respirator required due to poor warning properties and toxicity.
Sound Level Meter	< 85 dBA 85 - 90 dBA > 90 dBA	Suggest wearing hearing protection when it is necessary to raise voice to be heard at distance of 3 feet. **Hearing protection required.** Install warning signs for fixed noise sources. **Hearing protection required.** Employer must have Hearing Conservation Program.

C. FIRST AID EQUIPMENT AND EMERGENCY PROCEDURES: (compile information on the Incident/Near Miss form located in Appendix B. Call the office ASAP.

1. First Aid Equipment:

Standard first aid kit (sized for number of individuals on-site).
Portable eye wash (appropriate for number of individuals on-site).

2. First Aid Procedures:

Ingestion:	Follow instructions from Poison Control Center or the MSDS.
Inhalation:	Move victim to fresh air. Seek medical attention if needed.
Dermal Exposure:	Remove contaminated clothing. Wash thoroughly with soap and water.

A first aid kit will be provided on-site for use in case of minor injuries. A portable eye wash will also be provided, and if a worker suffers a chemical splash in the eye, the field team will be instructed to flush the eye for 15 minutes and arrange for off-site medical treatment immediately. Workers will also be instructed to thoroughly wash with soap and water any unprotected skin that comes in direct contact with contaminated soil or water.

Workers providing CPR or First Aid should use Universal Precautions to control possible exposure to bloodborne and infectious agents. Report all CPR or First Aid assistance to the Health and Safety Sr. Specialist immediately.

3. Site Emergencies:

In the event of a fire or explosion, evacuate the site immediately and call the appropriate emergency phone numbers listed in Section II.A, page 2.

In case of a spill, try to contain with clean dirt, if feasible, and call the local fire department or hazardous materials response (HAZMAT) unit. Phone numbers are listed in Section II.A, page 2.

Have procedures for remediation system shutdown or emergency procedures been provided to site owner or manager?

☐ Yes ☐ No (Applies to sites with remediation systems in place).

VIII. SAFETY STANDARD OPERATING PROCEDURES (Also See Appendix C for Site Safety Checklist)

A. CHEMICAL HAZARDS:

A photoionization detector (PID) or flame ionization detector (FID) will be used to measure the relative concentration of hydrocarbon vapors. Monitoring for exposure to benzene vapors may be done using activated charcoal tubes and vacuum pumps, vapor badges, or benzene colorimetric tubes in the breathing zone when working with heavily contaminated soil or water. Action limits for use of respiratory protective equipment are outlined in Section VI.B above. All respiratory protection equipment shall be NIOSH/MSHA-approved and use shall conform to OSHA 29 CFR 1910.134. A written Respiratory Protection Program detailing selection, use, cleaning, storage, medical monitoring, training and fit testing of respiratory protective equipment is maintained at the Delta office.

In addition to being inhalation hazards, hydrocarbon compounds can also be absorbed through the skin. Skin contact with liquid hydrocarbons or fuel hydrocarbon-bearing soil should be prevented. In situations where sampling would result in direct skin contact with hydrocarbon liquids, saturated soil or contaminated equipment, nitrile gloves will be worn.

Drilling or digging may also liberate pockets of hydrogen sulfide (H_2S). While the characteristic "rotten egg" odor of H_2S is detectable at levels as low as 0.0005 ppm, prolonged detection is unreliable due to its olfactory fatigue properties. In open air on a typical petroleum remediation site, risk from exposure to H_2S is minimal. However, should H_2S be encountered, workers shall be instructed to stop drilling/digging and move to an upwind location until the vapors have dissipated, as measured by H_2S colorimetric detector tubes or other direct-reading instruments. The bore hole or excavation will be immediately backfilled.

A combination explosimeter/oxygen (O_2) meter will be available on-site to monitor the levels of flammable gases, such as petroleum vapors and methane. An explosimeter should also be used by a subcontractor to verify that the atmosphere inside an underground storage tank has been inerter prior to allowing the tank to be removed.

B. PHYSICAL HAZARDS:

1. Mechanical hazards: cuts, abrasions, contusions; slips, trips, falls; being struck or entrapped by moving parts of heavy equipment or falling objects. Such hazards will be minimized by keeping the work area free of equipment and debris that could cause slips, trips or falls and maintaining a safe distance from heavy equipment and moving machinery parts.

2. Electrical hazards: Possible excavation of unanticipated electrical cables and potential contact by heavy equipment with overhead power lines during drilling and excavation. Maintain at least 20 feet clearance from overhead power lines. If unavoidably close to overhead or buried power lines, turn power off and lock out circuit breaker. All equipment will be properly locked/tagged out when required by the Energy Lockout/Tagout Program and Safe Electrical Work Policy and Procedure for Delta Project Work. Avoid standing in water when operating electrical equipment.

3. Traffic hazards: Petroleum site work frequently necessitates working in parking lots, streets or other areas with vehicular traffic. In such instances, the work team will be wearing neon traffic safety vests and will use a combination of traffic cones (each cone\flag configuration must be a minimum of 42-inches in height) and barricades as necessary to prevent contact between workers, pedestrians and motor vehicles. Please refer to the PM approved Site Specific Traffic Plan (sketch) attached in front of the Hospital Route Plan in the back of this SHSP.

4. Open excavations: When scheduling or work conditions necessitate leaving excavations open overnight, security fencing will be erected to restrict access to the site or work zones described in Section II.G, page 3.

C. UTILITIES:

A minimum of 72 working hours prior to excavating , Underground Service Alert or the state equivalent:

Name _____ Phone _____

will be contacted and informed of the scheduled field activities. The underground service locator company will identify which underground utilities (e.g. electrical, gas, sewer, water, telephone, cable TV) are present and will notify their respective owners. The utilities will be located by their owners. **Prior to drilling or direct push, hand or air excavate (110% the width of the hole) and to a depth of at least 5 feet will be performed at all times** to ensure no utilities, lines or tanks are in the way. See Excavation Section. **Look for overhead utilities** as well.

Utility service locator company has been notified? **If applicable attach contact sheet to back of document.**	Date(s)	_____ _____	Confirmation #, if applicable:	_____ _____

D. WORK LIMITATIONS (time of day, weather, heat/cold stress):

In the event of severe weather, such as high winds, heavy rain or snow, tornadoes, electrical storms, or extreme temperatures, the SSO and PM shall determine whether work can continue without compromising site worker health and safety.

In high ambient temperatures (especially with high humidity), ***follow heat-stress precautions***. Drink plenty of cool water and/or electrolyte-replacement beverages (e.g., Gatorade). Take frequent breaks out of direct sunlight removing protective clothing. Increase number of breaks if pulse does not return to normal resting pulse during breaks. Alter schedules so work is conducted during early morning or evening. Work shall progress only under conditions of adequate lighting.

Symptoms of heat exhaustion and heat stress include:

- Profuse sweating **or** complete cessation of sweating;
- Changes in skin color;
- Increased respiration;
- Vision problems, confusion;
- Body temperatures in excess of 100°F; and
- Increased heart rate.

Any member of the work team who exhibits these symptoms should immediately be removed from the area and observed while resting in a shaded area after removal of impervious or restrictive clothing and after consumption of cool water or electrolyte fluid. If symptoms persist, immediate medical attention shall be sought.

In cold temperatures, especially when combined with high wind, follow hypothermia precautions:

- Drink warm liquids and take frequent work breaks in a wind-sheltered area; Monitor co-workers for signs of shivering, in coordination, or confusion and remove workers exhibiting these signs from the work area to a heated warming shelter.
- Dress in removable layers of insulated clothing to prevent sweating and use protective waterproof gear;
- Frostbite (superficial or deep tissue) can occur on any exposed skin at temperatures of 30.2°F or colder.
- If available clothing does not give adequate protection to prevent hypothermia or frostbite (which can occur on any exposed skin), work should be modified or suspended until adequate clothing is available or until conditions improve.

If extreme cold conditions are encountered, follow the ACGIH TLV booklet's "work-warming regime" recommendations, taking an appropriate number of breaks in a heated warming shelter.

E. FIRE AND EXPLOSION HAZARDS:

During the course of underground storage tank removal, drilling, or remediation of petroleum impacted soil or ground water, the potential for fire and explosion of flammable vapors exists. Extreme caution should be taken to monitor for the presence of flammable vapors or conditions that could create flammable conditions. Explosimeters are available for this monitoring and action levels are defined in Section VII.B page 10. Fire extinguishers must be available on all sites with the potential for flammable vapors or electrical fires (i.e., systems, control panels). Use of fire extinguishers by employees trained in their use is limited to employee rescue or extinguishing relatively small, controllable fires. Delta does not expect or require its employees to fight fires.

In the event of a fire or explosion, the following action plan should be followed:

Shut down equipment and shut off all supply lines immediately if this can be done safely.

Evacuate the immediate area. At this point you may not know if a soil vapor fire has started or if a supply line, natural gas line, etc. has been hit. Tank, supply line, or remediation system fires are extremely hazardous and precautions must be taken to evacuate the area immediately.

Call 911 to notify the fire department. Delta employees are not trained fire brigades. Every fire should be treated as an emergency. Even if site personnel extinguish the fire, professional fire departments should evaluate the situation to ensure that the danger is over and that a fire will not reoccur.

Evaluate the situation to identify the source of the flammable vapors and to assess the danger to employees, the public and property. From a safe distance, try to determine if the fire is due to a ruptured supply line, ignited soil vapors or methane, or is electrical. This information should be communicated to the fire department. Small fires from known sources (i.e., engine fires, electrical panel fires, etc.) may be extinguished if the employee can do it without high risk. A soil vapor fire may eventually burn itself out. Soil stockpiles must be placed away from nearby structures and property lines. Extinguishing fires

in fuel vapor-laden soils with clean soil may be possible. **Employees or subcontractors shall not enter an excavation to attempt to extinguish a fire.**

F. NOISE/HEARING PROTECTION:

Workers shall be instructed in the recognition of noise hazards and shall be provided, and trained in the use of, hearing protective devices. Hearing protective devices shall be worn when working around heavy equipment, particularly drill rigs, or when background noise is so high that a worker has to shout to be heard at a distance of 3 feet.

G. LEVELS OF PROTECTION:

Work on typical petroleum remediation sites can usually be performed in Level D protection: hard hat, steel-toed work shoes/boots, cotton coveralls or long-sleeved shirts and long pants, eye protection, hearing protection, and gloves if needed.

If monitoring equipment or site conditions indicate the need to upgrade the level of protection to Level C, air-purifying respirators with organic vapor canisters (or other appropriate cartridges), Tyvek coveralls with hoods, chemical resistant inner and outer gloves, and disposable boot covers will be donned. Upon HSE Senior Specialist approval, dermal protection may be modified.

At no time will a Delta employee conduct work on any site requiring Level A protection. On work sites requiring Level B protection, workers will be provided with additional training and equipment. Health & Safety Sr. Specialist must be on-site at all times while Level B work is being conducted.

H. DECONTAMINATION PROCEDURE:

Level: B. [ ] C. [ ] D. [X]

Contamination may result from walking through contaminated soils or liquids, splashing liquids during sampling, use of or contact with contaminated equipment, or contact with air contaminants. Due to the volatile nature of petroleum hydrocarbons that may be encountered during drilling, hand-augering and sample collection procedures, the need to decontaminate equipment and vehicles will be minimal. Field team workers will be instructed to observe the following precautions to assure contaminants will not remain in contact with their skin.

- Tools, equipment and personnel will be decontaminated using procedure appropriate for level of personal protection worn.
- All contaminated, disposable clothing will be properly bagged for disposal and left on site. All personnel will be instructed to wash hands, face, neck and forearms at the end of the work shift and to shower at the end of the workday.
- **No eating or drinking will be permitted in the immediate vicinity of heavy equipment and/or drilling and excavating activities. No smoking is permitted on any Delta site at any time.**

Special decontamination requirements: _____

I. CONFINED SPACES:

If entry into a confined space is necessary, a trained Delta Subcontractor shall be used and a Confined Space Entry Permit must be completed and authorized, and confined space entry procedures followed. Detailed information on Delta's Confined Space Entry procedures can be found in the Delta Health & Safety Manual and contact a Senior HSE Specialist.

Does this site have any permit-required confined spaces? Yes [ ] No [ ]

J. INVESTIGATION-DERIVED MATERIAL DISPOSAL:

Soil cuttings and well development or sampling water shall be placed in 55-gallon drums on-site. Disposal methods of drummed soil and water will be determined based on laboratory analytical data. Proper disposal is the responsibility of the responsible party.

K. EXCAVATIONS:

All soil excavation and utility trenching is to be undertaken in strict conformance with all applicable local, state, and federal regulations. Entry into excavated areas or trenches is allowed only when:

1. Shoring, sloping and spoil pile placement is in conformance with 29 CFR 1926 Subpart P, and
2. Personal protection and monitoring, as detailed in this Site Health and Safety Plan, has been implemented.

Drilling and Excavating Health and Safety Guidance Procedures

PREP:

- Prior to conducting any subsurface work, a markout must ALWAYS be called in (approximately three working days before field work is scheduled - depending on the area). In some areas, not all markouts are performed by the "Call Before You Dig System". A Markout tracking sheet should be used. This will need to get filled out whenever a markout is called in. There will be an area where you will need to fill in the utilities contacted and identify utilities that are not listed. When a utility is not listed, you will need to contact that utility directly and obtain maps and/or get them to markout the property.

- Always search the file and request the client search files for an as-built of the station/facility.

WHEN ON SITE:

- Subcontractors are required to perform an on-site inspection of their heavy machinery each day prior to the start of fieldwork. The Delta Site Safety Officer (SSO) will observe the inspection. Any safety concerns identified by the subcontractor must be addressed prior to the use of the equipment. During the inspection, the subcontractor must verify that all rig/vehicle kill switches are working properly. Delta employees on-site must be informed of the location of the kill switches and how to operate them.

- As part of your on-site health and safety meeting, walk the site with the drillers and identify possible boring locations (make sure the locations shown on the work plan/site plan are in areas free of utilities/subsurface structures). Make sure all utilities have been marked out properly. It is your responsibility for our client to ensure all boring locations are clear of utilities prior to drilling. Often "as-builts" are incorrect or not available.

- Attempt to determine how all utilities are running. For the most part, utilities can run anywhere and can bend and twist in any direction but, there are a few basic things to keep in mind. Usually water and sewer lines will run to a bathroom. Electrical will run in between on-site lights, the kiosk and SS building. Storm water drains usually tie into one another and you can get a general idea of how they run by looking into them and seeing what direction the line is going. Obviously any cut outs in the asphalt should be avoided, especially if observed around the USTs (often, leak detection is an afterthought and is added following the completion of the service station rebuild and its location is obvious due to a continuous cut out in the asphalt around the tank field).

- WE SHOULD NOT DRILL OR EXCAVATE WITHIN TEN FEET OF THE TANK FIELD, USTs OR PUMP ISLANDS. IN ADDITION, DO NOT DRILL IN BETWEEN THE PUMP ISLAND AND THE TANK FIELD. Should drilling be required within Ten feet of the above noted systems, an "air knife" should be utilized to a depth of at least ten feet below grade surface (bgs). Drilling within five feet of the above noted systems will require the station and tank systems to be shut down. It may be helpful to open up tank field manways and identify the general direction that the product lines are running.

- ALWAYS HAND or AIR EXCAVATE (110% the width of the proposed hole) TO AT LEAST FIVE FEET bgs. If you are going in the same location as a previously installed point and the diameter of the new boring/well is larger, you must hand auger. In addition, if you didn't advance the "old" boring yourself, you can't assume that it is a safe drilling location. Refusal may have been encountered in the "old" location. If refusal with the hand auger is encountered prior to five feet, move to a new location. If you make three attempts without success, call office to discuss alternatives. If you can't reach the PM contact your UM for further instruction.

- If you encounter pea-gravel while excavating STOP. Call the Delta PM for further instruction. Utilities or USTs may be present.

- If you hit/damage any utility/subsurface feature IMMEDIATELY contact the office for further instruction. If you can't reach the PM contact your UM for further instruction. Also contact your HSE Sr. Specialists.

L. SUBCONTRACTOR SHSPs

All subcontractors of Delta Environmental Consultants shall be responsible for the development and implementation of their own SHSP to cover duties and hazards specific to that subcontractor's area of expertise or on-site functions. Subcontractors are given the opportunity to review Delta's SHSP, and must sign the document, prior to the start of on-site work.

Any hazardous work situations or procedures should be reported to the Delta Site Safety Officer so that corrective measures may be taken.

IX. ACKNOWLEDGMENT AGREEMENT

DELTA EMPLOYEE
SITE HEALTH AND SAFETY PLAN REVIEW RECORD

I acknowledge that I have read and understood the contents of this Site Health and Safety Plan and I agree to abide by all provisions as set forth. I have also checked in with the site client contact to alert them of our presence and for any daily safety issues. Please note: "no implements are to be brought on a Delta site, or while performing Delta business that are, or are intended to be used, as weapons (such as: guns, knives, etc.)". Firearms are expressly prohibited. By signing below you are certifying, that this policy is upheld. Delta retains the option to audit your personnel and equipment to assure your compliance.

Signature	Date
[signature]	6/23/05

SUBCONTRACTOR & VISITOR
SITE HEALTH AND SAFETY PLAN REVIEW RECORD

SITE: _____

I have read the Site Health and Safety Plan for this site and have been briefed on the nature of the contaminants and the level and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this plan. This SHSP does not replace the requirement or liability for your company to have it's own safety program and SHSP. I also acknowledge that this plan is specific for this Delta Environmental Consultants, Inc. site and may not address unforeseen hazards not included in the Site Health and Safety Plan or your specific contracted task. Please note: "no implements are to be brought on a Delta site, or while performing Delta business that are, or are intended to be used, as weapons (such as: guns, knives, etc.)". Firearms are expressly prohibited. By signing below you are certifying, that this policy is upheld. Delta retains the option to audit your personnel and equipment to assure your compliance.

Name	Signature	Affiliation	Date
Michael Lee Clark		DLC Socco	6-23-05
Miguel Ceja		MDE	6/23/05
Juan Ceja		MDE	6/23/05
BENJAMIN Avila		MDE	6/23/05

PETROLEUM CLASS III SHSP–HAZARDOUS PROPERTY INFORMATION (REV. 12-05-00)

Material	Water Solubility [A&B]	Specific Gravity[C]	Vapor Density[D]	Flash Point °F[E]	Vapor Pressure mm/Hg[F]	%LEL/ %UEL[G]	LD 50 mg/kg[H]	TLV-TWA *PEL*[I]	IDLH Level[J]	Recommended Respiratory Protection/Max. Use Concentration *Odor Threshold*[K]	Hazard Property[L]	Dermal Toxicity[M]	Acute Exposure Symptoms[N]
Benzene	0.18%	0.877	2.8	12	75 (20 °C)	1.2/7.8	930	*0.5 ppm* 1 ppm	500 ppm	½/OV/1ppm FF/OV/10 ppm *4.68 ppm*	BCDGI	CGI	BCDFHIKLM NOQR
Diesel Fuel	Insoluble	0.81-0.90	NA	130	NA	0.6-1.3 6-7.5	None Estab.	100 mg/m^3 (14 ppm)	None Estab.	*0.7 ppm*	BCD	CI	BCDFHIKLM NP
Ethylbenzene	0.014%	0.867	4.45	70	10 (26 °C)	0.8/6.7	3500	100 ppm *100 ppm*	800 ppm	½/OV/1000 ppm *140 ppm*	BCDI	CFI	ABFHIKLMNP QR
Gasoline	Insoluble	0.72-0.76	3-4	-50	Var.	1.4/7.6	None Estab.	300 ppm	None Estab.	½/OV/300 ppm *.25 ppm*	BCD	CI	BCEFHIKLMN P
Kerosene	Insoluble	0.83-1.0	4.5	100-165	5	0.7/5.0	None Estab.	100 mg/m^3	None Estab.	*1 ppm*	CD	CI	BCDFHIKLM NP
Lead (elemental)	Insoluble[B]	11.34	NA	NA	NA	NA	Varies by Cmpd.	0.05 mg/m^3 *0.05 mg/m^3*	100 mg/m^3	½/HEPA/0.05 mg/m^3 FF/HEPA/0.25 mg/m^3	C		ACDFGHOR
MTBE (methyl tertiary butyl ether)	Moderate	0.74	Unavlbl.	-16	245 (25 °C)	1.6/8.4	2.96 g/kg	40 ppm *None Estab.*	None Estab.	Unavailable	BD	A	BFK
Naphthalene	Insoluble	1.145	4.42	190	.23 (25 °C)	.9/5.9	490	10 ppm *10 ppm*	250 ppm	½/OV/10 ppm FF/OV/<50 ppm	C	CGI	BKLNQ
Tetraethyl lead	Insoluble[B]	1.653	8.6	199	0.2 mm (20 °C)	1.8/ Unkn	12.3	0.10 mg/m^3 (Skin) *0.075 mg/m^3 (Skin)*	40 mg/m^3	Supplied Air Warning Unknown	CG	CFI	N
Tetramethyl lead	Insoluble[B]	1.999	6.5	100	22.5 mm (20 °C)	Unkn/ Unkn	105	0.15 mg/m^3 (Skin) *0.075 mg/m^3 (Skin)*	40 mg/m^3	Supplied Air Poor Warning	CG	CFI	N
Toluene	0.05	0.866	3.2	39	21 (20 °C)	1.27/7	2000	50 ppm (Skin) *200 ppm*	2000 ppm	½/OV/200 ppm FF/OV/400 ppm *0.17-40 ppm (300-400 ppm)—Olfactory Fatigue*	BCI	BHE	BEFHIKLMN OPQ
Xylenes	Insoluble	0.868	3.68	63-81	9 mm (20 °C)	1.1/6.6-7.0	5000	100 ppm *100 ppm*	900 ppm	½/OV/<100 ppm	BCI	CFI	BEFHIKLMNP

APPENDIX A

PETROLEUM CLASS III SHSP--HAZARDOUS PROPERTY INFORMATION
Explanations and Footnotes

A Water solubility expressed as 0.2 g means 0.2 grams per 100 grams of water at 20 °C. Water solubility is expressed in different terms in different references. Many references use the term "insoluble" for materials that will not readily mix with water, such as gasoline. However, most of these materials are water soluble at the part per million or part per billion level. Gasoline, for example, is nearly insoluble and will be found as a discrete layer on top of the ground water. But certain gasoline constituents, such as benzene, toluene, and xylene, will also be found in solution in the ground water at the part per million or part per billion level.

B Solubility of metals depends on the compound in which they are present.

C Specific gravity is the ratio of the density of a substance to the density of a reference substance. For solids and liquids, the reference substance is water; for gases, the reference substance is air. Specific gravity is expressed in units of g/cc (for solids and liquids) or g/l (at 0 °C and 760 mm Hg) for gases.

D Vapor density is the weight/unit volume expressed as grams/cubic centimeter liquids.

E Flash point is the temperature at which a liquid or volatile solid gives off sufficient vapor to form an ignitable mixture with the air. Flash points may be determined by the open cup method or closed cup method. Several chlorinated hydrocarbons exhibit no flash point in the conventional sense, but will burn in the presence of high energy ignition sources or will form explosive mixtures at temperatures above 200 °F.

F Vapor pressure is the pressure at a given temperature of a vapor in equilibrium with its liquid or solid form. It is expressed as mm Hg at 1 atm. Temperatures vary...see chart.

G Lower explosive limit (LEL) and Upper explosive limit (UEL) are the minimum and maximum concentrations of a gas or vapor in air that will support flame. LEL and UEL are expressed as % in air at ambient or room temperature.

H LD_{50} is the quantity of a substance administered by ingestion that is necessary to kill 50% of the test animals exposed to it within a specified time.

I Threshold limit value as a time-weighted average (TLV-TWA) is the concentration for a normal 8-hr workday and 40-hr work week to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. Values reported are the current ACGIH Threshold Limit Value-Time Weighted Average (TLV-TWA) and OSHA Permissible Exposure Limit (PEL). All PELs are based on pre-1989 values, per OSHA's 1993 decision to vacate the 1989 PELs.

J Immediately Dangerous to Life and Health (IDLH) concentrations represent the maximum concentrations from which, in the event of a respirator failure, one could escape within 30 minutes without a respirator and without experiencing any escape-impairing or irreversible health effects.

K Recommended Respiratory Protection/Max. Use Concentration is used to show the limits for respirator style and contaminant concentration. The codes in the table refer to the following:

½ = Half-face, air-purifying respirator
FF = Full-face, air-purifying respirator
OV = Organic vapor canisters
HEPA = High Efficiency Particulate Air canisters
PAPR = Powered Air-purifying Respirator

The Odor Threshold is the lowest concentration at which one may detect an odor or experience a warning effect such as taste, eye irritation, etc., which varies with individual susceptibility.

L Hazard Property:

A - Corrosive	D - Volatile	G - Carcinogen
B - Flammable	E - Reactive	H - Infectious
C - Toxic	F - Radioactive	I - Reproductive Toxin

Note: A reproductive toxin is a compound (chemical) that affects the reproductive organs (generally the sperm and eggs, but sometimes the physical structure of the testes or ovaries, too). It can affect the reproductive organs of males, females, or both; it can affect the reproductive organs of an adult or child; it can affect the reproductive organs of a developing fetus with or without affecting the mother.

M Dermal toxicity data is summarized in the following three categories:

1. **Skin Penetration**
   - A - negligible penetration (solid-polar)
   - \+ B - slight penetration (solid-nonpolar)
   - ++ C - moderate penetration (liquid/solid-nonpolar)
   - +++ D - high penetration (gas/liquid-nonpolar)

2. **Systemic Potency**

E - Slightly Toxic (LD50 = 5 - 15 g/kg)	Lethal dose for 70 kg adult = 1 pint to 1 quart
F - Moderately Toxic (LD50 = 0.5 - 5 g/kg)	Lethal dose for 70 kg adult = 1 ounce to 1 pint
G - Extremely toxic (LD50 = 5 - 50 mg/kg)	Lethal dose for 70 kg adult = 7 drops to 1 teaspoon

3. **Local Potency**
   - H - slight - reddening of the skin
   - I - moderate - irritation/inflammation of skin
   - J - extreme - tissue destruction/necrosis

N Acute Exposure Symptoms

A - abdominal pains	G - diarrhea	M - respiratory irritation
B - central nervous system depression	H - drowsiness	N - skin
C - comatose	I - dyspnea	O - tremors
D - convulsions	J - fever	P - unconsciousness
E - confusion	K - headache	Q - vomiting
F – dizziness	L - nausea	R - weakness

Appendix C

5 Day Site Safety Checklist

SITE NAME: _____

SITE NUMBER: _____

Check if OK, NA if not applicable

DATE: ____

Pre-mobilization

Updated health and safety plan ____

Emergency phone numbers for utilities included ____

Proper personal protective equipment (PPE) selected & inspected-

- Hard hat ____
- Safety glasses (with side shields) ____
- Hearing protection ____
- Safety vest ____
- Work gloves ____
- Sampling gloves (PM specify type)_____ ____
- Protective coveralls (specify, Tyvek, Nomex, etc.) _____ ____
- Safety boots ____
- Respirator/cartridges (PM identify proper cartridges) ____

Other protective equipment-

- Eye wash (check expiration date) ____
- Fire extinguisher (visually inspected within last 30 days) ____
- First aid kit (inventory and check expiration dates) ____
- Safety cones (or flashing traffic light) ____

Underground utility hazards identified and addressed ____
(provide public utility one-call ticket or job number: _____.)

DATE ____ ____ ____ ____ ____

On-Site Pre-Work

Review site hazards and HASP w/ site workers ____ ____ ____ ____ ____

Review route to hospital ____ ____ ____ ____ ____

Site workers sign HASP acknowledgement page ____ ____ ____ ____ ____

Place HASP and emergency numbers in visible location ____ ____ ____ ____ ____

Designate evacuation signal and meeting place ____ ____ ____ ____ ____

	DATE				
Delineate exclusion zone					
Check subcontractor PPE-					
Hard hat					
Safety glasses (with side shields)					
Hearing protection					
Safety vest					
Work gloves					
Sampling gloves					
Protective coveralls (specify, Tyvek, Nomex, etc.) _____					
Safety boots					
Respirator					
Subcontractors-					
Subcontractor has own HASP or field SOPs on-site (when required)					
Confirm sub. equipment (e.g., drill rig, ext. cords) is in sound working condition					
Drilling subcontractor: drill rig kill switch identified, located and tested					
Overhead hazards identified and addressed					
On-Site Work					
Proper PPE worn by site workers					
Breathing zone monitoring performed and recorded					

(Specify any new hazards identified on-site not addressed by site HASP. If new hazard cannot be mitigated by the existing scope-of-work and/or available equipment on-site, stop work and immediately contact the site project manager.)

(Sign and date at the end of the field work.)

Name: _____

Signature: _____

Date: _____

REPORT ALL INCIDENTS AND NEAR MISSES IMMEDIATELY

Yahoo! Driving Directions

Starting from: A 1619 West First Street, Livermore, CA 94550-4303

Arriving at: B San Ramon Regional Medical Ctr 6001 Norris Canyon Rd, San Ramon, CA 94583 (925) 275-9200

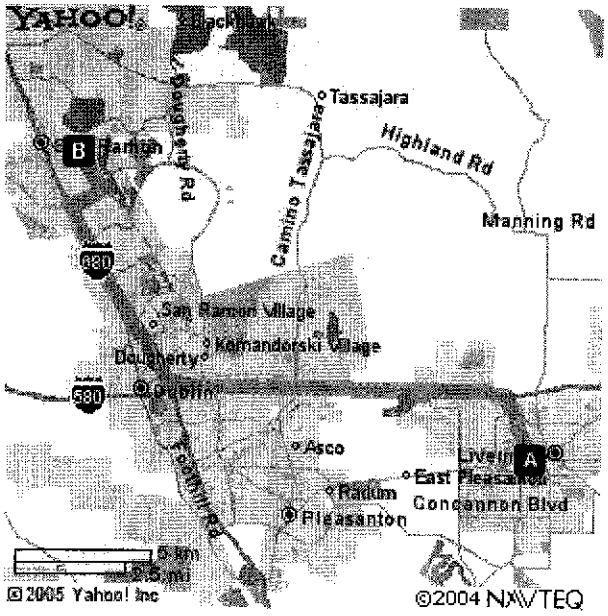
Distance: 15.4 miles **Approximate Travel Time:** 20 mins

Your Directions

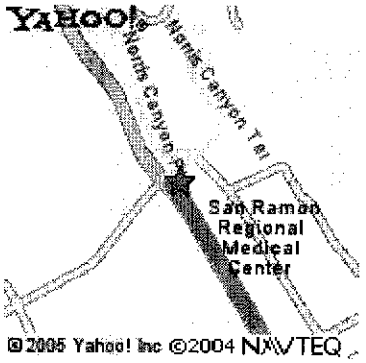
1.	Starting at on **1ST ST** - go < **0.1** mi
2.	Turn R on **P ST** - go **1.1** mi
3.	Turn L on **PORTOLA AVE** - go **0.2** mi
4.	Take ramp onto **I-580 WEST** toward **OAKLAND** - go **7.4** mi
5.	Take the **I-680 NORTH** exit toward **SACRAMENTO** - go **4.7** mi
6.	Take the **BOLLINGER CANYON ROAD** exit - go **0.3** mi
7.	Turn R on **BOLLINGER CANYON RD** - go **0.8** mi
8.	Turn L on **ALCOSTA BLVD** - go **0.9** mi
9.	Arrive at San Ramon Regional Medical Ctr

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Your Full Route



Your Destination



Address:
San Ramon Regional Medical Ctr 6001 Norris Canyon Rd
San Ramon, CA 94583