Chevron Environmental Management Company 6001 Bollinger Canyon Rd, K2236 P.O. Box 6012 San Ramon, CA 94583-2324 Tel 925-842-9559 Fax 925-842-8370

Dana Thurman Project Manager RECEIVED

By dehloptoxic at 1:56 pm, Mar 01, 2007

February 28, 2007

(date)

### ChevronTexaco

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

Re: Chevron Service Station #\_\_\_\_21-1173

Address: 500 grand Avenue, Oakland, CA

I have reviewed the attached report titled Subsurface Investigation Report and dated February 28, 2007

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by Cambria Environmental Technology, Inc., upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct.

anna

Sincerely,

Dana Thurman Project Manager

Enclosure: Report

Mr. Barney Chan Alameda County Health Services Agency (ACHCS) 1131 Harbor Bay Parkway Alameda, California 94502-6577

Re: Subsurface Investigation Report

Former Texaco Service Station (# 21-1173) 500 Grand Avenue Oakland, California



Dear Mr. Chan:

Cambria Environmental Technology, Inc. (Cambria) has prepared this Subsurface Investigation Report on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. The work was performed in accordance with Cambria's August 23, 2006 Work Plan for Additional Site Assessment and approved by the ACHCS in a letter dated September 5, 2006 (Attachment A). Cambria advanced six borings, in three pairs, to determine if soil vapor concentrations exceed the San Francisco Bay Regional Water Quality Control Board (SF Bay RWQCB) risk-based screening levels for soil vapor. The site background, details of the investigation and Cambria's conclusions and recommendations are presented below.

#### SITE BACKGROUND

Site Description: The site is located at 500 Grand Avenue in Oakland, California, on the northeast corner of the intersection of Grand Avenue and Euclid Avenue (Figure 1). Prior to decommissioning in 1991, the site was an active service station. The site is currently used as a parking lot. No structures currently exist on site. The site is capped with asphalt and the sidewalks are concrete. Surrounding land use is mixed commercial and residential. The site is relatively flat and level, and is at an approximate elevation of 20 feet above mean sea level (msl). Approximately 200 feet south of the site is Lake Merritt. The local topography consists of gently rolling hills and flatland.

Cambria Environmental Technology, Inc. Site Hydrogeology: Based on previous site investigation, from the surface to approximately 6 to 10 feet below grade (fbg) is gravelly clay fill material. The fill material is underlain by sandy and gravelly clay to sandy clay and silty sand. Since 1992, groundwater levels in monitoring wells have fluctuated between 1 to 12 fbg. Historical groundwater monitoring reports show that groundwater flows to the south and southeast, toward Lake Merritt.

2000 Opportunity Drive Suite 110 Roseville, CA 95678 Tel (916) 677-3407 Fax (916) 677-3687

#### PREVIOUS INVESTIGATIONS

May 1988, Sensitive Receptor Survey: In May 1988, a sensitive receptor survey was performed. According to the sensitive receptor survey; there are no public water supplies wells within 2,500 feet, there are no private water supply wells within 1,000 feet, and there is no school within 1,000 feet. Lake Merritt, a estuarine urban surface water body, is located within 200 feet of the property. Local drinking water is supplied via the Mokelumne Aqueduct from the Sierra Nevada Mountains. Refer to Harding Lawson Associates 1989 Environmental Assessment Report (HLA 1989).



September 1988, Soil Gas Survey: In September 1988, a soil gas survey was performed with 19 soil gas samples (HLA 1989). Elevated levels of total hydrocarbons and benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in the soil gas survey. Based on these results, HLA concluded that off-site migration had occurred beneath a portion of Grand Avenue.

September 1990-January1991, Removal of Used Oil-UST and Clay Sewer Pipe: In September 1990, the 500-gallon waste-oil UST was excavated and removed from the site after finding product in backfill. The excavation was approximately 8 feet deep, 7.5 feet wide, and 9.5 feet long. The used-oil tank had no apparent cracks or points of leakage when it was removed from the excavation. Total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), total oil & grease (TOG), and BTEX were detected in soil. Chlorinated hydrocarbons were not detected in soil from the tank excavation. During excavation of the used-oil tank, two clay pipes were discovered at approximately 1.5 fbg. One boring sample, B-13 at 2.5 fbg, collected near the western end of the clay pipe detected naphthalene at 0.90 milligrams per kilogram (mg/kg), 2-methylnaphthalene at 1.40 mg/kg, bis (2-ethylhexyl) phthalate at 0.26 mg/kg, and trichloroethane at 0.06 mg/kg. In January 1991, the clay pipe was excavated in the area of the used-oil UST. The excavation was approximately 15 feet long, 2.5 feet wide, and 4.5 feet deep. TPHg, TPHd, TOG, BTEX, and total petroleum hydrocarbons as motor oil (TPHmo) were detected in soil from the trench, but no chlorinated hydrocarbons were detected.

1991 Decommissioning: The service station was decommissioned in late 1991.

April 1992-January 1993, Removal of Three USTs, Excavation Activities, and Confirmation Samples: In April 1992, three 10,000-gallon USTs were removed from the site, along with two dispenser islands and associated piping. During tank removal operations, approximately 25,000 gallons of hydrocarbon-bearing water was pumped and removed from the excavation pit. In April and May 1992, over-excavation at the former fuel USTs extended to a depth of approximately 10 fbg, and in the area of the former dispenser islands, excavation extended to approximately 9 fbg.

Approximately 1,550 cubic yards of soil were excavated from the area of the USTs, pump islands, and fuel lines. The material was subsequently disposed of off-site at a Chevron approved disposal facility. Confirmation soil samples were collected at the bottom and sides of the excavation. Samples collected along the southern edge of the excavation identified TPHg at a maximum of 1,000 mg/kg. The excavation pit could not be extended south without undermining Grand Avenue. In January 1993, another phase of excavation occurred in the northern portion of the site with excavation of approximately 828 cubic yards of hydrocarbon impacted soil. Dimensions of the January 1993, excavation was 6.5 feet deep, 25 feet across by 45 feet long. Approximately 6,300 gallons of water was pumped from the excavation. Clean imported fill was used to backfill the excavation pit.



June 1988-1993, Soil and Groundwater Investigations: In June 1988, environmental activities included an investigation on whether petroleum hydrocarbons had impacted shallow soil and groundwater. This included soil borings, along with installation and sampling of monitoring wells. Concentrations of BTEX were detected in low concentrations in shallow soil samples (HLA July 1988). BTEX was also detected in groundwater. Additional site characterization was performed between 1989 and 1993.

**December 1996 ORC Remedial Action:** In December 1996, additional remediation consisted on installing oxygen-releasing compound (ORC) in selected monitoring wells to enhance biodegradation of the dissolved petroleum hydrocarbon plume. The ORC socks were removed before the second quarter 2000 groundwater monitoring event.

**February 2001 Closure Request:** In a February 13, 2001, letter report titled *Underground Storage Tank Case Closure Request* for the site, KHM Environmental Management requested that ACHCS close the case.

#### **INVESTIGATION RESULTS**

The objective of this investigation was to determine whether soil or soil vapor concentrations pose a risk to human health and the environment. To meet this objective, Cambria advanced a total of six soil borings, in three pairs, utilizing a direct push Geoprobe rig. Two soil vapor samples were collected in borings SV-1 and SV-2. Soil and vapor sample results are summarized in Tables 1 and 2, respectively. Boring logs and Alameda County Public Works Agency permit are presented in Attachment B. Cambria's *Standard Field Procedures for Soil and Soil Vapor Sampling* are presented as Attachment C. Laboratory analytical results for soil and soil vapor are presented in Attachments D and E, respectively.

#### VAPOR PROBE CONSTRUCTION AND INSTALLATION

Project Personnel: Staff Geologist John Bostick and Senior Staff Scientist Kiersten Hoey

conducted all field work under the supervision of Professional Geologist

David W. Herzog, P.G. #7211.

Permits: Alameda County Public Works Agency drilling permit number W2006-0963

(Attachment B).

Drilling Dates: November 20, 2006 to November 21, 2006.

*Number of Borings:* Six (S-1 through S-3, SV-1 through SV-3)

Drilling Method: Direct push Geoprobe and hand auger.

Encountered

Lithology: Lithology encountered in borings S-1, S-2, and S-3 consist of clay, silt and

silt with sand, to a total explored depth of 4 fbg.

Technique: Disturbed hand augured soil samples were collected from borings S-1

through S-3. All samples were labeled, placed on ice, and transported to Lancaster Laboratories following prescribed chain of custody procedures.

Soil Vapor Sampling

Soil Sampling

Technique: Five 6-liter Summa™ canisters, four for sample collection and one for purge

collection were connected at each vapor probe sampling point by a stainless steel T-connection to create a closed circuit. The purge Summa™ canister valve was opened and an appropriate volume was purged from the sampling

point tubing.

After purging, the purge Summa<sup>™</sup> canister was closed and the sample Summa<sup>™</sup> canister valve was opened. The vacuum of the Summa<sup>™</sup> canister was used to draw the soil vapor through the flow controller until a negative pressure of approximately 5 pounds per square inch was observed on the

vacuum gauge.

Laboratory Analysis: Soil samples were analyzed for:

- Total Petroleum Hydrocarbons as diesel (TPHd) by EPA Method 8015B,
- Total Petroleum Hydrocarbons as gasoline (TPHg) by EPA Method 8015B Modified,
- BTEX by EPA Method 8260B, and
- Total Petroleum Hydrocarbons as Oil and Grease (TOG) by EPA Method 5520 D/E/F.

Groundwater was not encountered during drilling and probe installation.

Soil vapor samples were analyzed for:

Depth to Water:

• TPHg and BTEX by EPA Method TO-3.

Soil Disposal: No waste was derived during this investigation.

HYDROCARBON RESULTS FOR SOIL

TPHd was detected in S-1, S-2 and S-3 at 15 mg/kg, 580 mg/kg, and 11 mg/kg, respectively. TPHg was detected in S-1 and S-2 at 390 mg/kg and 3,800 mg/kg, respectively. Benzene was detected in S-2 at 0.41 mg/kg. No TOG was detected in any of the samples. SF Bay RWQCB Environmental Screening Levels (ESL)<sup>1</sup> for residential land use for TPHd, TPHg, benzene, are 100 mg/kg, 100 mg/kg, 0.18 mg/kg respectively. TPHd, TPHg and BTEX detected in S-2, and only TPHg in S-1 exceed the targeted ESLs. Soil analytical results are presented in Table 1.

<sup>-</sup>

<sup>1</sup> ESL from Table B: Shallow Soil (<3m)-Water is not a current potential source of drinking water in Chapter 4 of Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by the California Regional Water Quality Control Board San Francisco Bay Region, interim final dated February 2005

#### HYDROCARBON RESULTS FOR VAPORS

On November 20, 2006, vapor probes SV-1 through SV-3 were sampled. Purging was conducted at a rate of approximately 0.5 liters per second (L/sec) and sampling was conducted at a rate of approximately 0.05L/sec. Vapor samples were collected in Summa<sup>™</sup> canisters after removing approximately three purge volumes from each discrete interval. A field duplicate was taken simultaneously with the original sample at SV-2. Sample SV-3 was cancelled due to lack of volume in the container. SV-1 reported concentrations of TPHg and benzene vapors at 62,960 μg/m³ and 3,513 μg/m³, respectively. SV-2 reported concentrations of TPHg and benzene vapors at 2,204,000 μg/m³ and 35,130 μg/m³, respectively. SF Bay RWQCB ESLs² for residential use for TPHg and benzene vapors are 26,000 μg/m³ and 85 μg/m³, respectively. Soil vapor analytical results are presented in Table 2.



#### DISCUSSION

Soil analytical results from borings S-1 through S-3 are consistent with historical soil data collected during overexcavation activities in 1992. There does not appear to be a significant decline in concentrations in soil since then, but because of the limited extent of impact along the southern property boundary and extending beneath Grand Avenue, significant risk to human health or the environment do not appear to exist. Historical groundwater data from 2000 showed that TPHg or BTEX were not leaching from soil and migrating downgradient, only minor concentrations of TPHd had migrated downgradient, but not at significant risk levels, and only TOG concentrations at levels higher than any reported on-site were detected beneath Grand Avenue. Based on this, remaining residual hydrocarbon concentrations in soil do not appear to pose a significant threat.

Soil vapor analytical results from SV-1 show significant decline in concentrations from data collected by HLA in 1988 in that area of the site. Soil vapor analytical results from SV-2 are comparable to historical data obtained in that area of the site, but because the results from SV-2 (dup), which was collected simultaneously with SV-2, are less than one-half the concentrations reported in SV-2, these results are suspect. Also, Cambria inadvertently left out analyses for leak testing compounds, so the results cannot be validated. Because of this, and no complete sample could be obtained from boring SV-3 due to low flow conditions, Cambria will perform additional soil vapor sampling. Cambria will

<sup>&</sup>lt;sup>2</sup> ESL from Table E: Indoor Air and Soil Gas (Vapor Intrusion Concerns) in Chapter 4 of Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by the California Regional Water Quality Control Board San Francisco Bay Region, interim final dated February 2005

prepare and submit a Supplemental Soil Vapor Workplan to repeat sample collection in the previously proposed areas of the site, along with additional sampling onsite and just offsite along the northern margin of Grand Avenue to confirm previously reported hydrocarbon concentrations in soil, and further evaluate risk at this site.

#### **CLOSING**

Please contact Christene Sunding (ext 109) or David Herzog (ext 112) at (916) 677-3407 if you have any questions or comments regarding this investigation.



Sincerely,

Cambria Environmental Technology, Inc.

Lindsay Marsh Staff Geologist

Christene M. Sunding Project Geologist

David W. Herzog, P. ... #7211 Senior Project Geologist

Figures:

1 – Vicinity Map

2 – Site Plan

Tables:

1 – Soil Analytical Data

2 – Vapor Analytical Data

Attachments:

A – Regulatory Correspondence

B – Boring Logs and ACPWA Permit

C – Standard Field Procedures for Hand-Auger Soil Borings and Soil and Soil Vapor

No. 7211

Sampling

D - Analytical Soil Sample Results

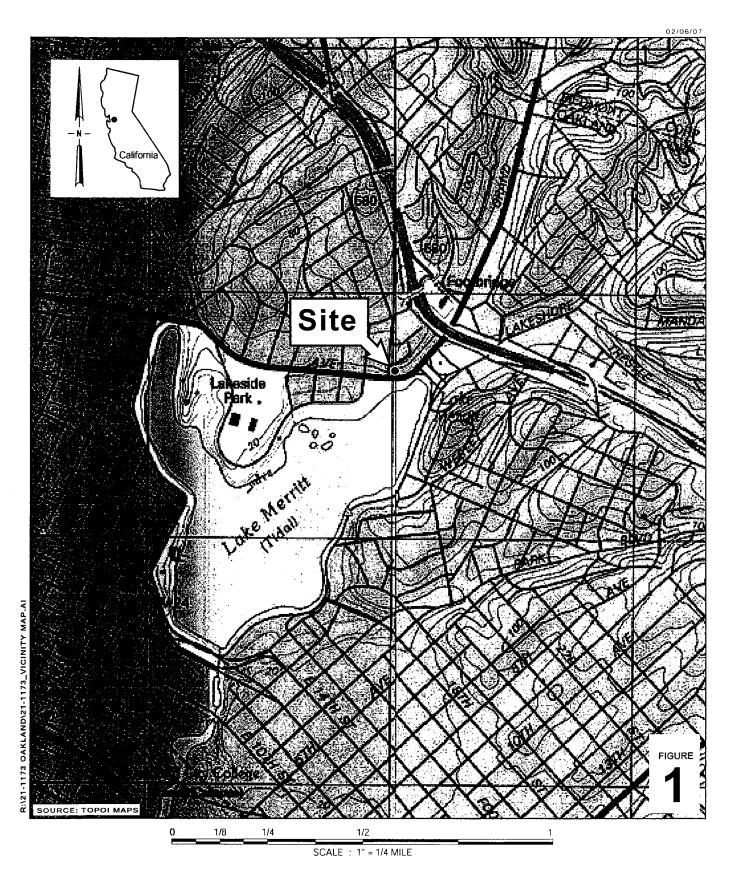
E – Analytical Soil Vapor Sample Results

cc: Mr. Dana Thurman, Chevron Environmental Management Company, PO Box 6012, K2236, San Ramon, CA 94583

R:\21-1173 Oakland\Soil Vapor Investigation 2006

Cambria Environmental Technology, Inc. (Cambria) prepared this document for use by our client and appropriate regulatory agencies. It is based partially on information available to Cambria from outside sources and/or in the public domain, and partially on information supplied by Cambria and its subcontractors. Cambria makes no warranty or guarantee, expressed or implied, included or intended in this document, with respect to the accuracy of information obtained from these outside sources or the public domain, or any conclusions or recommendations based on information that was not independently verified by Cambria. This document represents the best professional judgment of Cambria. None of the work performed hereunder constitutes or shall be represented as a legal opinion of any kind or nature.





Former Texaco Station 21-1173



Vicinity Map

500 Grand Avenue Oakland, California

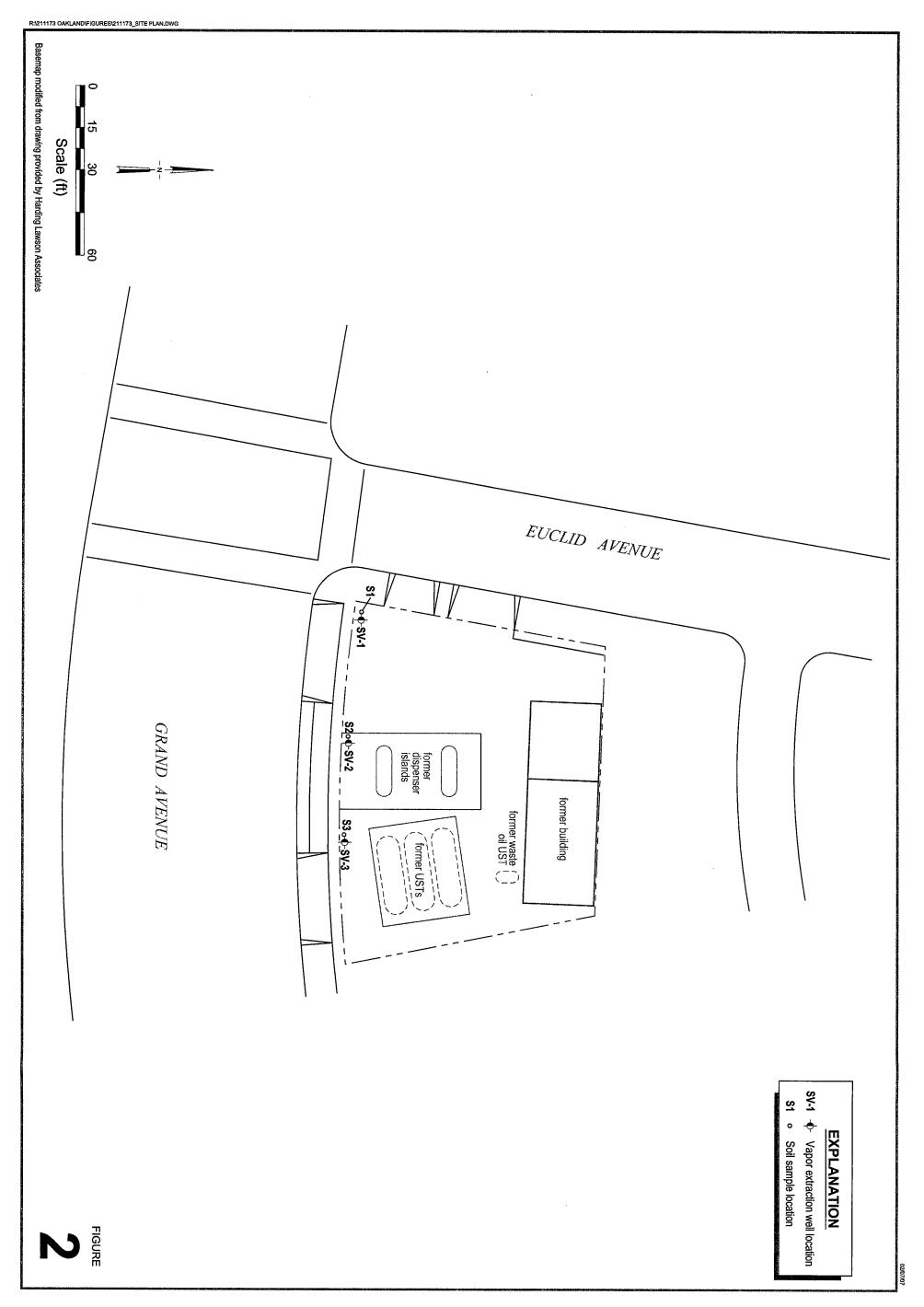


Table 1 Soil Analytical Data

Former Texaco Station 21-1173, 500 Grand Ave, Oakland, CA

Sample ID	Depth (fbg)	Date Sampled	TPHd	TPHg	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG
					concentration	ns in milligra	ams per kilog	gram (mg/kg)	
S-1	4	11/20/06	15	390	<0.062	<0.12	0.90	1.90	<330
S-2	4	11/20/06	580	3,800	0.41	17	36	170	<330
S-3	4	11/20/06	11	<1.0	<0.0005	<0.001	<0.001	<0.001	<330
Table A <sup>1</sup> -ESL Resedential Land Use		100	100	0.044	2.9	3.3	2.3	500	
Table B <sup>2</sup> -ESL Resedential Land Use			100	100	0.18	9.3	32.0	11	500

### Abbreviations:

TPHd= Total petroleum hydrocarbons as diesel by EPA Method 8015B

TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 8015B Modified

BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B

MTBE = Methyl tertiary butyl ether by EPA Method 8260B

TOG = Total oil and Grease by EPA Method 5520 D/E/F

< x =Not detected above method detection limit.

<sup>&</sup>lt;sup>1</sup> ESL from Table A: Shallow Soil (<3m)-Water is a current potential source of drinking water in Chapter 4 of Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by the California Regional Water Quality Control Board San Francisco Bay Region, interim final dated February 2005

<sup>&</sup>lt;sup>2</sup> ESL from Table B: Shallow Soil (<3m)-Water is not a current potential source of drinking water in Chapter 4 of Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by the California Regional Water Quality Control Board San Francisco Bay Region, interim final dated February 2005

Table 2 Vapor Analytical Data

Former Texaco Station 21-1173, 500 Grand Ave, Oakland, CA

Sample	Sample	TPHg <sup>2</sup>	Benzene	Toluene	Ethylbenzene	Total Xylenes	
ID	Date	Concentrations reported in micrograms per cubic meter - µg/m³					
SV-1	11/20/06	6.0E+04	3.4E+03	3.3E+02	2.6E+03	3.8E+02	
SV-2	11/20/06	2.0E+06	3.4E+04	1.6E+05	6.4E+04	2.8E+05	
SV-2 Duplicate	11/20/06	7.2E+05	1.4E+04	6.9E+04	2.7E+04	1.1E+05	
Table E <sup>1</sup> -ESL Resedential Land Use		2.6E+04	8.5E+01	6.3E+04	4.2E+05	1.5E+05	

### Abbreviations/Notes:

Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene and xylenes by EPA Method TO-3 Modified

<sup>2=</sup>TPH (C2 + Hydrocarbons) referenced to Gasoline

<sup>&</sup>lt;sup>1</sup> ESL from Table E: Indoor Air and Soil Gas (Vapor Intrusion Concerns) in Chapter 4 of Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater prepared by the California Regional Water Quality Control Board San Francisco Bay Region, interim final dated

# ATTACHMENT A

**Regulatory Correspondence** 

# ALAMEDA COUNTY HEALTH CARE SERVICES



DAVID J. KEARS, Agency Director





ENVIRONMENTAL HEALTH SERV ENVIRONMENTAL PROTECTION. 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-6577 (510) 567-6700 FAX (510) 337-9335

September 5, 2006

Mr. Dana Thurman Chevron Environmental Management Co. 6001 Bollinger Canyon Rd., Room K2236 San Ramon, CA 94583

Dear Mr. Thurman:

Subject: Fuel Leak Case RO0000391, Chevron #21-1173/Exxon #7-0237, 500 Grand Ave., Oakland, CA 94610

Alameda County Environmental Health (ACEH) staff has recently reviewed the case file for the subject site including the August 23, 2006 Work Plan for Additional Site Assessment by Cambria Environmental. The work plan proposes additional soil vapor sampling and soil sampling to provide an indication of current conditions in areas of potential environmental concern. Three boring pairs are proposed along the southern property boundary where previous elevated TPHg, BTEX had been detected in soil and also where elevated soil vapor samples had been detected. The shallow boring will be advanced to approximately 3.5' bgs and a soil vapor sample collected. The adjacent boring of the pair will be advanced to approximately 4' bgs for soil sampling. We concur that additional information in this area of the site may be sufficient for site closure. We request that you address the following technical comments when performing the proposed work and submit the technical report requested below.

### TECHNICAL COMMENTS

 We request that appropriate quality control sampling be performed when collecting the soil vapor samples. This should follow the DTSC Guidance document, December 15, 2004, revised February 7, 2005. A tracer gas and a background air sample should be included.

 Because of the past analytical results, we request that the soil sample boring for the middle boring be located as close as possible to the former sample WS-4 and also be collected at a depth of 5' bgs. All borings should be advanced avoiding excavation backfill material. Vertical delineation of contamination should be performed as necessary.

Please submit your investigation report to our office by November 3, 2006.

### **ELECTRONIC SUBMITTAL OF REPORTS**

Effective January 31, 2006, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Please do not submit reports as attachments to electronic mail.

Mr. Dana Thurman RO 391, 500 Grand Ave., Oakland Page 2 of 3

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (<a href="http://www.swrcb.ca.gov/ust/cleanup/electronic reporting">http://www.swrcb.ca.gov/ust/cleanup/electronic reporting</a>).

In order to facilitate electronic correspondence, we request that you provide up to date electronic mail addresses for all responsible and interested parties. Please provide current electronic mail addresses and notify us of future changes to electronic mail addresses by sending an electronic mail message to me at barney.chan@acgov.org.

### PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

### PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

### AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement

Mr. Dana Thurman RO 391, 500 Grand Ave., Oakland Page 3 of 3

including administrative action or monetary penalties of up to \$10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6765.

Sincerely,

Barnèy M. Chan

Hazardous Materials Specialist

cc: files, D. Drogos

Mr. David Herzog, Cambria Environmental, 2000 Opportunity Drive, Suite 110, Roseville, CA 95678

Mr. Brad Howard, Howard Tours Inc., 516 Grand Ave., Oakland, CA 94610-3515

9\_5\_06 500 GrandAve

# ATTACHMENT B Boring Logs and ACPWA Permit

### **Boring/Well Log Legend**

### KEY TO SYMBOLS/ABBREVIATIONS

∇ First encountered groundwater

▼ Static groundwater

Soils logged by hand-auger or air-knife cuttings

Soils logged by drill cuttings or disturbed sample

Undisturbed soil sample interval

Soil sample retained for submittal to analytical laboratory

O No recovery within interval

Hydropunch screen interval

Definite contact line

---- Inferred or gradational contact line

PID = Photo-ionization detector or organic vapor meter reading in parts per million (ppm)

fbg = Feet below grade

Blow Counts = Number of blows required to drive a

California-modified split-spoon sampler using a 140-pound hammer falling freely 30 inches, recorded per 6-inch interval of a total 18-inch sample interval

•

msl = Mean sea level

Soils logged according to the USCS.

### UNIFIED SOILS CLASSIFICATION SYSTEM (USCS) SUMMARY

Major Divisions				Group Symbol	Typical Description
		Clean Gravels	A	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	Gravel and	(≤5% fines)		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravelly Soils	Gravels with Fines		GM	Silty gravels, gravel-sand-silt mixtures
Coarse-Grained Soils		( ≥15% fines)		GC	Clayey gravels, gravel-sand-clay mixtures
(>50% Sands and/or Gravels)		Clean Sands		sw	Well-graded sands, gravelly sands, little or no fines
and/or Graveis)	Sand and Sandy Soils	(≤5% fines)		SP	Poorly-graded sands, gravelly sand, little or no fines
		Sands with Fines		SM	Silty sands, sand-silt mixtures
		( ≥15% fines)		sc	Clayey sands, sand-clay mixtures
			ML	Inorganic silts, very fine sands, silty or clayey fine sands, clayey silts with slight plasticity	
Fine-Grained	Silts and Clays			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
Soils					Organic silts and organic silty clays of low plasticity
(>50% Silts and/or Clays)				МН	Inorganic silts, micaceous or diatomaceous fine sand or silty soils
	Silts a	nd Clays		СН	Inorganic clays of high plasticity
		34 34 34 34 34 34	ОН	Organic clays of medium to high plasticity, organic silts	
Highly Organic Soils				PT	Peat, humus, swamp soils with high organic contents







Cambria Environmental Technology, Inc. 2000 Opportunity Drive, Suite 110 Roseville, CA 95678 Telephone: 916.677.3407

-		Fax: 9	10.07	7.300	5/							
CLIENT	NAME	Ch	nevror	n Envi	ronme	ntal Ma	anagement	BORING/WELL NAME	S-1			
JOB/SIT	E NAME	21	-1173	3				DRILLING STARTED _	20-Nov-06		··	
LOCATI	ON	50	0 Gra	and Av	e, Oal	kland, (	CA	DRILLING COMPLETED _	20-Nov-06			
PROJEC	CT NUMB	ER 61						WELL DEVELOPMENT DA	ATE (YIELD) _			
DRILLE	R	Fi	sch E	nviron	menta	1		GROUND SURFACE ELEV			rveyed	·
DRILLIN	IG METH	OD <u>H</u> y	/draul	lic pus	h			TOP OF CASING ELEVAT	ION Not Sur	veyed		
BORING	DIAMET	ER2"						SCREENED INTERVAL				
LOGGE	D BY _	K.	Hoey	/				DEPTH TO WATER (First	Encountered)	NA		<u>Ā</u>
REVIEW	VED BY	D.	Herz	og, PO	<u>G# 72</u>	11		DEPTH TO WATER (Statio	>)	NA		<u>¥</u>
REMAR	ks _											
	T			Т	· ·			· · · · · · · · · · · · · · · · · · ·		CONTACT DEPTH (ft bgs)		
Ē	BLOW	SAMPLE ID	뉟	E 😙	ο.	GRAPHIC LOG				AC.		565414
PID (ppm)	95	PL	EXTENT	(ft bgs)	U.S.C.S.	P Q	LITHO	DLOGIC DESCRIPTION		ŽΕ	WELI	_ DIAGRAM
吕	요양	SAN	[의 역	ا څ د	-j	R.				SH		
ļ						XXX				0.5	X/XX/	
			<b>   -</b>	-	МН	TIII	SILT: dark grev: dry	; hard; 70% silt, 25% clay, 5	5% sand;			
				1		4444	medium plasticity; m	noderate estimated permeat rk grey; moist; 60% silt, 20%	oility.	2.0		▼ Portland Type
				$\perp$	МН	Щ	→ 20% sand; medium	plasticity; moderate estimat	ed /-	3.0		1/11
581		S-1		1	СН		permeability.	moist; soft; 50% clay, 30% s	ilt 20%	4.0		Bottom of
1							sand; high plasticity	low estimated permeability				Boring @ 4 ft
							<u> </u>					
				i								
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WELL LOG (PID) R:v21-117-2\GINTV21-1173 GINT.GPJ DEFAULT.GDT 2/28\07					1							
¥					l		<u> </u>					PAGE 1 OF





Cambria Environmental Technology, Inc. 2000 Opportunity Dr. Suite 110 Roseville, CA Telephone: 916.677.3407 Fax: 916.677.3687

rax. 91	10.077.3007		
JOB/SITE NAME         21-           LOCATION         500           PROJECT NUMBER         61I           DRILLER         Fis           DRILLING METHOD         Hyd           BORING DIAMETER         2"	Ноеу	BORING/WELL NAME  DRILLING STARTED  DRILLING COMPLETED  20-Nov-06  WELL DEVELOPMENT DATE (YIELD)  GROUND SURFACE ELEVATION  TOP OF CASING ELEVATION  SCREENED INTERVAL  DEPTH TO WATER (First Encountered)  DEPTH TO WATER (Static)	Not Surveyed veyed
PID (ppm) BLOW COUNTS	EXTENT DEPTH (ft bgs) U.S.C.S. GRAPHIC LOG	OLOGIC DESCRIPTION	CONTACT DEPTH (# bgs) MET DISTRIBUTION M
173 OAKLANDIGINIZY-173 GIN 1973 DEFAULT 1991 ZANOV	ML medium plasticity; h  SILT with sand: bro 15% clay; medium permeability. SILT: brown-grey; n  medium plasticity; n	own-grey; dry; 75% silt, 25% sand; high estimated permeability.  own-grey; dry; 65% silt, 20% sand, plasticity; moderate estimated  noist; 65% silt, 25% clay, 10% sand; moderate estimated permeability.	9.5 1.5 2.0 4.0 Portland Type I/II Bottom of Boring @ 4 ft





WELL LOG (PID) R:\21-1173 OAKLAND\GINT\21-1173 GINT.GPJ DEFAULT.GDT 2/8/07

Cambria Environmental Technology, Inc. 2000 Opportunity Dr. Suite 110 Roseville, CA Telephone: 916.677.3407 Fax: 916.677.3687

JOB/SITE NAME         21-1173         DRILLING STARTED         20-Nov-06           LOCATION         500 Grand Ave, Oakland, CA         DRILLING COMPLETED         20-Nov-06	
PROJECT NUMBER 61H-2049 WELL DEVELOPMENT DATE (YIELD) NA	
DRILLER Fisch Environmental GROUND SURFACE ELEVATION Not Surveyed	
DRILLING METHOD Hydraulic push TOP OF CASING ELEVATION Not Surveyed	
BORING DIAMETER 2" SCREENED INTERVAL NA	
LOGGED BY K. Hoey DEPTH TO WATER (First Encountered) NA	$ar{ abla}$
REVIEWED BY D. Herzog, PG# 7211 DEPTH TO WATER (Static) NA	<u>▼</u>
REMARKS	
PID (ppm) BLOW COUNTS SAMPLE ID EXTENT DEPTH (ft bgs) U.S.C.S. GRAPHIC LOG CONTACT DEPTH (ft bgs)	DIAGRAM
FILL: grey; wet; 45% gravel 20% clay, 25% sand,10% silt.	Portland Type I/II  Bottom of Boring @ 4 ft

### Alameda County Public Works Agency - Water Resources Well Permit



Application Id:

Site Location: **Project Start Date:** 

Applicant:

399 Elmhurst Street Hayward, CA 94544-1395 Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 11/15/2006 By jamesy

1163527441992

11/20/2006

Permit Numbers: W2006-0963

Permits Valid from 11/20/2006 to 11/21/2006

City of Project Site: Oakland 500 Grand Avenue, Oakland, CA 94610

Completion Date: 11/21/2006

Cambria - John Bostick Phone: 916-677-3407 2000 Opportunity Dr. #110, Roseville, CA 95678

**Property Owner: Brad Howard** Phone: --

516 Grand Avenue, Oakland, CA 94610 Client: same as Property Owner \*

**Total Due:** \$200.00 Receipt Number: WR2006-0516 **Total Amount Paid:** \$200 00

Paver Name: Cambria Environmental Paid By: CHECK **PAID IN FULL** 

### **Works Requesting Permits:**

Borehole(s) for Investigation-Contamination Study - 6 Boreholes

Work Total: \$200.00 Driller: Fisch Exploration - Lic #: 683865 - Method: DP

#### Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2006-	11/15/2006	02/18/2007	6	3.00 in.	4.00 ft
0963					

### **Specific Work Permit Conditions**

- 1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site.
- 2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
- 3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
- 4. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
- 5. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
- 6. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.
- 7. No Inspector Assigned to this site.

## Alameda County Public Works Agency - Water Resources Well Permit

Applicant shall contact this office by email at wells@acpwa.org and certify in writing that work was completed and
according to County Standards within 5 working days after the completion of work.

### **ATTACHMENT C**

Standard Field Procedures for Hand-Auger Soil Borings and Soil Vapor Sampling

### Cambria

# STANDARD FIELD PROCEDURES SOIL VAPOR SAMPLING DIRECT PUSH AND VAPOR POINT METHODS

This document describes Cambria Environmental Technology's standard field methods for soil vapor sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

### **Objectives**

Soil vapor samples are collected and analyzed to assess whether vapor-phase subsurface contaminants pose a threat to human health or the environment.

### **Direct Push Method for Soil Vapor Sampling**

The direct push method for soil vapor sampling uses a hollow vapor probe, which is pushed into the ground, rather than augured, and the stratigraphy forms a vapor seal between the surface and subsurface environments ensuring that the surface and subsurface gases do not mix. Once the desired soil vapor sampling depth has been reached, the field technician installs disposable polyethylene tubing with a threaded adapter that screw into the bottom of the rods. The screw adapter ensures that the vapor sample comes directly from the bottom of the drill rods and does not mix with other vapor from inside the rod or from the ground surface. In addition, hydrated bentonite is placed around the sampling rod and the annulus of the boring to prevent ambient air from entering the boring. The operator then pulls up on the rods and exposes the desired stratigraphy by leaving an expendable drive point at the maximum depth. The required volume of soil vapor is then purged through the polyethylene tubing using a standard vacuum pump. The soil vapor can be sampled for direct injection into a field gas chromatograph, pumped into inert tedlar bags using a "bell jar" sampling device, or allowed to enter a Summa vacuum canister. Once collected, the vapor sample is transported under chain-of-custody to a state-certified laboratory. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure. Drilling and sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent. Once the sampling is completed, the borings are filled to the ground surface with neat cement.

### **Shallow Soil Vapor Point Method for Soil Vapor Sampling**

The shallow soil vapor point method for soil vapor sampling utilizes a hand augur or drill rig to advance a boring for the installation of a soil vapor sampling point. Once the boring is hand augered to the final depth, a half foot of number 2/16 filter sand is placed at the base of the boring (Figure A). One, ¼-inch inner-diameter nylon tube of known length is placed into the boring. The tube is fitted with a stainless steel screen and barbed brass fitting to prevent sand from clogging the tube and is capped at the top with another barbed brass fitting. Another half foot of number 2/16 filter sand is placed above the bottom of the tubing creating a one foot zone of filter sand with the end of the tubing in the middle. A 2-inch layer of unhydrated bentonite chips is placed on top of the filter pack. Next pre-hydrated granular bentonite is then poured into the hole to approximately 0.5 fbg. Another 2-inch layer of unhydrated bentonite chips is placed on top of the hydrated bentonite. The tube is coiled and placed within a wellbox finished flush to the surface. Soil vapor samples will be collected no sooner than one week after installation of the soil-vapor points to allow adequate time for representative soil vapors to accumulate. Soil vapor sample collection will not be scheduled until after a minimum of

## Cambria

three consecutive precipitation-free days and irrigation onsite has ceased. Figure B shows the soil vapor sampling apparatus. A measured volume of air will be purged from the tubing using a vacuum pump and a tedlar bag. Immediately after purging, soil-vapor samples will be collected using the appropriate size Summa canister with attached flow regulator and sediment filter. The soil-vapor points will be preserved until they are no longer needed for risk evaluation purposes. At that time, they will be destroyed by extracting the tubing, hand augering to remove the sand and bentonite, and backfilling the boring with neat cement. The boring will be patched with asphalt or concrete, as appropriate.

### Vapor Sample Storage, Handling, and Transport

Samples are stored and transported under chain-of-custody to a state-certified analytic laboratory. Samples should never be cooled due to the possibility of condensation within the canister.

# ATTACHMENT D Analytical Soil Sample Results



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### ANALYTICAL RESULTS

Prepared for:

Chevron c/o Cambria Suite 110 2000 Opportunity Drive Roseville CA 95678

916-677-3407

Prepared by:

Lancaster Laboratories 2425 New Holland Pike Lancaster, PA 17605-2425

### SAMPLE GROUP

The sample group for this submittal is 1015312. Samples arrived at the laboratory on Wednesday, November 22, 2006. The PO# for this group is 211173 and the release number is MTI.

Client Description	1		Lancaster Labs Number
S-1-S-4-061120	Grab	Soil	4922589
S-2-S-4-061120	Grab	Soil	4922590
S-3-S-4-061120	Grab	Soil	4922591
ELECTRONIC COPY TO	Cambria E	nvironmental	Attn: David Herzog
ELECTRONIC COPY TO	Cambria E	nvironmental	Attn: Jami Shaffer



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Questions? Contact your Client Services Representative Angela M Miller at (717) 656-2300

Respectfully Submitted,

Marla S. Lord Senior Specialist

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Page 1 of 1

Lancaster Laboratories Sample No. SW 4922589

S-1-S-4-061120

Facility# 211173 MTI# 61H-2049

CETR

500 Grand-Oakland

Discard: 01/11/2007

T0600101355 S-1

Collected:11/20/2006 11:15

Submitted: 11/22/2006 10:30

Reported: 12/11/2006 at 15:14

by JB

Account Number: 11997 Chevron c/o Cambria

Suite 110

2000 Opportunity Drive Roseville CA 95678

S1461

CAT			As Received	As Received Method		Dilution	
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor	
01725	TPH-GRO - Soils	n.a.	390.	20.	mg/kg	500	
	The analysis for volatiles was performed on a sample which was preserved in methanol. Therefore, the reporting limits were raised.  The reported concentration of TPH-GRO does not include MTBE or other gasoline constituents eluting prior to the C6 (n-hexane) TPH-GRO range start time.						
05547	TPH - DRO (Soils)	n.a.	15.	10.	mg/kg	1	
02446	TPH (gravimetric)	n.a.	N.D.	330.	mg/kg	1	
07360	BTEX+MTBE by 8260B			•			
05460	Benzene	71-43-2	N.D.	0.062	mg/kg	123.76	
05466	Toluene	108-88-3	N.D.	0.12	mg/kg	123.76	
05474	Ethylbenzene	100-41-4	0.90	0.12	mg/kg	123.76	
06301	Xylene (Total)	1330-20-7	1.9	0.12	mg/kg	123.76	

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/27/2006 05:22	Linda C Pape	500
05547	TPH - DRO (Soils)	SW-846 8015B	1	11/28/2006 03:43	Tracy A Cole	1
02446	TPH (gravimetric)	SM19 5520 D/E/F	1	12/07/2006 07:30	Michelle L Lalli	1
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/28/2006 11:27	Kerri E Koch	123.76
00374	GC/MS - Bulk Sample Prep	SW-846 5030A	1	11/28/2006 05:20	Seth J Good	n.a.
01150	GC - Bulk Soil Prep	SW-846 5035	1	11/24/2006 08:45	Larry E Bevins	n.a.
07024	DRO Alternate Soil	SW-846 3550B	1	11/27/2006 10:00	Olivia Arosemena	1



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Lancaster Laboratories Sample No. SW 4922590

S-2-S-4-061120 Grab Soil

Facility# 211173 MTI# 61H-2049 CETR

500 Grand-Oakland T0600101355 S-2

Collected:11/20/2006 13:05 by JB Account Number: 11997

Submitted: 11/22/2006 10:30 Chevron c/o Cambria

Reported: 12/11/2006 at 15:14 Suite 110

Discard: 01/11/2007 2000 Opportunity Drive Roseville CA 95678

S2461

Dilution
Factor
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10
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125
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125
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State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Chronicle

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/27/2006 05:58	Linda C Pape	20000
05547	TPH - DRO (Soils)	SW-846 8015B	2	11/28/2006 16:26	Tracy A Cole	10
02446	TPH (gravimetric)	SM19 5520 D/E/F	1	12/07/2006 07:30	Michelle L Lalli	1
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/28/2006 20:02	Kerri E Koch	250
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/29/2006 05:14	Seth J Good	125
00374	GC/MS - Bulk Sample Prep	SW-846 5030A	1	11/28/2006 05:21	Seth J Good	n.a.
01150	GC - Bulk Soil Prep	SW-846 5035	1	11/24/2006 08:40	Larry E Bevins	n.a.
07024	DRO Alternate Soil Extraction	SW-846 3550B	1	11/27/2006 10:00	Olivia Arosemena	1



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Page 1 of 1

Lancaster Laboratories Sample No. SW 4922591

S-3-S-4-061120

CETR

Facility# 211173 MTI# 61H-2049 500 Grand-Oakland

T0600101355 S-3

Collected:11/20/2006 14:10 by JB

Account Number: 11997

Chevron c/o Cambria

Submitted: 11/22/2006 10:30

Reported: 12/11/2006 at 15:14

Suite 110

Discard: 01/11/2007

2000 Opportunity Drive Roseville CA 95678

S3461

CAT			As Received	As Received Method		Dilution
No.	Analysis Name	CAS Number	Result	Detection Limit	Units	Factor
01725	TPH-GRO - Soils	n.a.	N.D.	1.0	mg/kg	25
	The analysis for volatiles was pin methanol. Therefore, the rep The reported concentration of The gasoline constituents eluting present time.	porting limits PH-GRO does not	were raised. include MTBE or	other		
05547	TPH - DRO (Soils)	n.a.	11.	10.	mg/kg	1
02446	TPH (gravimetric)	n.a.	N.D.	330.	mg/kg	1
07360	BTEX+MTBE by 8260B					
05460	Benzene	71-43-2	N.D.	0.0005	mg/kg	0.99
05466	Toluene	108-88-3	N.D.	0.001	mg/kg	0.99
05474	Ethylbenzene	100-41-4	N.D.	0.001	mg/kg	0.99
06301	Xylene (Total)	1330-20-7	N.D.	0.001	mg/kg	0.99

State of California Lab Certification No. 2116

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory	Chronicle
------------	-----------

CAT				Analysis		Dilution
No.	Analysis Name	Method	Trial#	Date and Time	Analyst	Factor
01725	TPH-GRO - Soils	TPH GRO SW-846 8015B mod	1	11/27/2006 07:13	Linda C Pape	25
05547	TPH - DRO (Soils)	SW-846 8015B	1	11/28/2006 05:11	Tracy A Cole	1
02446	TPH (gravimetric)	SM19 5520 D/E/F	1	12/07/2006 07:30	Michelle L Lalli	1
07360	BTEX+MTBE by 8260B	SW-846 8260B	1	11/28/2006 13:57	Emiley A King	0.99
00374	GC/MS - Bulk Sample Prep	SW-846 5030A	1	11/28/2006 10:02	Emiley A King	n.a.
01150	GC - Bulk Soil Prep	SW-846 5035	1	11/24/2006 08:35	Larry E Bevins	n.a.
07024	DRO Alternate Soil Extraction	SW-846 3550B	1	11/27/2006 10:00	Olivia Arosemena	1



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### Quality Control Summary

Client Name: Chevron c/o Cambria Reported: 12/11/06 at 03:14 PM

Group Number: 1015312

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

### Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>MDL</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: 06318A31D TPH-GRO - Soils	Sample nu N.D.	mber(s): 1.0	4922589-492 mg/kg	22591 86		67-119		
Batch number: 063290007A TPH - DRO (Soils)	Sample nu	mber(s): 10.	4922589-492 mg/kg	22591 85		53-120		
Batch number: 06341244601A TPH (gravimetric)	Sample nu	mber(s): 330.	4922589-492 mg/kg	22591 95		89-107		
Batch number: A063312AC Benzene Toluene Ethylbenzene Xylene (Total)	Sample num N.D. N.D. N.D. N.D.	mber(s): 0.5 1. 1.	4922591 ug/kg ug/kg ug/kg ug/kg	96 89 97 98		77-119 81-116 82-115 82-117		
Batch number: Q063321AA Benzene Toluene Ethylbenzene Xylene (Total)	Sample num N.D. N.D. N.D. N.D.	mber(s): 63. 130. 130.	4922589-492 ug/kg ug/kg ug/kg ug/kg	22590 96 93 87 90		77-119 81-116 82-115 82-117		
Batch number: Q063321AB Benzene Toluene Ethylbenzene	Sample num N.D. N.D. N.D.	mber(s): 63. 130. 130.		96 93 87		77-119 81-116 82-115		

### Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS <u>%REC</u>	MSD %REC	MS/MSD <u>Limits</u>	RPD	RPD <u>MAX</u>	BKG Conc	DUP Conc	DUP RPD		Dup RPD Max
Batch number: 06318A31D TPH-GRO - Soils	Sample 77	number 72	(s): 4922589 39-118	-492259 6	30 UNSP	K: P910513				
Batch number: 063290007A TPH - DRO (Soils)	Sample 97	number 97	(s): 4922589 21-136	-492259 1	01 UNSP	K: 4922589				
Batch number: 06341244601A TPH (gravimetric)	Sample 92	number 93	(s): 4922589 73-103	-492259 1	01 UNSP 20	K: 4922590 N.D.	BKG: 4922590 N.D.	200*	(1)	20
Batch number: A063312AC Benzene Toluene	Sample 86 82	number 84 74	(s): 4922591 59-120 52-121	UNSPK: 3 8	: P9184 30 30	03				

#### \*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The background result was more than four times the spike added.



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Page 2 of 3

### Quality Control Summary

Client Name: Chevron c/o Cambria

Group Number: 1015312

Reported: 12/11/06 at 03:14 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name Ethylbenzene Xylene (Total)	<b>MS</b> <u>%REC</u> 89 97	MSD %REC 80 83	MS/MSD <u>Limits</u> 54-116 44-127	<u>RPD</u> 9 12	RPD <u>MAX</u> 30 30	BKG Conc	DUP Conc	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: Q063321AA	Sample	number	(s): 4922589	-492259	0 UNSF	K: P922980			
Benzene	95 -	100	59-120	5	30				
Toluene	114	106	52-121	7	30				
Ethylbenzene	166*	120*	54-116	23	30				
Xylene (Total)	268*	151*	44-127	29	30				
Batch number: Q063321AB	Sample	number	(s): 4922590	UNSPK:		80			
Benzene	95	100	59-120	5	30				
Toluene	114	106	52-121	7	30				
Ethylbenzene	166*	120*	54-116	23	30				

### Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: TPH-GRO - Soils Batch number: 06318A31D Trifluorotoluene-F

		 	1.	 	 
4922589	23*				
4922590	2*				
4922591	84				
Blank	80				
LCS	90				
MS	118				
MSD	114				
	61 100	 		 	 
Limits:	61-122				

Analysis Name: TPH - DRO (Soils) Batch number: 063290007A Orthoterphenyl

4922589	69				
1922590	101				
1922591	97				
Blank	97				
LCS	105				
4S	97				
MSD	100				

Analysis Name: BTEX+MTBE by 8260B Batch number: A063312AC Dibromofluoromethane

1,2-Dichloroethane-d4

Toluene-d8

4-Bromofluorobenzene

### \*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The background result was more than four times the spike added.



70-111

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### Quality Control Summary

70-109

Client Name: Chevron c/o Cambria Reported: 12/11/06 at 03:14 PM

Group Number: 1015312

### Surrogate Quality Control

70-123

		-	
95	84	92	66*
95	85	83	77
93	86	86	80
95	84	90	75
93	84	89	76
71-114	70-109	70-123	70-111
ame: BTEX+MTBE by 8260B			
	1 0 District the second	m-1 40	4-Bromofluorobenzene
Dibromofluoromethane	1,2-Dichloroethane-d4	ToTuene-d8	4-Bromoriuoropenzene
93	97	90	87
99	102	96	86
96	101	94	90
94	100	92	90
99	104	96	93
71-114	70-109	70-123	70-111
ame: BTEX+MTBE by 8260B er: Q063321AB Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
		0.5	
			98
			84
			90
	** * *		90
99	104	96	93
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### \*- Outside of specification

Limits:

71-114

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The background result was more than four times the spike added.

## Chevron California Region Analysis Request/Chain of Custody



Acct. #: 11997 For Langaster Laboratories use only 53/2 244431

Acct. #: 11997 Scr#:

MTI # 61H-2049							Γ			-	Analyses Requested													
Facility #: 21-117	3													Pres	erva	tion	Coc	ies			Pre	serva	ative Cod	es
Site Address: 500 (	ZANI THUR	AVE	<i>DA</i> Lead C	(KLANI), Consultant: (	CA AMBRIA							Silica Gel Cleanup				1664		led			H = HC1 N = HN0 S = H <sub>2</sub> S	) <sub>3</sub>	T = Thio: B = NaO O = Othe	Н
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Consultant Prj. Mgr.: _	_		ZOG			·			ontai	8021		Silica				š	4	V					west detect	
Consultant Phone #:	716)6	77 34	07	Fax#:(916)	677 36	84			o <sub>f</sub> C	8260 🗺 8021 🗆	6 <del>8</del> 0					PH oileGroups	552	ا	ام		8021 MTE		•	ands.
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Service Order #:			No	n SAR:				) Soci	N	Ŧ	15 MC	15 MC	scan	Oxygenates	20 []	H	व्य	18C700	10				ts by 8260	
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Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

3460 Rev. 10/04/01

## Lancaster Laboratories Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	BMQL	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	MPN	Most Probable Number
IU	International Units	CP Units	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	NTU	nephelometric turbidity units
C	degrees Celsius	F	degrees Fahrenheit
Cal	(diet) calories	lb.	pound(s)
meq	milliequivalents	kg	kilogram(s)
g	gram(s)	mg	milligram(s)
ug	microgram(s)	Ī	liter(s)
ml	milliliter(s)	ul	microliter(s)
m3	cubic meter(s)	fib >5 um/ml	fibers greater than 5 microns in length per ml

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

**Inorganic Qualifiers** 

ppb parts per billion

**Dry weight basis**Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

U.S. EPA data qualifiers:

#### **Organic Qualifiers**

			<del>-</del>
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	E	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quatitated on a diluted sample	N	Spike amount not within control limits
E	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
J	Estimated value	U	Compound was not detected
N	Presumptive evidence of a compound (TICs only)	W	Post digestion spike out of control limits
Р	Concentration difference between primary and	*	Duplicate analysis not within control limits
	confirmation columns >25%	+	Correlation coefficient for MSA < 0.995
U	Compound was not detected		
X,Y,Z	Defined in case narrative		

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY – In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions of Lancaster Laboratories and we hereby object to any conflicting terms contained in any acceptance or order submitted by client.

# ATTACHMENT E Analytical Soil Vapor Sample Results



### Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- · Laboratory Narrative;
- · Results; and
- Chain of Custody (copy).



#### **WORK ORDER #: 0611513**

Work Order Summary

CLIENT:

Mr. John Bostick

BILL TO: N

Mr. John Bostick

Cambria Environmental Technology,

Cambria Environmental Technology, Inc.

Inc

2000 Opportunity Dr.

2000 Opportunity Dr.

Suite 110

Suite 110

Roseville, CA 95678

PHONE:

Roseville, CA, 95678

P.O. #

FAX:

916-677-3687

PROJECT#

61H-2049 21-1173 MTI

DATE RECEIVED:

11/22/2006

CONTACT:

Kyle Vagadori

**DATE COMPLETED:** 12/08/2006

			RECEIPT
FRACTION #	NAME	<u>TEST</u>	VAC./PRES.
01A	SV-1	Modified TO-3	8.0 "Hg
02A	SV-2	Modified TO-3	9.0 "Hg
03A	SV-2 Duplicate	Modified TO-3	5.5 "Hg
04A(cancelled)	SV-3	Modified TO-3	
05A(cancelled)	Purge	Modified TO-3	
06A	Lab Blank	Modified TO-3	NA
07A	LCS	Modified TO-3	NA
07B	LCS	Modified TO-3	NA

CERTIFIED BY:

Sinda d. Truman

DATE: 12

12/08/06

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004 NY NELAP - 11291, UT NELAP - 9166389892

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act, Accreditation number: E87680, Effective date: 07/01/06, Expiration date: 06/30/07

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630 (916) 985-1000. (800) 985-5955. FAX (916) 985-1020



#### LABORATORY NARRATIVE Modified TO-3 (Gas range) Cambria Environmental Technology Workorder# 0611513

Five 6 Liter Summa Canister samples were received on November 22, 2006. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with photo ionization and flame ionization detection. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system. The TPH (Gasoline Range) results are calculated using the response factor of Gasoline and correspond to the range of hydrocarbons from C5 to C10. A molecular weight of 100 is used to convert the TPH (Gasoline Range) ppmv result to ug/L. See the data sheets for the reporting limits for each compound.

Method modifications taken to run these samples include:

Requirement	TO-3	ATL Modifications
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch = 20 samples</td
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Moisture Control	Nafion system	Sorbent system
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture

#### **Receiving Notes**

Samples SV-3 and Purge was cancelled per client's request.

The Chain of Custody incorrect method information. ATL proceeded with the analysis as per the original contract or verbal agreement.

#### **Analytical Notes**

There were no analytical discrepancies.



#### **Definition of Data Qualifying Flags**

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B Compound present in laboratory blank greater than reporting limit.
- J Estimated value.
- E Exceeds instrument calibration range.
- S Saturated peak.
- Q Exceeds quality control limits.
- U Compound analyzed for but not detected above the detection limit.
- M Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue



# **Summary of Detected Compounds MODIFIED EPA METHOD TO-3 GC/PID/FID**

Client Sample ID: SV-1

Lab ID#: 0611513-01A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.0049	0.016	1.1	3.4
Toluene	0.0049	0.018	0.089	0.33
Ethyl Benzene	0.0049	0.021	0.60	2.6
Total Xylenes	0.0049	0.021	0.087	0.38
TPH (Gasoline Range)	0.12	0.50	14	60

Client Sample ID: SV-2

Lab ID#: 0611513-02A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	(uG/L)
Benzene	0.15	0.49	11 M	34 M
Toluene	0.15	0.58	43	160
Ethyl Benzene	0.15	0.66	15	64
Total Xylenes	0.15	0.66	66	280
TPH (Gasoline Range)	3.8	16	490	2000

#### Client Sample ID: SV-2 Duplicate

Lab ID#: 0611513-03A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)
Benzene	0.066	0.21	4.2	14
Toluene	0.066	0.25	18	69
Ethyl Benzene	0.066	0.28	6.2	27
Total Xylenes	0.066	0.28	26	110
TPH (Gasoline Range)	1.6	6.7	180	720



#### Client Sample ID: SV-1 Lab ID#: 0611513-01A

#### MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name: Dil. Factor:	d120508 4.88		Date of Collection: 11/20/06 Date of Analysis: 12/5/06.10:54 AM		
Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)	
Benzene	0.0049	0.016	1.1	3.4	
Toluene	0.0049	0.018	0.089	0.33	
Ethyl Benzene	0.0049	0.021	0.60	2.6	
Total Xylenes	0.0049	0.021	0.087	0.38	
TPH (Gasoline Range)	0.12	0.50	14	60	

#### Container Type: 6 Liter Summa Canister

Container Type, o Liter Cumma Cumoto.		Method	
Surrogates	%Recovery	Limits	
Fluorobenzene (FID)	130	75-150	
Fluorobenzene (PID)	122	75-125	



#### Client Sample ID: SV-2 Lab ID#: 0611513-02A

#### MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	d120505 153		Date of Collection: 11/20/06 Date of Analysis: 12/5/06 08:58 AM		
Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)	
Benzene	0.15	0.49	11 M	34 M	
Toluene	0.15	0.58	43	160	
Ethyl Benzene	0.15	0.66	15	64	
Total Xylenes	0.15	0.66	66	280	
TPH (Gasoline Range)	3.8	16	490	2000	

M = Reported value may be biased due to apparent matrix interferences.

Container Type: 6 Liter Summa Canister

Containor Typor o Enter Cummu Cummu		Method
Surrogates	%Recovery	Limits
Fluorobenzene (FID)	108	75-150
Fluorobenzene (PID)	114	75-125



#### Client Sample ID: SV-2 Duplicate

#### Lab ID#: 0611513-03A

## MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name: Dil. Factor:	d120506 65.6	Date of Collection: 11/20/06  Date of Analysis: 12/5/06 09:38 AM			
Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)	
Benzene	0.066	0.21	4.2	14	
Toluene	0.066	0.25	18	69	
Ethyl Benzene	0.066	0.28	6.2	27	
Total Xylenes	0.066	0.28	26	110	
TPH (Gasoline Range)	1.6	6.7	180	720	

#### Container Type: 6 Liter Summa Canister

Container Type, o Liter Summa Camster	%Recovery	Method Limits		
Surrogates	76Recovery			
Fluorobenzene (FID)	104	75-150		
Fluorobenzene (PID)	104	75-125		



#### Client Sample ID: Lab Blank

#### Lab ID#: 0611513-06A

#### MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name: Dil. Factor:	d120504 1,00		Date of Collection: N Date of Analysis: 12	of Collection: NA of Analysis: 12/5/06 08:21 AM		
Compound	Rpt. Limit (ppmv)	Rpt. Limit (uG/L)	Amount (ppmv)	Amount (uG/L)		
Benzene	0.0010	0.0032	Not Detected	Not Detected		
Toluene	0.0010	0.0038	Not Detected	Not Detected		
Ethyl Benzene	0.0010	0.0043	Not Detected	Not Detected		
Total Xylenes	0.0010	0.0043	Not Detected	Not Detected		
TPH (Gasoline Range)	0.025	0.10	Not Detected	Not Detected		

#### Container Type: NA - Not Applicable

		Method		
Surrogates	%Recovery	Limits		
Fluorobenzene (FID)	92	75-150		
Fluorobenzene (PID)	103	75-125		



#### Client Sample ID: LCS Lab ID#: 0611513-07A

#### MODIFIED EPA METHOD TO-3 GC/PID/FID

File Name:	d120527b Date of Collection: NA
Dil. Factor:	1.00 Date of Analysis: 12/5/06 11:20 PM

Compound		%Recovery
Benzene		100
Toluene		100
Ethyl Benzene		96
Total Xylenes		90
Container Type: NA - Not Applicable		Method
Surrogates	%Recovery	Limits
Fluorobenzene (PID)	102	75-125



Fluorobenzene (FID)

AN ENVIRONMENTAL ANALYTICAL LABORATORY

#### Client Sample ID: LCS Lab ID#: 0611513-07B

#### MODIFIED EPA METHOD TO-3 GC/PID/FID

	Method
Container Type: NA - Not Applicable	
TPH (Gasoline Range)	95
Compound	%Recovery

96

75-150



Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance. 180 BLUE RAVINE ROAD, SUITE 5 with a lapplicable local, State, Federal, national, and international laws, regulations and ordinances FOLSOM, CA 95630-4719 of any kind, Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless,

CHAIN-C	DF-CUSTODY RECORD				against any claim, demand, or action, of any kind, rola samples. D.O.T. Hotline (800) 467-4922.	Med.		Pa	ige <u> </u>	y: <u>/</u>
Contact Person Toho Bastick				Project Info:		Turn Around		Lab Use Chly Pressurized by:		
Company	Campria Environmental E	المرابية المرابية mail	ostike	Cambria (12) Co	P.O. #	<u> </u>		7 **		
Address 2000 Epperhal Dec City Reservity State CA Zip 95679					⊠ Normal		Date 11/30/06			
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	U		-			·	Canis	ter Pre	ssure/Va	cuum
Leb i.D.	Field Sample I.D. (Location)	Can#	Date	Time	Analyses Requested		Initial	Final	Receipt	Fina:
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OJA	5U-2	Scrille		1217			3a.	8	9:014	. : (
03A;	SV-2-Doplicate	9584		1259			30	4	504	14/
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