



**Shell Oil Products US**

**RECEIVED**

10:40 am, Oct 19, 2009

Alameda County  
Environmental Health

October 16, 2009

**Re: 2009 Offsite Soil Vapor Gas Investigation Report**  
Former Shell-Branded Service Station  
15275 Washington Avenue  
San Leandro, California

Dear Mr. Jerry Wickham:

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.

Sincerely,  
Shell Oil Products US

A handwritten signature in black ink, appearing to read "Denis L. Brown", with a long horizontal flourish extending to the right.

Denis L. Brown  
Project Manager

October 16, 2009  
Delta Project SCA152751  
SAP: 129460

Mr. Jerry Wickham  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

**RE: 2009 Offsite Soil Vapor Gas Investigation Report**  
Former Shell-Branded Service Station  
15275 Washington Avenue  
San Leandro, California

Dear Mr. Wickham:

On behalf of Shell Oil Products US (Shell), Delta Consultants (Delta) has prepared this *2009 Offsite Soil Vapor Gas Investigation Report* for work completed at the site referenced above. Alameda County Health Care Services Agency (ACHCSA), in a letter dated March 31, 2009, requested that an additional soil vapor investigation be conducted at the site in order to further evaluate the vapor intrusion potential offsite from impacted soils. Work was completed under a work plan dated May 29, 2009 and approved by ACHCSA in a letter dated July 14, 2009 (Appendix A).



## **SITE DESCRIPTION AND BACKGROUND**

The subject site is located on the northwest corner of the intersection of Washington Avenue and Lewelling Boulevard in San Leandro (Figure 1). The area is a mix of residential (predominantly multi-family units) and commercial properties. A mobile home park is directly adjacent the site to the west. An Arco service station is still in operation across Lewelling Boulevard at the southwest corner of the intersection, and is currently an open leaking underground fuel tank (LUFT) case. The subject site, formerly a Shell-branded service station, currently has two businesses, an automotive emission testing facility (*Speedy Smog Check*) and tire service center (*Big O Tires*). Site details are shown on Figure 2. Soil vapor samples have been collected previously on and near the site in 1988, 1997, and 2008.

## **SOIL VAPOR GAS INVESTIGATION**

The following sections describe work that was completed during the soil vapor gas investigation conducted on September 23 and 24, 2009. Delta collected soil vapor samples at six locations, P-24 through P-29, indicated on Figure 2. Soil gas samples were collected from three discrete depths at each location, 3 feet below ground surface (bgs), 5 feet bgs, and 8 feet bgs. The locations were selected in order to meet the ACHCSA request to review the site assessment data and propose additional soil vapor sampling as necessary to identify the extent of potential offsite vapor intrusion concerns. All samples were collected as per the approved work plan and under Department of Toxic Substance Control (DTSC) guidelines.

## **Prefield Activities**

Delta obtained the necessary drilling and installation permits from the Alameda County Public Works Agency (Appendix B). Delta marked the location of each proposed soil vapor boring and contacted Underground Service Alert a minimum of 48 hours prior to drilling. In addition, a utility locating contractor was utilized to perform a geophysical survey of the proposed boring locations.

## **Boring Advancement and Soil Sampling Activities**

On September 8 and 9, 2009, air knife equipment operated by RSI Drilling was used to clear the sample boreholes in order to minimize the possibility of encountering unidentified underground utilities or hazards during vapor probe advancement. The boreholes were cleared to depths of 3, 5, and 8 feet bgs, and then backfilled with the soil cuttings. The sample boreholes were given two weeks to equilibrate in order to provide representative soil vapor conditions for sampling.

On September 23 and 24, 2009, Geoprobe drilling equipment operated by Gregg Drilling & Testing, Inc. (Gregg) was used to advance the soil vapor probe boreholes, which were 3-inches in diameter. A soil vapor probe was advanced at each boring location to depths of 3, 5, and 8 feet bgs using the Geoprobe equipment.

## **Soil Vapor Gas Sampling**

Soil vapor gas samples were collected on September 23 and 24, 2009. During sample collection, a Tedlar® bag was connected to a pump set at a flow rate of approximately 200 milliliters per minute, which was connected to Teflon tubing. The Teflon tubing was attached to the probe tip before advancing the tip to depth in order to minimize leaks.

## **Vapor Purging**

Prior to sample collection, the pump was turned on and three casing volumes of air from the sample tubing (dead air volume) was purged in order to remove any stagnant, non-representative air that existed within the sample tubing and equipment with minimal subsurface air influence, in accordance with DTSC guidelines. The purge time for one casing volume was calculated based on the length and diameter of the tubing and the flow rate, preset by the laboratory at an average of 200 milliliters/minute. Upon completion of purging, the pump was turned off.

## **Leak Test**

Delta field staff continually applied a vapor leak tracer compound (1,1-difluoroethane [Dust Off®]) during sample collection in order to evaluate the integrity of the system. Dust Off® was sprayed in the vicinity of all tubing joints within the sampling system, and an extension tube was placed on the spray-can in order to apply the tracer gas into the void space of the probe. Laboratory analytical results for 1,1-difluoroethane were used to determine the air-tightness of the sampling system. Tracer gas results are included in Table 1.

## **Soil Vapor Gas Sample Collection**

Following purging and leak detection, sample collection began by attaching the Tedlar® bag to the vacuum pump. After turning on the pump, the soil gas vapors were collected. When the Tedlar® bag was filled to capacity, the pump was turned off and the valve to the Tedlar® bag was closed. Approximately 1 liter of soil gas vapor was collected from each soil vapor probe location.

## **Soil Vapor Gas Analytical Results**

Tedlar® sample bags were submitted within 24 hours of sample collection to Calscience Environmental Laboratories, Inc., a California state-certified laboratory, under proper chain-of-custody documentation. Samples were analyzed for total petroleum hydrocarbon calculated as gasoline (TPH-g) by EPA Method TO-3M and

for benzene, toluene, ethylbenzene and total xylenes (BTEX compounds), methyl tert-butyl ether (MTBE), tert-butyl alcohol (TBA) and the leak test compound 1,1-difluoroethane by EPA Method TO-15M. Analyses for carbon dioxide and oxygen were omitted from the chain-of-custody in error, so results are not available. Vapor results from the latest sampling event were compared to Table E-2, shallow soil gas screening levels for evaluation of potential vapor intrusion concerns, from the Interim Final *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, issued November 2007 by the California Regional Water Quality Control Board, San Francisco Bay Region. The certified laboratory reports with chain-of-custody documentation are included as Appendix C. Historical soil vapor analytical results are included as Appendix D and Table E-2 is included as Appendix E.

Soil vapor gas results included the following:

- Petroleum hydrocarbons were detected in fifteen soil vapor gas samples. TPH-g was detected at concentrations ranging from 46,000 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) to 2,900,000  $\mu\text{g}/\text{m}^3$  (Figure 3). All reported concentrations were above both the lowest residential and commercial environmental screening levels (ESLs) of 10,000 and 29,000  $\mu\text{g}/\text{m}^3$ , respectively. 2008 soil vapor concentrations collected in 2008 ranged from 450 to 9,000,000  $\mu\text{g}/\text{m}^3$  and historical concentrations from the initial soil vapor sampling events in 1988 and 1997 ranged from 660 to 130,000,000  $\mu\text{g}/\text{m}^3$ .
- Benzene was detected in four soil vapor gas samples at concentrations ranging from 1.7 to 1.9  $\mu\text{g}/\text{m}^3$  (Figure 4); all other samples reported no detectable concentration at detection limits ranging from 1.6 to 64  $\mu\text{g}/\text{m}^3$ . No benzene sample results exceeded the lowest residential and commercial ESLs of 84 and 280  $\mu\text{g}/\text{m}^3$ , respectively. 2008 soil vapor concentrations for benzene collected in 2008 ranged from not detected (ND) to 12,000  $\mu\text{g}/\text{m}^3$  and historical concentrations of benzene from the initial soil vapor sampling events in 1988 and 1997 ranged from ND at a reporting limit of 6.7  $\mu\text{g}/\text{m}^3$  to 750,000  $\mu\text{g}/\text{m}^3$ . Toluene was reported in two samples at concentrations of 21 and 25  $\mu\text{g}/\text{m}^3$  and no detectable concentrations of ethylbenzene or total xylenes were reported.
- MTBE was not reported in any sample above the detection limit, which ranged from 7.2 to 350  $\mu\text{g}/\text{m}^3$ . 2008 soil vapor sample concentrations for MTBE were all reported as ND ranging from reporting limits of 2.8 to 600  $\mu\text{g}/\text{m}^3$  and historical concentrations of MTBE from the initial soil vapor sampling events in 1988 and 1997 ranged from ND at a reporting limit of 7.5  $\mu\text{g}/\text{m}^3$  to 700,000  $\mu\text{g}/\text{m}^3$ .
- The tracer gas 1,1-difluoroethane was detected in all soil vapor gas samples at concentrations ranging from 28  $\mu\text{g}/\text{m}^3$  to 4,800,000  $\mu\text{g}/\text{m}^3$ . In general, concentrations exceeding 10,000  $\mu\text{g}/\text{m}^3$  are considered to indicate a potential concern with sampling integrity; all but 3 samples reported concentrations of concern.

Soil vapor gas analytical results for all compounds are summarized in Table 1.

## CONCLUSIONS AND RECOMMENDATIONS

Soil vapor samples collected from depths of 3, 5, and 8 feet bgs at each sample location were collected to evaluate the potential for indoor air intrusion from additional shallow offsite soils. TPH-g was detected in fifteen of the eighteen samples and benzene was detected in four samples; MTBE was not detected in any samples. Mean concentrations were generally lower than previous samples collected nearer to the source material; however, it is likely the majority of samples may have reported lower concentrations than would be considered representative due to possible leaks in the sampling system setup or the introduction of trace amounts of 1,1-difluoroethane (tracer gas) into the sample connections during setup. The samples also show variation in vertical profile; some samples demonstrated attenuation at depth (P-25 and P-29); samples collected at P-28 and P-24 showed the highest values at depths of 3 feet and 5 feet, respectively, but didn't have a linear vertical profile. One sample reported a reverse attenuation trend with the highest concentration at 8 feet (P-26). Sample P-27 reported similar concentrations at 3 feet and 8 feet, with a lower concentration at 5 feet. Because of the ambiguity in sample results, Delta recommends a repeated sampling event with the following changes:

- Install soil vapor implants (three nested in each borehole at depths of 3, 5 and 8 feet) to allow for subsequent sampling to determine if attenuation is occurring.
- Install nested soil vapor implants (SVG-1 through SVG-9) in the vicinity of historic high concentrations of soil vapor and groundwater, with coverage of both onsite and offsite locations. Proposed sample locations are included on Figure 5. An effort will be made to locate the samples so they are accessible but not in high-traffic areas, and provide good representative samples. The nested probes will be placed in well boxes to protect them.
- Initiate field work to install new probes in the proposed sample locations within 45 days of approval of this recommendation; soil vapor probes will be left in place and sampled following stabilization. A second sampling event is not scheduled at this time and may be determined based on an eventual schedule for additional site activities. A guideline for soil gas collection using Tedlar® bags is included as Appendix F.

A soil vapor extraction pilot test was completed at the site and a report is currently in progress, to be issued by mid-November. At that time, Delta will make a recommendation for active remedial measures to address persistent soil vapor gas concerns at the site and adjacent trailer park. Following remediation, re-sampling for soil vapor is recommended to determine the effectiveness of the suggested remedial measures.

## **REMARKS**

The recommendations contained in this document represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently acceptable professional standards. This document 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 that contract or outlined in this document were performed. This document is intended only for the use of Delta's Client and anyone else specifically listed on this document. Delta will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this document.

If you have any questions or comments regarding this report, please contact Suzanne McClurkin-Nelson (Delta) at (408) 826-1875 or Denis Brown (Shell) at (707) 865-0251.

Sincerely,  
**Delta Consultants, Inc.**



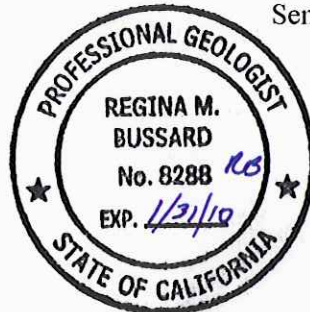
Abhik Dutta  
Senior Staff Geologist



Suzanne McClurkin-Nelson  
Senior Project Manager



Regina Bussard, P.G.  
Senior Project Specialist



cc: Denis Brown, Shell Oil Products US, Carson  
Mike Bakaldin, San Leandro Fire Department, San Leandro  
Salel Enterprises c/o Foothill Hardware, Oakland

#### **ATTACHMENTS:**

- Table 1 – Soil Vapor Sampling Analytical Data
- Figure 1 – Site Location Map
- Figure 2 – Site Layout with Soil Vapor Sample Locations
- Figure 3 – TPH-g Concentration Map
- Figure 4 – Benzene Concentration Map
- Figure 5 – Proposed Soil Vapor Gas Sample Probe Locations
- Appendix A - Alameda County Health Care Services Agency Letter
- Appendix B - Alameda County Public Works Well Permit
- Appendix C - Certified Analytical Reports with Chain-of-Custody Documentation
- Appendix D – Historical Soil Vapor Data
- Appendix E – Table E-2 - Shallow Soil Gas Screening Levels for Evaluation of Potential Vapor Intrusion Concerns
- Appendix F – Guidelines for Soil Gas Collection in Tedlar® Bags

## **TABLE**

**Table 1**  
**Soil Vapor Sampling Analytical Data**  
Former Shell Service Station  
15275 Washington Avenue  
San Leandro, California

Sample Location (depth, feet)	Date	TPH-g ( $\mu\text{g}/\text{m}^3$ )	Benzene ( $\mu\text{g}/\text{m}^3$ )	Toluene ( $\mu\text{g}/\text{m}^3$ )	Ethyl-benzene ( $\mu\text{g}/\text{m}^3$ )	Total Xylenes ( $\mu\text{g}/\text{m}^3$ )	MTBE ( $\mu\text{g}/\text{m}^3$ )	TBA ( $\mu\text{g}/\text{m}^3$ )	1,1-difluoroethane ( $\mu\text{g}/\text{m}^3$ ) <sup>a</sup>
P-24 (3)	09/23/09	160,000	1.9	25	ND<2.2	ND<8.7	ND<7.2	ND<15	570,000
P-24 (5)	09/23/09	340,000	ND<3.2	ND<38	ND<4.3	ND<17	ND<14	ND<30	1,000,000
P-24 (8)	09/23/09	48,000	1.7	ND<19	ND<2.2	ND<8.7	ND<7.2	ND<15	3,900,000
P-25 (3)	09/23/09	2,900,000	ND<64	ND<750	ND<87	ND<350	ND<7.2	ND<610	2,600,000
P-25 (5)	09/23/09	ND<5,700	ND<1.6	ND<19	ND<2.2	ND<8.7	ND<19	ND<15	4,300
P-25 (8)	09/23/09	ND<5,700	ND<1.6	ND<19	ND<2.2	ND<8.7	ND<7.2	ND<15	210
P-26 (3)	09/23/09	ND<5,700	1.8	21	ND<2.2	ND<8.7	ND<7.2	ND<15	28
P-26 (5)	09/23/09	610,000	ND<6.4	ND<75	ND<8.7	ND<35	ND<29	ND<61	1,300,000
P-26 (8)	09/23/09	2,600,000	ND<64	ND<750	ND<87	ND<350	ND<350	ND<610	4,800,000
P-27 (3)	09/24/09	410,000	ND<4.0	ND<47	ND<5.4	ND<22	ND<18	ND<38	710,000
P-27 (5)	09/24/09	120,000	ND<1.6	ND<19	ND<2.2	ND<8.7	ND<7.2	ND<15	14,000
P-27 (8)	09/24/09	570,000	ND<4.0	ND<47	ND<5.4	ND<22	ND<18	ND<38	860,000
P-28 (3)	09/24/09	1,200,000	ND<8.0	ND<94	ND<11	ND<43	ND<36	ND<76	2,200,000
P-28 (5)	09/24/09	58,000	1.8	ND<19	ND<2.2	ND<8.7	ND<7.2	ND<15	11,000
P-28 (8) <sup>b</sup>	09/24/09	270,000	ND<3.2	ND<38	ND<4.3	ND<17	ND<14	ND<30	42,000
P-29 (3)	09/24/09	1,200,000	ND<8.0	ND<94	ND<11	ND<43	ND<36	ND<76	2,000,000
P-29 (5)	09/24/09	660,000	ND<6.4	ND<75	ND<8.7	ND<35	ND<29	ND<61	1,300,000
P-29 (8) <sup>b</sup>	09/24/09	46,000	ND<1.6	ND<19	ND<2.2	ND<8.7	ND<7.2	ND<15	83,000

**Abbreviations and Notes:**

TPH-g - Total petroleum hydrocarbons as gasoline

MTBE - Methyl-tert butyl ether

TBA - Tert-butyl alcohol

( $\mu\text{g}/\text{m}^3$ ) - micrograms per cubic meter

ND - Not detected above shown detection limit

a. Concentrations exceeding 10,000  $\mu\text{g}/\text{m}^3$  generally indicate the presence of a leak

b. Dilution analysis was performed outside the recommended holding time for tracer gas compound (1,1-difluoroethane)



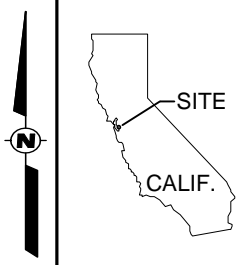
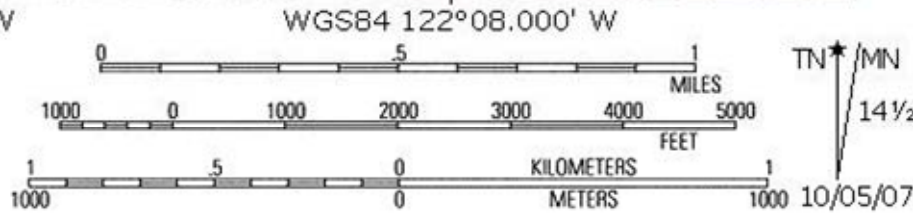
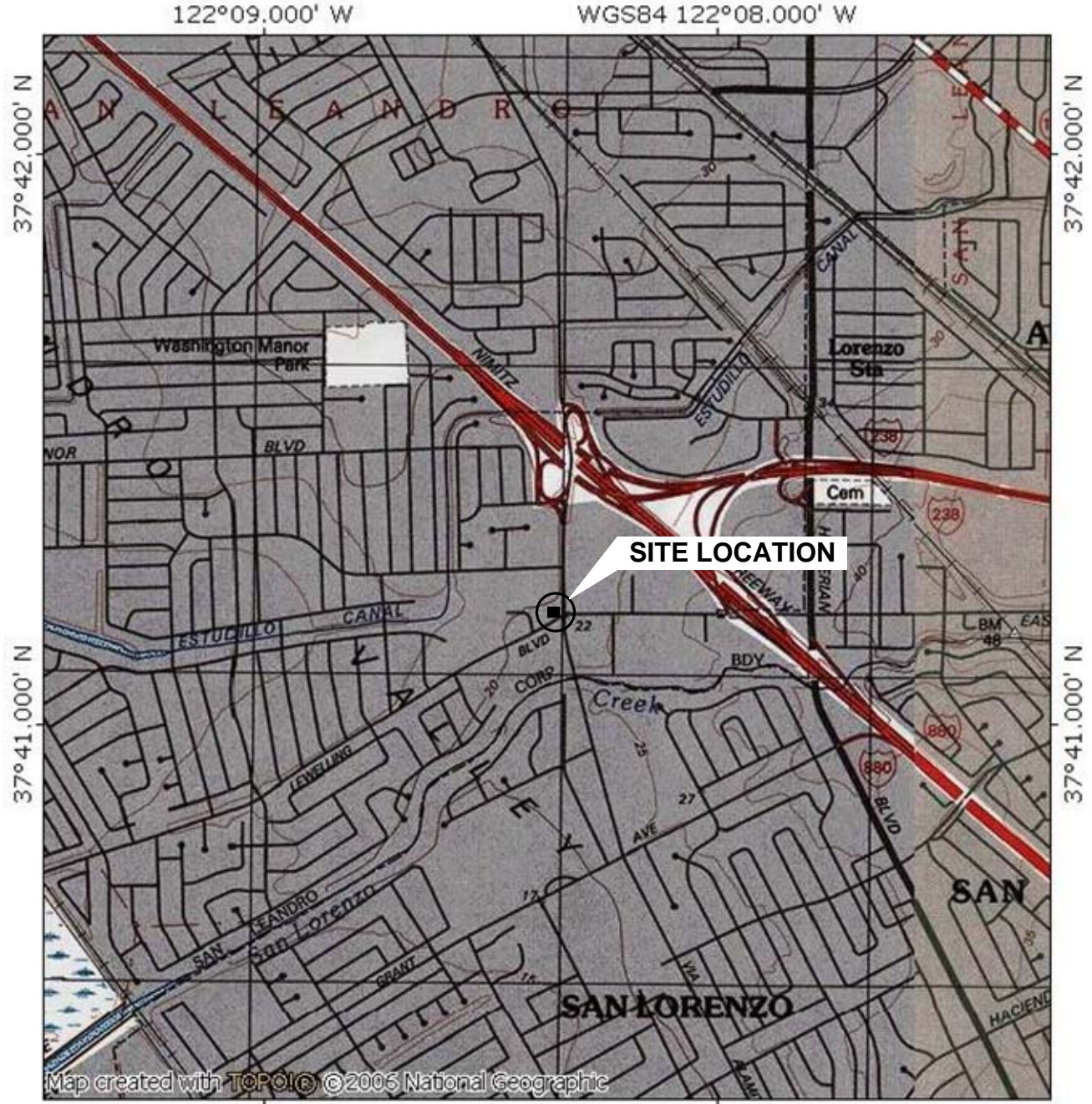
## **FIGURES**

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CHECKED BY

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J.F.F.



SHELL OIL PRODUCTS US  
FORMER SHELL SERVICE STATION  
SAN LEANDRO, CALIFORNIA

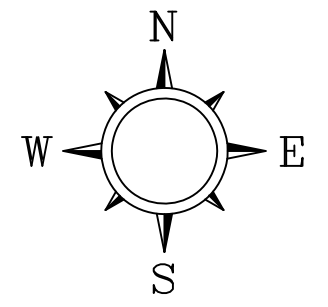
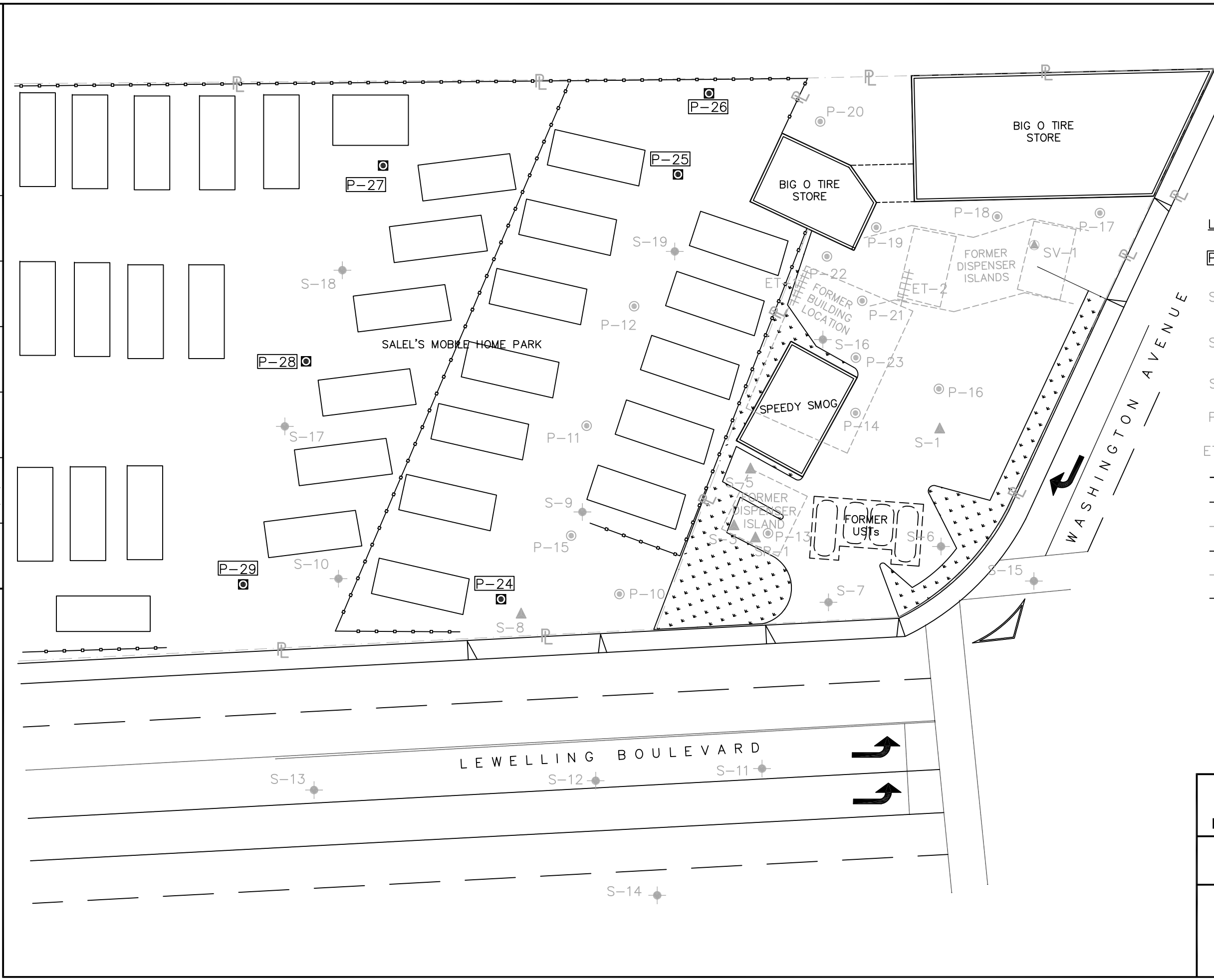
FIGURE 1  
SITE LOCATION MAP  
15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

PROJECT NUMBER  
SCA15275-1

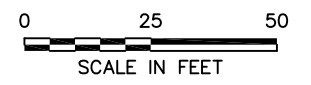
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AD 5/26/09



- LEGEND**
- P-24 PROPOSED SOIL VAPOR PROBE LOCATION AND DESIGNATION
  - S-15 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
  - S-1 GROUNDWATER MONITORING WELL MODIFIED FOR SOIL VAPOR EXTRACTION
  - SV-1 SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
  - P-18 SOIL VAPOR PROBE LOCATION AND DESIGNATION
  - ET-1 CURRENT BUILDING LOCATION AND DESIGNATION
  - EXTENDED TEST WELL
  - TRAILER PARK STRUCTURE
  - FORMER BUILDING
  - FORMER UST LOCATION
  - PROPERTY LINE
  - FENCING



SHELL OIL PRODUCTS U.S.  
FORMER SHELL-BRANDED SERVICE STATION  
SAN LEANDRO, CALIFORNIA

**FIGURE 2**  
**SITE LAYOUT WITH**  
**SOIL VAPOR SAMPLE LOCATIONS**

15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

PROJECT NUMBER SCA152751A

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0 20 40  
SCALE IN FEET

P-27	
DEPTH (FEET)	TPH-g ( $\mu\text{g}/\text{m}^3$ )
3	410,000
5	120,000
8	570,000

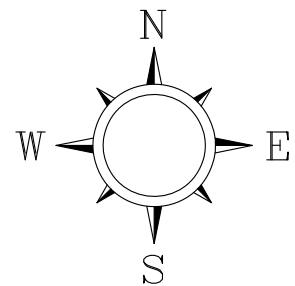
P-25	
DEPTH (FEET)	TPH-g ( $\mu\text{g}/\text{m}^3$ )
3	2,900,000
5	ND<5,700
8	ND<5,700

P-26	
DEPTH (FEET)	TPH-g ( $\mu\text{g}/\text{m}^3$ )
3	ND<5,700
5	610,000
8	2,600,000

P-28	
DEPTH (FEET)	TPH-g ( $\mu\text{g}/\text{m}^3$ )
3	1,200,000
5	58,000
8	270,000

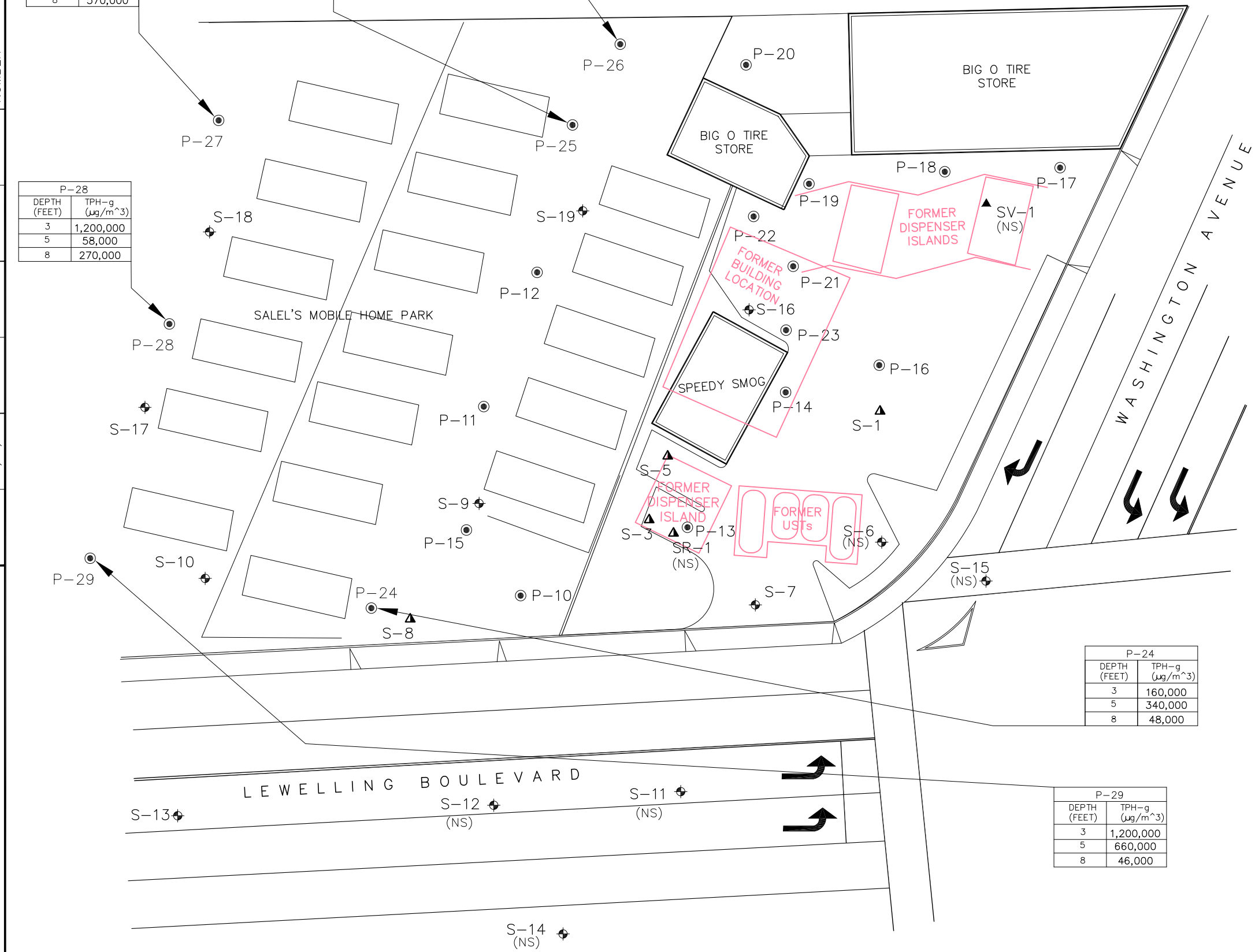
P-24	
DEPTH (FEET)	TPH-g ( $\mu\text{g}/\text{m}^3$ )
3	160,000
5	340,000
8	48,000

P-29	
DEPTH (FEET)	TPH-g ( $\mu\text{g}/\text{m}^3$ )
3	1,200,000
5	660,000
8	46,000



LEGEND

- S-6 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- S-1 GROUNDWATER MONITORING WELL MODIFIED FOR SOIL VAPOR EXTRACTION
- SV-1 SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
- P-18 SOIL VAPOR SAMPLE LOCATIONS
- ND< NOT DETECTED ABOVE LIMIT NOTED
- ( $\mu\text{g}/\text{m}^3$ ) MICROGRAMS PER METER CUBED
- TPH-g TOTAL PETROLEUM HYDROCARBONS AS GASOLINE



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SAN LEANDRO, CALIFORNIA

FIGURE 3

THP-g CONCENTRATION MAP

15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

PROJECT NUMBER  
SCA152751A

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AD

SCALE IN FEET  
0 20 40

P-27	
DEPTH (FEET)	BENZENE ( $\mu\text{g}/\text{m}^3$ )
3	ND<4.0
5	ND<1.6
8	ND<4.0

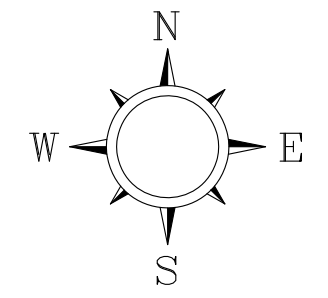
P-25	
DEPTH (FEET)	BENZENE ( $\mu\text{g}/\text{m}^3$ )
3	ND<6.4
5	ND<1.6
8	ND<1.6

P-26	
DEPTH (FEET)	BENZENE ( $\mu\text{g}/\text{m}^3$ )
3	1.8
5	ND<6.4
8	ND<6.4

P-28	
DEPTH (FEET)	BENZENE ( $\mu\text{g}/\text{m}^3$ )
3	ND<8.0
5	1.8
8	ND<3.2

P-24	
DEPTH (FEET)	BENZENE ( $\mu\text{g}/\text{m}^3$ )
3	1.9
5	ND<3.2
8	1.7

P-29	
DEPTH (FEET)	BENZENE ( $\mu\text{g}/\text{m}^3$ )
3	ND<8.0
5	ND<6.4
8	ND<1.6



- LEGEND**
- S-6 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
  - S-1 GROUNDWATER MONITORING WELL MODIFIED FOR SOIL VAPOR EXTRACTION
  - SV-1 SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
  - P-18 SOIL VAPOR SAMPLE LOCATIONS
  - ND< NOT DETECTED ABOVE LIMIT NOTED
  - ( $\mu\text{g}/\text{m}^3$ ) MICROGRAMS PER METER CUBED



SHELL OIL PRODUCTS  
FORMER SHELL-BRANDED SERVICE STATION  
SAN LEANDRO, CALIFORNIA

FIGURE 4

BENZENE CONCENTRATION MAP

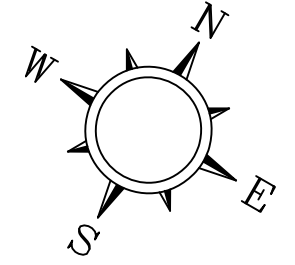
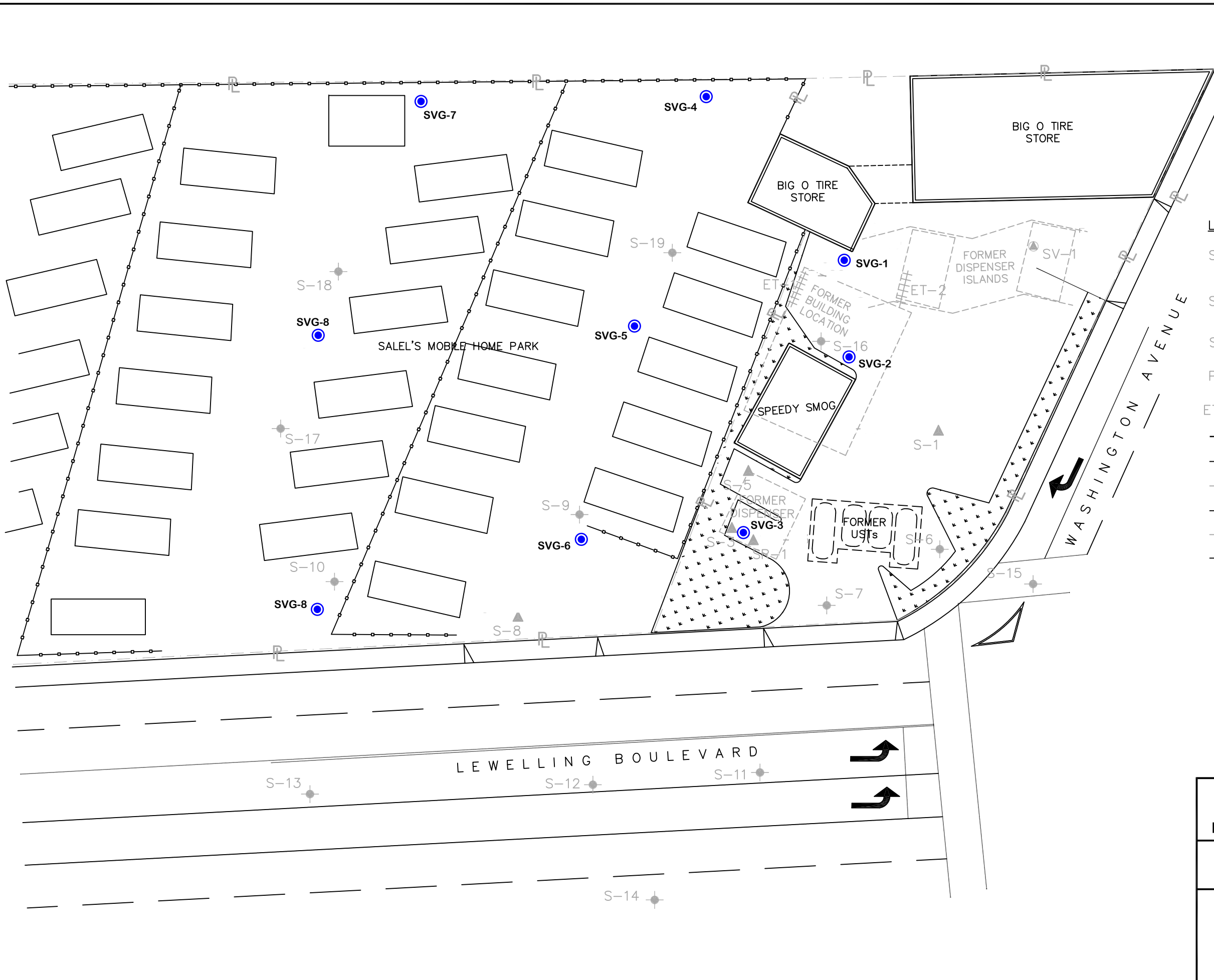
15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

PROJECT NUMBER  
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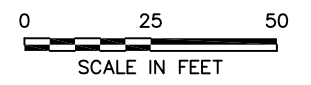
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- LEGEND**
- S-15 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
  - S-1 GROUNDWATER MONITORING WELL MODIFIED FOR SOIL VAPOR EXTRACTION
  - SV-1 SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION
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  - EXTENDED TEST WELL
  - TRAILER PARK STRUCTURE
  - FORMER BUILDING
  - FORMER UST LOCATION
  - PROPERTY LINE
  - FENCING
  - SVG-2** **PROPOSED NESTED SOIL GAS IMPLANT LOCATIONS**



  
**DELTA CONSULTANTS**

SHELL OIL PRODUCTS U.S.  
FORMER SHELL-BRANDED SERVICE STATION  
SAN LEANDRO, CALIFORNIA

**FIGURE 5**  
**PROPOSED SOIL VAPOR GAS SAMPLE PROBE LOCATIONS**

15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

**APPENDIX A**

**ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY LETTER**



RECEIVED  
JUL 17 2009  
BY: *AP/CO*

ENVIRONMENTAL HEALTH SERVICES  
ENVIRONMENTAL PROTECTION  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577  
(510) 567-6700  
FAX (510) 337-93

July 14, 2009

Mr. Denis Brown  
Shell Oil Products US  
20945 S. Wilmington Ave.  
Carson, CA 90810-1039

Mr. Frank Salel  
Salel Enterprises  
P.O. Box 5099  
Oakland, CA 94605

Subject: Fuel Leak Case No. RO0000372 and Geotracker Global ID T0600101226, Shell#129460, 15275 Washington Avenue, San Leandro, CA 94579 – Work Plan Approval

Dear Mr. Brown and Mr. Salel:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site including the work plans entitled, "*Revised Groundwater Sampling Work Plan, Former Shell-Branded Service Station, 15275 Washington Avenue, San Leandro, California,*" dated May 21, 2009, "*Revised Soil Vapor Extraction Pilot Test Work Plan, Former Shell-Branded Service Station, 15275 Washington Avenue, San Leandro, California,*" dated May 21, 2009 and, "*Additional Soil Vapor Survey Work Plan, Former Shell-Branded Service Station, 15275 Washington Avenue, San Leandro, California,*" dated May 29, 2009. The work plans were prepared on Shell's behalf by Delta Environmental.

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

#### **TECHNICAL COMMENTS**

1. **Proposed Purge and No Purge Sampling.** The proposal in the "*Revised Groundwater Sampling Work Plan,*" to conduct both purge and no purge sampling in selected wells to assure that representative samples are being collected is acceptable. Please present the results of the purge and no purge sampling in the Semi-Annual Groundwater Monitoring Report – Third Quarter 2009 requested below.
2. **Soil Vapor Extraction (SVE) Pilot Test.** The proposed scope of work in the "*Revised Soil Vapor Extraction Pilot Test Work Plan,*" dated May 29, 2009 is acceptable and may be implemented as proposed. Please present results from the pilot test in the SVE Pilot Test Report requested below.



Denis Brown  
Frank Salei  
RO0000088  
July 14, 2009  
Page 2

3. **Additional Soil Vapor Sampling.** The proposed scope of work in the "*Additional Soil Vapor Survey Work Plan*," dated May 29, 2009 is acceptable and may be implemented as proposed. Please present results from the pilot test in the SVE Pilot Test Report requested below.

### TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **October 16, 2009** – Soil Vapor Sampling Report
- **October 31, 2009** – Semi-Annual Groundwater Monitoring Report – Third Quarter 2009
- **November 19, 2009** – SVE Pilot Test Report

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

### ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." 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. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all 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 monitoring wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements ([http://www.swrcb.ca.gov/ust/cleanup/electronic\\_reporting](http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting)).

### 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

Denis Brown  
Frank Salel  
RO0000088  
July 14, 2009  
Page 3

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.

#### UNDERGROUND STORAGE TANK CLEANUP FUND

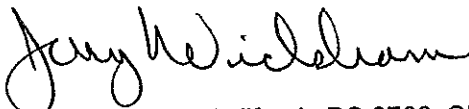
Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

#### 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 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) 567-6791 or send me an electronic mail message at [jerry.wickham@acgov.org](mailto:jerry.wickham@acgov.org).

Sincerely,



Jerry Wickham, California PG 3766, CEG 1177, and CHG 297  
Senior Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Suzanne McClurkin-Nelson

Denis Brown  
Frank Salel  
RO0000088  
July 14, 2009  
Page 4

Delta Environmental  
312 Piercy Road  
San Jose, CA 95138

Regina Bussard  
Delta Environmental  
312 Piercy Road  
San Jose, CA 95138

Donna Drogos, ACEH  
Jerry Wickham, ACEH  
File

<b>Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)</b>	<b>ISSUE DATE:</b> July 5, 2005
	<b>REVISION DATE:</b> March 27, 2009
	<b>PREVIOUS REVISIONS:</b> December 16, 2005, October 31, 2005
<b>SECTION:</b> Miscellaneous Administrative Topics & Procedures	<b>SUBJECT:</b> Electronic Report Upload (ftp) Instructions

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.

#### REQUIREMENTS

- Entire report including cover letter must be submitted to the ftp site as a **single portable document format (PDF) with no password protection**. (Please do not submit reports as attachments to electronic mail.)
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- Signature pages and perjury statements **must** be included and have either original or electronic signature.
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:  
RO#\_Report Name\_Year-Month-Date (e.g., RO#5555\_WorkPlan\_2005-06-14)

#### Additional Recommendations

- A separate copy of the tables in the document should be submitted by e-mail to your Caseworker in **Excel** format. These are for use by assigned Caseworker only.

#### Submission Instructions

- 1) Obtain User Name and Password:
  - a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
    - i) Send an e-mail to [dehloptoxic@acgov.org](mailto:dehloptoxic@acgov.org)
    - Or
    - ii) Send a fax on company letterhead to (510) 337-9335, to the attention of My Le Huynh.
  - b) In the subject line of your request, be sure to include "**ftp PASSWORD REQUEST**" and in the body of your request, include the **Contact Information, Site Addresses, and the Case Numbers (RO# available in Geotracker) you will be posting for.**
- 2) Upload Files to the ftp Site
  - a) Using Internet Explorer (IE4+), go to <ftp://alcoftp1.acgov.org>
    - (i) Note: Netscape and Firefox browsers will not open the FTP site.
  - b) Click on File, then on Login As.
  - c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
  - d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
  - e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.
- 3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
  - a) Send email to [dehloptoxic@acgov.org](mailto:dehloptoxic@acgov.org) notify us that you have placed a report on our ftp site.
  - b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
  - c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO# use the street address instead.
  - d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

**APPENDIX B**

**ALAMEDA COUNTY PUBLIC WORKS WELL PERMIT**

# Alameda County Public Works Agency - Water Resources Well Permit



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

Application Approved on: 09/24/2009 By jamesy

Permit Numbers: W2009-0894  
Permits Valid from 09/23/2009 to 09/24/2009

Application Id: 1251506410701  
Site Location: 747 Lewelling Blvd.

City of Project Site: San Leandro

Project Start Date: San Leandro  
09/23/2009  
Assigned Inspector: Contact James Yoo at (510) 670-6633 or jamesy@acpwa.org

Completion Date: 09/24/2009

Applicant: Delta Consultants - Abhik Dutta  
312 Piercy Rd, San Jose, CA 95138

Phone: 408-826-1869

Property Owner: Frank Salel  
871 38th Ave, Santa Cruz, CA 95062

Phone: --

Client: Abhik Dutta  
312 Piercy Rd, San Jose, CA 95138

Phone: 408-826-1869

Contact: Abhik Dutta

Phone: --  
Cell: --

Receipt Number: WR2009-0353 Total Due: \$265.00  
Payer Name : Regigna Bussard Total Amount Paid: \$265.00  
Paid By: MC PAID IN FULL

## Works Requesting Permits:

Borehole(s) for Geo Probes-Sampling 24 to 72 hours only - 18 Boreholes  
Driller: GREGG Drilling - Lic #: 485165 - Method: DP

Work Total: \$265.00

### Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2009-0894	09/24/2009	12/22/2009	18	4.00 in.	8.00 ft

### 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. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
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 James Yoo for an inspection time at 510-670-6633 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. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled,

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

properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

6. 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.

7. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

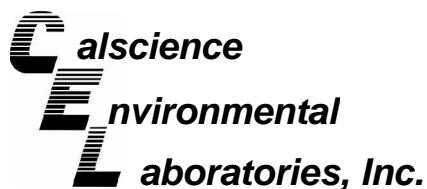
8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

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**APPENDIX C**

**CERTIFIED ANALYTICAL REPORTS  
WITH CHAIN-OF-CUSTODY DOCUMENTATION**





October 06, 2009

Sunzanne McClukin  
Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Subject: **CalScience Work Order No.: 09-09-1804**  
**Client Reference: 15275 Washington, San Leandro, CA**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 9/24/2009 and analyzed in accordance with the attached chain-of-custody.

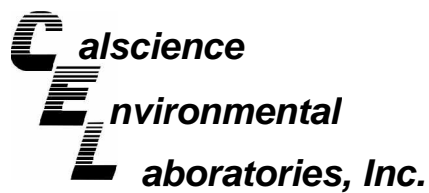
Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows 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,

A handwritten signature in cursive script that reads 'Philip Samelle for'.

CalScience Environmental  
Laboratories, Inc.  
Xuan H. Dang  
Project Manager



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/24/09  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-3M

Project: 15275 Washington, San Leandro, CA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-24 (3)	09-09-1804-1-A	09/23/09 10:20	Air	GC 39	N/A	09/24/09 13:52	090924L02

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	43	1.5	1		ppm (v/v)

P-24 (5)	09-09-1804-2-A	09/23/09 10:25	Air	GC 39	N/A	09/24/09 14:10	090924L02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	89	1.5	1		ppm (v/v)

P-24 (8)	09-09-1804-3-A	09/23/09 10:30	Air	GC 39	N/A	09/24/09 14:19	090924L02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	13	1.5	1		ppm (v/v)

P-25 (3)	09-09-1804-4-A	09/23/09 12:10	Air	GC 39	N/A	09/24/09 15:28	090924L02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	770	3.8	2.5		ppm (v/v)

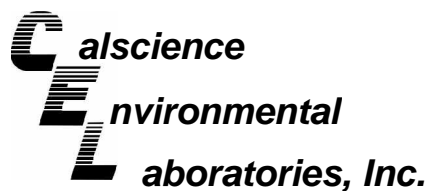
P-25 (5)	09-09-1804-5-A	09/23/09 12:15	Air	GC 39	N/A	09/24/09 14:37	090924L02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	1.5	1		ppm (v/v)

P-25 (8)	09-09-1804-6-A	09/23/09 12:20	Air	GC 39	N/A	09/24/09 16:12	090924L02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	1.5	1		ppm (v/v)

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



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/24/09  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-3M

Project: 15275 Washington, San Leandro, CA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-26 (3)	09-09-1804-7-A	09/23/09 14:05	Air	GC 39	N/A	09/24/09 14:57	090924L02

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	ND	1.5	1		ppm (v/v)

P-26 (5)	09-09-1804-8-A	09/23/09 14:10	Air	GC 39	N/A	09/24/09 15:06	090924L02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	160	1.5	1		ppm (v/v)

P-26 (8)	09-09-1804-9-A	09/23/09 14:15	Air	GC 39	N/A	09/24/09 15:39	090924L02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	690	3.8	2.5		ppm (v/v)

Method Blank	098-01-005-1,965	N/A	Air	GC 39	N/A	09/24/09 09:30	090924L02
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	ND	1.5	1		ppm (v/v)

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

## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/24/09  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-15M  
Units: ppm (v/v)

Project: 15275 Washington, San Leandro, CA

Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-24 (3)	09-09-1804-1-A	09/23/09 10:20	Air	GC/MS K	N/A	09/25/09 13:23	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0006	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	0.0066	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	210	8.0	4000	
Xylenes (total)	ND	0.0020	1						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	102	57-129			1,2-Dichloroethane-d4	102	47-137		
Toluene-d8	97	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-24 (5)	09-09-1804-2-A	09/23/09 10:25	Air	GC/MS K	N/A	09/25/09 14:09	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	2		Tert-Butyl Alcohol (TBA)	ND	0.010	2	
Ethylbenzene	ND	0.0010	2		Toluene	ND	0.010	2	
Methyl-t-Butyl Ether (MTBE)	ND	0.0040	2		1,1-Difluoroethane	380	8.0	4000	
Xylenes (total)	ND	0.0040	2						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	106	57-129			1,2-Dichloroethane-d4	95	47-137		
Toluene-d8	100	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-24 (8)	09-09-1804-3-A	09/23/09 10:30	Air	GC/MS K	N/A	09/25/09 14:55	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0005	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	ND	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	1400	40	20000	
Xylenes (total)	ND	0.0020	1						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	104	57-129			1,2-Dichloroethane-d4	96	47-137		
Toluene-d8	99	78-156							

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



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/24/09  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-15M  
Units: ppm (v/v)

Project: 15275 Washington, San Leandro, CA

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-25 (3)	09-09-1804-4-A	09/23/09 12:10	Air	GC/MS K	N/A	09/25/09 15:42	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.020	40		Tert-Butyl Alcohol (TBA)	ND	0.20	40	
Ethylbenzene	ND	0.020	40		Toluene	ND	0.20	40	
Methyl-t-Butyl Ether (MTBE)	ND	0.080	40		1,1-Difluoroethane	9700	340	170000	
Xylenes (total)	ND	0.080	40						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	104	57-129			1,2-Dichloroethane-d4	96	47-137		
Toluene-d8	97	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-25 (5)	09-09-1804-5-A	09/23/09 12:15	Air	GC/MS K	N/A	09/25/09 03:13	090924L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	ND	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	1.6	0.080	40	
Xylenes (total)	ND	0.0020	1						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	111	57-129			1,2-Dichloroethane-d4	101	47-137		
Toluene-d8	98	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-25 (8)	09-09-1804-6-A	09/23/09 12:20	Air	GC/MS K	N/A	09/25/09 04:00	090924L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	ND	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	0.079	0.0020	1	
Xylenes (total)	ND	0.0020	1						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	110	57-129			1,2-Dichloroethane-d4	100	47-137		
Toluene-d8	99	78-156							

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



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/24/09  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-15M  
Units: ppm (v/v)

Project: 15275 Washington, San Leandro, CA

Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-26 (3)	09-09-1804-7-A	09/23/09 14:05	Air	GC/MS K	N/A	09/25/09 04:46	090924L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.00055	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	0.0056	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	0.010	0.0020	1	
Xylenes (total)	ND	0.0020	1						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	109	57-129			1,2-Dichloroethane-d4	95	47-137		
Toluene-d8	99	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-26 (5)	09-09-1804-8-A	09/23/09 14:10	Air	GC/MS K	N/A	09/25/09 16:28	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0020	4		Tert-Butyl Alcohol (TBA)	ND	0.020	4	
Ethylbenzene	ND	0.0020	4		Toluene	ND	0.020	4	
Methyl-t-Butyl Ether (MTBE)	ND	0.0080	4		1,1-Difluoroethane	480	20	10000	
Xylenes (total)	ND	0.0080	4						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	104	57-129			1,2-Dichloroethane-d4	95	47-137		
Toluene-d8	98	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-26 (8)	09-09-1804-9-A	09/23/09 14:15	Air	GC/MS K	N/A	09/25/09 17:14	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.020	40		Tert-Butyl Alcohol (TBA)	ND	0.20	40	
Ethylbenzene	ND	0.020	40		Toluene	ND	0.20	40	
Methyl-t-Butyl Ether (MTBE)	ND	0.080	40		1,1-Difluoroethane	1800	68	34000	
Xylenes (total)	ND	0.080	40						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,4-Bromofluorobenzene	101	57-129			1,2-Dichloroethane-d4	94	47-137		
Toluene-d8	98	78-156							

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



**Analytical Report**



Delta Environmental Consultants, Inc.  
 312 Piercy Rd.  
 San Jose, CA 95138-1401

Date Received: 09/24/09  
 Work Order No: 09-09-1804  
 Preparation: N/A  
 Method: EPA TO-15M  
 Units: ppm (v/v)

Project: 15275 Washington, San Leandro, CA

Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-981-24</b>	<b>N/A</b>	<b>Air</b>	<b>GC/MS K</b>	<b>N/A</b>	<b>09/24/09 14:22</b>	<b>090924L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	ND	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	ND	0.0020	1	
Xylenes (total)	ND	0.0020	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	100	57-129			1,2-Dichloroethane-d4	96	47-137		
Toluene-d8	98	78-156							

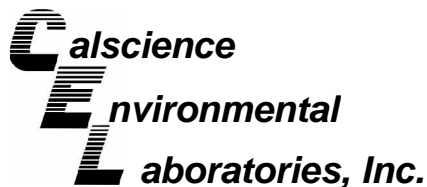
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-981-40</b>	<b>N/A</b>	<b>Air</b>	<b>GC/MS K</b>	<b>N/A</b>	<b>09/25/09 11:51</b>	<b>090925L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	ND	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	ND	0.0020	1	
Xylenes (total)	ND	0.0020	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	100	57-129			1,2-Dichloroethane-d4	98	47-137		
Toluene-d8	98	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-981-41</b>	<b>N/A</b>	<b>Air</b>	<b>GC/MS V</b>	<b>N/A</b>	<b>09/26/09 14:16</b>	<b>090926L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00050	1		Tert-Butyl Alcohol (TBA)	ND	0.0050	1	
Ethylbenzene	ND	0.00050	1		Toluene	ND	0.0050	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1		1,1-Difluoroethane	ND	0.0020	1	
Xylenes (total)	ND	0.0020	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	93	57-129			1,2-Dichloroethane-d4	99	47-137		
Toluene-d8	98	78-156							

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



## Quality Control - Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/24/09  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-3M

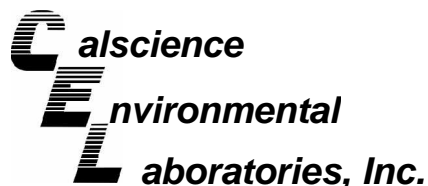
Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
P-24 (3)	Air	GC 39	N/A	09/24/09	090924D02

<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	43	45	6	0-20	

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: N/A  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-15M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-981-24	Air	GC/MS K	N/A	09/24/09	090924L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	104	118	60-156	44-172	13	0-40	
Carbon Tetrachloride	98	110	64-154	49-169	12	0-32	
1,2-Dibromoethane	109	121	54-144	39-159	10	0-36	
1,2-Dichlorobenzene	109	121	34-160	13-181	10	0-47	
1,2-Dichloroethane	97	107	69-153	55-167	9	0-30	
1,2-Dichloropropane	109	125	67-157	52-172	13	0-35	
1,4-Dichlorobenzene	106	118	36-156	16-176	11	0-47	
c-1,3-Dichloropropene	127	144	61-157	45-173	13	0-35	
Ethylbenzene	113	126	52-154	35-171	10	0-38	
o-Xylene	111	123	52-148	36-164	10	0-38	
p/m-Xylene	90	100	42-156	23-175	11	0-41	
Tetrachloroethene	104	115	56-152	40-168	10	0-40	
Toluene	110	122	56-146	41-161	10	0-43	
Trichloroethene	102	115	63-159	47-175	12	0-34	
1,1,2-Trichloroethane	109	126	65-149	51-163	14	0-37	
Vinyl Chloride	101	110	45-177	23-199	9	0-36	

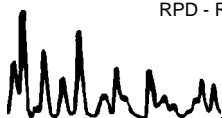
Total number of LCS compounds : 16

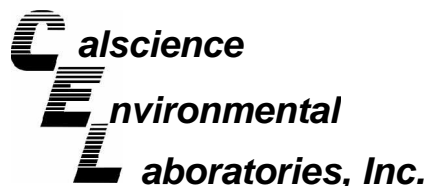
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: N/A  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-15M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-981-40	Air	GC/MS K	N/A	09/25/09	090925L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	105	124	60-156	44-172	16	0-40	
Carbon Tetrachloride	106	123	64-154	49-169	15	0-32	
1,2-Dibromoethane	113	130	54-144	39-159	14	0-36	
1,2-Dichlorobenzene	117	134	34-160	13-181	14	0-47	
1,2-Dichloroethane	104	116	69-153	55-167	11	0-30	
1,2-Dichloropropane	111	130	67-157	52-172	16	0-35	
1,4-Dichlorobenzene	113	131	36-156	16-176	15	0-47	
c-1,3-Dichloropropene	130	154	61-157	45-173	17	0-35	
Ethylbenzene	116	135	52-154	35-171	15	0-38	
o-Xylene	117	134	52-148	36-164	14	0-38	
p/m-Xylene	94	109	42-156	23-175	14	0-41	
Tetrachloroethene	107	123	56-152	40-168	15	0-40	
Toluene	111	128	56-146	41-161	14	0-43	
Trichloroethene	105	124	63-159	47-175	17	0-34	
1,1,2-Trichloroethane	112	134	65-149	51-163	18	0-37	
Vinyl Chloride	106	119	45-177	23-199	12	0-36	

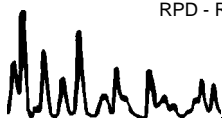
Total number of LCS compounds : 16

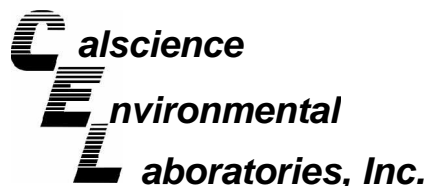
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: N/A  
Work Order No: 09-09-1804  
Preparation: N/A  
Method: EPA TO-15M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-981-41	Air	GC/MS V	N/A	09/26/09	090926L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	101	102	60-156	44-172	1	0-40	
Carbon Tetrachloride	117	122	64-154	49-169	4	0-32	
1,2-Dibromoethane	114	114	54-144	39-159	0	0-36	
1,2-Dichlorobenzene	111	108	34-160	13-181	3	0-47	
1,2-Dichloroethane	105	107	69-153	55-167	2	0-30	
1,2-Dichloropropane	109	103	67-157	52-172	6	0-35	
1,4-Dichlorobenzene	109	106	36-156	16-176	2	0-47	
c-1,3-Dichloropropene	129	122	61-157	45-173	6	0-35	
Ethylbenzene	106	107	52-154	35-171	1	0-38	
o-Xylene	107	108	52-148	36-164	0	0-38	
p/m-Xylene	107	109	42-156	23-175	2	0-41	
Tetrachloroethene	110	110	56-152	40-168	1	0-40	
Toluene	105	105	56-146	41-161	0	0-43	
Trichloroethene	117	114	63-159	47-175	2	0-34	
1,1,2-Trichloroethane	117	111	65-149	51-163	5	0-37	
Vinyl Chloride	110	111	45-177	23-199	2	0-36	

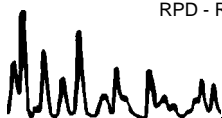
Total number of LCS compounds : 16

Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

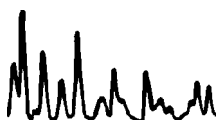
RPD - Relative Percent Difference , CL - Control Limit



Work Order Number: 09-09-1804
 

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<u>Qualifier</u>	<u>Definition</u>
*	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 (MS) or Matrix Spike Duplicate (MSD) 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.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
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.  Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.



LAB (LOCATION)

- CALSCIENCE ( )
- SPL ( )
- XENCO ( )
- TEST AMERICA ( )
- OTHER ( )



# Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

<input type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SD&CM	<input checked="" type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER	

Print Bill To Contact Name: **SUZANNE MCCLURKIN-NELSON**

INCIDENT # (ENV SERVICES): 9 7 0 9 3 4 1 2

PO #: \_\_\_\_\_ SAP #: \_\_\_\_\_

DATE: 9/23/2009

PAGE: 1 of 1

SAMPLING COMPANY: Delta Consultants

ADDRESS: 312 Piercy Rd, San Jose, CA. 95138

PROJECT CONTACT (Hardcopy or PDF Report to): **Suzanne McClurkin-Nelson**

TELEPHONE: 408-826-1869 FAX: 408-225-8506

E-MAIL: smcclurkin-nelson@deltaenv.com

SITE ADDRESS: Street and City: **15275 Washington, San Leandro** State: **CA**

GLOBAL ID NO.: **T0600101226**

EDP DELIVERABLE TO (Name, Company, Office Location): **Angela Pico, Delta Consultant**

PHONE NO.: **408-826-1862** E-MAIL: **apico@deltaenv.com** CONSULTANT PROJECT NO.: **SCA152751A**

SAMPLER NAME(S) (Print): **Abhik Dutta**

LAB USE ONLY: **09-1804**

TURNAROUND TIME (CALENDAR DAYS):

STANDARD (14 DAY)  5 DAYS  3 DAYS  2 DAYS  24 HOURS

RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

LA - RWQCB REPORT FORMAT  UST AGENCY:

SPECIAL INSTRUCTIONS OR NOTES :

please also email results to: adutta@deltaenv.com

SHELL CONTRACT RATE APPLIES

STATE REIMBURSEMENT RATE APPLIES

EDD NOT NEEDED

RECEIPT VERIFICATION REQUESTED

Air Analysis		+ diesel	Waste Characterization			TEMPERATURE ON RECEIPT C°				
TPH-G Purgeable (TO-15)	BTEX (to-15)	MTBE (TO-15)	TBA (TO-15)	EDC (8260B)	Etanol (8260B)	TPH-D Extractable (8015M)	CAM 17 Metals (6010)	Run STL/TCLP Metals/Org Pb if needed	Run Biotassay if Benzene >5000 ppm.	

LAB USE ONLY	Field Sample Identification	SAMPLING		MATRIX	PRESERVATIVE					NO. OF CONT.	Air Analysis							Waste Characterization			TEMPERATURE ON RECEIPT C°
		DATE	TIME		HCL	HNO3	H2SO4	NONE	OTHER		TPH-G Purgeable (TO-15)	BTEX (to-15)	MTBE (TO-15)	TBA (TO-15)	EDC (8260B)	Etanol (8260B)	TPH-D Extractable (8015M)	CAM 17 Metals (6010)	Run STL/TCLP Metals/Org Pb if needed	Run Biotassay if Benzene >5000 ppm.	
1	P-24 (3)	9/23/09	10:20					X			X	X	X	X							
2	P-24 (5)	9/23/09	10:25					X			X	X	X	X							
3	P-24 (8)	9/23/09	10:30					X			X	X	X	X							
4	P-25 (3)	9/23/09	12:10					X			X	X	X	X							
5	P-25 (5)	9/23/09	12:15					X			X	X	X	X							
6	P-25 (8)	9/23/09	12:20					X			X	X	X	X							
7	P-26 (3)	9/23/09	14:05					X			X	X	X	X							
8	P-26 (5)	9/23/09	14:10					X			X	X	X	X							
9	P-26 (8)	9/23/09	14:15					X			X	X	X	X							

used 1,1-difluoroethane as leak tracer

Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) _____	Date: 9/23/09	Time: _____
Relinquished by: (Signature) _____	Received by: (Signature) _____	Date: _____	Time: _____
Relinquished by: (Signature) <b>105723788</b>	Received by: (Signature) <i>[Signature]</i>	Date: 9/24/09	Time: 10:30

05/2/06 Revision

**SAMPLE RECEIPT FORM**

BOX Cooler 1 of 1

CLIENT: DELTA CONSULTANTS

DATE: 09/24/09

**TEMPERATURE:** (Criteria: 0.0°C – 6.0°C, not frozen)

Temperature \_\_\_\_\_ °C - 0.2°C (CF) = \_\_\_\_\_ °C     Blank     Sample

Sample(s) outside temperature criteria (PM/APM contacted by: \_\_\_\_\_).

Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature:  Air     Filter     Metals Only     PCBs Only    Initial: PS

**CUSTODY SEALS INTACT:**

Cooler     \_\_\_\_\_     No (Not Intact)     Not Present     N/A    Initial: PS

Sample     \_\_\_\_\_     No (Not Intact)     Not Present    Initial: PS

**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Collection date/time, <u>matrix</u> , and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> COC not relinquished. <input type="checkbox"/> No date relinquished. <input checked="" type="checkbox"/> No time relinquished.			
Sampler's name indicated on COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct containers and volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**CONTAINER TYPE:**

**Solid:**  4ozCGJ     8ozCGJ     16ozCGJ     Sleeve     EnCores®     TerraCores®     \_\_\_\_\_

**Water:**  VOA     VOAh     VOAna<sub>2</sub>     125AGB     125AGBh     125AGBp     1AGB     1AGBna<sub>2</sub>     1AGBs

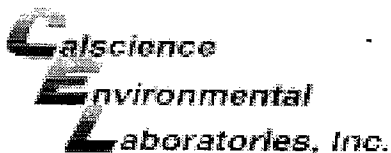
500AGB     500AGJ     500AGJs     250AGB     250CGB     250CGBs     1PB     500PB     500PBna

250PB     250PBn     125PB     125PBzanna     100PJ     100PJna<sub>2</sub>     \_\_\_\_\_     \_\_\_\_\_     \_\_\_\_\_

**Air:**  Tedlar®     Summa®     \_\_\_\_\_    **Other:**  \_\_\_\_\_    **Checked/Labeled by:** PS

**Container:** C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelop    **Reviewed by:** PS

**Preservative:** h: HCL    n: HNO<sub>3</sub>    na<sub>2</sub>: Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>    Na: NaOH    p: H<sub>3</sub>PO<sub>4</sub>    s: H<sub>2</sub>SO<sub>4</sub>    zanna: ZnAc<sub>2</sub>+NaOH    f: Field-filtered    **Scanned by:** PS



WORK ORDER #: 09-09-1804

# SAMPLE ANOMALY FORM

**SAMPLES - CONTAINERS & LABELS:**

**Comments:**

- Samples NOT RECEIVED but listed on COC
- Samples received but NOT LISTED on COC
- Holding time expired – list sample ID(s) and test
- Insufficient quantities for analysis – list test
- Improper container(s)/preservative used – list test
- No preservative noted on COC or label – list test & notify lab
- Sample labels illegible – note test/container type
- Sample labels do not match COC – Note in comments
  - Sample ID
  - Date and/or Time Collected
  - Project Information
  - # of Containers
  - Analysis
- Sample containers compromised – Note in comments
  - Leaking
  - Broken
  - Without Labels
- Air sample containers compromised – Note in comments
  - Flat
  - Very low in volume
  - Leaking (transferred into CalScience Tedlar® Bag\*)
  - Leaking (transferred into Client's Tedlar® Bag\*)
- Other: \_\_\_\_\_

(-9) P-26 (8) COLLECTION TIME  
Labeled AS 12:15.

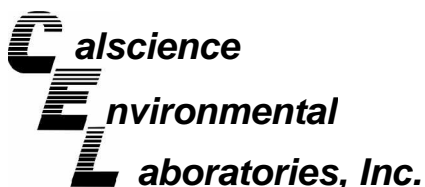
**HEADSPACE – Containers with Bubble > 6mm or ¼ inch:**

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of RSK or CO <sub>2</sub> or DO Received

Comments: \_\_\_\_\_

\*Transferred at Client's request.

Initial / Date PS 9/24/09



October 07, 2009

Suzanne McClurkin-Nelson  
Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Subject: **Calscience Work Order No.: 09-09-1884**  
**Client Reference: 15275 Washington, San Leandro, CA**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 9/25/2009 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 Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, 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,

A handwritten signature in black ink, appearing to read "Xuan H. Dang".

Calscience Environmental  
Laboratories, Inc.  
Xuan H. Dang  
Project Manager

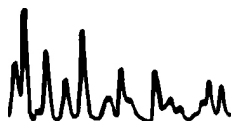


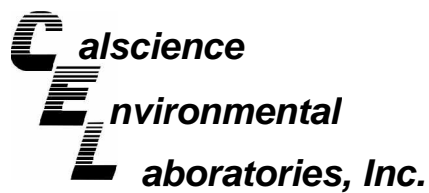
## CASE NARRATIVE

**Calscience Work Order No.: 09-09-1884**

### EPA TO-15M

There was insufficient sample volume to perform dilutions on samples P-27 (5) and P-28(5). 1,1-Difluoroethane was reported with an E qualifier for both samples which indicated that the concentration reported for this compound exceeds the calibration range.





## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/25/09  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-3M

Project: 15275 Washington, San Leandro, CA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-27 (3)	09-09-1884-1-A	09/24/09 09:25	Air	GC 13	N/A	09/25/09 10:47	090925L01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	110	1.5	1		ppm (v/v)

P-27 (5)	09-09-1884-2-A	09/24/09 09:20	Air	GC 13	N/A	09/25/09 10:57	090925L01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	33	1.5	1		ppm (v/v)

P-27 (8)	09-09-1884-3-A	09/24/09 09:15	Air	GC 13	N/A	09/25/09 11:08	090925L01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	150	1.5	1		ppm (v/v)

P-28 (3)	09-09-1884-4-A	09/24/09 11:10	Air	GC 13	N/A	09/25/09 11:17	090925L01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	310	1.5	1		ppm (v/v)

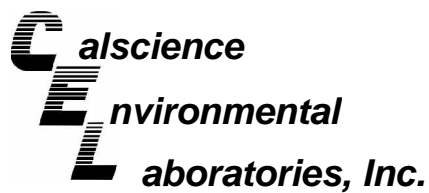
P-28 (5)	09-09-1884-5-A	09/24/09 11:00	Air	GC 13	N/A	09/25/09 11:27	090925L01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	15	1.5	1		ppm (v/v)

P-28 (8)	09-09-1884-6-A	09/24/09 11:05	Air	GC 13	N/A	09/25/09 11:38	090925L01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	71	1.5	1		ppm (v/v)

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



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/25/09  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-3M

Project: 15275 Washington, San Leandro, CA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-29 (3)	09-09-1884-7-A	09/24/09 12:35	Air	GC 13	N/A	09/25/09 11:47	090925L01

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	310	1.5	1		ppm (v/v)

P-29 (5)	09-09-1884-8-A	09/24/09 12:25	Air	GC 13	N/A	09/25/09 11:58	090925L01
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	170	1.5	1		ppm (v/v)

P-29 (8)	09-09-1884-9-A	09/24/09 12:30	Air	GC 13	N/A	09/25/09 12:08	090925L01
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	12	1.5	1		ppm (v/v)

Method Blank	098-01-005-1,966	N/A	Air	GC 13	N/A	09/25/09 08:50	090925L01
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
TPH as Gasoline	ND	1.5	1		ppm (v/v)

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

## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/25/09  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M  
Units: ug/L

Project: 15275 Washington, San Leandro, CA

Page 1 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-27 (3)	09-09-1884-1-A	09/24/09 09:25	Air	GC/MS K	N/A	09/25/09 18:01	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0040	2.5		Tert-Butyl Alcohol (TBA)	ND	0.038	2.5	
Ethylbenzene	ND	0.0054	2.5		Toluene	ND	0.047	2.5	
Methyl-t-Butyl Ether (MTBE)	ND	0.018	2.5		1,1-Difluoroethane	710	22	4000	
Xylenes (total)	ND	0.022	2.5						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	100	57-129			1,2-Dichloroethane-d4	97	47-137		
Toluene-d8	98	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-27 (5)	09-09-1884-2-A	09/24/09 09:20	Air	GC/MS K	N/A	09/25/09 18:46	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

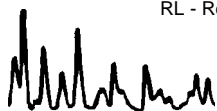
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.015	1	
Ethylbenzene	ND	0.0022	1		Toluene	ND	0.019	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		1,1-Difluoroethane	14	0.0054	1	E
Xylenes (total)	ND	0.0087	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	104	57-129			1,2-Dichloroethane-d4	94	47-137		
Toluene-d8	97	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-27 (8)	09-09-1884-3-A	09/24/09 09:15	Air	GC/MS K	N/A	09/25/09 19:32	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0040	2.5		Tert-Butyl Alcohol (TBA)	ND	0.038	2.5	
Ethylbenzene	ND	0.0054	2.5		Toluene	ND	0.047	2.5	
Methyl-t-Butyl Ether (MTBE)	ND	0.018	2.5		1,1-Difluoroethane	860	43	8000	
Xylenes (total)	ND	0.022	2.5						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	105	57-129			1,2-Dichloroethane-d4	94	47-137		
Toluene-d8	96	78-156							

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



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/25/09  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M  
Units: ug/L

Project: 15275 Washington, San Leandro, CA

Page 2 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-28 (3)	09-09-1884-4-A	09/24/09 11:10	Air	GC/MS K	N/A	09/25/09 20:19	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0080	5		Tert-Butyl Alcohol (TBA)	ND	0.076	5	
Ethylbenzene	ND	0.011	5		Toluene	ND	0.094	5	
Methyl-t-Butyl Ether (MTBE)	ND	0.036	5		1,1-Difluoroethane	2200	54	10000	
Xylenes (total)	ND	0.043	5						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	101	57-129			1,2-Dichloroethane-d4	93	47-137		
Toluene-d8	97	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-28 (5)	09-09-1884-5-A	09/24/09 11:00	Air	GC/MS K	N/A	09/25/09 21:05	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0018	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.015	1	
Ethylbenzene	ND	0.0022	1		Toluene	0.019	0.019	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		1,1-Difluoroethane	11	0.0054	1	E
Xylenes (total)	ND	0.0087	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	102	57-129			1,2-Dichloroethane-d4	91	47-137		
Toluene-d8	99	78-156							


Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-28 (8)	09-09-1884-6-A	09/24/09 11:05	Air	GC/MS K	N/A	09/25/09 21:52	090925L01

Comment(s): -Dilution analysis was performed outside the recommended holding time.

-The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0032	2		Tert-Butyl Alcohol (TBA)	ND	0.030	2	
Ethylbenzene	ND	0.0043	2		Toluene	ND	0.038	2	
Methyl-t-Butyl Ether (MTBE)	ND	0.014	2		1,1-Difluoroethane	42	1.4	250	
Xylenes (total)	ND	0.017	2						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	104	57-129			1,2-Dichloroethane-d4	91	47-137		
Toluene-d8	98	78-156							

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



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/25/09  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M  
Units: ug/L

Project: 15275 Washington, San Leandro, CA

Page 3 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-29 (3)	09-09-1884-7-A	09/24/09 12:35	Air	GC/MS K	N/A	09/25/09 22:39	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0080	5		Tert-Butyl Alcohol (TBA)	ND	0.076	5	
Ethylbenzene	ND	0.011	5		Toluene	ND	0.094	5	
Methyl-t-Butyl Ether (MTBE)	ND	0.036	5		1,1-Difluoroethane	2000	54	10000	
Xylenes (total)	ND	0.043	5						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	101	57-129			1,2-Dichloroethane-d4	92	47-137		
Toluene-d8	97	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-29 (5)	09-09-1884-8-A	09/24/09 12:25	Air	GC/MS K	N/A	09/25/09 23:27	090925L01

Comment(s): -The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0064	4		Tert-Butyl Alcohol (TBA)	ND	0.061	4	
Ethylbenzene	ND	0.0087	4		Toluene	ND	0.075	4	
Methyl-t-Butyl Ether (MTBE)	ND	0.029	4		1,1-Difluoroethane	1300	54	10000	
Xylenes (total)	ND	0.035	4						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	99	57-129			1,2-Dichloroethane-d4	91	47-137		
Toluene-d8	98	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
P-29 (8)	09-09-1884-9-A	09/24/09 12:30	Air	GC/MS K	N/A	09/26/09 00:15	090925L01

Comment(s): -Dilution analysis was performed outside the recommended holding time.

-The method has been modified to use Tedlar bags instead of Summa Canisters.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.015	1	
Ethylbenzene	ND	0.0022	1		Toluene	ND	0.019	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		1,1-Difluoroethane	83	2.7	500	
Xylenes (total)	ND	0.0087	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	103	57-129			1,2-Dichloroethane-d4	89	47-137		
Toluene-d8	99	78-156							

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



## Analytical Report



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: 09/25/09  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M  
Units: ug/L

Project: 15275 Washington, San Leandro, CA

Page 4 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-981-28</b>	<b>N/A</b>	<b>Air</b>	<b>GC/MS K</b>	<b>N/A</b>	<b>09/29/09 12:01</b>	<b>090929L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.015	1	
Ethylbenzene	ND	0.0022	1		Toluene	ND	0.019	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		1,1-Difluoroethane	ND	0.0054	1	
Xylenes (total)	ND	0.0087	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	91	57-129			1,2-Dichloroethane-d4	85	47-137		
Toluene-d8	95	78-156							

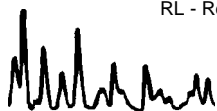
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-981-40</b>	<b>N/A</b>	<b>Air</b>	<b>GC/MS K</b>	<b>N/A</b>	<b>09/25/09 11:51</b>	<b>090925L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.015	1	
Ethylbenzene	ND	0.0022	1		Toluene	ND	0.019	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		1,1-Difluoroethane	ND	0.0054	1	
Xylenes (total)	ND	0.0087	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	100	57-129			1,2-Dichloroethane-d4	98	47-137		
Toluene-d8	98	78-156							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-981-41</b>	<b>N/A</b>	<b>Air</b>	<b>GC/MS V</b>	<b>N/A</b>	<b>09/26/09 14:16</b>	<b>090926L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.015	1	
Ethylbenzene	ND	0.0022	1		Toluene	ND	0.019	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		1,1-Difluoroethane	ND	0.0054	1	
Xylenes (total)	ND	0.0087	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	93	57-129			1,2-Dichloroethane-d4	99	47-137		
Toluene-d8	98	78-156							

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



**Analytical Report**



Delta Environmental Consultants, Inc.  
 312 Piercy Rd.  
 San Jose, CA 95138-1401

Date Received: 09/25/09  
 Work Order No: 09-09-1884  
 Preparation: N/A  
 Method: EPA TO-15M  
 Units: ug/L

Project: 15275 Washington, San Leandro, CA

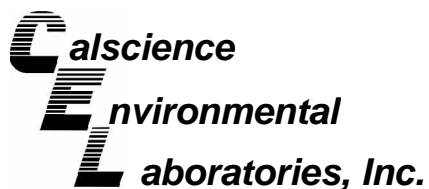
Page 5 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-981-42	N/A	Air	GC/MS V	N/A	09/28/09 15:23	090928L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0016	1		Tert-Butyl Alcohol (TBA)	ND	0.015	1	
Ethylbenzene	ND	0.0022	1		Toluene	ND	0.019	1	
Methyl-t-Butyl Ether (MTBE)	ND	0.0072	1		1,1-Difluoroethane	ND	0.0054	1	
Xylenes (total)	ND	0.0087	1						
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,4-Bromofluorobenzene	96	57-129			1,2-Dichloroethane-d4	102	47-137		
Toluene-d8	100	78-156							

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





## Quality Control - Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

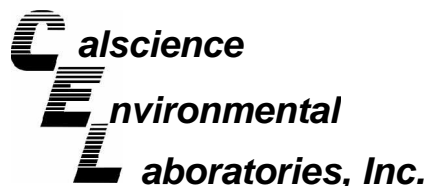
Date Received: 09/25/09  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-3M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
P-28 (3)	Air	GC 13	N/A	09/25/09	090925D01

<u>Parameter</u>	<u>Sample Conc.</u>	<u>DUP Conc</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	310	310	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit



## Quality Control - LCS/LCS Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: N/A  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-981-40	Air	GC/MS K	N/A	09/25/09	090925L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	105	124	60-156	44-172	16	0-40	
Carbon Tetrachloride	106	123	64-154	49-169	15	0-32	
1,2-Dibromoethane	113	130	54-144	39-159	14	0-36	
1,2-Dichlorobenzene	117	134	34-160	13-181	14	0-47	
1,2-Dichloroethane	104	116	69-153	55-167	11	0-30	
1,2-Dichloropropane	111	130	67-157	52-172	16	0-35	
1,4-Dichlorobenzene	113	131	36-156	16-176	15	0-47	
c-1,3-Dichloropropene	130	154	61-157	45-173	17	0-35	
Ethylbenzene	116	135	52-154	35-171	15	0-38	
o-Xylene	117	134	52-148	36-164	14	0-38	
p/m-Xylene	94	109	42-156	23-175	14	0-41	
Tetrachloroethene	107	123	56-152	40-168	15	0-40	
Toluene	111	128	56-146	41-161	14	0-43	
Trichloroethene	105	124	63-159	47-175	17	0-34	
1,1,2-Trichloroethane	112	134	65-149	51-163	18	0-37	
Vinyl Chloride	106	119	45-177	23-199	12	0-36	

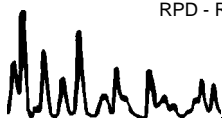
Total number of LCS compounds : 16

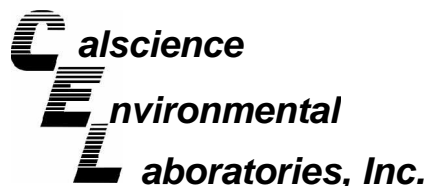
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: N/A  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-981-41	Air	GC/MS V	N/A	09/26/09	090926L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	101	102	60-156	44-172	1	0-40	
Carbon Tetrachloride	117	122	64-154	49-169	4	0-32	
1,2-Dibromoethane	114	114	54-144	39-159	0	0-36	
1,2-Dichlorobenzene	111	108	34-160	13-181	3	0-47	
1,2-Dichloroethane	105	107	69-153	55-167	2	0-30	
1,2-Dichloropropane	109	103	67-157	52-172	6	0-35	
1,4-Dichlorobenzene	109	106	36-156	16-176	2	0-47	
c-1,3-Dichloropropene	129	122	61-157	45-173	6	0-35	
Ethylbenzene	106	107	52-154	35-171	1	0-38	
o-Xylene	107	108	52-148	36-164	0	0-38	
p/m-Xylene	107	109	42-156	23-175	2	0-41	
Tetrachloroethene	110	110	56-152	40-168	1	0-40	
Toluene	105	105	56-146	41-161	0	0-43	
Trichloroethene	117	114	63-159	47-175	2	0-34	
1,1,2-Trichloroethane	117	111	65-149	51-163	5	0-37	
Vinyl Chloride	110	111	45-177	23-199	2	0-36	

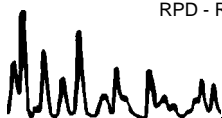
Total number of LCS compounds : 16

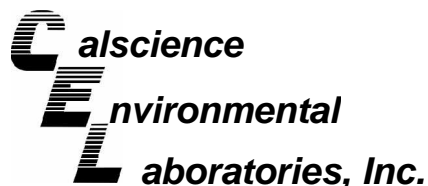
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: N/A  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-981-42	Air	GC/MS V	N/A	09/28/09	090928L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	98	95	60-156	44-172	3	0-40	
Carbon Tetrachloride	117	113	64-154	49-169	4	0-32	
1,2-Dibromoethane	110	106	54-144	39-159	4	0-36	
1,2-Dichlorobenzene	110	108	34-160	13-181	2	0-47	
1,2-Dichloroethane	104	100	69-153	55-167	4	0-30	
1,2-Dichloropropane	101	98	67-157	52-172	4	0-35	
1,4-Dichlorobenzene	109	108	36-156	16-176	1	0-47	
c-1,3-Dichloropropene	120	115	61-157	45-173	4	0-35	
Ethylbenzene	103	101	52-154	35-171	2	0-38	
o-Xylene	107	106	52-148	36-164	1	0-38	
p/m-Xylene	106	104	42-156	23-175	1	0-41	
Tetrachloroethene	104	101	56-152	40-168	3	0-40	
Toluene	100	97	56-146	41-161	3	0-43	
Trichloroethene	110	106	63-159	47-175	4	0-34	
1,1,2-Trichloroethane	110	106	65-149	51-163	3	0-37	
Vinyl Chloride	104	103	45-177	23-199	1	0-36	

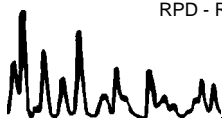
Total number of LCS compounds : 16

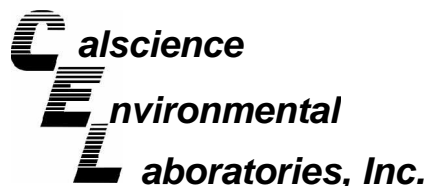
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate



Delta Environmental Consultants, Inc.  
312 Piercy Rd.  
San Jose, CA 95138-1401

Date Received: N/A  
Work Order No: 09-09-1884  
Preparation: N/A  
Method: EPA TO-15M

Project: 15275 Washington, San Leandro, CA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-981-28	Air	GC/MS K	N/A	09/29/09	090929L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	92	91	60-156	44-172	2	0-40	
Carbon Tetrachloride	83	82	64-154	49-169	2	0-32	
1,2-Dibromoethane	98	97	54-144	39-159	1	0-36	
1,2-Dichlorobenzene	108	106	34-160	13-181	2	0-47	
1,2-Dichloroethane	78	78	69-153	55-167	1	0-30	
1,2-Dichloropropane	98	97	67-157	52-172	1	0-35	
1,4-Dichlorobenzene	104	102	36-156	16-176	2	0-47	
c-1,3-Dichloropropene	110	108	61-157	45-173	2	0-35	
Ethylbenzene	101	101	52-154	35-171	1	0-38	
o-Xylene	101	100	52-148	36-164	2	0-38	
p/m-Xylene	81	80	42-156	23-175	1	0-41	
Tetrachloroethene	92	92	56-152	40-168	1	0-40	
Toluene	97	98	56-146	41-161	0	0-43	
Trichloroethene	90	88	63-159	47-175	2	0-34	
1,1,2-Trichloroethane	99	97	65-149	51-163	2	0-37	
Vinyl Chloride	82	82	45-177	23-199	0	0-36	

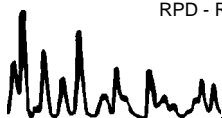
Total number of LCS compounds : 16

Total number of ME compounds : 0

Total number of ME compounds allowed : 1

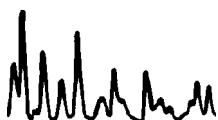
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit



Work Order Number: 09-09-1884

<u>Qualifier</u>	<u>Definition</u>
*	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 (MS) or Matrix Spike Duplicate (MSD) 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.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
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.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.



LAB (LOCATION)

- CALSCIENCE ( \_\_\_\_\_ )
- SPL ( \_\_\_\_\_ )
- XENCO ( \_\_\_\_\_ )
- TEST AMERICA ( \_\_\_\_\_ )
- OTHER ( \_\_\_\_\_ )



# Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

<input type="checkbox"/> ENV. SERVICES	<input type="checkbox"/> MOTIVA RETAIL	<input type="checkbox"/> SHELL RETAIL
<input type="checkbox"/> MOTIVA SD&CM	<input checked="" type="checkbox"/> CONSULTANT	<input type="checkbox"/> LUBES
<input type="checkbox"/> SHELL PIPELINE	<input type="checkbox"/> OTHER _____	

Print Bill To Contact Name: **SUZANNE MCCLURKIN-NELSON**

INCIDENT # (ENV SERVICES): **9 7 0 9 3 4 1 2**

PO #: \_\_\_\_\_ SAP #: \_\_\_\_\_

DATE: 9/24/2009  
PAGE: 1 of 1

SAMPLING COMPANY: **Delta Consultants**

ADDRESS: **312 Piercy Rd, San Jose, CA. 95138**

PROJECT CONTACT (Hardcopy or PDF Report to): **Suzanne McClurkin-Nelson**

TELEPHONE: **408-826-1869** FAX: **408-225-8506** E-MAIL: **smclurkin-nelson@deltaenv.com**

TURNAROUND TIME (CALENDAR DAYS):  
 STANDARD (14 DAY)  5 DAYS  3 DAYS  2 DAYS  24 HOURS  RESULTS NEEDED ON WEEKEND

LA - RWQCB REPORT FORMAT  UST AGENCY:

LAB USE ONLY: **09-09-1884**

SITE ADDRESS: Street and City: **15275 Washington, San Leandro** State: **CA** GLOBAL ID NO.: **T0600101226**

EDF DELIVERABLE TO (Name, Company, Office Location): **Angela Pico, Delta Consultant San Jose, CA** PHONE NO.: **408-826-1862** E-MAIL: **apico@deltaenv.com** CONSULTANT PROJECT NO.: **SCA152751A**

SAMPLER NAME(S) (Print): **Abhik Dutta**

SPECIAL INSTRUCTIONS OR NOTES :  
please also email results to: **adutta@deltaenv.com**

SHELL CONTRACT RATE APPLIES  
 STATE REIMBURSEMENT RATE APPLIES  
 EDD NOT NEEDED  
 RECEIPT VERIFICATION REQUESTED

REQUESTED ANALYSIS

Air Analysis		+ diesel		Waste Characterization		TEMPERATURE ON RECEIPT C°			
TPH-G Purgeable (TO-15)	BTEX (to-15)	MTBE (TO-15)	TBA (TO-15)	1,1-difluoroethane (TO-15)	TPH-D Extractable (8015M)	CAM 17 Metals (6010)	Run STLCTCLP Metals/Org Pb if needed	Run Bioassay if Benzene > 6000 ppm.	Container PID Readings or Laboratory Notes
X	X	X	X	X					
X	X	X	X	X					
X	X	X	X	X					
X	X	X	X	X					
X	X	X	X	X					
X	X	X	X	X					
X	X	X	X	X					
X	X	X	X	X					
X	X	X	X	X					

LAB USE ONLY	Field Sample Identification				SAMPLING		PRESERVATIVE					NO. OF CONT.	REQUESTED ANALYSIS						TEMPERATURE ON RECEIPT C°							
					DATE	TIME	MATRIX	HCL	HNO3	H2SO4	NONE		OTHER	TPH-G Purgeable (TO-15)	BTEX (to-15)	MTBE (TO-15)	TBA (TO-15)	1,1-difluoroethane (TO-15)		TPH-D Extractable (8015M)	+ diesel	CAM 17 Metals (6010)	Run STLCTCLP Metals/Org Pb if needed	Run Bioassay if Benzene > 6000 ppm.		
	1	P-27 (3)	9/24/09	9:25	AIR					X						X	X	X		X	X					
2	P-27 (5)	9/24/09	9:20	AIR					X					X	X	X	X	X								
3	P-27 (8)	9/24/09	9:15	AIR					X					X	X	X	X	X								
4	P-28 (3)	9/24/09	11:10	AIR					X					X	X	X	X	X								
5	P-28 (5)	9/24/09	11:00	AIR					X					X	X	X	X	X								
6	P-28 (8)	9/24/09	11:05	AIR					X					X	X	X	X	X								
7	P-29 (3)	9/24/09	12:35	AIR					X					X	X	X	X	X								
8	P-29 (5)	9/24/09	12:25	AIR					X					X	X	X	X	X								
9	P-29 (8)	9/24/09	12:30	AIR					X					X	X	X	X	X								

Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Date: <b>9/24/09</b>	Time: <b>0920</b>
Relinquished by: (Signature) <b>GSO AB# 105723787</b>	Received by: (Signature) <i>[Signature]</i>	Date: <b>9/25/09</b>	Time: <b>0920</b>
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

05/2/06 Revision

**SAMPLE RECEIPT FORM**

Box 1 of 1  
Cooler

CLIENT: Delta

DATE: 9/25/09

**TEMPERATURE:** (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature \_\_\_\_\_ °C - 0.2 °C (CF) = \_\_\_\_\_ °C     Blank     Sample

Sample(s) outside temperature criteria (PM/APM contacted by: \_\_\_\_\_).

Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature:  Air     Filter     Metals Only     PCBs Only    Initial: NL

**CUSTODY SEALS INTACT:**

Cooler     \_\_\_\_\_     No (Not Intact)     Not Present     N/A    Initial: NL

Sample     \_\_\_\_\_     No (Not Intact)     Not Present    Initial: NL

**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> COC not relinquished. <input type="checkbox"/> No date relinquished. <input checked="" type="checkbox"/> No time relinquished.			
Sampler's name indicated on COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Correct containers and volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**CONTAINER TYPE:**

**Solid:**  4ozCGJ     8ozCGJ     16ozCGJ     Sleeve     EnCores®     TerraCores®     \_\_\_\_\_

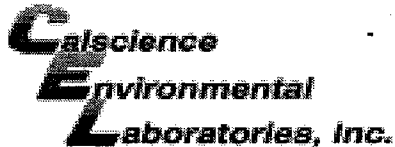
**Water:**  VOA     VOA<sub>h</sub>     VOA<sub>na2</sub>     125AGB     125AGB<sub>h</sub>     125AGB<sub>p</sub>     1AGB     1AGB<sub>na2</sub>     1AGB<sub>s</sub>  
 500AGB     500AGJ     500AGJ<sub>s</sub>     250AGB     250CGB     250CGB<sub>s</sub>     1PB     500PB     500PB<sub>na</sub>  
 250PB     250PB<sub>n</sub>     125PB     125PB<sub>znna</sub>     100PJ     100PJ<sub>na2</sub>     \_\_\_\_\_     \_\_\_\_\_     \_\_\_\_\_

**Air:**  Tedlar®     Summa®     \_\_\_\_\_    **Other:**  \_\_\_\_\_    **Checked/Labeled by:** NL

**Container:** C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelop    **Reviewed by:** [Signature]

**Preservative:** h: HCL n: HNO3 na<sub>2</sub>:Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> Na: NaOH p: H<sub>3</sub>PO<sub>4</sub> s: H<sub>2</sub>SO<sub>4</sub> znna: ZnAc<sub>2</sub>+NaOH f: Field-filtered    **Scanned by:** [Signature]





WORK ORDER #: 09-09-1884

**SAMPLE ANOMALY FORM**

**SAMPLES - CONTAINERS & LABELS:**

- Samples NOT RECEIVED but listed on COC
- Samples received but NOT LISTED on COC
- Holding time expired – list sample ID(s) and test
- Insufficient quantities for analysis – list test
- Improper container(s)/preservative used – list test
- No preservative noted on COC or label – list test & notify lab
- Sample labels illegible – note test/container type
- Sample labels do not match COC – Note in comments
  - Sample ID
  - Date and/or Time Collected
  - Project Information
  - # of Containers
  - Analysis
- Sample containers compromised – Note in comments
  - Leaking
  - Broken
  - Without Labels
- Air sample containers compromised – Note in comments
  - Flat
  - Very low in volume
  - Leaking (transferred into Calscience Tedlar® Bag\*)
  - Leaking (transferred into Client's Tedlar® Bag\*)
- Other: Taped Pinholes w/ certified clean tape.

**Comments:**

(-3) P-27(8) - half-full  
(-5) P-28(5) - 1/3 full

**HEADSPACE – Containers with Bubble > 6mm or ¼ inch:**

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of RSK or CO <sub>2</sub> or DO Received

Comments: \_\_\_\_\_

\*Transferred at Client's request.

Initial / Date NC 9/25/09

**APPENDIX D**  
**HISTORICAL SOIL VAPOR DATA**

**TABLE 1**  
**SOIL VAPOR SAMPLING ANALYTICAL DATA**  
**Former Shell Service Station**  
**15275 Washington Boulevard**  
**San Leandro, CA**

Well ID	Date	Depth (feet)	TPH-g (ug/m3)	B (ug/m3)	T (ug/m3)	E (ug/m3)	X (ug/m3)	MTBE (ug/m3)	TBA (ug/m3)	2-Propanol
P-10	6/11/2008	5.5 ft	100,000	<2.7	14	3.9	11.8	<3.0	43	<8.2
P-11	6/11/2008	5.5 ft	8,000,000	1,100	240	<180	<180	<150	<520	<420
P-12	6/11/2008	5.5 ft	7,800,000	810	<630	<730	<730	<600	<5,100	<1,600
P-13	6/10/2008	5.5 ft	5,300	<2.5	5.6	<3.4	3.6	<2.8	<24	<7.8
P-14	6/10/2008	5.5 ft	2,100,000	1400	<130	4,700	280	<120	<1,000	<340
P-15	6/11/2008	5.5 ft	160,000	<54	<63	<73	<73	<60	<150	<160
P-16	6/10/2008	5.5 ft	130,000	<13	<15	26	<17	<14	<120	<120
P-17	6/10/2008	5.5 ft	450	<2.5	5.4	<3.4	3.6	<2.8	<23	<7.6
P-17D	6/10/2008	5.5 ft	1,100	<2.5	4.0	<3.4	<3.4	<2.8	<24	<7.8
P-18	6/10/2008	5.5 ft	13,000	3.2	6.0	<3.6	4.0	<3.0	36	<8.2
P-19	6/10/2008	5.5 ft	9,000,000	600	270	<180	<180	<150	<510	<410
P-20	6/10/2008	5.5 ft	26,000	<2.5	240	<3.4	<3.4	<2.8	55	27
P-20LD	6/10/2008	5.5 ft	26,000	<2.5	230	<3.4	<3.4	<2.8	52	29
P-21	6/10/2008	5.5 ft	8,200,000	6,400	280	27,000	3,500	<100	<340	<280
P-22	6/10/2008	5.5 ft	8,200,000	1,400	<320	14,000	<360	<300	<1,000	<820
P-23	6/10/2008	5.5 ft	6,500,000	12,000	190	46,000	25,120	<56	<190	<150
P-23LD	6/10/2008	5.5 ft	6,500,000	11,000	180	44,000	23,110	<56	<190	<150

Abbreviations:

TPH-g = Total petroleum hydrocarbons as gasoline by EPA Method T0-14/T0-15

BTEX = Benzene, toluene, ethylbenzene, total xylenes by EPA Method T0-14A/T0-15

MTBE = Methyl tert-butyl ether

TBA = Tert-butyl-alcohol

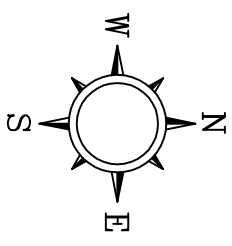
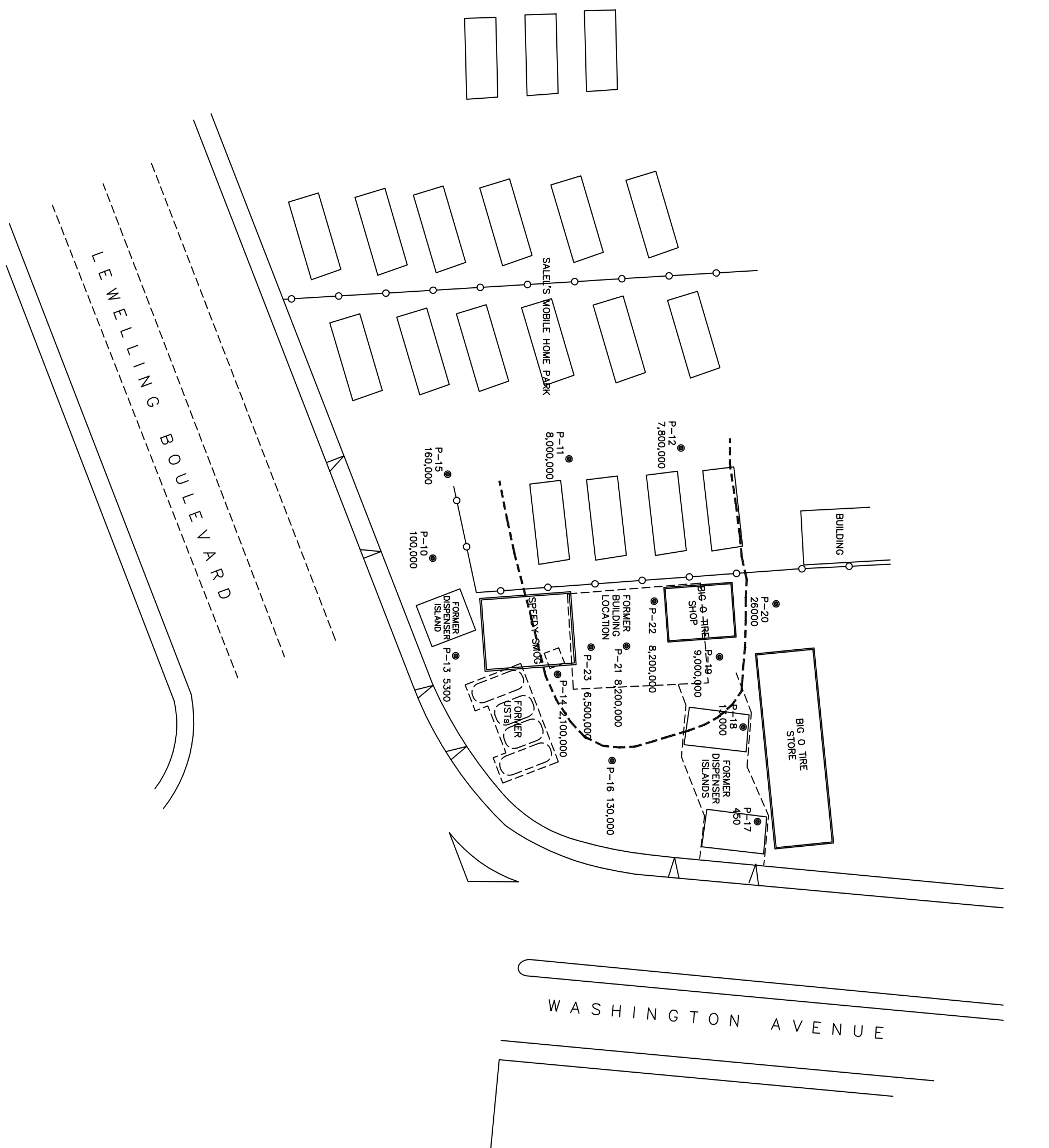
2-Propanol= Isopropyl alcohol

ug/m3 = Microgram per cubic meter

<n = Not detected, below method detection limit

D = Duplicate sample

LD = Lab duplicate



**LEGEND**

● DETECTED TPH-g CONCENTRATIONS µg/m³

--- APPROXIMATE TPH-g 100,000 µg/m³ CONCENTRATION ISOCONTOUR

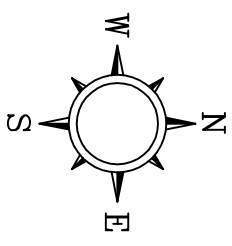
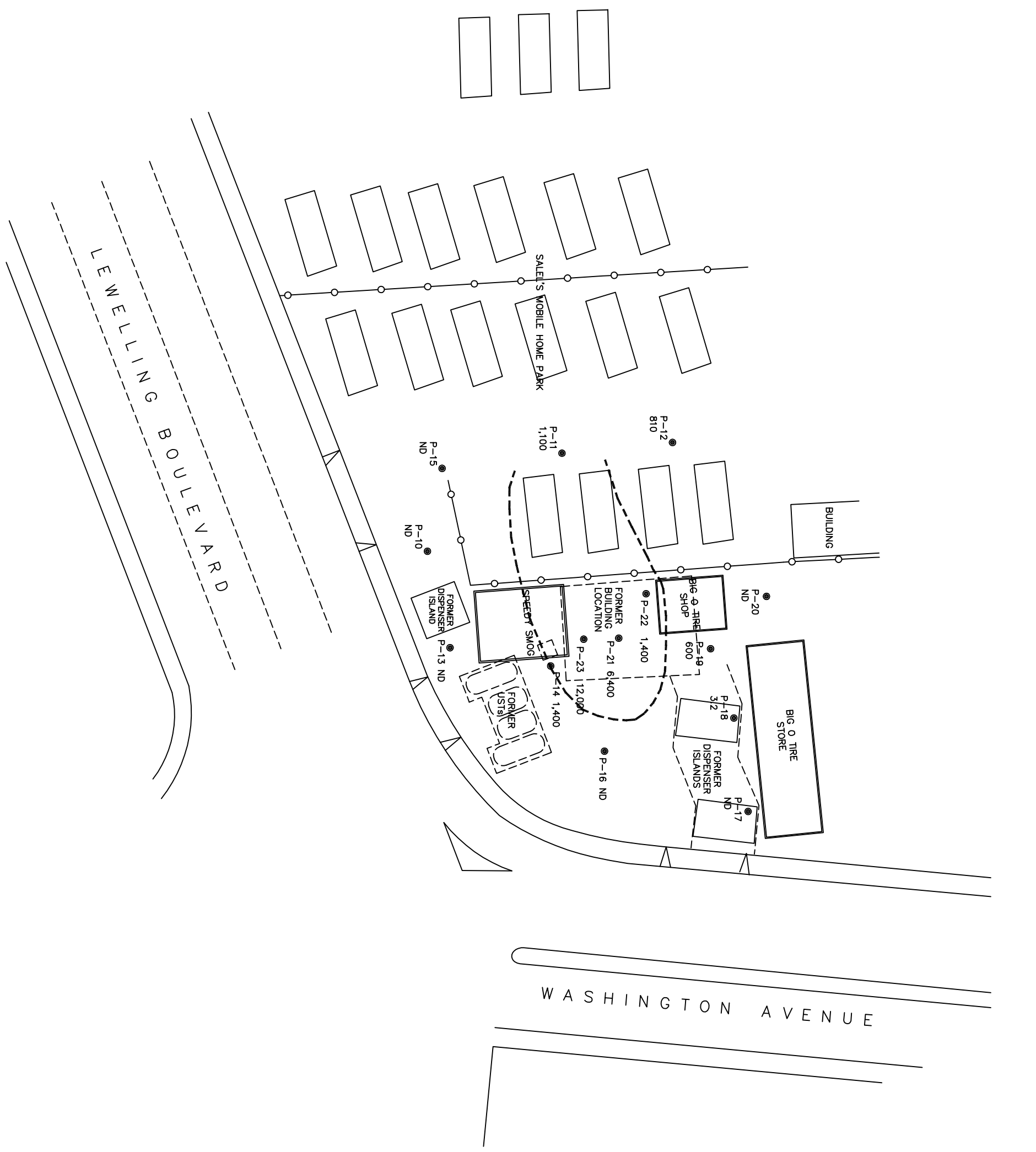


**DELTA CONSULTANTS**

SHELL OIL PRODUCTS U.S.  
FORMER SHELL-BRANDED SERVICE STATION  
SAN LEANDRO, CALIFORNIA

**FIGURE 3**

TPH-G CONCENTRATIONS AND  
TPH-g > 1,000,000 µg/m³ ISOCONTOUR MAP  
15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA



**LEGEND**

● DETECTED BENZENE CONCENTRATIONS µg/m<sup>3</sup>

--- APPROXIMATE BENZENE CONCENTRATION 1000 µg/m<sup>3</sup> CONCENTRATION ISOCONTOUR



**DELTA CONSULTANTS**

SHELL OIL PRODUCTS U.S.  
FORMER SHELL-BRANDED SERVICE STATION  
SAN LEANDRO, CALIFORNIA

**FIGURE 4**

**BENZENE CONCENTRATIONS AND BENZENE > 1,000 µg/m<sup>3</sup> ISOCONTOUR MAP**

15275 WASHINGTON AVENUE  
SAN LEANDRO, CALIFORNIA

TABLE 5

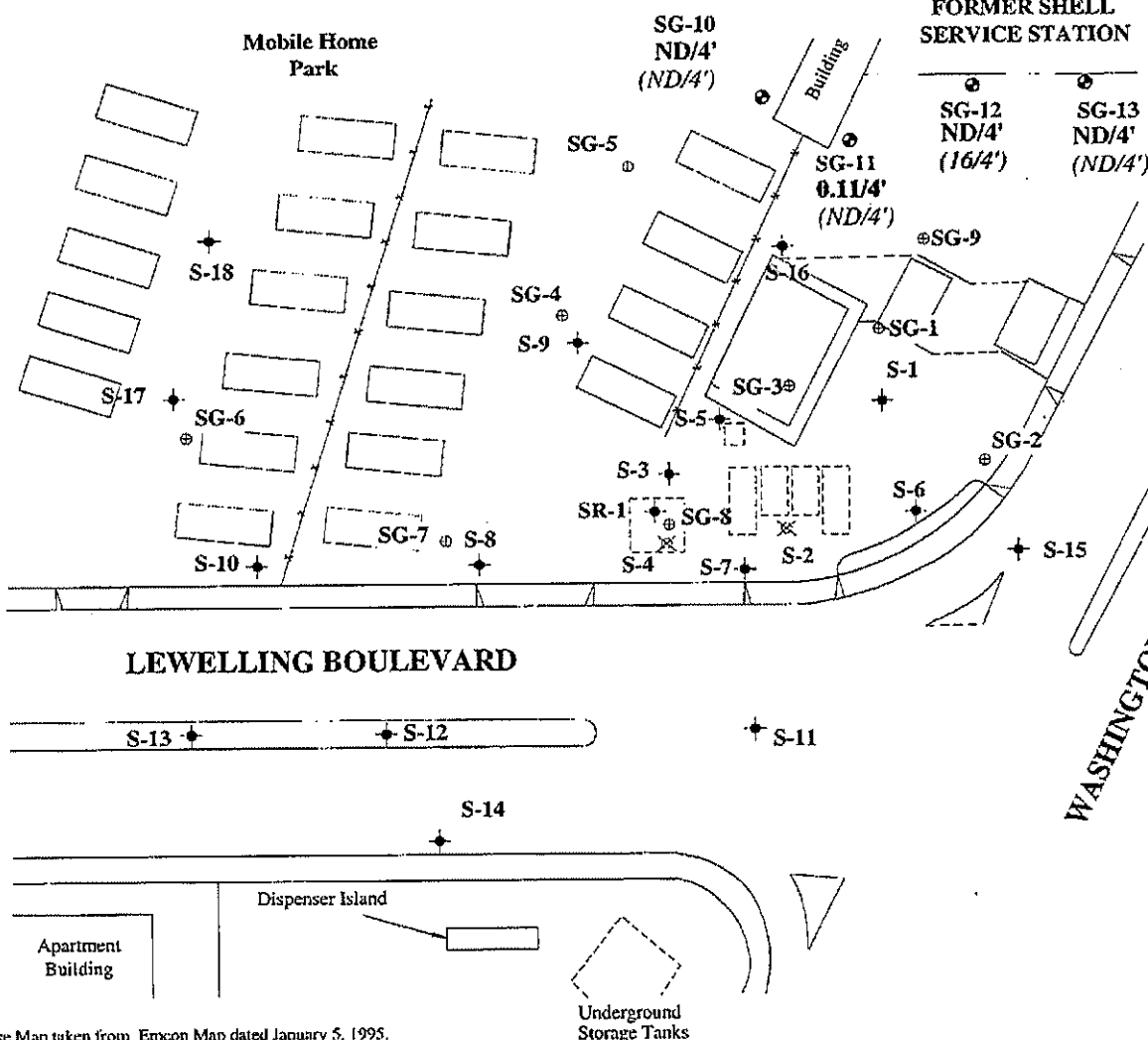
SOIL GAS SURVEY ANALYTICAL DATA  
 Shell Oil Products Company  
 15275 Washington Avenue  
 San Leandro, CA  
 WIC# 204-6852-1008

Sample Depth (ft)	Date Sampled	TPPH ( $\mu\text{g}/\text{m}^3$ )	B ( $\mu\text{g}/\text{m}^3$ )	T ( $\mu\text{g}/\text{m}^3$ )	E ( $\mu\text{g}/\text{m}^3$ )	X ( $\mu\text{g}/\text{m}^3$ )	MTBE ( $\mu\text{g}/\text{m}^3$ )	Comments
<b>SG-10-4</b>								
4	31-Jul-97	1700	<7.0	11	<9.5	22	11	
<b>SG-11-4</b>								
4	31-Jul-97	660	<6.7	<7.9	<9.0	<9.0	<7.5	
<b>SG-12-4</b>								
4	31-Jul-97	5000	16	<8.3	13	22	29	
<b>SG-13-4</b>								
4	31-Jul-97	5000	<71	<84	<97	<97	<81	

Abbreviations:

<x = Not detected at detection limit of x

NA = Not analyzed or not available



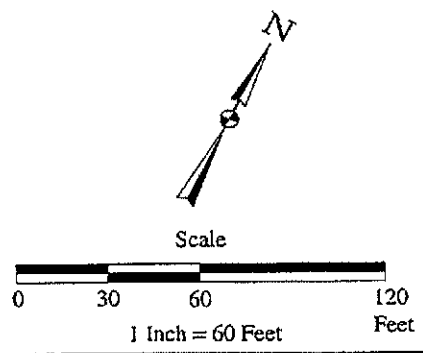
**EXPLANATION**

- ⊕ Groundwater Monitoring Well
- ⊗ Abandoned Groundwater Monitoring Well
- ⊙ Weiss Associates Soil Boring
- ⊕ Enviros Soil Boring (31-Jul-97)

0.11/4'  
Benzene/Depth in feet. Concentration in soil in parts per million.

(0.11/4')  
Benzene/Depth in feet. Vapor concentration in soil in ug/cubic meter

ND None Detected



Base Map taken from Exxon Map dated January 5, 1995.

**PLATE 2** **SITE MAP / BENZENE CONCENTRATION MAP**  
 Shell Oil Products Company  
 15275 Washington Avenue  
 San Leandro, California



Drawn By: DML Date: 7-22-97 Approved By: *[Signature]* Date: 8/13/97

**Table 2. Soil Vapor Survey Data: Sorted by Depth**  
**Former Shell Service Station WIC #204-6852-1008, 15275 Washington Avenue, San Leandro, California**

WA Sample ID	Depth below ground surface	Air Toxics LTD Data (ug/m <sup>3</sup> )						InterPhase Data (%)				Comments
		(PH (C+ as gas)	MIBE	Benzene	Toluene	Ethylbenzene	m,p,c-Xylene	Carbon Dioxide	Oxygen	Nitrogen	Methane	
SG-02-2ft	2 ft	46,000	73	250	96	250	880	9.2%	11.3%	79.5%	< 0.1%	No flow, sample collected at 2 ft
SG-03-2ft	2 ft	54,000,000	260,000	390,000	190,000	370,000	310,000	15.8%	3.8%	78.9%	1.6%	Good flow, gravel
SG-04-2ft	2 ft	220,000	310	420	150	1,700	3,200	0.7%	19.8%	79.4%	< 0.1%	Pretty good/medium flow
SG-07-2ft	2 ft	62,000,000	330,000	220,000	210,000	230,000	110,000	0.9%	19.7%	79.4%	< 0.1%	Good flow
SG-08-2ft	2 ft	15,000	22	10	38	190	220	0.1%	20.6%	79.3%	< 0.1%	Good flow
<b>Mean</b>	<b>2 ft</b>	<b>23,256,200</b>	<b>118,081</b>	<b>122,136</b>	<b>80,057</b>	<b>120,428</b>	<b>84,860</b>	<b>5.3%</b>	<b>15.0%</b>	<b>79.3%</b>	<b>0.4%</b>	
SG-01-4ft	4 ft	100,000,000	700,000	750,000	280,000	370,000	1,300,000	19.7%	3.9%	68.6%	7.8%	Good flow, tight soil
SG-03-4ft	4 ft	33,000,000	150,000	230,000	110,000	210,000	330,000	1.6%	18.1%	80.3%	< 0.1%	Somewhat restricted flow
SG-04-4ft	4 ft	350,000	550	1,000	2,300	2,600	4,400	1.4%	19.2%	79.4%	< 0.1%	
SG-05-4ft	4 ft	8,700,000	6,200	20,000	42,000	75,000	130,000	0.3%	20.3%	79.4%	< 0.1%	Very tight
SG-06-4ft	4 ft	66,000	22	8	150	380	790	0.5%	19.9%	79.6%	< 0.1%	Good flow
SG-07-4ft	4 ft	130,000,000	510,000	450,000	420,000	440,000	180,000	13.4%	9.5%	67.9%	9.3%	Good flow, high permeability
SG-08-4ft	4 ft	7,100,000	3,200	15,000	46,000	44,000	62,000	12.6%	4.8%	82.7%	< 0.1%	Good flow
SG-09-4ft	4 ft	540,000	1,600	18,000	610	17,000	15,000	0.9%	20.0%	79.1%	< 0.1%	Pretty good flow
<b>Mean</b>	<b>4 ft</b>	<b>34,969,500</b>	<b>171,447</b>	<b>185,501</b>	<b>112,633</b>	<b>144,873</b>	<b>252,774</b>	<b>6.3%</b>	<b>14.5%</b>	<b>77.1%</b>	<b>2.2%</b>	
SG-03-6ft	6 ft	5,000,000	16,000	39,000	18,000	71,000	190,000	4.7%	16.4%	78.9%	< 0.1%	Somewhat restricted flow
SG-04-6ft	6 ft	310,000	200	1,000	2,200	4,000	4,800	1.2%	19.5%	79.3%	< 0.1%	Medium flow
SG-04-6ft (dup)	6 ft	NA	NA	NA	NA	NA	NA	1.0%	19.2%	79.8%	< 0.1%	Medium flow
SG-07-6ft	6 ft	3,000,000	17,000	19,000	6,500	20,000	6,600	1.9%	18.7%	78.5%	1.0%	Low flow/very low permeability
SG-07-6ft (dup)	6 ft	3,400,000	19,000	21,000	7,300	22,000	7,500	NA	NA	NA	NA	Low flow/very low permeability
SG-08-6ft	6 ft	20,000,000	8,400	49,000	130,000	140,000	290,000	0.3%	20.0%	79.7%	< 0.1%	Low flow, a little tighter than 2 ft and 4 ft depths
SG-08-6ft (dup)	6 ft	NA	NA	NA	NA	NA	NA	0.2%	20.0%	79.8%	< 0.1%	Low flow, a little tighter than 2 ft and 4 ft depths
<b>Mean</b>	<b>6 ft</b>	<b>6,342,000</b>	<b>12,120</b>	<b>25,800</b>	<b>32,800</b>	<b>51,400</b>	<b>99,780</b>	<b>1.6%</b>	<b>19.0%</b>	<b>79.3%</b>	<b>0.3%</b>	

Notes: < - Below the method detection limit.  
M - reported value may be biased due to apparent matrix interferences.



**Table 3. Soil Vapor Survey Data: Sorted by Location**  
**Former Shell Service Station WIC #204-6852-1008, 15275 Washington Avenue, San Leandro, California**

WA Sample ID	Depth below ground surface	Air Toxics LTD Data (ug/m <sup>3</sup> )						InterPhase Data (%)				Comments
		IPH (C <sub>1</sub> + as gas)	MTBE	Benzene	Toluene	Ethylbenzene	m,p,o-Xylene	Carbon Dioxide	Oxygen	Nitrogen	Methane	
SG-01-4ft	4 ft	100,000,000	700,000	750,000	280,000	370,000	1,300,000	19.7%	3.9%	68.6%	7.8%	Good flow, tight soil
SG-02-2ft	2 ft	46,000	73	250	96	250	880	9.2%	11.3%	79.5%	< 0.1%	No flow, sample collected at 2 ft
SG-03-2ft	2 ft	54,000,000	260,000	390,000	190,000	370,000	370,000	15.8%	3.8%	78.9%	1.6%	Good flow, gravel
SG-03-4ft	4 ft	33,000,000	160,000	230,000	110,000	210,000	330,000	1.6%	18.1%	80.3%	< 0.1%	Somewhat restricted flow
SG-03-6ft	6 ft	5,000,000	16,000	39,000	18,000	71,000	190,000	4.7%	16.4%	78.9%	< 0.1%	Somewhat restricted flow
SG-04-2ft	2 ft	220,000	310	420	150	1,700	3,200	0.7%	19.8%	79.4%	< 0.1%	Pretty good/medium flow
SG-04-4ft	4 ft	350,000	550	1,000	2,300	2,600	4,400	1.4%	19.2%	79.4%	< 0.1%	
SG-04-6ft	6 ft	310,000	200	1,000	2,200	4,000	4,800	1.2%	19.5%	79.3%	< 0.1%	Medium flow
SG-04-6ft (dup)	6 ft	NA	NA	NA	NA	NA	NA	1.0%	19.2%	79.8%	< 0.1%	Medium flow
SG-05-4ft	4 ft	8,700,000	6,200	20,000	42,000	75,000	130,000	0.3%	20.3%	79.4%	< 0.1%	Very tight
SG-06-4ft	4 ft	66,000	22	8	150	380	790	0.5%	19.9%	79.6%	< 0.1%	Good flow
SG-07-2ft	2 ft	62,000,000	330,000	220,000	210,000	230,000	110,000	0.9%	19.7%	79.4%	< 0.1%	Good flow
SG-07-4ft	4 ft	130,000,000	510,000	450,000	420,000	440,000	180,000	13.4%	9.5%	67.9%	9.3%	Good flow, high permeability
SG-07-6ft	6 ft	3,000,000	17,000	19,000	6,500	20,000	6,500	1.9%	18.7%	78.5%	1.0%	Low flow/very low permeability
SG-07-6ft (dup)	6 ft	3,400,000	19,000	21,000	7,300	22,000	7,500	NA	NA	NA	NA	Low flow/very low permeability
SG-08-2ft	2 ft	15,000	22	10	38	190	220	0.1%	20.6%	79.3%	< 0.1%	Good flow
SG-08-4ft	4 ft	7,100,000	3,200	15,000	46,000	44,000	62,000	12.6%	4.8%	82.7%	< 0.1%	Good flow
SG-08-6ft	6 ft	20,000,000	8,400	49,000	190,000	140,000	290,000	0.3%	20.0%	79.7%	< 0.1%	Low flow, a little tighter than 2 ft and 4 ft dept
SG-08-6ft (dup)	6 ft	NA	NA	NA	NA	NA	NA	0.2%	20.0%	79.8%	< 0.1%	Low flow, a little tighter than 2 ft and 4 ft dept
SG-09-4ft	4 ft	540,000	1,600	18,000	610	17,000	15,000	0.9%	20.0%	79.1%	< 0.1%	Pretty good flow

Notes: < - Below the method detection limit.

M - reported value may be biased due to apparent matrix interferences.

**APPENDIX E**

**TABLE E-2 - SOIL GAS SCREENING LEVELS FOR  
EVALUATION OF POTENTIAL VAPOR INTRUSION CONCERNS**

# **Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater**

Prepared by:

**California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, California 94612**

**INTERIM FINAL - November 2007**  
(Revised May 2008)

**Table E-2. Shallow Soil Gas Screening Levels  
for Evaluation of Potential Vapor Intrusion Concerns  
(volatile chemicals only)**

Chemical	Physical State		Residential Exposure			Commercial/Industrial Land Use		
			Lowest Residential	Carcinogenic Effects	Noncarcinogenic Effects	Lowest C/I	Carcinogenic Effects	Noncarcinogenic Effects
			( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )
Acenaphthene	V	S	4.4E+04		4.4E+04	1.2E+05		1.2E+05
Acenaphthylene	V	S	2.2E+04		2.2E+04	6.1E+04		6.1E+04
Acetone	V	L	6.6E+05		6.6E+05	1.8E+06		1.8E+06
Aldrin	NV	S						
Anthracene	V	S	2.2E+05		2.2E+05	6.1E+05		6.1E+05
Antimony	NV	S						
Arsenic	NV	S						
Barium	NV	S						
Benzene	V	L	8.4E+01	8.4E+01	6.3E+03	2.8E+02	2.8E+02	1.8E+04
Benzo(a)anthracene	NV	S						
Benzo(b)fluoranthene	NV	S						
Benzo(k)fluoranthene	NV	S						
Benzo(g,h,i)perylene	NV	S						
Benzo(a)pyrene	NV	S						
Beryllium	NV	S						
1,1-Biphenyl	V	S						
Bis(2-chloroethyl) ether	V	L	7.4E+00	7.4E+00		2.5E+01	2.5E+01	
Bis(2-chloroisopropyl) ether	V	L	3.4E+00	3.4E+00	2.9E+04	1.2E+01	1.2E+01	8.2E+04
Bis(2-ethylhexyl) phthalate	NV	S						
Boron	NV	S						
Bromodichloromethane	V	L	1.4E+02	1.4E+02	1.5E+04	4.6E+02	4.6E+02	4.1E+04
Bromoform (Tribromomethane)	NV	S						
Bromomethane	V	G	1.0E+03		1.0E+03	2.9E+03		2.9E+03
Cadmium	NV	S						
Carbon tetrachloride	V	L	1.9E+01	1.9E+01	8.3E+03	6.3E+01	6.3E+01	2.3E+04
Chlordane	NV	S						
p-Chloroaniline	NV	S						
Chlorobenzene	V	L	2.1E+05		2.1E+05	5.8E+05		5.8E+05
Chloroethane	V	G	2.1E+04		2.1E+04	5.8E+04		5.8E+04
Chloroform	V	L	4.6E+02	4.6E+02	6.3E+04	1.5E+03	1.5E+03	1.8E+05
Chloromethane	V	G	1.9E+04		1.9E+04	5.3E+04		5.3E+04
2-Chlorophenol	V	L	3.7E+03		3.7E+03	1.0E+04		1.0E+04
Chromium (total)	NV	S						
Chromium III	NV	S						
Chromium VI	NV	S						

**Table E-2. Shallow Soil Gas Screening Levels  
for Evaluation of Potential Vapor Intrusion Concerns  
(volatile chemicals only)**

Chemical	Physical State		Residential Exposure			Commercial/Industrial Land Use		
			Lowest Residential	Carcinogenic Effects	Noncarcinogenic Effects	Lowest C/I	Carcinogenic Effects	Noncarcinogenic Effects
			( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )
Chrysene	NV	S						
Cobalt	NV	S						
Copper	NV	S						
Cyanide	NV	S	1.5E+04		1.5E+04	4.1E+04		4.1E+04
Dibenz(a,h)anthracene	NV	S						
Dibromochloromethane	V	S						
1,2-dibromo-3-chloropropane	V	L	1.3E+00	1.3E+00	4.2E+01	4.3E+00	4.3E+00	1.2E+02
1,2-Dibromoethane	V	S	4.1E+00	4.1E+00	1.9E+03	1.4E+01	1.4E+01	5.3E+03
1,2-Dichlorobenzene	V	L	4.2E+04		4.2E+04	1.2E+05		1.2E+05
1,3-Dichlorobenzene	V	L	2.2E+04		2.2E+04	6.1E+04		6.1E+04
1,4-Dichlorobenzene	V	S	2.2E+02	2.2E+02	1.7E+05	7.4E+02	7.4E+02	4.7E+05
3,3-Dichlorobenzidine	NV	S						
Dichlorodiphenyldichloroethane (DDD)	NV	S						
Dichlorodiphenyldichloroethene (DDE)	NV	S						
Dichlorodiphenyltrichloroethane (DDT)	NV	S						
1,1-Dichloroethane	V	L	1.5E+03	1.5E+03	1.0E+05	5.1E+03	5.1E+03	2.9E+05
1,2-Dichloroethane	V	L	9.4E+01	9.4E+01	1.0E+03	3.1E+02	3.1E+02	2.9E+03
1,1-Dichloroethene	V	L	4.2E+04		4.2E+04	1.2E+05		1.2E+05
<i>cis</i> -1,2-Dichloroethene	V	L	7.3E+03		7.3E+03	2.0E+04		2.0E+04
<i>trans</i> -1,2-Dichloroethene	V	L	1.5E+04		1.5E+04	4.1E+04		4.1E+04
2,4-Dichlorophenol	NV	S						
1,2-Dichloropropane	V	L	2.4E+02	2.4E+02	8.3E+02	8.2E+02	8.2E+02	2.3E+03
1,3-Dichloropropene	V	L	1.5E+02	1.5E+02	4.2E+03	5.1E+02	5.1E+02	1.2E+04
Dieldrin	NV	S						
Diethyl phthalate	NV	S						
Dimethyl phthalate	NV	S						
2,4-Dimethylphenol	V	S						
2,4-Dinitrophenol	NV	S						
2,4-Dinitrotoluene	NV	S						
1,4-Dioxane	NV	L						
Dioxin (2,3,7,8-TCDD)	NV	S						
Endosulfan	NV	S						
Endrin	NV	S						
Ethylbenzene	V	L	9.8E+02	9.8E+02	2.1E+05	3.3E+03	3.3E+03	5.8E+05
Fluoranthene	NV	S						

**Table E-2. Shallow Soil Gas Screening Levels  
for Evaluation of Potential Vapor Intrusion Concerns  
(volatile chemicals only)**

Chemical	Physical State		Residential Exposure			Commercial/Industrial Land Use		
			Lowest Residential	Carcinogenic Effects	Noncarcinogenic Effects	Lowest C/I	Carcinogenic Effects	Noncarcinogenic Effects
			( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )
Fluorene	V	S	2.9E+04		2.9E+04	8.2E+04		8.2E+04
Heptachlor	NV	S						
Heptachlor epoxide	NV	S						
Hexachlorobenzene	NV	S						
Hexachlorobutadiene	NV	S						
$\gamma$ -Hexachlorocyclohexane (Lindane)	NV	S						
Hexachloroethane	NV	S						
Indeno(1,2,3-c,d)pyrene	NV	S						
Lead	NV	S						
Mercury (elemental)	V	S	1.9E+01		1.9E+01	5.3E+01		5.3E+01
Methoxychlor	NV	S						
Methylene chloride	V	L	5.2E+03	5.2E+03	8.3E+04	1.7E+04	1.7E+04	2.3E+05
Methyl ethyl ketone	V	L	1.0E+06		1.0E+06	2.9E+06		2.9E+06
Methyl isobutyl ketone	V	L	6.3E+05		6.3E+05	1.8E+06		1.8E+06
Methyl mercury	NV	S						
2-Methylnaphthalene	V	S						
<i>tert</i> -Butyl methyl ether	V	L	9.4E+03	9.4E+03	6.3E+05	3.1E+04	3.1E+04	1.8E+06
Molybdenum	NV	S						
Naphthalene	V	S	7.2E+01	7.2E+01	6.3E+02	2.4E+02	2.4E+02	1.8E+03
Nickel	NV	S						
Pentachlorophenol	NV	S						
Perchlorate	NV	S						
Phenanthrene	V	S	2.2E+04		2.2E+04	6.1E+04		6.1E+04
Phenol	NV	S						
Polychlorinated biphenyls (PCBs)	NV	S						
Pyrene	V	S	2.2E+04		2.2E+04	6.1E+04		6.1E+04
Selenium	NV	S						
Silver	NV	S						
Styrene	V	L	1.9E+05		1.9E+05	5.3E+05		5.3E+05
<i>tert</i> -Butyl alcohol	V	L						
1,1,1,2-Tetrachloroethane	V	L	3.2E+02	3.2E+02		1.1E+03	1.1E+03	
1,1,2,2-Tetrachloroethane	V	L	4.2E+01	4.2E+01	4.4E+04	1.4E+02	1.4E+02	1.2E+05
Tetrachloroethene	V	L	4.1E+02	4.1E+02	8.3E+04	1.4E+03	1.4E+03	2.3E+05
Thallium	NV	S						
Toluene	V	L	6.3E+04		6.3E+04	1.8E+05		1.8E+05

**Table E-2. Shallow Soil Gas Screening Levels  
for Evaluation of Potential Vapor Intrusion Concerns  
(volatile chemicals only)**

Chemical	Physical State		Residential Exposure			Commercial/Industrial Land Use		
			Lowest Residential	Carcinogenic Effects	Noncarcinogenic Effects	Lowest C/I	Carcinogenic Effects	Noncarcinogenic Effects
			( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )	( $\mu\text{g}/\text{m}^3$ )
Toxaphene	NV	S						
TPH (gasolines)	V	L	1.0E+04		1.0E+04	2.9E+04		2.9E+04
TPH (middle distillates)	V	L	1.0E+04		1.0E+04	2.9E+04		2.9E+04
TPH (residual fuels)	NV	L/S						
1,2,4-Trichlorobenzene	V	L	8.3E+02		8.3E+02	2.3E+03		2.3E+03
1,1,1-Trichloroethane	V	L	4.6E+05		4.6E+05	1.3E+06		1.3E+06
1,1,2-Trichloroethane	V	L	1.5E+02	1.5E+02	2.9E+03	5.1E+02	5.1E+02	8.2E+03
Trichloroethene	V	L	1.2E+03	1.2E+03	1.3E+05	4.1E+03	4.1E+03	3.5E+05
2,4,5-Trichlorophenol	V	S	7.3E+04		7.3E+04	2.0E+05		2.0E+05
2,4,6-Trichlorophenol	NV	S						
Vanadium	NV	S						
Vinyl chloride	V	G	3.1E+01	3.1E+01	2.1E+04	1.0E+02	1.0E+02	5.8E+04
Xylenes	V	L	2.1E+04		2.1E+04	5.8E+04		5.8E+04
Zinc	NV	S						

**Notes:**

Soil gas screening levels intended to be protective of indoor air quality, calculated for volatile chemicals only.

Physical state of chemical at ambient conditions (V - volatile, NV - nonvolatile, S - solid, L - liquid, G - gas).

Chemical considered to be volatile if Henry's Law constant ( $\text{atm m}^3/\text{mole}$ )  $>10^{-5}$  and molecular weight  $<200$  (see Table E-1).

Dibromochloromethane, dibromochloropropane and pyrene considered volatile for purposes of modeling (USEPA 2004).

Target cancer risk =  $1\text{E}-06$ , Target Hazard Quotient = 0.2 for all chemicals.

Residential soil gas:indoor air attenuation factor = 0.001 (1/1000). Commercial/industrial soil gas:indoor air attenuation factor = 0.0005 (1/2000).

Soil gas screening level for ethanol based on potential indoor air nuisance concerns (refer to Section 5.3.3 and Table H series).

soils or limited soil impacts and no groundwater source of VOCs.

## **APPENDIX F**

### **GUIDELINES FOR SOIL GAS COLLECTION IN TEDLAR® BAGS**



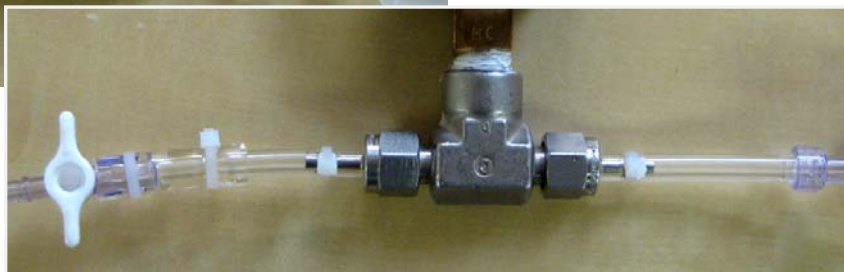
## INSTRUCTIONS FOR SOIL GAS COLLECTION IN TEDLAR BAGS FULFILLING MISSOURI DNR GUIDELINES

### Collecting Samples into Tedlar Bags

1. Connect a 2-way valve on to the soil gas probe using flex tubing. Connect the vacuum gauge to the 2-way valve and to a 3-way valve on 60 cc syringe as shown in Figure 1. BEWARE, STEM ON 3-WAY VALVE POINTS TO THE OFF DIRECTION.



Fig 1: Attach syringe & vacuum gauge to soil gas probe tubing using 2-way & 3-way valves. Be sure to zip tie the connections.



2. Leak test the sampling train by pulling on the syringe with the 2-way valve on the soil gas probe in off position. The vacuum gauge should deflect to ~10" to 15" of HG.
3. Turn the 3-way valve on the syringe so that the flow-path to the vacuum gauge is off. Watch the vacuum gauge. If vacuum remains steady for 30 seconds, sampling train is leak-tight. If the vacuum does not remain steady, find the leak, correct, and repeat leak test.
4. Open the 3-way and 2-way valves so that the soil gas probe is open to the syringe and purge appropriate volume from probe using 60 cc syringe). Use 3 internal dead-volumes unless otherwise instructed to do so. Dead volume of 1/8" nylaflo is 1 cc per foot. Dead volume of 1/4" tubing is 5 cc/foot.

5. After purging, leave the syringe connected to the vapor gauge & vapor probe and connect a tedlar bag to the side port of the 3-way valve using flex tubing (figure 2).



Fig 2: Connect tedlar to the side port of the 3-way valve and fill bag with 300-450 cc vapor sample.

6. If a leak/tracer compound is required, place leak compound around base of probe where it enters the ground. An easy way to do this is to dampen a paper towel with isopropyl alcohol (rubbing alcohol) or difluoroethane (duster spray) and place around the base of probe.
7. Open valve on the tedlar bag. Fill tedlar bag with 300 cc to 400 cc using the syringe and switching the position of the 3-way valve from the probe to the tedlar bag. Note: if tedlar bags are to be shipped by air, only fill them with 300 cc. If the samples in the tedlar will be transferred to mini-canisters on-site, put 450 cc into the tedlar.
8. Once filled, close valve on tedlar bag and remove from 3-way valve.

*Note: When filling with a syringe, you control the flow rate by how fast you pull on the syringe. Hence, a flow meter should not be necessary. If you wish to install a flow meter, place it between the 60 cc syringe and the vacuum gauge.*