Shell Oil Products US

March 14, 2006

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

Subject: Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California
SAP Code 129449

Dear Mr. Wickham:

Attached for your review and comment is a copy of the *Pilot Test Report* for the above referenced site. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

As always, please feel free to contact me directly at (707) 865-0251 with any questions or concerns.

Sincerely,

Shell Oil Products US

Denis L. Brown
Project Manager

20945 S. Wilmington Ave., Carson, CA 90810 Phone (707) 865-0251 Facsimile (707) 865-2542

CAMBRIA

March 14, 2006

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

Re: **Pilot Test Report**
Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California
SAP Code 129449
Incident No. 97093397

Dear Mr. Wickham:

Cambria Environmental Technology, Inc. (Cambria) prepared this report on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) to document the pilot testing activities performed at the referenced site. Cambria followed the scope of work presented in our November 22, 2005 *Feasibility Study Work Plan*, which Alameda County Environmental Health (ACEH) staff approved in their December 29, 2005 letter to Shell. The work was performed in accordance with ACEH and San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) guidelines.

SITE LOCATION AND DESCRIPTION

The site is a former service station located on the northwest corner of Martin Luther King Jr. Way and 27th Street in a commercial and residential area of Oakland, California (Figure 1). A Shell service station operated on the property from approximately 1959 to 1979. The site layout consisted of a service station building, two dispenser islands, three underground fuel storage tanks (USTs), associated product piping, and a waste oil UST (Figure 2). The fueling equipment associated with the former Shell service station was removed after Shell terminated operations at the site. In 1979, Acme West Ambulance Company (Acme) purchased the site and installed a 2,000-gallon UST for gasoline storage. Acme sold the property to Auto-Tech West (ATW) in 1986. According to an August 25, 1986 ACHCSA inspector's report, ATW reportedly never used the UST, although a 150-gallon aboveground waste oil tank, a 15-gallon carburetor cleaner tank, and a parts cleaning tank with solvent were reportedly in use.

Currently, the site is occupied by ATW and is utilized as an automotive repair shop. The current site operator uses the northwest corner of the property and the wooden car port for storage of

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such things as non-operational automobiles, portable gasoline containers, tires, and drums used for waste oil collection and storage.

PREVIOUS WORK

A complete description of historical investigative activities was presented in previous documents, and most recently in Cambria's November 21, 2005 *Feasibility Study Work Plan,* and will be updated in the subsequent technical report for the site investigation work. For brevity, that information is not repeated in this document.

DUAL-PHASE EXTRACTION PILOT TEST

Historical assessment data suggested that dual-phase extraction (DPE) may be an effective method for remediating the remaining impacted soil and groundwater. DPE is the process of applying high vacuum through an airtight well seal to simultaneously extract soil vapors from the vadose zone and groundwater from the saturated zone. The vacuum created by DPE can increase the groundwater yield from wells completed in low permeability formations. In addition, residual TPHg and BTEX in soil within the influence of the vacuum may be removed in the vapor phase. Groundwater extraction may provide hydraulic control of the hydrocarbon plume and reduce contaminant migration. Furthermore, extended dewatering of the saturated zone combined with vapor extraction can remediate residual hydrocarbons in the source area.

Cambria's November 22, 2005, *Feasibility Study Work Plan* recommended that additional wells be installed, followed by performance of a 5-day DPE pilot test. Wells MW-6, MW-7, and MW-8 were installed the first week of January 2006. The construction details are provided on Table 1, but the technical report of findings from the sampling and installation activities will be submitted under separate cover.

This document presents the DPE pilot testing activities, results, and conclusions. The objectives of the DPE pilot test were to:

1) assess the magnitude of vapor-phase hydrocarbons yielded from the source area;
2) determine whether extracted vapor-phase hydrocarbons would be sustained over time;
3) assess the vapor extraction flow rate yielded from the soil formation;
4) assess the groundwater extraction flow rate yielded from the aquifer;
5) assess the residual hydrocarbon mass removal by DPE from soil and groundwater;
6) estimate a vacuum radius of influence; and
7) assess groundwater drawdown created by DPE.

DPE Equipment: A Solleco trailer-mounted liquid-ring pump with electric catalytic oxidizer (Solleco unit) was used as the extraction and vapor abatement device during interim remediation. A 100-kilowatt generator powered the Solleco unit. A throttle valve controlled the applied vacuum and vapor extraction flow rate. The Solleco unit is equipped with auto-dilution and manual dilution valves for additional vacuum and flow control, as well as to maintain oxidizer temperatures within the specified range.

Field vapor concentrations were measured with a Horiba model MEXA554J organic vapor analyzer (OVA). Vapor samples were collected in one-liter tedlar bags using a Gast rotary-vane sample pump. The vacuum induced in nearby wells, at the wellhead, and within the sample manifold was monitored using Magnehelic differential pressure gauges. A thermal anemometer was used to measure extraction flow rates within the sample manifold.

The extracted groundwater was temporarily stored in an on-site storage tank, and transported via vacuum truck to the Shell refinery in Martinez, California for reclamation. Approximately 2,100 gallons of groundwater were removed through these activities (Appendix A).

Data Collection and Sampling: Data was collected on standard forms, which was used to generate the data tables included as Tables 2 through 4, herein. The depth to groundwater in onsite monitoring wells and distances between the extraction and monitoring points were recorded prior to beginning DPE. Throughout the DPE pilot test, Cambria measured the applied vacuum, airflow, volatile organic vapor concentration, and vacuum influence in nearby wells at 15 to 30 minute intervals. Samples of the extracted soil vapor were collected several times during testing. Depth to groundwater was periodically measured in observation wells to assess drawdown.

Analyses: Laboratory samples were analyzed by STL-San Francisco and Sequoia Analytical-Morgan Hill, both State of California certified laboratories, using EPA Method 8260B to determine TPHg and BTEX concentrations and verify field measurements.

Health and Safety Plan: A site-specific Health and Safety Plan was prepared for the pilot testing activities, and was kept onsite throughout the remedial activities.

Results of DPE Pilot Test

The vapor extraction data, groundwater extraction data, and vacuum radius of influence data are summarized in Tables 2, 3, and 4, respectively. Certified laboratory analytical reports are included in Appendix B. Details of the DPE pilot test are presented below.

DPE Test on V-1: DPE from well V-1 began at 12:30 on January 16, 2006. The static groundwater level in well V-1 was measured at 5.10 feet below grade (fbg) prior to testing. Using a down well stinger, the well was dewatered to near its total depth of 13.0 fbg at the outset of DPE. During step testing, the applied wellhead vacuum ranged from 7 to 21 inches of water column (WC). The extraction flow rate ranged from 7.6 to 29.1 standard cubic feet per minute (scfm). Cambria personnel measured maximum induced vacuum in wells V-2, MW-5, and MW-8 of 5.5 inches WC, 0.30 inches WC, and 0.78 inches WC, respectively. No vacuum response was observed in wells MW-4, MW-6, and MW-7.

Vapor samples were collected in tedlar bags for laboratory analysis. The vapor sample (V-1-A) collected at 12:40 on January 16 contained 170 parts per million by volume (ppmv) TPHg. Benzene was not detected above the laboratory reporting limit of 0.31 ppmv in this sample. The vapor sample (V-1-B) collected at 16:00 on January 16 contained 33 ppmv TPHg. Benzene was not detected above the laboratory reporting limit of 0.31 ppmv in this sample. The vapor sample (V-1-C) collected at 10:30 on January 17 contained 34 ppmv TPHg. Benzene was not detected above the laboratory reporting limit of 0.31 ppmv in this sample.

Extraction from well V-1 ceased at 10:30 on January 17, 2006, completing 22 hours of continuous extraction. A total of 590 gallons of groundwater was extracted, equating to 0.45 gallons per minute (gpm).

DPE Test on V-2: DPE from well V-2 began at 10:45 on January 17, 2006. The static groundwater level in well V-2 was measured at 5.11 fbg prior to testing. Using a down well stinger, the well was dewatered to near its total depth of 13.0 fbg at the outset of DPE. A small amount of wellhead bleed air was required to sustain groundwater extraction and prevent vacuum-lock. The addition of wellhead bleed air increased the measured vapor extraction flow rate and diluted the vapor hydrocarbon concentrations. The applied wellhead vacuum data was collected by briefly attaching a vacuum gauge to the wellhead and was estimated to be greater than 100 inches WC. The extraction flow rate ranged from 2.6 to 5.0 scfm, which included an unknown (small) amount of wellhead bleed air. Cambria personnel measured a maximum induced vacuum in wells V-1, MW-4, MW-5, MW-6, MW-7, and MW-8 of 0.19 inches WC,

1.25 inches WC, 4.7 inches WC, 0.42 inches WC, 0.06 inches WC, and 0.06 inches WC, respectively.

Vapor samples were collected in tedlar bags for laboratory analysis. Typically, vapor samples are collected from the process line. Due to the necessity to add bleed-air as discussed above, vapor samples were instead collected from the wellhead. Sampling from the wellhead provided an undiluted and representative vapor sample under the operating conditions. The vapor sample (V-2-A) collected at 12:30 on January 17 contained 17,000 ppmv TPHg and 39 ppmv benzene. The vapor sample (V-2-B) collected at 14:15 on January 17 contained 7,000 ppmv TPHg and 16 ppmv benzene.

Extraction from well V-2 ceased at 14:15 on January 17, 2006, completing 3.5 hours of continuous extraction. A total of 90 gallons of groundwater was extracted, equating to 0.43 gpm.

DPE Test on MW-6: DPE from well MW-6 began at 14:25 on January 17, 2006. The static groundwater level in well MW-6 was measured at 5.18 fbg prior to testing. Using a down well stinger, the well was dewatered to near its total depth of 20.0 fbg at the outset of DPE. During step testing, the applied wellhead vacuum ranged from 10 to 15 inches WC. The extraction flow rate ranged from 23.8 to 31.2 scfm. Cambria personnel measured a maximum induced vacuum in wells MW-4 and MW-5 of 1.7 inches WC and 0.34 inches WC, respectively. No vacuum response was observed in wells V-1, V-2, MW-7, and MW-8.

Vapor samples were collected in tedlar bags for laboratory analysis. The vapor sample (MW-6-A) collected at 14:45 on January 17 contained 130 ppmv TPHg and 6.5 ppmv benzene. The vapor sample (MW-6-B) collected at 17:25 on January 17 contained 24 ppmv TPHg and 5.1 ppmv benzene.

Extraction from well MW-6 ceased at 17:25 on January 17, 2006, completing 3 hours of continuous extraction. Due to a noise complaint from the neighboring resident, the equipment was not operated overnight. A total of 107 gallons of groundwater was extracted, equating to 0.59 gpm.

DPE Test on MW-7: DPE from well MW-7 began at 10:00 on January 18, 2006. The static groundwater level in well MW-7 was measured at 6.27 fbg prior to testing. Using a down well stinger, the well was dewatered to near its total depth of 20.0 fbg at the outset of DPE. During

step testing, the applied wellhead vacuum ranged from 3.8 to 7.8 inches WC. The extraction flow rate ranged from 17.7 to 27.3 scfm. Cambria personnel measured a maximum induced vacuum in wells MW-5 and MW-8 of 4.30 inches WC, and 4.60 inches WC, respectively. No vacuum response was observed in wells V-1, V-2, MW-4, and MW-6.

Vapor samples were collected in tedlar bags for laboratory analysis. The vapor sample (MW-7-A) collected at 10:20 on January 18 contained 91 ppmv TPHg and 15 ppmv benzene. The vapor sample (MW-7-B) collected at 14:20 on January 18 contained 69 ppmv TPHg and 9.7 ppmv benzene.

Extraction from well MW-7 ceased at 14:30 on January 18, 2006, completing 4 hours of continuous extraction. A total of 117 gallons of groundwater was extracted, equating to 0.49 gpm.

DPE Test on MW-4: DPE from well MW-4 began at 14:45 on January 18, 2006. The static groundwater level in well MW-4 was measured at 5.25 fbg prior to testing. Using a down well stinger, the well was dewatered to near its total depth of 20.0 fbg at the outset of DPE. A small amount of wellhead bleed air was required to sustain groundwater extraction and prevent vacuum-lock. The addition of wellhead bleed air increased the measured vapor extraction flow rate and diluted the vapor hydrocarbon concentrations. The applied wellhead vacuum data was collected by briefly attaching a vacuum gauge to the wellhead and was estimated to be greater than 100 inches WC. The extraction flow rate ranged from 8.9 to 11.0 scfm, which included an unknown (small) amount of wellhead bleed air. Cambria personnel measured maximum induced vacuum in well V-2 of 0.25 inches WC. No vacuum response was observed in wells V-1, MW-5, MW-6, MW-7, and MW-8.

Vapor samples were collected in tedlar bags for laboratory analysis. Vapor samples were collected from the wellhead to provide representative (undiluted) hydrocarbon concentrations. The vapor sample collected at 15:30 on January 18 (MW-4-A) contained 3,900 ppmv TPHg and 13 ppmv benzene. The vapor sample collected at 17:00 on January 18 (MW-4-B) contained 910 ppmv TPHg and 3.2 ppmv benzene.

Extraction from well MW-4 ceased at 17:00 on January 18, 2006, completing 2.25 hours of continuous extraction. A total of 62 gallons of groundwater was extracted, equating to 0.46 gpm.

DPE Test on MW-5: DPE from well MW-5 began at 10:00 on January 19, 2006. The static groundwater level in well MW-5 was measured at 6.55 fbg prior to testing. Using a down well

stinger, the well was dewatered to near its total depth of 20.0 fbg at the outset of DPE. A small amount of wellhead bleed air was required to sustain groundwater extraction and prevent vacuum-lock. The addition of wellhead bleed air increased the measured vapor extraction flow rate and diluted the vapor hydrocarbon concentrations. The applied wellhead vacuum data was collected by briefly attaching a vacuum gauge to the wellhead and ranged from 45 inches WC to greater than 100 inches WC. The extraction flow rate ranged from 2.0 to 7.1 scfm, which included an unknown (small) amount of wellhead bleed air. Cambria personnel measured a maximum induced vacuum in well MW-8 of 4.95 inches WC. No vacuum response was observed in wells V-1, V-2, MW-4, MW-6, and MW-7.

Vapor samples were collected in tedlar bags for laboratory analysis. Vapor samples were collected from the wellhead to provide undiluted and representative vapor samples as previously discussed. The vapor sample (MW-5-A) collected at 11:40 on January 19 contained 18,000 ppmv TPHg and 160 ppmv benzene. The vapor sample (MW-5-B) collected at 12:50 on January 19 contained 18,000 ppmv TPHg and 260 ppmv benzene.

Extraction from well MW-5 ceased at 13:10 on January 19, 2006, completing 3.17 hours of continuous extraction. A total of 399 gallons of groundwater was extracted, equating to 2.10 gpm.

DPE Test on MW-8: DPE from well MW-8 began at 13:25 on January 19, 2006. The static groundwater level in well MW-8 was measured at 6.85 fbg prior to testing. Using a down well stinger, the well was dewatered to near its total depth of 20.0 fbg at the outset of DPE. A small amount of wellhead bleed air was required to sustain groundwater extraction and prevent vacuum-lock. The addition of wellhead bleed air increased the measured vapor extraction flow rate and diluted the vapor hydrocarbon concentrations. The applied wellhead vacuum data was collected by briefly attaching a vacuum gauge to the wellhead and ranged from 40 inches WC to 70 inches WC. The extraction flow rate ranged from 1.4 to 7.6 scfm, which included an unknown (small) amount of wellhead bleed air. Cambria personnel measured a maximum induced vacuum in wells V-2 and MW-5 of 0.035 inches WC and 9.40 inches WC, respectively. No vacuum response was observed in wells V-1, MW-4, MW-6, and MW-7.

Vapor samples were collected in tedlar bags for laboratory analysis. Vapor samples were collected from the wellhead to provide undiluted and representative vapor samples. The vapor sample (MW-8-A) collected at 14:20 on January 19 contained 41 ppmv benzene. TPHg was not detected above the laboratory reporting limit of 710 ppmv. The vapor sample (MW-8-B) collected at 16:40 on January 19 contained 2,800 ppmv TPHg and 73 ppmv benzene.

Extraction from well MW-8 ceased at 17:10 on January 19, 2006, completing 3.75 hours of continuous extraction. A total of 200 gallons of groundwater was extracted, equating to 0.89 gpm.

Constant Vacuum DPE Test on MW-6: DPE activities on well MW-6 were restarted at 9:45 on January 20, 2006 for constant vacuum testing. Well MW-6 was selected for constant vacuum testing due to its proximity to the neighboring residence and potential vapor intrusion. The static groundwater level in well MW-6 was measured at 6.26 fbg prior to testing. Using a down well stinger, the well was dewatered to near its total depth of 20.0 fbg at the outset of DPE. During constant vacuum testing, the applied wellhead was set at approximately 100 inches of WC. A higher applied vacuum was set to contrast the low applied vacuum data from the step test. The extraction flow rate ranged from 6.3 to 9.4 scfm. Cambria personnel measured a maximum induced vacuum in wells MW-4, MW-5 and V-2 of 1.5 inches WC, 0.14 inches of WC, and 0.14 inches WC, respectively. No vacuum response was observed in wells V-1, MW-7, and MW-8.

One vapor sample was collected in a tedlar bag for laboratory analysis. The vapor sample (MW-6-C) collected at 12:00 on January 20 contained 590 ppmv TPHg and 24 ppmv benzene.

Extraction from well MW-6 ceased at 13:00 on January 20, 2006, completing 3.25 hours of continuous extraction. A total of 154 gallons of groundwater was extracted, equating to 0.79 gpm.

CONCLUSIONS

The magnitude of vapor-phase hydrocarbons yielded from the extraction wells varied during DPE pilot testing activities. TPHg vapor concentrations were low and decreased over the duration of DPE activities from well V-1. TPHg vapor concentrations reported from the samples collected at the outset of the DPE activities were 170 ppmv. After 22 hours of DPE extraction, these vapor concentrations were decreased to 34 ppmv. Benzene was not detected, at a reporting limit of 0.31 ppmv, in any samples collected from well V-1 during DPE activities.

High, but decreasing, TPHg and benzene vapor concentrations were encountered over the duration of DPE from well V-2 (3.5 hours). TPHg concentrations were reduced from 17,000 ppmv to 7,000 ppmv over the duration of DPE from well V-2. Benzene concentrations were reduced from 39 ppmv to 16 ppmv over the duration of DPE from well V-2.

During the step test on well MW-6 on January 17, 2006, the initial TPHg and benzene vapor concentrations were 130 and 6.5 ppmv, respectively. TPHg and benzene vapor concentrations

decreased to 24 ppmv and 5.1 ppmv, respectively, over the duration of the DPE step test on well MW-6. Final TPHg and benzene vapor concentrations taken near the end of the constant vacuum test on well MW-6 on January 20, 2006, increased to 590 ppmv and 24 ppmv, respectively.

Vapor concentrations for TPHg and benzene in well MW-7 decreased over the duration of DPE step testing activities. Initial TPHg and benzene vapor concentrations were reported at 91 ppmv and 15 ppmv, respectively. Final TPHg and benzene vapor concentrations were 69 ppmv and 9.7 ppmv, respectively.

Vapor concentrations for TPHg and benzene in well MW-4 decreased over the duration of DPE step testing. Initial TPHg and benzene vapor concentrations were 3,900 ppmv and 13 ppmv, respectively. Final TPHg and benzene vapor concentrations were 910 ppmv and 3.2 ppmv, respectively.

TPHg in well MW-5 remained steady at a concentration of 18,000 ppmv over the duration of DPE step testing. Benzene vapor concentrations increased over the duration of DPE step testing from well MW-5. Benzene vapor concentrations were reported at 160 ppmv at the outset and were reported at 260 ppmv near the end of DPE.

Vapor concentrations in well MW-8 also increased over the duration of DPE step testing activities. TPHg was not detected above the laboratory reporting limit of 710 ppmv at the outset of DPE. The initial benzene vapor concentration was reported at 41 ppmv. Final TPHg and benzene vapor concentrations were reported at 2,800 ppmv and 73 ppmv, respectively.

In general, the TPHg and BTEX vapor concentrations from wells V-1 and MW-7 were low. The vapor concentrations detected in wells MW-4, MW-6, and MW-8 are considered moderate. Analytical results indicate that the vapor concentrations for TPHg and BTEX detected in wells V-2 and MW-5 were high and sustained over the duration of the test.

Vapor extraction flow rates varied during DPE testing. Low extraction flow rates were measured in wells V-2, MW-4, MW-5, and MW-8. The extraction flow rate for wells V-2, MW-4, MW-5, and MW-8 ranged from 1.4 scfm to 11.0 scfm, which included an unknown (small) amount of wellhead bleed air. Moderate extraction flow rates were measured in wells V-1 and MW-7. The extraction flow rate for wells V-1 and MW-7 ranged from 7.6 scfm to 29.1 scfm. The extraction flow rate from well MW-6 varied. During step test, a moderate flow rate (~28 scfm) was observed at a lower applied vacuum (~12.5 inches WC). During the constant vacuum test, a low flow rate (<10 scfm) was observed at a higher applied vacuum (~100 inches WC).

The variability in extraction flow rates across the site may be attributed to heterogeneities and preferential pathways in subsurface soil. Furthermore, high vapor concentrations were observed

from wells that yielded low flow rates. This suggests that the remaining source material is sorbed to the native, less permeable, soils.

Based on operating parameters and vapor sample analytical results, the total vapor-phase mass removed from well V-1 during DPE activities is estimated at 0.32 pounds of TPHg and 0.001 pounds of benzene. The total vapor-phase mass removed from well V-2 is estimated at 2.54 pounds of TPHg and 0.005 pounds of benzene. The total vapor-phase mass removed from well MW-4 is estimated at 0.76 pounds of TPHg and 0.002 pounds of benzene. The total vapor-phase mass removed from well MW-5 is estimated at 3.38 pounds of TPHg and 0.03 pounds of benzene. The combined total vapor-phase mass removed from well MW-6 is estimated at 0.31 pounds of TPHg and 0.014 pounds of benzene. The total vapor-phase mass removed from well MW-7 is estimated at 0.11 pounds of TPHg and 0.02 pounds of benzene. The total vapor-phase mass removed from well MW-8 is estimated at 0.61 pounds of TPHg and 0.02 pounds of benzene. The total vapor-phase mass removed from all wells during the DPE step testing and constant vacuum testing activities is estimated at 8.0 pounds of TPHg and 0.09 pounds of benzene.

Wells V-1, V-2, and MW-4 through MW-8 were used to measure vacuum influence or alternatively as extraction points. An effective radius of influence is typically identified where observed vacuum is approximately 1% of the applied vacuum. For example, during DPE from well V-1, an applied wellhead vacuum of 20 inches WC induced a maximum vacuum of 5.5 inches WC in well V-2, 0.30 inches WC in well MW-5, and 0.78 inches WC in well MW-8. The maximum induced vacuums observed at wells V-2, MW-5, and MW-8 were approximately 27.5%, 1.5%, and 3.9% of the applied vacuum at well V-1 and satisfy this effective radius of influence criteria. Effective radius of influence data was recorded in one or more observations wells for extraction wells V-1, V-2, and MW-5 through MW-8.

Table 4 presents the vacuum radius of influence data and the effective radius of influence calculation. The theoretical radius of influence is estimated according to the steady-state radial distribution equation in *A Practical Approach to the Design, Operation, and Monitoring of In Situ Soil Venting Systems* (P.C. Johnson, C.C. Stanley, M.W. Kemblowski, D.L. Byers, and J.D. Colthart, Groundwater Monitoring and Review, Spring 1990). Based on the induced vacuum data, the effective radius of influence is estimated to be between 20 and 65 feet.

Effective radius of influence data was observed in observation well MW-5 during DPE testing from wells V-1, V-2, MW-6, MW-7, and MW-8. Also, a radius of influence of >5,000 feet and >10,000 feet was estimated from induced vacuum data from wells MW-5 and MW-8, respectively, while extracting from well MW-7. This data is considered an exception to the

actual radius of influence and supports the presence of a preferential pathway in the vicinity of these wells.

Approximately 2,085 gallons of groundwater were extracted from wells V-1, V-2, and MW-4 through MW-8, equating to an average groundwater extraction rate of 0.36 gpm. The majority of the extracted groundwater was yielded from well V-1. Approximately 590 gallons of groundwater was extracted from well V-1 over 22 hours, equating to a groundwater extraction rate of 0.37 gpm. The highest groundwater extraction rate was determined to be well MW-5 with an average flow rate of 2.10 gpm over 3.2 hours. Table 3 presents the groundwater extraction data. Using analytical data from the first quarter 2006 monitoring event, the mass of contaminants removed through groundwater extraction during this pilot test is calculated and presented on Table 3. Through the pilot test activities, approximately 0.533 pounds of TPHg and 0.042 pounds of benzene were removed through groundwater extraction activities.

Groundwater level measurements during DPE were recorded throughout the pilot test in monitoring wells V-1, V-2, and MW-1 through MW-8, and show localized groundwater draw down in close proximity to extraction wells. Table 4 presents groundwater level, draw down, and exposed well screen data. While extracting from well V-1, the groundwater level in V-2 was drawn down 0.03 feet. While extracting from well V-2, the groundwater level in MW-6 was drawn down 0.30 feet. While extracting from well MW-6, the groundwater levels in wells MW-4, MW-5, MW-7, and MW-8 were drawn down 0.50 feet, 0.66 feet, 0.28 feet, and 0.37 feet, respectively. While extracting from well MW-7, the groundwater levels in wells MW-5, MW-6, and MW-8 were drawn down 0.95 feet, 0.11 feet, and 0.71 feet, respectively. While extracting from well MW-4, the groundwater levels in wells MW-5, MW-6, and MW-8 were drawn down 0.07 feet, 0.41 feet, and 0.18 feet, respectively. While extracting from well MW-5, the groundwater levels in wells MW-6, MW-7, and MW-8 were drawn down 1.57 feet, 2.79 feet, and 0.51 feet, respectively.

Summary of Conclusions

- The absence of vapor phase concentrations (and groundwater concentrations) from well V-1 indicates that the former UST excavation does not contain residual source material.

- High sustained and increasing vapor concentrations suggest source material is present in the vicinity of wells V-2, MW-5, and MW-8.

- Variability in extraction flow rates across the site may reflect heterogeneities in subsurface soils or may suggest preferential pathways.

- The extremely high effective radius of influence calculated for wells MW-5 and MW-8 during DPE testing on well MW-7 supports the presence of a preferential pathway in the vicinity of these wells.

RECOMMENDATIONS

The data from this DPE pilot test suggests that DPE is feasible at this site. The groundwater table was effectively drawn down by DPE and moderate vapor extraction flow rates were yielded from some of the extraction points. Although DPE is deemed feasible, Cambria does not recommend implementing DPE at this site. The extraction points that yielded the highest vapor concentrations did not yield an effective vapor extraction flow rate. Conversely, low vapor concentrations were yielded from the extraction point that yielded an effective vapor extraction flow rate. Therefore, DPE is not considered feasible in the target areas and therefore not recommended at this site.

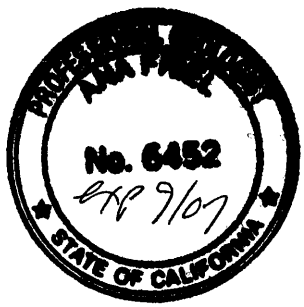
CLOSING

If you have any questions regarding the contents of this document, please call Ana Friel at (707) 268-3812.

Sincerely,
Cambria Environmental Technology, Inc.

for Rowan Fennell
Project Scientist

Ana Friel, PG
Associate Geologist



Attachments:

Table 1.	Well Data
Table 2.	Dual-Phase Extraction – Vapor Phase Mass Removal
Table 3.	Dual-Phase Extraction – Liquid Phase Mass Removal
Table 4.	Dual-Phase Extraction – Radius of Influence Data
Figure 1.	Site Vicinity/Receptor Survey Map
Figure 2.	Site Map
Appendix A.	Vacuum Truck Purging Form
Appendix B.	Certified Analytical Reports – DPE Test

cc: Denis Brown, Shell
Rodney & Janet Kwan, property owners

I:\Oakland 2703 Martin Luther King Jr Way\REPORTS\Jan06 DPE Pilot Test 15Mar06 Rpt\Jan06 DPE Test Rpt 15Mar06.doc

Table 1. Well Data, Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, CA

Name	Type	Date Installed	TOC Elevation (ft msl)	Total Depth (fbg)	Sample Interval (ft)	First Encountered GW		Screen Diameter (In)	Screen Depth (fbg)		Comments
						Depth (fbg)	Elevation (ft msl)		Top	Bottom	
MW-1	Hollow Stem Auger	19-Jul-96	29.53	21	5	9	20.53	2	6	21	Logged as B-11
MW-2	Hollow Stem Auger	19-Jul-96	28.47	21	5	11	17.47	2	6	21	Logged as B-12
MW-3	Hollow Stem Auger	19-Jul-96	28.30	20	5	15	13.30	4	5	20	
MW-4	Hollow Stem Auger	21-Nov-00	28.51	20	5	15	13.51	4	5	20	
MW-5	Hollow Stem Auger	21-Nov-00	29.54	20	5	15	14.54	4	5	20	
MW-6	Hollow Stem Auger	04-Jan-06	-	20	C	13.5	-	4	5	20	
MW-7	Hollow Stem Auger	04-Jan-06	-	20	C	12.5	-	4	5	20	
MW-8	Hollow Stem Auger	03-Jan-06	-	20	C	12	-	4	5	20	
V-1	Hollow Stem Auger	17-Jul-96	23.26	13	5	10	13.26	2	3	13	
V-2	Hollow Stem Auger	19-Jul-96	28.80	13	5	8	20.80	2	3	13	

Abbreviations:

TOC = Top of casing

ft msl = Elevation in feet relative to mean sea level

fbg = Feet below grade

ft = Feet

GW = Groundwater

In = Inches

C = Continuous

Table 2. Dual-Phase Extraction - Vapor Phase Mass Removal, Former Shell Service Station, Incident No. 97093397

2703 Martin Luther King Jr. Way, Oakland, CA.

Well # / Date/Time	Sample ID	Hour Meter (hours)	Cumulative Operation (hours)	Well Head: Vacuum Gage (in WC)	Well Head: Vacuum Abs (in WC)	Well Head: Flow Rate (acfm)	Well Head: Flow Rate (scfm)	Hydrocarbon Concentrations: TPHg (Concentrations in ppmv)	Hydrocarbon Concentrations: Benzene (Concentrations in ppmv)	TPHg: Removal Rate (#/hour)	TPHg: Cumulative Removed (#)	Benzene: Removal Rate (#/hour)	Benzene: Cumulative Removed (#)
V-1 DPE TEST													
1/16/06 12:30		5876.0	0.0							0	0	0	0
1/16/06 12:40	**V-1-A**	5876.2	0.2	7.0	399.8	7.76	7.6	**170**	**<0.31**	0.02	0.00	0.00001	0.000003
1/16/06 13:00		5876.5	0.5	10	396.8	11.0	10.7	362		0.02	0.01	0.00002	0.00001
1/16/06 13:20		5876.8	0.8	20	386.8	18.7	17.8	129		0.04	0.02	0.00003	0.00002
1/16/06 13:40		5877.2	1.2	21	385.8	21.7	20.6	116		0.05	0.04	0.00004	0.00003
1/16/06 14:00		5877.5	1.5	18	388.8	21.3	20.4	93		0.05	0.06	0.00004	0.00005
1/16/06 14:20		5877.8	1.8	19	387.8	24.4	23.3	92		0.05	0.07	0.00004	0.0001
1/16/06 14:40		5878.2	2.2	20	386.8	25.0	23.8	90		0.01	0.08	0.00004	0.0001
1/16/06 15:00		5878.6	2.6	15	391.8	19.8	19.1	84		0.01	0.08	0.00004	0.0001
1/16/06 15:20		5878.9	2.9	15	391.8	20.8	20.0	86		0.01	0.08	0.00004	0.0001
1/16/06 15:40		5879.2	3.2	15	391.8	21.4	20.6	98		0.01	0.08	0.00004	0.0001
1/16/06 16:00	**V-1-B**	5879.6	3.6	20	386.8	27.7	26.3	**33**	**<0.31**	0.01	0.09	0.00005	0.0001
1/17/06 10:00		5897.8	21.8	20	386.8	29.1	27.7	72	5.5	0.01	0.31	0.00005	0.0011
1/17/06 10:30	**V-1-C**	5898.3	22.3	20	386.8	30.6	29.1	**34**	**<0.31**	0.01	0.32	0.00005	0.0011
V-2 DPE TEST													
1/17/06 10:45		*5898.5*	0.0							0	0	0	0
1/17/06 11:00		5898.8	0.3	*>100*	306.8	*5.35*	4.0	3,920		0.92	0.28	0.0019	0.0006
1/17/06 11:30		5899.3	0.8	*>100*	306.8	*4.52*	3.4	2,870		0.77	0.66	0.0016	0.0014
1/17/06 12:00		5899.8	1.3	*>100*	306.8	*6.04*	4.6	3,680		1.04	1.18	0.0022	0.0025
1/17/06 12:30	**V-2-A**	5900.3	1.8	*>100*	306.8	*3.98*	3.0	**17,000**	**39**	0.68	1.52	0.0014	0.0032
1/17/06 12:45		5900.6	2.1	*>100*	306.8	*3.83*	2.9	4,510		0.66	1.72	0.0014	0.0036
1/17/06 13:05		5900.9	2.4	*>100*	306.8	*6.63*	5.0	4,410		1.14	2.06	0.0024	0.0043
1/17/06 13:25		5901.2	2.7	*>100*	306.8	*4.71*	3.6	4,220		0.81	2.30	0.0017	0.0048
1/17/06 13:45		5901.5	3.0	*>100*	306.8	*5.45*	4.1	2,400		0.38	2.42	0.0008	0.0050
1/17/06 14:00		5901.8	3.3	*>100*	306.8	*3.58*	2.7	4,420		0.25	2.49	0.0005	0.0052
1/17/06 14:15	**V-2-B**	5902.0	3.5	*>100*	306.8	*3.49*	2.6	**7,000**	**16**	0.246	2.54	0.00051	0.0053

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Well # / Date/Time	Sample ID	Hour Meter (hours)	Cumulative Operation (hours)	Well Head: Vacuum Gage (in WC)	Well Head: Vacuum Abs (in WC)	Well Head: Flow Rate (acfm)	Well Head: Flow Rate (scfm)	Hydrocarbon Concentrations: TPHg (ppmv)	Hydrocarbon Concentrations: Benzene (ppmv)	TPHg: Removal Rate (#/hour)	TPHg: Cumulative Removed (#)	Benzene: Removal Rate (#/hour)	Benzene: Cumulative Removed (#)
MW-6 DPE TEST													
1/17/06 14:25		*5902.2*	0.0							0	0	0	0
1/17/06 14:45	**MW-6-A**	5902.6	0.4	13	393.8	29.5	28.6	**130**	**6.5**	0.05	0.02	0.002	0.001
1/17/06 15:05		5902.9	0.7	14	392.8	30.7	29.6	65		0.05	0.04	0.002	0.002
1/17/06 15:25		5903.2	1.0	14	392.8	31.3	30.2	70		0.05	0.05	0.002	0.002
1/17/06 15:45		5903.6	1.4	15	391.8	32.4	31.2	50		0.05	0.07	0.002	0.003
1/17/06 15:45		5903.6	1.4	12	394.8	28.7	27.9	38		0.05	0.07	0.002	0.003
1/17/06 16:05		5903.9	1.7	12.5	394.3	29.2	28.3	41		0.05	0.09	0.002	0.004
1/17/06 16:25		5904.2	2.0	13.5	393.3	31.9	30.8	31		0.01	0.09	0.002	0.005
1/17/06 16:45		5904.6	2.4	14	392.8	31.5	30.4	30		0.01	0.09	0.002	0.01
1/17/06 16:45		5904.6	2.4	10	396.8	24.4	23.8	28		0.01	0.09	0.001	0.01
1/17/06 17:05		5904.9	2.7	10	396.8	24.6	24.0	33		0.01	0.10	0.001	0.01
1/17/06 17:25	**MW-6-B**	5905.2	3.0	10	396.8	24.6	24.0	**24**	**5.1**	0.01	0.10	0.001	0.01
MW-7 DPE TEST													
1/18/06 10:00		5905.7	0.0							0	0	0	0
1/18/06 10:20	**MW-7-A**	5906.1	0.4	5.6	401.2	22.1	21.8	**91**	**15**	0.03	0.01	0.004	0.002
1/18/06 10:40		5906.4	0.7	6.0	400.8	22.6	22.3	145		0.03	0.02	0.004	0.003
1/18/06 11:00		5906.7	1.0	6.2	400.6	24.0	23.6	113		0.03	0.03	0.004	0.004
1/18/06 11:20		5907.1	1.4	6.5	400.3	25.1	24.7	108		0.03	0.04	0.004	0.01
1/18/06 11:40		5907.4	1.7	5.8	401.0	19.2	18.9	103		0.02	0.05	0.003	0.01
1/18/06 12:00		5907.7	2.0	6.0	400.8	22.7	22.4	109		0.03	0.05	0.004	0.01
1/18/06 12:20		5908.1	2.4	6.0	400.8	21.5	21.2	100		0.03	0.06	0.004	0.01
1/18/06 12:40		5908.4	2.7	6.0	400.8	24.1	23.7	100		0.02	0.07	0.003	0.01
1/18/06 13:00		5908.7	3.0	3.8	403.0	18.8	18.6	105		0.02	0.08	0.002	0.01
1/18/06 13:20		5909.1	3.4	3.9	402.9	17.9	17.7	124		0.02	0.08	0.002	0.01
1/18/06 13:40		5909.4	3.7	4.0	402.8	18.7	18.5	123		0.02	0.09	0.002	0.01
1/18/06 14:00		5909.7	4.0	7.6	399.2	27.3	26.8	91		0.02	0.10	0.003	0.01
1/18/06 14:20	**MW-7-B**	5910.1	4.4	7.8	399.0	27.8	27.3	**69**	**9.7**	0.03	0.11	0.003	0.01
1/18/06 14:30		*5910.3*	4.6	7.8*	399.0*	27.8*	27.3*	69*		0.03	0.11	0.003	0.02

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MW-4 DPE TEST													
1/18/06 14:45		*5910.7*	0.0							0	0	0	0
1/18/06 15:30	**MW-4-A**	5911.3	0.6	*>100*	306.8	*14.6*	11.0	**3,900**	**13**	0.57	0.34	0.002	0.001
1/18/06 15:50		5911.6	0.9	*>100*	306.8	*13.5*	10.2	1,000		0.53	0.50	0.002	0.002
1/18/06 16:10		5911.9	1.2	*>100*	306.8	*13.1*	9.9	1,178		0.52	0.66	0.002	0.002
1/18/06 16:30		5912.3	1.6	*>100*	306.8	*13.1*	9.9	1,093		0.12	0.71	0.0004	0.002
1/18/06 16:40		5912.5	1.8	*>100*	306.8	*11.8*	8.9	1,395		0.11	0.73	0.0003	0.002
1/18/06 17:00	**MW-4-B**	5912.8	2.1	*>100*	306.8	*12.3*	9.3	**910**	**3.2**	0.11	0.76	0.0004	0.002
MW-5 DPE TEST													
1/19/06 10:00		*5913.5*	0.0							0	0	0	0
1/19/06 10:20		5913.8	0.3	*>100*	306.8	*8.20*	6.2	312		1.49	0.45	0.012	0.004
1/19/06 10:40		5914.1	0.6	*>100*	306.8	*4.96*	3.7	1,534		0.90	0.72	0.007	0.01
1/19/06 11:00		5914.5	1.0	*>100*	306.8	*4.07*	3.1	2,450		0.74	1.01	0.006	0.01
1/19/06 11:20		5914.8	1.3	*>100*	306.8	*7.51*	5.7	1,057		1.36	1.42	0.011	0.01
1/19/06 11:40	**MW-5-A**	5915.1	1.6	*>100*	306.8	*2.70*	2.0	**18,000**	**160**	0.49	1.57	0.004	0.01
1/19/06 12:00		5915.5	2.0	100	306.8	*4.61*	3.5	4,520		0.84	1.90	0.007	0.02
1/19/06 12:20		5915.8	2.3	100	306.8	*3.98*	3.0	1,120		0.72	2.12	0.009	0.02
1/19/06 12:30		5916.0	2.5	46	360.8	*7.95*	7.1	814		1.70	2.46	0.022	0.02
1/19/06 12:50	**MW-5-B**	5916.3	2.8	45	361.8	*7.17*	6.4	**18,000**	**260**	1.53	2.92	0.020	0.03
1/19/06 13:10		5916.6	3.1	45*	361.8*	7.17*	6.4*	18,000*		1.53	3.38	0.020	0.03
MW-8 DPE TEST													
1/19/06 13:25		5916.9	0.0							0	0	0	0
1/19/06 13:40		5917.2	0.3	40	366.8	*7.56*	6.8	780		0.03	0.01	0.003	0.001
1/19/06 14:00		5917.5	0.6	54	352.8	*8.30*	7.2	892		0.03	0.02	0.004	0.002
1/19/06 14:20	**MW-8-A**	5917.8	0.9	70	336.8	*7.41*	6.1	**<710**	**41**	0.03	0.03	0.003	0.003
1/19/06 14:40		5918.2	1.3	70	336.8	*9.23*	7.6	706		0.04	0.04	0.004	0.005
1/19/06 14:40		5918.2	1.3	42	364.8	*7.56*	6.8	515		0.03	0.04	0.003	0.005
1/19/06 15:00		5918.5	1.6	44	362.8	*8.25*	7.4	641		0.03	0.05	0.004	0.01
1/19/06 15:20		5918.8	1.9	40	366.8	*8.25*	7.4	773		0.28	0.14	0.007	0.01
1/19/06 15:40		5919.2	2.3	58	348.8	*8.59*	7.4	754		0.28	0.25	0.007	0.01
1/19/06 15:40		5919.2	2.3	51	355.8	*1.57*	1.4	398		0.05	0.25	0.001	0.01
1/19/06 16:40	**MW-8-B**	5920.2	3.3	53	353.8	*7.51*	6.5	**2,800**	**73**	0.24	0.49	0.006	0.02
1/19/06 17:10		5920.7	3.8	53*	353.8*	*7.51**	6.5*	2,800*		0.24	0.61	0.006	0.02

Table 2. Dual-Phase Extraction - Vapor Phase Mass Removal, Former Shell Service Station, Incident No. 97093397

2703 Martin Luther King Jr. Way, Oakland, CA.

Well # / Date/Time	Sample ID	Hour Meter (hours)	Cumulative Operation (hours)	Well Head: Vacuum Gage (in WC)	Well Head: Vacuum Abs (in WC)	Well Head: Flow Rate (acfm)	Well Head: Flow Rate (scfm)	Hydrocarbon Concentrations: TPHg (ppmv)	Hydrocarbon Concentrations: Benzene (ppmv)	TPHg: Removal Rate (#/hour)	TPHg: Cumulative Removed (#)	Benzene: Removal Rate (#/hour)	Benzene: Cumulative Removed (#)
MW-6 CONSTANT VACUUM DPE TEST													
1/20/06 9:45		5920.7	3.8							0	0	0	0
1/20/06 10:00		5921.0	4.1	100	306.8	8.5	6.4	551		0.05	0.02	0.002	0.001
1/20/06 10:20		5921.4	4.5	*>100*	306.8	8.3	6.3	370		0.05	0.03	0.002	0.001
1/20/06 10:40		5921.7	4.8	*>100*	306.8	9.0	6.8	454		0.05	0.05	0.002	0.002
1/20/06 11:00		5922.0	5.1	*>100*	306.8	10.3	7.8	491		0.06	0.07	0.002	0.003
1/20/06 11:20		5922.4	5.5	*>100*	306.8	10.2	7.7	529		0.06	0.09	0.002	0.003
1/20/06 11:40		5922.7	5.8	*>100*	306.8	11.6	8.7	614		0.07	0.11	0.003	0.004
1/20/06 12:00	**MW-6-C**	5923.0	6.1	*>100*	306.8	12.5	9.4	**590**	**24**	0.07	0.14	0.003	0.005
1/20/06 13:00		5924.0	7.1	*>100**	306.8*	12.5*	9.4*	590*		0.07	0.21	0.003	0.01
Total Pounds Removed:										**TPHg =**	**8.0**	**Benzene =**	**0.09**

Abbreviations and Notes:

Italicized Wellhead Vacuum = Vacuum exceeded upper limit of vacuum gauge (i.e. *>100)*. Upper limit value used for calculations. Actual wellhead vacuum may be higher.

Italicized Flow Rate = Unknown volume of dilution bleed air from wellhead is included.

Italicized Hour Meter Reading = Value estimated based on previous readings and time of day.

ACFM = Actual cubic feet per minute.

SCFM = Standard cubic feet per minute.

in WC = inches water column.

Atmospheric pressure = 406.86 in WC.

Absolute = Atmospheric pressure - gauge vacuum (in WC).

System flow rates and vacuum readings taken from three-inch system header pipe.

* = Data estimated from previous reading. No operational change made.

= Pounds

ppmv = Parts per million by volume

TPHg = Total petroleum hydrocarbons as gasoline

MTBE = methyl tertiary butyl ether

Bold Hydrocarbon Concentrations = Sample concentrations from Lab analysis; Non-Bold = field measured concentrations by a Horiba organic vapor analyzer.

TPHg, Benzene, and MTBE analyzed by EPA Method 8260B from 1 liter tedlar bag samples.

TPHg / Benzene / MTBE removal rate = Rate based on Bay Area Air Quality Management District's Manual of Procedures for Soil Vapor Extraction dated July 17, 1991.

(Rate = Laboratory analytical concentration (ppmv) x system flow rate (scfm) x (1lb-mole/386ft^3) x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene, 88 lb/lb-mole for MTBE) x 60 min/hour x 1/1,000,000).

Cumulative TPHg / Benzene / MTBE removal = removal rate multiplied by the hour-interval of operation plus the previous total.

Table 3. Dual-Phase Extraction - Liquid Phase Mass Removal

Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, CA.

Time (hh:mm)	Elapsed Time (min)	Flow Meter Reading (gal)	Cumulative Volume Removed (gal)	Flow Rate (gpm)	TPHg		Benzene	
					TPHg Conc. (ppb)	Cumulative Mass Removed (pounds)	Benzene Conc. (ppb)	Cumulative Mass Removed (pounds)
V-1 DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				<50		<0.5	
1/16/06 12:30	0	191,237	0	0.00		0		0
1/16/06 13:00	30	191,349	112	3.73		0.00002		0.0000002
1/16/06 13:40	70	191,431	194	2.77		0.00004		0.0000004
1/16/06 14:40	130	191,476	239	1.84		0.00005		0.0000005
1/16/06 15:00	150	191,487	250	1.67		0.0001		0.000001
1/16/06 15:20	170	191,493	256	1.51		0.0001		0.000001
1/16/06 15:40	190	191,498	261	1.37		0.0001		0.000001
1/16/06 16:00	210	191,509	272	1.30		0.0001		0.000001
1/17/06 10:00	1,290	191,734	497	0.39		0.0001		0.000001
1/17/06 10:30	1,320	191,827	590	0.45		0.0001		0.000001
V-2 DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				45,000		1,900	
1/17/06 10:45	0	191,827	0	0.00		0		0
1/17/06 12:30	105	191,887	60	0.57		0.02		0.001
1/17/06 13:45	180	191,906	79	0.44		0.03		0.001
1/17/06 14:15	210	191,917	90	0.43		0.03		0.001
MW-6 DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				150,000		9,300	
1/17/06 14:25	0	191,917	0	0.00		0		0
1/17/06 15:05	40	191,970	53	1.33		0.07		0.004
1/17/06 15:45	80	191,983	66	0.83		0.08		0.01
1/17/06 16:45	140	192,009	92	0.66		0.12		0.01
1/17/06 17:25	180	192,024	107	0.59		0.13		0.01
MW-7 DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				79,000		9,800	
1/18/06 10:00	0	192,024	0	0.00		0		0
1/18/06 10:40	40	192,115	91	2.27		0.06		0.01
1/18/06 11:00	60	192,121	97	1.62		0.06		0.01
1/18/06 11:20	80	192,139	115	1.44		0.08		0.01
1/18/06 12:40	160	192,202	87	0.54		0.06		0.01
1/18/06 14:00	240	192,238	117	0.49		0.08		0.01
MW-4 DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				3,900		1,700	
1/18/06 14:45	0	192,283	0	0.00		0		0
1/18/06 16:30	105	192,341	58	0.55		0.002		0.001
1/18/06 16:40	115	192,342	59	0.51		0.002		0.001
1/18/06 17:00	135	192,345	62	0.46		0.002		0.001

Table 3. Dual-Phase Extraction - Liquid Phase Mass Removal

Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, CA.

Time (hh:mm)	Elapsed Time (min)	Flow Meter Reading (gal)	Cumulative Volume Removed (gal)	Flow Rate (gpm)	TPHg Conc. (ppb)	TPHg Cumulative Mass Removed (pounds)	Benzene Conc. (ppb)	Benzene Cumulative Mass Removed (pounds)
MW-5 DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				12,000		1,900	
1/19/06 10:00	0	192,345	0	0.00		0		0
1/19/06 10:20	20	192,396	51	2.55		0.01		0.001
1/19/06 10:40	40	192,454	109	2.72		0.01		0.002
1/19/06 11:40	100	192,549	204	2.04		0.02		0.003
1/19/06 13:10	190	192,744	399	2.10		0.04		0.006
MW-8 DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				32,000		2,400	
1/19/06 13:25	0	192,744	0	0.00		0		0
1/19/06 13:40	15	192,808	64	4.27		0.02		0.001
1/19/06 14:20	55	192,908	164	2.98		0.04		0.003
1/19/06 14:40	75	192,968	160	2.13		0.04		0.003
1/19/06 15:40	135	193,049	141	1.04		0.04		0.003
1/19/06 17:10	225	193,168	200	0.89		0.05		0.004
MW-6 CONSTANT VACUUM DPE TEST								
1/11/2006	First Quarter 2006 Quarterly Monitoring				150,000		9,300	
1/20/06 9:45	0	193,168	0	0.00		0		0
1/20/06 10:00	15	193,190	22	1.47		0.03		0.002
1/20/06 11:40	115	193,268	100	0.87		0.13		0.008
1/20/06 13:00	195	193,322	154	0.79		0.19		0.012
		Total Gallons Extracted:		**2,085**	**Total Pounds:**	**0.533**	**Total Pounds:**	**0.042**
		Avg Flow Rate:		**0.360**	**Total Gallons:**	**0.073**	**Total Gallons:**	**0.006**

Abbreviations and Notes

hh:mm = hours and minutes

min = minutes

gal = gallons

gpm = gallons per minute

ppb = parts per billion

TPHg = Total petroleum hydrocarbons as gasoline

When constituents are not detected, the concentration is assumed to be equal to half the detection limit in subsequent calculations.

Volume removal data based on the formula: mass (pounds) x $(\text{density})^{-1}$ (cc/g) x 453.6 (g/pound) x (L/1000 cc) * (gal/3.785 L)

Density inputs: TPHg = 0.73 g/cc, benzene = 0.88 g/cc

TPHg and BTEX analyzed by EPA Method 8260B.

Table 4. Dual-Phase Extraction - Radius of Influence Data: Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, CA

Extraction Well	Monitoring Wells	Rw (feet)	r (feet)	Pw ("H2O gauge)	Pw(abs) ("H2O absolute)	P(r) ("H2O gauge)	P(r) ("H2O absolute)	Ri [1] (feet)	P(r)/P(w) (%)	Static DTW (fbg)	DTW during DPE (fbg)	Drawdown (fbg)	Exposed Well Screen (feet)
V-1 DPE TEST									**V-1 --->**	5.10	12.65	7.55	9.65
V-1	**V-2**	**0.083**	**22**	**20**	**386.8**	**5.50**	**401.3**	**192.4**	**27.50%**	5.08	5.11	0.03	2.11
	MW-4	0.083	38	20	386.8	0.00	406.8	38.0	0.00%	4.75	NM	NM	0.00
	MW-5	**0.083**	**27**	**20**	**386.8**	**0.30**	**406.5**	**29.6**	**1.50%**	5.89	NM	NM	0.89
	MW-6	0.083	29	20	386.8	0.00	406.8	29.0	0.00%	4.88	NM	NM	0.00
	MW-7	0.083	42.75	20	386.8	0.00	406.8	42.8	0.00%	6.07	NM	NM	1.07
	MW-8	**0.083**	**40**	**20**	**386.8**	**0.78**	**406.0**	**51.7**	**3.90%**	5.65	NM	NM	0.65
V-2 DPE TEST									**V-2 --->**	5.08	12.10	7.02	9.10
V-2	V-1	0.083	22	*100*	306.8	0.19	406.6	22.3	0.19%	5.10	7.27	2.17	4.27
	MW-4	**0.083**	**30.5**	***100***	**306.8**	**1.25**	**405.6**	**33.2**	**1.25%**	4.75	NM	NM	0.00
	MW-5	**0.083**	**46**	***100***	**306.8**	**4.7**	**402.1**	**65.6**	**4.70%**	5.89	NM	NM	0.89
	MW-6	0.083	32	*100*	306.8	0.42	406.4	32.9	0.42%	4.88	5.18	0.30	0.18
	MW-7	0.083	63	*100*	306.8	0.06	406.7	63.3	0.06%	6.07	NM	NM	1.07
	MW-8	0.083	61	*100*	306.8	0.06	406.7	61.3	0.06%	5.65	NM	NM	0.65
MW-6 DPE TEST									**MW-6 --->**	4.88	19.37	14.49	14.37
MW-6	V-1	0.167	29	10	396.8	0.00	406.8	29.0	0.00%	5.10	7.13	2.03	4.13
	V-2	0.167	32	10	396.8	0.00	406.8	32.0	0.00%	5.08	6.19	1.11	3.19
	MW-4	**0.167**	**18.5**	**10**	**396.8**	**1.7**	**405.2**	**47.4**	**16.50%**	4.75	5.25	0.5	0.25
	MW-5	**0.167**	**25**	**10**	**396.8**	**0.34**	**406.5**	**29.9**	**3.40%**	5.89	6.55	0.66	1.55
	MW-7	0.167	41.5	10	396.8	0.00	406.8	41.5	0.00%	6.07	NM	NM	1.07
	MW-8	0.167	48.5	10	396.8	0.00	406.8	48.5	0.00%	5.65	NM	NM	0.65
MW-7 DPE TEST									**MW-7 --->**	6.07	20.00	13.93	15.00
MW-7	V-1	0.167	42.75	7.8	399.0	0.01	406.8	43.1	0.13%	5.10	6.49	1.39	3.49
	V-2	0.167	63	7.8	399.0	0.00	406.8	63.0	0.00%	5.08	5.60	0.52	2.60
	MW-4	0.167	60	7.8	399.0	0.0	406.8	60.0	0.00%	4.75	5.25	0.50	0.25
	MW-5	**0.167**	**17**	**7.8**	**399.0**	**4.30**	**402.5**	**5,274**	**55.13%**	5.89	7.23	1.34	2.23
	MW-6	0.167	41.5	7.8	399.0	0.00	406.8	41.5	0.00%	4.88	5.50	0.62	0.50
	MW-8	**0.167**	**15**	**7.8**	**399.0**	**4.60**	**402.2**	**10,296**	**58.97%**	5.65	6.74	1.09	1.74
MW-4 DPE TEST									**MW-4 --->**	4.75	18.65	13.90	13.65
MW-4	V-1	0.167	38	*100*	306.8	0.01	406.8	38.0	0.01%	5.10	6.45	1.35	3.45
	V-2	0.167	30.5	*100*	306.8	0.25	406.6	31.0	0.25%	5.08	5.63	0.55	2.63
	MW-5	0.167	42	*100*	306.8	0.0	406.8	42.0	0.00%	5.89	7.30	1.41	2.30
	MW-6	0.167	18.5	*100*	306.8	0.01	406.8	18.5	0.01%	4.88	5.91	1.03	0.91
	MW-7	0.167	60	*100*	306.8	0.00	406.8	60.0	0.00%	6.07	7.33	1.26	2.33
	MW-8	0.167	67	*100*	306.8	0.00	406.8	67.0	0.00%	5.65	6.92	1.27	1.92

Table 4. Dual-Phase Extraction - Radius of Influence Data: Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, CA

Extraction Well	Monitoring Wells	Rw (feet)	r (feet)	Pw ("H2O gauge)	Pw(abs) ("H2O absolute)	P(r) ("H2O gauge)	P(r) ("H2O absolute)	Ri [1] (feet)	P(r)/P(w) (%)	Static DTW (fbg)	DTW during DPE (fbg)	Drawdown (fbg)	Exposed Well Screen (feet)
MW-5 DPE TEST									**MW-5 --->**	5.89	18.37	12.48	13.37
MW-5	V-1	0.167	27	45	361.8	0.01	406.8	27.0	0.02%	5.10	6.34	1.24	3.34
	V-2	0.167	46	45	361.8	0.01	406.8	46.1	0.02%	5.08	5.70	0.62	2.70
	MW-4	0.167	42	45	361.8	0.00	406.8	42.0	0.00%	4.75	5.63	0.88	0.63
	MW-6	0.167	25	45	361.8	0.00	406.8	25.0	0.00%	4.88	6.81	1.93	1.81
	MW-7	0.167	17	45	361.8	0.00	406.8	17.0	0.00%	6.07	9.35	3.28	4.35
	MW-8	**0.167**	**24.5**	**45**	**361.8**	**4.95**	**401.9**	**47.1**	**11.00%**	5.65	6.85	1.20	1.85
MW-8 DPE TEST									**MW-8 --->**	5.65	17.83	12.18	12.83
MW-8	V-1	0.167	40	53	353.8	0.01	406.8	40.0	0.02%	5.10	6.43	1.33	3.43
	V-2	0.167	61	53	353.8	0.035	406.8	61.3	0.07%	5.08	5.83	0.75	2.83
	MW-4	0.167	67	53	353.8	0.0	406.8	67.3	0.08%	4.75	5.70	0.95	0.70
	MW-5	**0.167**	**24.5**	**53**	**353.8**	**9.40**	**397.4**	**77.5**	**17.74%**	5.89	8.88	2.99	3.88
	MW-6	0.167	48.5	53	353.8	0.00	406.8	48.5	0.00%	4.88	6.67	1.79	1.67
	MW-7	0.167	15	53	353.8	0.00	406.8	15.0	0.00%	6.07	9.70	3.63	4.70
MW-6 DPE TEST (Constant Vacuum)									**MW-6 --->**	4.88	18.94	14.06	13.94
MW-6	V-1	0.167	29	100	306.8	0.00	406.8	29.0	0.00%	5.10	6.6	1.5	3.6
	V-2	0.167	32	100	306.8	0.14	406.7	32.3	0.14%	5.08	6.02	0.94	3.02
	MW-4	**0.167**	**18.5**	**100**	**306.8**	**1.5**	**405.3**	**20.1**	**1.50%**	4.75	6.06	1.31	1.06
	MW-5	0.167	25	100	306.8	0.14	406.7	25.2	0.14%	5.89	7.82	1.93	2.82
	MW-7	0.167	41.5	100	306.8	0.01	406.8	41.5	0.01%	6.07	7.64	1.57	2.64
	MW-8	0.167	48.5	100	306.8	0.00	406.8	48.5	0.00%	5.65	7.48	1.83	2.48

[1] Based on the steady-state radial pressure distribution equation from "A Practical Approach to the Design, Operation, and Monitoring of In Situ Soil Venting Systems", P.C. Johnson, C.C. Stanley, M.W. Kemblowski, D.L. Byers, and J.D. Cothart, Groundwater Monitoring and Review, Spring 1990:

Ri = [Rw] / [r/Rw]^[(1-(Patm/Pw)^2)/(((P(r)/Pw)^2)-1)]

[2] Ratio of monitoring well gauge pressure to extraction well gauge pressure.

Rw = Radius of Extraction Well (feet)

r = Distance of monitoring well from extraction well (feet)

Pw = Absolute pressure applied at extraction well (inches of water column)

Italicized Pw = Exceeded upper limit of gauge (>100). Upper limit value used for calculations.

P(r) = Absolute pressure at monitoring well (inches of water column)

Ri = Radius of Influence (feet)

Bold = Denotes data meets criteria for effective radius of influence

DTW = depth to groundwater

fbg = feet below grade

NM = Not Measured

Drawdown = DTW during DPE - Static DTW

Exposed well screen = DTW during DPE - Top of well screen. Static DTW used in calculation when DTW during DPE was not measured.

12/11/03

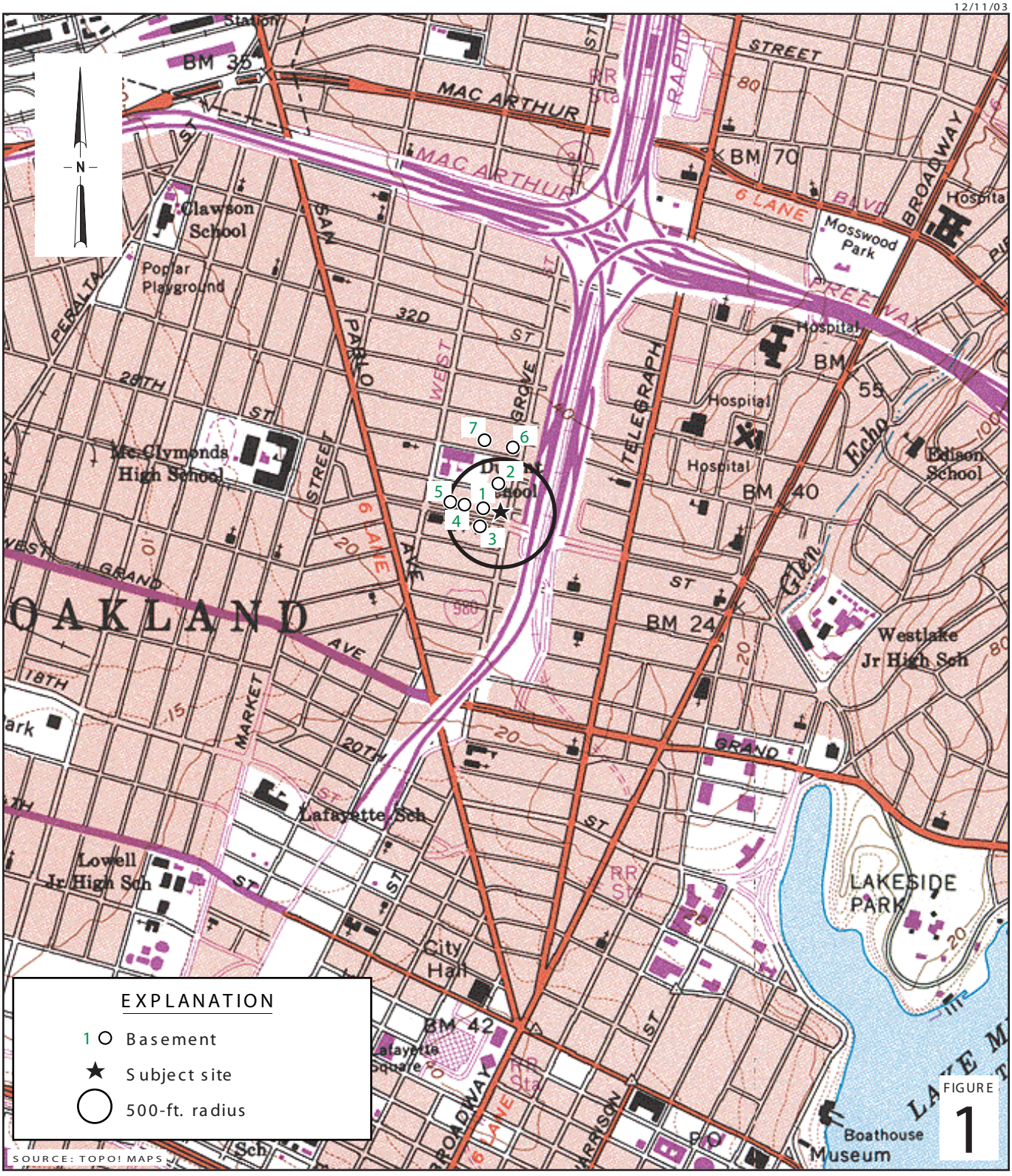


FIGURE 1

0 1/8 1/4 1/2 1

SCALE (MILES)

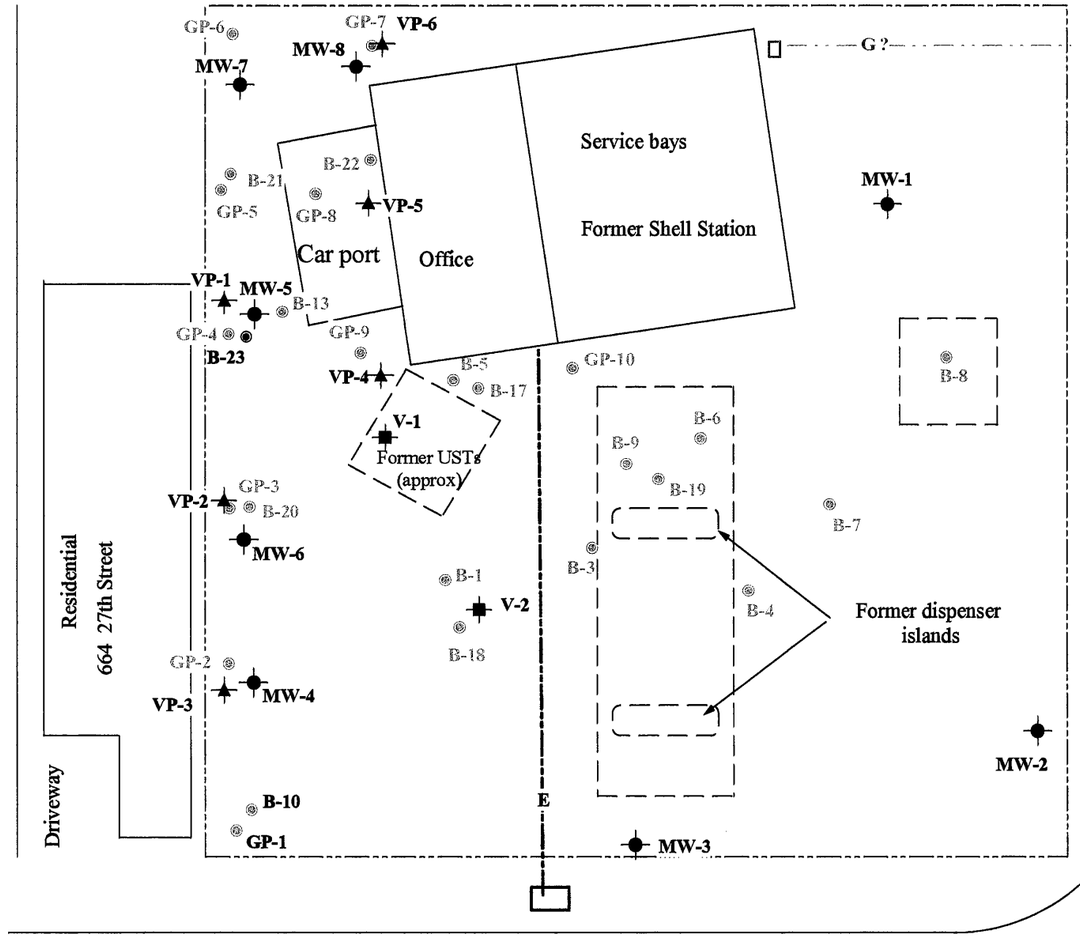
Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California

CAMBRIA

Site Vicinity/Receptor Survey Map

09-Mar-06

Residential
2719-2723 MLK



MARTIN LUTHER KING JR. WAY

27th STREET

EXPLANATION

- Soil boring
- Monitoring well
- Soil-Gas Probe
- Soil vapor well

Site Map

N

Scale (ft)
0 10 20 40

FIGURE
2

Former Shell Service Station
2703 Martin Luther King Way
Oakland, California

CAMBRIA

0781

Appendix A

Vacuum Truck Purging Form

1st LOAD
(ONLY LOAD)

CAMBRIA

Vacuum Truck Purging
Site Specific Scope of Work/Data Form

Date:	January 19, 2006	
Site Address:	2703 Martin Luther King, Jr. Way	
City:	Oakland, California	
Project Address:	Former Shell-branded Service Station 2703 Martin Luther King, Jr. Way Oakland, California	
Incident #:	97093397	
SAP Code:	NA	
RIPR #:	**50784**	
RIPR Date:	1/23/06	
Contractor:	ECI	
Equiva Engineer:	Denis Brown	PH(707) 865-0251
Cambria Contact:	Karen Newton knewton@cambria-env.com	PH(510) 420-3309 FX(510)420-9170

Scope of Work: Empty and clean a 6,500 gallon Baker tank. The site is small, so more than one trip or truck may be necessary to completely empty the tank. Use this data form and fax the completed form to **Karen Newton** within 24 hours.

Vacuum Truck Size Requirement:	35bbl( ) 70bbl(X) 120bbl ( )
Field Data Sheet Required:	yes (X) no ( )
Traffic Control:	Yes, provided by ECI.
Estimated Duration of Project:	Single event

Requested Schedule:

Time: 09:30

Day: Tuesday, January 24th, 2006

Extraction Data:

Date	Time Start	Time Stop	Volume
1-24-06	10:00Am	12:30pm	2108g

Total Volume=	52860
MRC Weight In=	52860
MRC Weight Out=	33300

Notes: Upon arrival at the site, please check in with property owner, Rodney Kwan, prior to beginning work.

Appendix B

Certified Analytical Reports – DPE Test

Submission#: 2006-01-0134

Cambria Environmental Emeryville January 26, 2006

5900 Hollis Street, Ste. A
Emeryville, CA 94608

Attn.: Rowan Fennell

Project#: 248-0781-008
Project: 97093397
Site: 2703 Martin Luther King-Oakland

Attached is our report for your samples received on 01/17/2006 10:21
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after 03/03/2006 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions,

You can also contact me via email. My email address is: mbrewer@stl-inc.com

Sincerely,

Melissa Brewer
Project Manager

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
V-1-A	01/16/2006 12:40	Air	1
V-1-B	01/16/2006 16:00	Air	2

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**V-1-A**	Lab ID:	2006-01-0134 - 1
Sampled:	01/16/2006 12:40	Extracted:	1/19/2006 12:33
Matrix:	Air	QC Batch#:	2006/01/19-1A.66

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	170	9.8	ppmv	1.00	01/19/2006 12:33	
Benzene	ND	0.31	ppmv	1.00	01/19/2006 12:33	
Toluene	0.51	0.26	ppmv	1.00	01/19/2006 12:33	
Ethylbenzene	0.25	0.23	ppmv	1.00	01/19/2006 12:33	
Total xylenes	0.97	0.23	ppmv	1.00	01/19/2006 12:33	
Surrogate(s)						
1,2-Dichloroethane-d4	87.1	76-130	%	1.00	01/19/2006 12:33	
Toluene-d8	92.0	78-115	%	1.00	01/19/2006 12:33	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**V-1-B**	Lab ID:	2006-01-0134 - 2
Sampled:	01/16/2006 16:00	Extracted:	1/19/2006 12:54
Matrix:	Air	QC Batch#:	2006/01/19-1B.64

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	33	9.8	ppmv	1.00	01/19/2006 12:54	
Benzene	ND	0.31	ppmv	1.00	01/19/2006 12:54	
Toluene	ND	0.26	ppmv	1.00	01/19/2006 12:54	
Ethylbenzene	ND	0.23	ppmv	1.00	01/19/2006 12:54	
Total xylenes	ND	0.23	ppmv	1.00	01/19/2006 12:54	
Surrogate(s)						
1,2-Dichloroethane-d4	96.6	76-130	%	1.00	01/19/2006 12:54	
Toluene-d8	88.8	78-115	%	1.00	01/19/2006 12:54	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B — Test(s): 8260B

Method Blank — **Water** — **QC Batch # 2006/01/19-1A.66**

MB: 2006/01/19-1A.66-041 — Date Extracted: 01/19/2006 09:41

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline [Shell]	ND	50	ug/L	01/19/2006 09:41	
Gasoline [Shell]	ND	50	ug/L	01/19/2006 09:41	
Benzene	ND	0.5	ug/L	01/19/2006 09:41	
Toluene	ND	0.5	ug/L	01/19/2006 09:41	
Ethylbenzene	ND	0.5	ug/L	01/19/2006 09:41	
Total xylenes	ND	1.0	ug/L	01/19/2006 09:41	
Surrogates(s)					
1,2-Dichloroethane-d4	90.0	72-130	%	01/19/2006 09:41	
Toluene-d8	89.6	81-114	%	01/19/2006 09:41	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B — Test(s): 8260B

Method Blank — **Water** — **QC Batch # 2006/01/19-1B.64**

MB: 2006/01/19-1B.64-044 — Date Extracted: 01/19/2006 09:44

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline [Shell]	ND	50	ug/L	01/19/2006 09:44	
Gasoline [Shell]	ND	50	ug/L	01/19/2006 09:44	
Benzene	ND	0.5	ug/L	01/19/2006 09:44	
Toluene	ND	0.5	ug/L	01/19/2006 09:44	
Ethylbenzene	ND	0.5	ug/L	01/19/2006 09:44	
Total xylenes	ND	1.0	ug/L	01/19/2006 09:44	
Surrogates(s)					
1,2-Dichloroethane-d4	85.8	72-130	%	01/19/2006 09:44	
Toluene-d8	90.4	81-114	%	01/19/2006 09:44	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2006/01/19-1A.66**

LCS 2006/01/19-1A.66-047 Extracted: 01/19/2006 Analyzed: 01/19/2006 08:47

LCSD 2006/01/19-1A.66-015 Extracted: 01/19/2006 Analyzed: 01/19/2006 09:15

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	30.6	27.4	25	122.4	109.6	11.0	69-129	20		
Toluene	28.3	26.9	25	113.2	107.6	5.1	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	444	409	500	88.8	81.8		72-130			
Toluene-d8	470	460	500	94.0	92.0		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2006/01/19-1B.64**

LCS 2006/01/19-1B.64-009 Extracted: 01/19/2006 Analyzed: 01/19/2006 10:09

LCSD 2006/01/19-1B.64-023 Extracted: 01/19/2006 Analyzed: 01/19/2006 09:23

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	25.5	27.7	25	102.0	110.8	8.3	69-129	20		
Toluene	27.7	31.8	25	110.8	127.2	13.8	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	421	415	500	84.2	83.0		72-130			
Toluene-d8	449	452	500	89.8	90.4		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/17/2006 10:21

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Matrix Spike (MS / MSD) **Water** **QC Batch # 2006/01/19-1A.66**

MS/MSD

Lab ID: 2006-01-0029 - 001

MS: 2006/01/19-1A.66-023 Extracted: 01/19/2006 Analyzed: 01/19/2006 13:00

Dilution: 10.00

MSD: 2006/01/19-1A.66-027 Extracted: 01/19/2006 Analyzed: 01/19/2006 13:27

Dilution: 10.00

Compound	Conc. ug/L			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	ug/L	MS	MSD	RPD	Rec.	RPD	MS	MSD
Benzene	245	272	ND	250	98.0	108.8	10.4	69-129	20		
Toluene	230	265	ND	250	92.0	106.0	14.1	70-130	20		
Surrogate(s)											
1,2-Dichloroethane-d4	417	436		500	83.4	87.2		72-130			
Toluene-d8	453	460		500	90.6	92.0		81-114			

LAB: Test America STL Other______

Lab Identification (if necessary):

- ☐ TA - Irvine, California
- ☐ TA - Morgan Hill, California
- ☐ TA - Nashville, Tennesee
- ☑ STL
- ☐ Other (location)______

SHELL Chain Of Custody Record

300285

Shell Project Manager to be invoiced:

☑ ENVIRONMENTAL SERVICES ☐ TECHNICAL SERVICES ☐ CRMT HOUSTON

Denis Brown

2006-01-0134

☐ NOT FOR ENV. REMEDIATION - NO ETIM - SEND PAPER INVOICE

INCIDENT NUMBER (ES ONLY): 9 7 0 9 3 3 9 7

SAP or CRMT NUMBER (TS/CRMT):

DATE: 1/16/06

PAGE: 1 of 1

SAMPLING COMPANY:	Cambria Environmental Technology, Inc.
LOG CODE:	CETO
SITE ADDRESS: Street and City	2703 Martin Luther King-Oakland
State	CA
GLOBAL ID NO.:	
ADDRESS:	5900 Hollis Street, Suite A, Emeryville, CA 94608
EDF DELIVERABLE TO (Name, Company, Office Location):	Brenda Carter, Cambria, Emeryville
PHONE NO.:	510-420-3343
E-MAIL:	shell.em.edf@cambria-env.com
CONSULTANT PROJECT NO.:	248-0781-008
PROJECT CONTACT (Hardcopy or PDF Report to):	Rowan Fennell
SAMPLER NAME(S) (Print):	Rowan Fennell
TELEPHONE:	510-420-3319
FAX:	510-420-9170
E-MAIL:	rfennell@cambria-env.com

LAB USE ONLY

TURNAROUND TIME (STANDARD IS 10 CALENDAR DAYS): ☑ STD ☐ 5 DAY ☐ 3 DAY ☐ 2 DAY ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY: ______

GC/MS MTBE CONFIRMATION: HIGHEST ______ HIGHEST per BORING ______ ALL ______

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED ☑

Report results in ppm(v)

RECEIPT VERIFICATION REQUESTED ☑

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH - Purgeable (8260B)	TPH - Extractable (8015M)	BTEX (8260B)	5 Oxygenates (8260B)	5 Oxygenates (8260B) (MTBE, TBA, DIPE, TAME, ETBE)	TBA (8260B)	DIPE (8260B)	TAME (8260B)	ETBE (8260B)	1,2 DCA (8260B)	EDB (8260B)	Ethanol (8260B)	Methanol (8015M)	VOCs by 8260B	Semi-Volatiles by 8270C	Lead ☐ Total ☐ STLC ☐ TCLP	LUFT5 ☐ Total ☐ STLC ☐ TCLP	CAM17 ☐ Total ☐ STLC ☐ TCLP	Test for Disposal (see attached)		FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
	V-1-A	1/16/06	12:40p	Vapor	1	X		X																		Tedlar Bag
	V-1-B	1/16/06	4pm	Vapor	1	X		X																		Tedlar Bag

TEMPERATURE ON RECEIPT C°: 20

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	[signature]	1/16/06	5:30 pm
[signature] 1/17/06	[signature]	1/17/06	~~1655~~ 1021
[signature] 1/17/06	[signature]	1/17/06	1655

11/15/05 Revision

Submission#: 2006-01-0140

Cambria Environmental Emeryville January 26, 2006

5900 Hollis Street, Ste. A
Emeryville, CA 94608

Attn.: Rowan Fennell

Project#: 248-0781-008
Project: 97093397
Site: 2703 Martin Luther King-Oakland

Attached is our report for your samples received on 01/18/2006 13:50
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after 03/04/2006 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions,

You can also contact me via email. My email address is: mbrewer@stl-inc.com

Sincerely,

Melissa Brewer
Project Manager

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
V-1-C	01/17/2006 10:30	Air	1
V-2-A	01/17/2006 12:30	Air	2
V-2-B	01/17/2006 14:15	Air	3
MW-6-A	01/17/2006 14:45	Air	4
MW-6-B	01/17/2006 17:25	Air	5

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**V-1-C**	Lab ID:	2006-01-0140 - 1
Sampled:	01/17/2006 10:30	Extracted:	1/19/2006 16:41
Matrix:	Air	QC Batch#:	2006/01/19-1B.65

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	34	9.8	ppmv	1.00	01/19/2006 16:41	
Benzene	ND	0.31	ppmv	1.00	01/19/2006 16:41	
Toluene	ND	0.26	ppmv	1.00	01/19/2006 16:41	
Ethylbenzene	ND	0.23	ppmv	1.00	01/19/2006 16:41	
Total xylenes	0.24	0.23	ppmv	1.00	01/19/2006 16:41	
Surrogate(s)						
1,2-Dichloroethane-d4	97.7	76-130	%	1.00	01/19/2006 16:41	
Toluene-d8	90.7	78-115	%	1.00	01/19/2006 16:41	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**V-2-A**	Lab ID:	2006-01-0140 - 2
Sampled:	01/17/2006 12:30	Extracted:	1/20/2006 11:02
Matrix:	Air	QC Batch#:	2006/01/20-1A.64

Analysis Flag: L2 (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	17000	200	ppmv	20.00	01/20/2006 11:02	
Benzene	39	6.2	ppmv	20.00	01/20/2006 11:02	
Toluene	ND	5.2	ppmv	20.00	01/20/2006 11:02	
Ethylbenzene	12	4.6	ppmv	20.00	01/20/2006 11:02	
Total xylenes	15	4.6	ppmv	20.00	01/20/2006 11:02	
Surrogate(s)						
1,2-Dichloroethane-d4	83.5	76-130	%	20.00	01/20/2006 11:02	
Toluene-d8	88.2	78-115	%	20.00	01/20/2006 11:02	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**V-2-B**	Lab ID:	2006-01-0140 - 3
Sampled:	01/17/2006 14:15	Extracted:	1/20/2006 10:40
Matrix:	Air	QC Batch#:	2006/01/20-1A.64

Analysis Flag: L2 (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	7000	98	ppmv	10.00	01/20/2006 10:40	
Benzene	16	3.1	ppmv	10.00	01/20/2006 10:40	
Toluene	ND	2.6	ppmv	10.00	01/20/2006 10:40	
Ethylbenzene	4.6	2.3	ppmv	10.00	01/20/2006 10:40	
Total xylenes	7.5	2.3	ppmv	10.00	01/20/2006 10:40	
Surrogate(s)						
1,2-Dichloroethane-d4	86.5	76-130	%	10.00	01/20/2006 10:40	
Toluene-d8	91.6	78-115	%	10.00	01/20/2006 10:40	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**MW-6-A**	Lab ID:	2006-01-0140 - 4
Sampled:	01/17/2006 14:45	Extracted:	1/20/2006 10:19
Matrix:	Air	QC Batch#:	2006/01/20-1A.64

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	130	9.8	ppmv	1.00	01/20/2006 10:19	
Benzene	6.5	0.31	ppmv	1.00	01/20/2006 10:19	
Toluene	1.2	0.26	ppmv	1.00	01/20/2006 10:19	
Ethylbenzene	2.0	0.23	ppmv	1.00	01/20/2006 10:19	
Total xylenes	7.4	0.23	ppmv	1.00	01/20/2006 10:19	
Surrogate(s)						
1,2-Dichloroethane-d4	88.8	76-130	%	1.00	01/20/2006 10:19	
Toluene-d8	86.9	78-115	%	1.00	01/20/2006 10:19	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**MW-6-B**	Lab ID:	2006-01-0140 - 5
Sampled:	01/17/2006 17:25	Extracted:	1/20/2006 09:57
Matrix:	Air	QC Batch#:	2006/01/20-1A.64

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	24	9.8	ppmv	1.00	01/20/2006 09:57	
Benzene	5.1	0.31	ppmv	1.00	01/20/2006 09:57	
Toluene	1.0	0.26	ppmv	1.00	01/20/2006 09:57	
Ethylbenzene	1.0	0.23	ppmv	1.00	01/20/2006 09:57	
Total xylenes	3.0	0.23	ppmv	1.00	01/20/2006 09:57	
Surrogate(s)						
1,2-Dichloroethane-d4	92.4	76-130	%	1.00	01/20/2006 09:57	
Toluene-d8	87.8	78-115	%	1.00	01/20/2006 09:57	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B | Test(s): 8260B

Method Blank | **Water** | **QC Batch # 2006/01/19-1B.65**

MB: 2006/01/19-1B.65-058 | Date Extracted: 01/19/2006 14:58

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline [Shell]	ND	50	ug/L	01/19/2006 14:58	
Gasoline [Shell]	ND	50	ug/L	01/19/2006 14:58	
Benzene	ND	0.5	ug/L	01/19/2006 14:58	
Toluene	ND	0.5	ug/L	01/19/2006 14:58	
Ethylbenzene	ND	0.5	ug/L	01/19/2006 14:58	
Total xylenes	ND	1.0	ug/L	01/19/2006 14:58	
Surrogates(s)					
1,2-Dichloroethane-d4	89.4	72-130	%	01/19/2006 14:58	
Toluene-d8	92.8	81-114	%	01/19/2006 14:58	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B — Test(s): 8260B

Method Blank — **Water** — **QC Batch # 2006/01/20-1A.64**

MB: 2006/01/20-1A.64-018 — Date Extracted: 01/20/2006 09:18

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline [Shell]	ND	50	ug/L	01/20/2006 09:18	
Gasoline [Shell]	ND	50	ug/L	01/20/2006 09:18	
Benzene	ND	0.5	ug/L	01/20/2006 09:18	
Toluene	ND	0.5	ug/L	01/20/2006 09:18	
Ethylbenzene	ND	0.5	ug/L	01/20/2006 09:18	
Total xylenes	ND	1.0	ug/L	01/20/2006 09:18	
Surrogates(s)					
1,2-Dichloroethane-d4	86.4	72-130	%	01/20/2006 09:18	
Toluene-d8	88.4	81-114	%	01/20/2006 09:18	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2006/01/19-1B.65**

LCS 2006/01/19-1B.65-024 Extracted: 01/19/2006 Analyzed: 01/19/2006 15:24

LCSD 2006/01/19-1B.65-032 Extracted: 01/19/2006 Analyzed: 01/19/2006 14:32

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	26.7	23.9	25	106.8	95.6	11.1	69-129	20		
Toluene	26.8	23.8	25	107.2	95.2	11.9	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	404	446	500	80.8	89.2		72-130			
Toluene-d8	465	471	500	93.0	94.2		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2006/01/20-1A.64**

LCS 2006/01/20-1A.64-035 Extracted: 01/20/2006 Analyzed: 01/20/2006 08:35

LCSD 2006/01/20-1A.64-057 Extracted: 01/20/2006 Analyzed: 01/20/2006 08:57

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	25.9	24.5	25	103.6	98.0	5.6	69-129	20		
Toluene	27.2	27.7	25	108.8	110.8	1.8	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	416	421	500	83.2	84.2		72-130			
Toluene-d8	444	432	500	88.8	86.4		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Matrix Spike (MS / MSD) **Water** **QC Batch # 2006/01/19-1B.65**

MS/MSD

Lab ID: 2006-01-0058 - 001

MS: 2006/01/19-1B.65-016 Extracted: 01/19/2006 Analyzed: 01/19/2006 19:16

Dilution: 1.00

MSD: 2006/01/19-1B.65-042 Extracted: 01/19/2006 Analyzed: 01/19/2006 19:42

Dilution: 1.00

Compound	Conc. ug/L			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	ug/L	MS	MSD	RPD	Rec.	RPD	MS	MSD
Benzene	19.9	20.7	ND	25	79.6	82.8	3.9	69-129	20		
Toluene	19.1	20.9	ND	25	76.4	83.6	9.0	70-130	20		
Surrogate(s)											
1,2-Dichloroethane-d4	434	422		500	86.8	84.4		72-130			
Toluene-d8	469	461		500	93.8	92.2		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Matrix Spike (MS / MSD) **Water** **QC Batch # 2006/01/20-1A.64**

MS/MSD

Lab ID: 2006-01-0086 - 002

MS: 2006/01/20-1A.64-012 Extracted: 01/20/2006 Analyzed: 01/20/2006 13:12
Dilution: 200.00

MSD: 2006/01/20-1A.64-033 Extracted: 01/20/2006 Analyzed: 01/20/2006 13:33
Dilution: 200.00

Compound	Conc. ug/L			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	ug/L	MS	MSD	RPD	Rec.	RPD	MS	MSD
Benzene	5500	5520	115	5000	107.7	108.1	0.4	69-129	20		
Toluene	5900	5830	ND	5000	118.0	116.6	1.2	70-130	20		
Surrogate(s)											
1,2-Dichloroethane-d4	413	434		500	82.6	86.8		72-130			
Toluene-d8	454	443		500	90.8	88.6		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/18/2006 13:50

Site: 2703 Martin Luther King-Oakland

Legend and Notes

Analysis Flag

L2

Reporting limits were raised due to high level of analyte present in the sample.

LAB: Test America STL Other________

Lab Identification (if necessary)

- ☐ TA - Irvine, California
- ☐ TA - Morgan Hill, California
- ☐ TA - Nashville, Tennesee
- ☑ STL
- ☐ Other (location)____________

SHELL Chain Of Custody Record

3003154 TB 3

Shell Project Manager to be invoiced:

- ☑ ENVIRONMENTAL SERVICES
- ☐ TECHNICAL SERVICES
- ☐ CRMT HOUSTON

Denis Brown

2006-01-0140

☐ NOT FOR ENV. REMEDIATION - NO ETIM - SEND PAPER INVOICE

INCIDENT NUMBER (ES ONLY): 9 7 0 9 3 3 9 7

SAP or CRMT NUMBER (TS/CRMT):

DATE: 1/17/06

PAGE: 1 of 1

SAMPLING COMPANY:	Cambria Environmental Technology, Inc.
LOG CODE:	CETO
SITE ADDRESS: Street and City	2703 Martin Luther King-Oakland
State	CA
GLOBAL ID NO.:	
ADDRESS:	5900 Hollis Street, Suite A, Emeryville, CA 94608
EDF DELIVERABLE TO (Name, Company, Office Location):	Brenda Carter, Cambria, Emeryville
PHONE NO.:	510-420-3343
E-MAIL:	shell.em.edf@cambria-env.com
CONSULTANT PROJECT NO.:	248-0781-008
PROJECT CONTACT (Hardcopy or PDF Report to):	Rowan Fennell
TELEPHONE:	510 420 3319
FAX:	510 420 9170
E-MAIL:	rfennell@cambria-env.com
SAMPLER NAME(S) (Print):	ROWAN FENNELL
LAB USE ONLY	

TURNAROUND TIME (STANDARD IS 10 CALENDAR DAYS): ☑ STD ☐ 5 DAY ☐ 3 DAY ☐ 2 DAY ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY: ____________

GC/MS MTBE CONFIRMATION: HIGHEST ________ HIGHEST per BORING ________ ALL ________

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED ☑

Report results in ppm(v)

RECEIPT VERIFICATION REQUESTED ☑

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH - Purgeable (8260B)	TPH - Extractable (8015M)	BTEX (8260B)	5 Oxygenates (8260B)	5 Oxygenates (8260B) (MTBE, TBA, DIPE, TAME, ETBE)	TBA (8260B)	DIPE (8260B)	TAME (8260B)	ETBE (8260B)	1,2 DCA (8260B)	EDB (8260B)	Ethanol (8260B)	Methanol (8015M)	VOCs by 8260B	Semi-Volatiles by 8270C	Lead ☐ Total ☐ STLC ☐ TCLP	LUFT5 ☐ Total ☐ STLC ☐ TCLP	CAM17 ☐ Total ☐ STLC ☐ TCLP	Test for Disposal (see attached)		FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
																										TEMPERATURE ON RECEIPT C°: 17
	V-1-C	1/17/06	10:30a	Vapor	1	X		X																		Tedlar Bag
	V-2-A	1/17/06	12:30p	Vapor	1	X		X																		Tedlar Bag
	V-2-B	1/17/06	2:15p	Vapor	1	X		X																		Tedlar Bag
	MW-6-A	1/17/06	2:45p	Vapor	1	X		X																		Tedlar Bag
	MW-6-B	1/17/06	5:25p	Vapor	1	X		X																		Tedlar Bag

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	Seured Locaton	1/17/06	6:30 pm
[signature]	[signature]	1/18/06	1350
[signature]	[signature]	1/18/06	1630

11/18/05 Revision

Q&Q Graphic (714) 888-9702

Submission#: 2006-01-0144

Cambria Environmental Emeryville February 01, 2006

5900 Hollis Street, Ste. A
Emeryville, CA 94608

Attn.: Rowan Fennell

Project#: 248-0781-008
Project: 97093397
Site: 2703 Martin Luther King-Oakland

Attached is our report for your samples received on 01/19/2006 09:00
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after 03/05/2006 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions,

You can also contact me via email. My email address is: mbrewer@stl-inc.com

Sincerely,

Melissa Brewer
Project Manager

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
MW-7-A	01/18/2006 10:20	Air	1
MW-7-B	01/18/2006 14:20	Air	2
MW-4-A	01/18/2006 15:45	Air	3
MW-4-B	01/18/2006 17:00	Air	4

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**MW-7-A**	Lab ID:	2006-01-0144 - 1
Sampled:	01/18/2006 10:20	Extracted:	1/20/2006 05:56 1/24/2006 05:45
Matrix:	Air	QC Batch#:	2006/01/19-2A.65 2006/01/23-2C.65

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	91	9.8	ppmv	1.00	01/24/2006 05:45	H2
Benzene	15	0.31	ppmv	1.00	01/20/2006 05:56	
Toluene	2.2	0.26	ppmv	1.00	01/20/2006 05:56	
Ethylbenzene	3.9	0.23	ppmv	1.00	01/20/2006 05:56	
Total xylenes	14	0.23	ppmv	1.00	01/20/2006 05:56	
Surrogate(s)						
1,2-Dichloroethane-d4	101.0	76-130	%	1.00	01/24/2006 05:45	
1,2-Dichloroethane-d4	86.5	76-130	%	1.00	01/20/2006 05:56	
Toluene-d8	93.8	78-115	%	1.00	01/24/2006 05:45	
Toluene-d8	104.6	78-115	%	1.00	01/20/2006 05:56	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**MW-7-B**	Lab ID:	2006-01-0144 - 2
Sampled:	01/18/2006 14:20	Extracted:	1/20/2006 06:21
Matrix:	Air	QC Batch#:	2006/01/19-2A.65

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	69	9.8	ppmv	1.00	01/20/2006 06:21	
Benzene	9.7	0.31	ppmv	1.00	01/20/2006 06:21	
Toluene	1.4	0.26	ppmv	1.00	01/20/2006 06:21	
Ethylbenzene	2.7	0.23	ppmv	1.00	01/20/2006 06:21	
Total xylenes	9.4	0.23	ppmv	1.00	01/20/2006 06:21	
Surrogate(s)						
1,2-Dichloroethane-d4	93.0	76-130	%	1.00	01/20/2006 06:21	
Toluene-d8	95.1	78-115	%	1.00	01/20/2006 06:21	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**MW-4-A**	Lab ID:	2006-01-0144 - 3
Sampled:	01/18/2006 15:45	Extracted:	1/20/2006 12:07
Matrix:	Air	QC Batch#:	2006/01/20-1A.64

Analysis Flag: L2 (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	3900	98	ppmv	10.00	01/20/2006 12:07	
Benzene	13	3.1	ppmv	10.00	01/20/2006 12:07	
Toluene	ND	2.6	ppmv	10.00	01/20/2006 12:07	
Ethylbenzene	ND	2.3	ppmv	10.00	01/20/2006 12:07	
Total xylenes	ND	2.3	ppmv	10.00	01/20/2006 12:07	
Surrogate(s)						
1,2-Dichloroethane-d4	84.8	76-130	%	10.00	01/20/2006 12:07	
Toluene-d8	89.2	78-115	%	10.00	01/20/2006 12:07	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Prep(s):	5030B	Test(s):	8260B
Sample ID:	**MW-4-B**	Lab ID:	2006-01-0144 - 4
Sampled:	01/18/2006 17:00	Extracted:	1/20/2006 12:28
Matrix:	Air	QC Batch#:	2006/01/20-1A.64

Analysis Flag: L2 (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline [Shell]	910	98	ppmv	10.00	01/20/2006 12:28	
Benzene	3.2	3.1	ppmv	10.00	01/20/2006 12:28	
Toluene	ND	2.6	ppmv	10.00	01/20/2006 12:28	
Ethylbenzene	ND	2.3	ppmv	10.00	01/20/2006 12:28	
Total xylenes	ND	2.3	ppmv	10.00	01/20/2006 12:28	
Surrogate(s)						
1,2-Dichloroethane-d4	89.7	76-130	%	10.00	01/20/2006 12:28	
Toluene-d8	86.4	78-115	%	10.00	01/20/2006 12:28	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B — Test(s): 8260B

Method Blank — **Water** — **QC Batch # 2006/01/19-2A.65**

MB: 2006/01/19-2A.65-020 — Date Extracted: 01/20/2006 00:20

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline [Shell]	ND	50	ug/L	01/20/2006 00:20	
Gasoline [Shell]	ND	50	ug/L	01/20/2006 00:20	
Benzene	ND	0.5	ug/L	01/20/2006 00:20	
Toluene	ND	0.5	ug/L	01/20/2006 00:20	
Ethylbenzene	ND	0.5	ug/L	01/20/2006 00:20	
Total xylenes	ND	1.0	ug/L	01/20/2006 00:20	
Surrogates(s)					
1,2-Dichloroethane-d4	89.8	72-130	%	01/20/2006 00:20	
Toluene-d8	90.8	81-114	%	01/20/2006 00:20	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B — Test(s): 8260B

Method Blank — **Water** — **QC Batch # 2006/01/20-1A.64**

MB: 2006/01/20-1A.64-018 — Date Extracted: 01/20/2006 09:18

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline [Shell]	ND	50	ug/L	01/20/2006 09:18	
Gasoline [Shell]	ND	50	ug/L	01/20/2006 09:18	
Benzene	ND	0.5	ug/L	01/20/2006 09:18	
Toluene	ND	0.5	ug/L	01/20/2006 09:18	
Ethylbenzene	ND	0.5	ug/L	01/20/2006 09:18	
Total xylenes	ND	1.0	ug/L	01/20/2006 09:18	
Surrogates(s)					
1,2-Dichloroethane-d4	86.4	72-130	%	01/20/2006 09:18	
Toluene-d8	88.4	81-114	%	01/20/2006 09:18	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B — Test(s): 8260B

Method Blank — **Water** — **QC Batch # 2006/01/23-2C.65**

MB: 2006/01/23-2C.65-058 — Date Extracted: 01/23/2006 21:58

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline [Shell]	ND	50	ug/L	01/23/2006 21:58	
Gasoline [Shell]	ND	50	ug/L	01/23/2006 21:58	
Benzene	ND	0.5	ug/L	01/23/2006 21:58	
Toluene	ND	0.5	ug/L	01/23/2006 21:58	
Ethylbenzene	ND	0.5	ug/L	01/23/2006 21:58	
Total xylenes	ND	1.0	ug/L	01/23/2006 21:58	
Surrogates(s)					
1,2-Dichloroethane-d4	77.4	72-130	%	01/23/2006 21:58	
Toluene-d8	98.2	81-114	%	01/23/2006 21:58	

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2006/01/19-2A.65**

LCS 2006/01/19-2A.65-028 Extracted: 01/19/2006 Analyzed: 01/19/2006 23:28

LCSD 2006/01/19-2A.65-046 Extracted: 01/20/2006 Analyzed: 01/20/2006 00:46

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	26.8	23.4	25	107.2	93.6	13.5	69-129	20		
Toluene	26.5	23.0	25	106.0	92.0	14.1	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	370	398	500	74.0	79.6		72-130			
Toluene-d8	457	469	500	91.4	93.8		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2006/01/20-1A.64**

LCS 2006/01/20-1A.64-035 Extracted: 01/20/2006 Analyzed: 01/20/2006 08:35

LCSD 2006/01/20-1A.64-057 Extracted: 01/20/2006 Analyzed: 01/20/2006 08:57

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	25.9	24.5	25	103.6	98.0	5.6	69-129	20		
Toluene	27.2	27.7	25	108.8	110.8	1.8	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	416	421	500	83.2	84.2		72-130			
Toluene-d8	444	432	500	88.8	86.4		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2006/01/23-2C.65**

LCS 2006/01/23-2C.65-006 Extracted: 01/23/2006 Analyzed: 01/23/2006 21:06

LCSD 2006/01/23-2C.65-032 Extracted: 01/23/2006 Analyzed: 01/23/2006 21:32

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	22.3	22.0	25	89.2	88.0	1.4	69-129	20		
Toluene	24.8	23.1	25	99.2	92.4	7.1	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	380	413	500	76.0	82.6		72-130			
Toluene-d8	494	479	500	98.8	95.8		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Matrix Spike (MS / MSD) **Water** **QC Batch # 2006/01/20-1A.64**

MS/MSD

Lab ID: 2006-01-0086 - 002

MS: 2006/01/20-1A.64-012 Extracted: 01/20/2006 Analyzed: 01/20/2006 13:12

Dilution: 200.00

MSD: 2006/01/20-1A.64-033 Extracted: 01/20/2006 Analyzed: 01/20/2006 13:33

Dilution: 200.00

Compound	Conc. ug/L			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	ug/L	MS	MSD	RPD	Rec.	RPD	MS	MSD
Benzene	5500	5520	115	5000	107.7	108.1	0.4	69-129	20		
Toluene	5900	5830	ND	5000	118.0	116.6	1.2	70-130	20		
Surrogate(s)											
1,2-Dichloroethane-d4	413	434		500	82.6	86.8		72-130			
Toluene-d8	454	443		500	90.8	88.6		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Matrix Spike (MS / MSD) **Water** **QC Batch # 2006/01/23-2C.65**

MS/MSD

Lab ID: 2006-01-0116 - 004

MS: 2006/01/23-2C.65-023 Extracted: 01/23/2006 Analyzed: 01/23/2006 22:23

Dilution: 1.00

MSD: 2006/01/23-2C.65-049 Extracted: 01/23/2006 Analyzed: 01/23/2006 22:49

Dilution: 1.00

Compound	Conc. ug/L			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	ug/L	MS	MSD	RPD	Rec.	RPD	MS	MSD
Benzene	23.6	21.2	ND	25	94.4	84.8	10.7	69-129	20		
Toluene	23.9	21.6	ND	25	95.6	86.4	10.1	70-130	20		
Surrogate(s)											
1,2-Dichloroethane-d4	409	403		500	81.8	80.6		72-130			
Toluene-d8	471	467		500	94.2	93.4		81-114			

Gas/BTEX Fuel Oxygenates by 8260B (C6-C12)

Cambria Environmental Emeryville

Attn.: Rowan Fennell

5900 Hollis Street, Ste. A
Emeryville, CA 94608
Phone: (510) 420-3319 Fax: (510) 420-9170

Project: 248-0781-008
97093397

Received: 01/19/2006 09:00

Site: 2703 Martin Luther King-Oakland

Legend and Notes

Analysis Flag

L2

Reporting limits were raised due to high level of analyte present in the sample.

Result Flag

H2

Analyzed out of holding time.

SHELL Chain Of Custody Record

300375

LAB: Test America STL Other

Lab Identification (if necessary):
- ☐ TA - Irvine, California
- ☐ TA - Morgan Hill, California
- ☐ TA - Nashville, Tennessee
- ☑ STL
- ☐ Other (location)

Shell Project Manager to be invoiced:
- ☑ ENVIRONMENTAL SERVICES — Denis Brown
- ☐ TECHNICAL SERVICES
- ☐ CRMT HOUSTON

2006-01-0144

☐ NOT FOR ENV. REMEDIATION - NO ETIM - SEND PAPER INVOICE

INCIDENT NUMBER (ES ONLY): 9 7 0 9 3 3 9 7

SAP or CRMT NUMBER (TS/CRMT):

DATE: 1/18/06

PAGE: 1 of 1

MAILING COMPANY: Cambria Environmental Technology, Inc.

LOG CODE: CETO

ADDRESS: 0 Hollis Street, Suite A, Emeryville, CA 94608

PROJECT CONTACT (Hardcopy or PDF Report to): an Fennell

PHONE: 20 3319 | FAX: 510 420 9170 | E-MAIL: rfennell@cambria-env.com

SITE ADDRESS: Street and City: 2703 Martin Luther King-Oakland

State: CA

GLOBAL ID NO.:

EDF DELIVERABLE TO (Name, Company, Office Location): Brenda Carter, Cambria, Emeryville

PHONE NO.: 510-420-3343

E-MAIL: shell.em.edf@cambria-env.com

CONSULTANT PROJECT NO.: 248-0781-008

SAMPLER NAME(S) (Print): ROWAN FENNELL

LAB USE ONLY

TURN AROUND TIME (STANDARD IS 10 CALENDAR DAYS): ☐ 5 DAY ☐ 3 DAY ☐ 2 DAY ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ RWQCB REPORT FORMAT ☐ UST AGENCY:

MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED ☑

PORT RESULTS IN ppm(v)

RECEIPT VERIFICATION REQUESTED ☑

REQUESTED ANALYSIS

Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH - Purgeable (8260B)	TPH - Extractable (8015M)	BTEX (8260B)	5 Oxygenates (8260B)	5 Oxygenates (8260B) (MTBE, TBA, DIPE, TAME, ETBE)	TBA (8260B)	DIPE (8260B)	TAME (8260B)	ETBE (8260B)	1,2 DCA (8260B)	EDB (8260B)	Ethanol (8260B)	Methanol (8015M)	VOCs by 8260B	Semi-Volatiles by 8270C	Lead ☐ Total ☐ STLC ☐ TCLP	LUFT5 ☐ Total ☐ STLC ☐ TCLP	CAM17 ☐ Total ☐ STLC ☐ TCLP	Test for Disposal (see attached)	FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
V-7-A	1/18/06	10:20a	Vapor	1	X		X																	Tedlar Bag
V-7-B	1/18/06	2:20p	Vapor	1	X		X																	Tedlar Bag
V-4-A	1/18/06	3:45p	Vapor	1	X		X																	Tedlar Bag
V-4-B	1/18/06	5:00p	Vapor	1	X		X																	Tedlar Bag

TEMPERATURE ON RECEIPT C°: 18

Relinquished by: (Signature)	Received by: (Signature)	Date: 1/18/06	Time: 6PM
1/19/06 1133	Received by: (Signature)	Date: 1/19/06	Time: 1800
	Received by: (Signature)	Date: 1/19/06	Time: 1800

OSO Graphic (714) 898-9702

11/18/05 Revision

Sequoia Analytical

885 Jarvis Drive
Morgan Hill, CA 95037
(408) 776-9600
FAX (408) 782-6308
www.sequoialabs.com

30 January, 2006

Rowan Fennell
Cambria - Oakland (Shell)
1144 65th St. Suite C
Oakland, CA 94608

RE: 2703 Martin Luther King, Oakland, CA
Work Order: MPA1151

Enclosed are the results of analyses for samples received by the laboratory on 01/20/06 19:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Theresa Allen
Project Manager

CA ELAP Certificate #1210

Sequoia Analytical

885 Jarvis Drive
Morgan Hill, CA 95037
(408) 776-9600
FAX (408) 782-6308
www.sequoialabs.com

Cambria - Oakland (Shell)	Project: 2703 Martin Luther King, Oakland, CA	MPA1151
1144 65th St. Suite C	Project Number: 248-0781-008	**Reported:**
Oakland CA, 94608	Project Manager: Rowan Fennell	01/30/06 15:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5-A	MPA1151-01	Air	01/19/06 11:30	01/20/06 19:20
MW-5-B	MPA1151-02	Air	01/19/06 13:00	01/20/06 19:20
MW-8-A	MPA1151-03	Air	01/19/06 14:20	01/20/06 19:20
MW-8-B	MPA1151-04	Air	01/19/06 16:40	01/20/06 19:20
MW-6-C	MPA1151-05	Air	01/20/06 12:00	01/20/06 19:20

Sequoia Analytical

885 Jarvis Drive
Morgan Hill, CA 95037
(408) 776-9600
FAX (408) 782-6308
www.sequoialabs.com

Cambria - Oakland (Shell)	Project: 2703 Martin Luther King, Oakland, CA	MPA1151
1144 65th St. Suite C	Project Number: 248-0781-008	**Reported:**
Oakland CA, 94608	Project Manager: Rowan Fennell	01/30/06 15:33

Purgeable Hydrocarbons and Volatile Organic Compounds by EPA method 8260B

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-5-A (MPA1151-01) Air Sampled: 01/19/06 11:30 Received: 01/20/06 19:20									**HT-09**
Gasoline Range Organics (C4-C12)	**18000**	1400	ppmv	100	6A22003	01/22/06	01/22/06 22:59	EPA 8260B	
Benzene	**160**	16	"	"	"	"	"	"	
Toluene	**64**	13	"	"	"	"	"	"	
Ethylbenzene	**23**	12	"	"	"	"	"	"	
Xylenes (total)	**88**	12	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*121 %*	*60-135*		"	"	"	"	
MW-5-B (MPA1151-02) Air Sampled: 01/19/06 13:00 Received: 01/20/06 19:20									**HT-09**
Gasoline Range Organics (C4-C12)	**18000**	1400	ppmv	100	6A22003	01/22/06	01/22/06 23:28	EPA 8260B	
Benzene	**260**	16	"	"	"	"	"	"	
Toluene	**67**	13	"	"	"	"	"	"	
Ethylbenzene	**30**	12	"	"	"	"	"	"	
Xylenes (total)	**120**	12	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*60-135*		"	"	"	"	
MW-8-A (MPA1151-03) Air Sampled: 01/19/06 14:20 Received: 01/20/06 19:20									**HT-09**
Gasoline Range Organics (C4-C12)	ND	710	ppmv	50	6A22003	01/22/06	01/22/06 21:18	EPA 8260B	
Benzene	**41**	7.8	"	"	"	"	"	"	
Toluene	**11**	6.6	"	"	"	"	"	"	
Ethylbenzene	ND	5.8	"	"	"	"	"	"	
Xylenes (total)	**24**	5.8	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*115 %*	*60-135*		"	"	"	"	
MW-8-B (MPA1151-04) Air Sampled: 01/19/06 16:40 Received: 01/20/06 19:20									**HT-09**
Gasoline Range Organics (C4-C12)	**2800**	280	ppmv	20	6A22003	01/22/06	01/22/06 21:48	EPA 8260B	
Benzene	**73**	3.1	"	"	"	"	"	"	
Toluene	**9.4**	2.7	"	"	"	"	"	"	
Ethylbenzene	**8.4**	2.3	"	"	"	"	"	"	
Xylenes (total)	**40**	2.3	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*60-135*		"	"	"	"	

Sequoia Analytical

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1144 65th St. Suite C	Project Number: 248-0781-008	**Reported:**
Oakland CA, 94608	Project Manager: Rowan Fennell	01/30/06 15:33

Purgeable Hydrocarbons and Volatile Organic Compounds by EPA method 8260B

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-6-C (MPA1151-05) Air Sampled: 01/20/06 12:00 Received: 01/20/06 19:20									
Gasoline Range Organics (C4-C12)	**590**	71	ppmv	5	6A22003	01/22/06	01/22/06 22:18	EPA 8260B	
Benzene	**24**	0.78	"	"	"	"	"	"	
Toluene	**5.0**	0.66	"	"	"	"	"	"	
Ethylbenzene	**6.3**	0.58	"	"	"	"	"	"	
Xylenes (total)	**21**	0.58	"	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*113 %*	*60-135*		"	"	"	"	

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Cambria - Oakland (Shell)	Project: 2703 Martin Luther King, Oakland, CA	MPA1151
1144 65th St. Suite C	Project Number: 248-0781-008	**Reported:**
Oakland CA, 94608	Project Manager: Rowan Fennell	01/30/06 15:33

Purgeable Hydrocarbons and Volatile Organic Compounds by EPA method 8260B - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 6A22003 - EPA 5030B P/T / EPA 8260B										
Blank (6A22003-BLK1)				Prepared & Analyzed: 01/22/06						
Gasoline Range Organics (C4-C12)	ND	14	ppmv							
Benzene	ND	0.16	"							
Toluene	ND	0.13	"							
Ethylbenzene	ND	0.12	"							
Xylenes (total)	ND	0.12	"							
Surrogate: 1,2-Dichloroethane-d4	*0.684*		*"*	*0.594*		*115*	*60-135*			
Laboratory Control Sample (6A22003-BS1)				Prepared & Analyzed: 01/22/06						
Gasoline Range Organics (C4-C12)	129	14	ppmv	125		103	70-124			
Benzene	1.60	0.16	"	1.58		101	35-115			
Toluene	9.48	0.13	"	10.1		94	85-120			
Ethylbenzene	1.56	0.12	"	1.68		93	75-135			
Xylenes (total)	8.98	0.12	"	9.41		95	85-125			
Surrogate: 1,2-Dichloroethane-d4	*0.653*		*"*	*0.594*		*110*	*60-135*			
Laboratory Control Sample Dup (6A22003-BSD1)				Prepared & Analyzed: 01/22/06						
Gasoline Range Organics (C4-C12)	142	14	ppmv	125		114	70-124	10	20	
Benzene	1.81	0.16	"	1.58		115	35-115	12	20	
Toluene	10.9	0.13	"	10.1		108	85-120	14	20	
Ethylbenzene	1.78	0.12	"	1.68		106	75-135	13	15	
Xylenes (total)	10.4	0.12	"	9.41		111	85-125	15	20	
Surrogate: 1,2-Dichloroethane-d4	*0.674*		*"*	*0.594*		*113*	*60-135*			

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1144 65th St. Suite C	Project Number: 248-0781-008	**Reported:**
Oakland CA, 94608	Project Manager: Rowan Fennell	01/30/06 15:33

Notes and Definitions

HT-09	The sample was analyzed beyond the industry standard recommended holding time. There is no EPA recommended holding time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SHELL Chain Of Custody Record

LAB: Test America STL Other_____

Lab Identification (if necessary):
- ☐ TA - Irvine, California
- ☒ TA - Morgan Hill, California
- ☐ TA - Nashville, Tennesee
- ☐ [illegible]
- ☐ Other (location)_____

Shell Project Manager to be invoiced: Denis Brown
- ☑ ENVIRONMENTAL SERVICES
- ☐ TECHNICAL SERVICES
- ☐ CRMT HOUSTON
- ☐ NOT FOR ENV. REMEDIATION - NO ETIM - SEND PAPER INVOICE

INCIDENT NUMBER (ES ONLY): 9 7 0 9 3 3 9 7

SAP or CRMT NUMBER (TS/CRMT):

DATE: 1/20/06

PAGE: 1 of 1

SAMPLING COMPANY:	LOG CODE:	SITE ADDRESS: Street and City	State	GLOBAL ID NO.:
Cambria Environmental Technology, Inc.	CETO	2703 Martin Luther King-Oakland	CA	

ADDRESS: 5900 Hollis Street, Suite A, Emeryville, CA 94608

EDF DELIVERABLE TO (Name, Company, Office Location):	PHONE NO.:	E-MAIL:	CONSULTANT PROJECT NO.:
Brenda Carter, Cambria, Emeryville	510-420-3343	shell.em.edf@cambria-env.com	248-0781-008

PROJECT CONTACT (Hardcopy or PDF Report to): Rowan Fennell

TELEPHONE:	FAX:	E-MAIL:
510 420 3319	510 420 9170	rfennell@cambria-env.com

SAMPLER NAME(S) (Print): ROWAN FENNELL

LAB USE ONLY

TURNAROUND TIME (STANDARD IS 10 CALENDAR DAYS): ☑ STD ☐ 5 DAY ☐ 3 DAY ☐ 2 DAY ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY: _____

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED ☑

Report Results in PPM(v)

RECEIPT VERIFICATION REQUESTED ☑

REQUESTED ANALYSIS — MPA1151

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH - Purgeable (8260B)	TPH - Extractable (8015M)	BTEX (8260B)	5 Oxygenates (8260B)	5 Oxygenates (8260B) (MTBE, TBA, DIPE, TAME, ETBE)	TBA (8260B)	DIPE (8260B)	TAME (8260B)	ETBE (8260B)	1,2 DCA (8260B)	EDB (8260B)	Ethanol (8260B)	Methanol (8015M)	VOCs by 8260B	Semi-Volatiles by 8270C	Lead ☐ Total ☐ STLC ☐ TCLP	LUFT5 ☐ Total ☐ STLC ☐ TCLP	CAM17 ☐ Total ☐ STLC ☐ TCLP	Test for Disposal (see attached)		TEMPERATURE ON RECEIPT C°
	MW-5-A 01	1/19/06	11:30a	Vapor	1	X		X																		Tedlar Bag
	MW-5-B 02	1/19/06	1pm	Vapor	1	X		X																		Tedlar Bag
	MW-8-A 03	1/19/06	2:20	Vapor	1	X		X																		Tedlar Bag
	MW-8-B 04	1/19/06	4:40	Vapor	1	X		X																		Tedlar Bag
	MW-6-C 05	1/20/06	12pm	Vapor	1	X		X																		Tedlar Bag

FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
[signature]	[signature]	1/20/06	12:22PM
[signature]	[signature]	1/20/06	7:20PM
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

11/18/05 Revision

Q&Q Graphic (714) 895-9702

SEQUOIA ANALYTICAL SAMPLE RECEIPT LOG

CLIENT NAME: Cambria
REC. BY (PRINT): EB
WORKORDER: MPA 1151

DATE REC'D AT LAB: 1-20-04
TIME REC'D AT LAB: 1920
DATE LOGGED IN: 1-20-04

For Regulatory Purposes?
DRINKING WATER YES / NO (circled: NO)
WASTE WATER YES / NO (circled: NO)

CIRCLE THE APPROPRIATE RESPONSE		LAB SAMPLE #	DASH #	CLIENT ID	CONTAINER DESCRIPTION	PRESERVATIVE	pH	SAMPLE MATRIX	DATE SAMPLED	REMARKS: CONDITION (ETC.)
1. Custody Seal(s)	Present / Absent (circled: Absent) Intact / Broken*									
2. Chain-of-Custody	Present / Absent* (circled: Present)									
3. Traffic Reports or Packing List:	Present / Absent (circled: Absent)									
4. Airbill:	Airbill / Sticker Present / Absent (circled: Absent)									
5. Airbill #:										
6. Sample Labels:	Present / Absent (circled: Present)									
7. Sample IDs:	Listed / Not Listed on Chain-of-Custody (circled: Listed)									
8. Sample Condition:	Intact / Broken* / Leaking* (circled: Intact)									
9. Does information on chain-of-custody, traffic reports and sample labels agree?	**Yes / No*** (circled: Yes)									
10. Sample received within hold time?	Yes / No* (circled: Yes)									
11. Adequate sample volume received?	Yes / No* (circled: Yes)									
12. Proper preservatives used?	Yes / No* (circled: Yes)									
13. Trip Blank / Temp Blank Received? (circle which, if yes)	Yes / No* (circled: No)									
14. Read Temp: Corrected Temp: Is corrected temp 4 +/-2°C?	____ — Yes / No**									
(Acceptance range for samples requiring thermal pres.)										
**Exception (if any): METALS / DFF ON ICE or Problem COC	Ed Lo									

(Handwritten across table: 1-20-04 [illegible] 16C [illegible])

*IF CIRCLED, CONTACT PROJECT MANAGER AND ATTACH RECORD OF RESOLUTION.

SRL Revision 7
Replaces Rev 5 (07/13/04)
Effective 07/19/05