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(In Memoriam)
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December 15, 2011

Mr. Jerry Wickham
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

SUBJECT: GROUNDWATER AND SOIL GAS SAMPLING REPORT CERTIFICATION
County Case # RO 2500
Former El Monte RV Service Center
4341 Howard Street
Oakland, CA

Dear Mr. Wickham:

You will find enclosed one copy of the following document prepared by P&D Environmental, Inc.

1. Groundwater and Soil Gas Sampling Report dated November 29, 2011 (document 0547.R2).

I declare, under penalty of perjury, that the information and/or recommendations contained in the above-mentioned document for the subject site is true and correct to the best of my knowledge.

Should you have any questions, please do not hesitate to contact me at 760-327-4232.

Sincerely,

David Earl Jacobs, Esq.

Enclosure

P&D ENVIRONMENTAL, INC.

55 Santa Clara Avenue, Suite 240
Oakland, CA 94610
(510) 658-6916

November 29, 2011
Report 0547.R2

Mr. David E. Jacobs
The Law Offices of David Earl Jacobs
225 South Civic Drive, Suite 1-3
Palm Springs, CA 92262

SUBJECT: GROUNDWATER AND SOIL GAS SAMPLING REPORT
(MW1/MW7, B4, B5, AND SG1 THROUGH SG5)
County File # RO 2500
Former El Monte RV Service Center
4341 Howard Street
Oakland, CA

Dear Mr. Jacobs:

P&D Environmental, Inc. (P&D) is pleased to present this report documenting groundwater and soil gas sample collection at the subject site. Existing groundwater monitoring well MW1/MW7 was monitored and sampled on April 18, 2011; two boreholes designated as B4 and B5 were drilled for grab groundwater sample collection on June 30, 2011; and five soil gas samples designated as SG1 through SG5 and one duplicate soil gas sample designated as SG1 DUP were collected on September 7, 2011. The work was performed in accordance with P&D's Soil Gas and Groundwater Sampling and Well Survey Work Plan dated July 22, 2011 (document 0547.W1) and a letter dated August 15, 2011 from the Alameda County Department of Environmental Health (ACDEH) that approved the work plan. All work was performed under the direct supervision of a California professional geologist. A Site Location Map is attached as Figure 1, and a Site Plan showing the sample collection locations is attached as Figure 2.

BACKGROUND

The subject site is the former El Monte RV Service Center and is bordered by a railroad spur to the south. Historical information for the subject site was obtained from the Artesian Environmental Consultants (Artesian) Groundwater Sampling Report dated January 19, 1996. On November 15, 1991 a 1,000 gallon gasoline underground storage tank (UST) was removed from the site, and petroleum was detected in soil samples collected at the time of UST removal. On June 24, 1993 Artesian personnel over-excavated the gasoline-impacted soil, resulting in 110 cubic yards of impacted soil removed and a pit measuring approximately 15 feet by 20 feet by 10 feet deep. On August 19, 1993 the excavation was backfilled with clean imported backfill material, and on August 31, 1993 the stockpiled soil that had been excavated was removed from the site. The locations of the former UST pit and dispenser are shown in Figures 3, 4, 7, and 8.

On June 25, 1993 Artesian personnel supervised installation of groundwater monitoring well MW-1 using 2-inch diameter PVC pipe to a total depth of 20 feet below the ground surface (bgs). The screened interval of the well was from 5 to 20 feet bgs. The laboratory analytical results for soil samples collected at depths of 5 and 10 feet bgs from borehole MW-1 showed that TPH-G and BTEX were not detected. Well MW-1 was sampled a total of seven times between June 25, 1993 and October 16, 1995 and the samples were analyzed for TPH-G and BTEX. In March and October 1995 the groundwater samples collected from well MW-1 were also analyzed for halogenated volatile organic compounds (HVOCs) using EPA Method 8010 associated with investigation of the extent of HVOCs detected in groundwater at the adjacent 500 High Street property (also referred to as the Bank of America site and also referred to as the Cobbledick-Kibbe site). On October 13 and 16, 1995 Artesian drilled borings B-1 through B-3 at locations to the west of the subject site building for collection of groundwater grab samples to further investigate the extent of HVOCs detected in groundwater at and near the subject site. The locations of Artesian well MW-1 and borings B-1, B-2, and B-3 are shown in Figures 3, 4, 5, and 6. Well MW-1 is identified on the figures with the designation of MW-1/MW-7 based on sample reporting associated with the 500 High Street site. The groundwater sample collected from this well in 2011 was designated as MW1/MW7.

Historical information for the 500 High Street site in Oakland was obtained from the ACDEH Fuel Leak Site Case Closure letter dated February 4, 1998 for the 500 High Street site. On March 13, 1990 one 10,000 gallon UST which had contained diesel and gasoline at different times and one 2,000 gallon gasoline UST were removed from the 500 High Street site. On April 9, 1990 the UST pit was over-excavated. On February 26 and 27, 1991 wells MW-1 through MW-3 were installed in the vicinity of the former UST pit. On March 25, 1991 well MW-4 was installed near the site oil-water separator to further investigate the former UST pit. Based on the detected presence of oil in well MW-4, soil borings were drilled in the vicinity of the oil-water separator on May 23, 1991, well MW-5 was installed near the oil-water separator on November 21, 1991, and the 160 gallon oil-water separator was removed on November 26, 1991. Well MW-4 was subsequently destroyed and petroleum-impacted soil in the vicinity of the former oil-water separator was excavated. A total of seven soil samples were collected from the pit on November 27, 1991. The HVOCs cis-1,2-DCE, and trans-1,2-DCE were detected in the soil sample collected from directly beneath the oil-water separator, and the HVOC TCE was also detected in one of the pit soil samples. The excavation was described as appearing fairly complete in removing soil contamination. The locations of the 500 High Street UST pit, the oil-water separator pit, and the wells are shown in Figures 3 through 8.

To further evaluate the extent of HVOCs detected at the 500 High Street site, Blymyer Engineering, Inc. (Blymyer) drilled borings B-1 through B-4 in the vicinity of the 500 High Street site on April 27, 1994 for groundwater sample collection. Blymyer also collected a groundwater sample from the 4341 Howard Street site well MW-1 and identified the MW-1 well sample as MW-7. Additional subsequent sampling of well MW-7 was also performed. On September 12, 1995 well MW-8 was installed at a location identified as immediately downgradient of the former oil-water separator. The low concentrations of HVOCs in well MW-8 relative to well MW-7, and the elevated

concentrations of HVOCs in Artesian's boring B-3 groundwater grab sample were identified as suggesting that the detected elevated HVOC concentrations could be originating from the El Monte RV Service Center.

A summary table of historical groundwater quality data for well MW-1 and borings B-1 through B-3 at 4341 Howard Street that was obtained from the Artesian Groundwater Sampling Report dated January 19, 1996 is attached with P&D's work plan dated July 22, 2011 as Appendix A. Summary tables of historical groundwater quality data for the wells associated with the 500 High Street site and obtained from the ACDEH Fuel Leak Site Case Closure letter dated February 4, 1998 is attached with P&D's work plan dated July 22, 2011 as Appendix B. No historical groundwater level or groundwater flow direction information was available associated with the 500 High Street site.

The ACDEH Fuel Leak Site Case Closure letter dated February 4, 1998 states that the ACDEH concurred that the TPH releases from both the 500 High Street and the 4341 Howard Street sites had been adequately investigated, and that analysis for petroleum hydrocarbons was discontinued for all wells beginning in 1996. Additionally, sampling would continue on a semi-annual basis for HVOCs. Following completion of an April 8, 1997 human health risk assessment using ASTM RBCA for the 500 High Street property, the ACDEH concluded that no further action was recommended for both the petroleum and HVOC releases for the 500 High Street site.

The results of a 2,000-foot radius well survey performed by P&D under separate cover identified a domestic well at the adjacent property at 500 High Street and an industrial well across High Street from the subject site at 499 High Street. The location of the well at the 500 High Street property is unknown. The location of the well at 499 High Street is estimated to be at a location that is approximately 200 feet northwest of the northwestern corner of the property (as projected parallel to and along the western property boundary). The well location is estimated to be approximately 550 feet northwest of the northwestern corner of the existing building at the subject site. A Well Completion Report for the 499 High Street site for destruction of a well with the same diameter as the industrial well suggests that the industrial well may have been destroyed by filling the well with pea gravel to a depth of 22 feet bgs.

GROUNDWATER SAMPLE COLLECTION

Groundwater samples were collected from existing onsite groundwater monitoring well MW1/MW7 on April 18, 2011, and from two boreholes designated as B4 and B5 that were drilled for grab groundwater sample collection on June 30, 2011. Field procedures associated with sample collection are provided below.

Groundwater Monitoring Well Sample Collection

On April 18, 2011 P&D personnel monitored on-site well MW1/MW7 for depth to water to the nearest 0.01 foot using an electric water level indicator. The measured depth to groundwater from

the top of the well casing prior to purging and sampling on April 18, 2011 in well MW1/MW7 was 6.13 feet.

On April 18, 2011 P&D personnel purged and sampled well MW1/MW7 using USEPA low flow purge methods. Prior to well sampling, the well was purged with a peristaltic pump for a minimum of 15 minutes. Purging was performed at low flow rates of approximately 350 mL/min to minimize turbulence and minimize the likelihood of sediments in the samples. During purging operations, the field parameters of electrical conductivity, temperature, pH, and turbidity were monitored and recorded on a groundwater monitoring/well purging data sheet. No petroleum hydrocarbon or solvent odor was detected on the purge water from the well. Once the field parameters were observed to stabilize, and the wells had been purged for a minimum of 15 minutes, water samples were collected from the discharge tubing to the pump. The sample was transferred to 40-milliliter glass Volatile Organic Analysis (VOA) vials and 1-liter amber glass bottles that were sealed with Teflon-lined screw caps. The VOA vials were overturned and tapped to assure that no air bubbles were present. The VOA vials and bottles were then transferred to a cooler with ice, pending transport to the laboratory. Chain of custody documentation accompanied the samples to the laboratory. A record of the field parameters measured during well purging are attached with this report as Appendix A.

Borehole Grab Groundwater Sample Collection

On June 30, 2011 boreholes were drilled at locations B4 and B5 as shown on Figures 2 through 6 by Vironex, Inc. of Concord, California using a GeoProbe direct push drill rig equipped with a 2.5-inch outside diameter macrocore barrel sampler lined with transparent PVC liners. The soil from the borings was logged in the field in accordance with standard geologic field techniques and the Unified Soil Classification System. All soil from the boreholes was evaluated with a Photoionization Detector (PID) equipped with a 10.6 eV bulb and calibrated using a 100 ppm isobutylene standard. The soil was also evaluated for other evidence of petroleum hydrocarbon contamination such as odors, staining, and discoloration. No elevated PID values, odors, staining, or discoloration were detected in the boreholes. No soil samples were retained from the boreholes for laboratory analysis.

Boreholes B4 and B5 were each drilled to total depths of 10 feet bgs. Groundwater was initially encountered during drilling in borehole B4 at a depth of 5.5 feet bgs and was subsequently measured at a depth of 8.3 feet bgs. Groundwater was initially encountered during drilling in borehole B5 at a depth of 6.0 feet bgs and was subsequently measured at a depth of 8.6 feet bgs.

The groundwater grab samples were collected from the boreholes by placing temporary 1-inch diameter slotted PVC pipe into the boreholes and using disposable polyethylene tubing with a peristaltic pump to retrieve each sample from each borehole. Groundwater samples were transferred from the tubing to 40-millileter VOAs and 1-liter glass amber bottles, all of which were supplied by the laboratory and contained hydrochloric acid preservative. The sample bottles were

labeled and placed in a cooler with ice pending delivery to the laboratory. Chain of custody procedures were observed for all sample handling.

Following groundwater sample collection, the temporary PVC pipe was removed from each borehole, and the boreholes were then filled with neat cement grout. Mr. Steve Miller of the ACPWA was onsite to inspect all grouting. All drilling and continuous coring equipment was cleaned with an Alconox solution followed by a clean water rinse prior to use in each borehole. Soil generated during subsurface investigation was stored in a labeled 5-gallon plastic bucket covered with a lid at the site pending characterization and disposal. Soil boring logs are attached with this report as Appendix B.

SOIL GAS SAMPLE COLLECTION

A total of 5 temporary soil gas wells designated as SG1 through SG5 were each installed to a total depth of 5 feet bgs with a 7-foot length of Teflon tubing and one soil gas sample was collected from each temporary soil gas well on September 7, 2011. In addition, one duplicate soil gas sample was collected from one of the temporary soil gas wells. The temporary soil gas wells were destroyed following sample collection.

Each of the temporary soil gas wells was constructed by Vironex, Inc. of Concord, California by driving a hollow 1.5-inch diameter Geoprobe drill rod with an expendable tip to a depth of 5 feet bgs, dislodging the expendable tip, and then inserting a 0.250-inch outside diameter (0.187-inch inside diameter) Teflon tube with a 2-inch long porous high-density polyethylene (HDPE) filter connected to the bottom of the tube to a depth of 4 inches above the bottom of the borehole. A #2/16 Lonestar sack sand was added to the annular space between the hollow rod and the Teflon tubing as the hollow rod was withdrawn from the ground until the lowermost 8 inches of the borehole was filled with sand. Granular bentonite (with grains measuring 1 to 2 millimeters in diameter) was placed in the annular space above the sand to a height of 12 inches above the sand, and the remaining annular space was filled with a bentonite slurry to the ground surface.

A soil gas sampling manifold was assembled at each sampling location using the configuration shown in Figure 9 with a 1-liter Summa canister as the sampling canister. Each manifold was assembled in a shroud consisting of a 35-gallon Rubbermaid bin that had been modified by cutting viewing ports into the sides of the bin and covering the viewing ports with transparent polycarbonate sheets. The Rubbermaid bin was also modified to include a hole measuring approximately two inches square in the bottom of the bin to allow the bin to cover the temporary soil gas well while still allowing access to the temporary well through the bottom of the bin. Immediately prior to assembling the manifold, the vacuum for the sample canister was checked with a vacuum gauge and recorded.

Following completion of the soil gas sampling manifold and prior to sampling the soil gas at each location, a 10 minute leak check of the sampling manifold was performed by closing the valve located between the filter and the pressure gauge, opening the purge canister valve, and recording

the manifold system vacuum (see Figure 9). Following successful verification of the manifold leak check, a default of three purge volumes was purged from the temporary soil gas well prior to sample collection. A period of at least 30 minutes elapsed after construction of each temporary soil gas well prior to purging.

No purge testing for purge volume determination was performed because the samples were collected using Summa canisters. The purge volume was calculated based on the void space surrounding the HDPE filter and the volume of the tube. The purge time was calculated using a nominal flow rate provided by the flow controller of 200 milliliters per minute. A copy of the soil gas purge volume calculations is attached as Appendix C.

Following completion of the purging of three purge volumes, the valve to the purge canister was closed, a lid for the bin that had been modified to include two gauntlet nitrile gloves and a viewing port covered with a transparent polycarbonate sheet for adjustment of equipment inside the bin was placed over the top of the bin, enclosing the well and the sampling manifold in the sampling shroud. A tracer gas (1,1-Difluoroethane) was then sprayed into the shroud interior for one second through a tube connected to a hole in the side of the shroud.

Following placement of the tracer gas into the shroud, the gloves in the lid of the shroud were used to open the sample canister valve. After verifying that low flow conditions were not present associated with the soil gas sample, an air sample was collected from the shroud atmosphere to quantify the shroud tracer gas concentration while the soil gas sample was being collected at locations SG1 and SG5. The shroud atmosphere sample was collected into a Tedlar bag that had been placed into a vacuum chamber. The Tedlar bag inlet was connected to a new piece of Teflon tubing that was inserted into the shroud atmosphere through a hole in the side of the shroud at the time that the lid was placed onto the shroud.

Once the vacuum for the sample canister valve had decreased to 5 inches of mercury, the gloves in the lid of the shroud were used to close the sample canister valve. The pressure gage on the inlet side of the flow controller (see Figure 9) was monitored during sample collection to ensure that the vacuum applied to the soil gas well did not exceed 100 inches of water.

One duplicate soil gas sample designated as SG1-DUP was collected into a Summa canister from temporary soil gas well SG1 using a stainless steel sampling tee for the Summa canisters using methods described above. Following soil gas sample collection, a PID was connected to the temporary soil gas well Teflon tubing to obtain a preliminary field value for the sample collection location. The soil gas Summa canister samples were stored in a box and promptly shipped to the laboratory for extraction and analysis. Chain of custody procedures were observed for all sample handling. Measurements of vacuums, purging and equilibration time intervals, and PID readings were recorded on a Soil Gas Sampling Data Sheet that is provided in Appendix C of this report.

All drilling rods and associated drilling fittings were cleaned with an Alconox solution wash followed by a clean water rinse prior to use at each temporary soil gas well location. New Teflon

tubing and filters, and clean, unused vacuum gages and stainless steel sampling manifolds were used at each sample collection location. Following soil gas sample collection the Teflon tubing was pulled from each temporary soil gas sampling well and a 1-inch diameter solid steel rod was driven through the bentonite and sand to the total depth of the temporary soil gas sampling well. The solid steel rod was then removed, and the borehole was filled with neat cement.

No precipitation occurred during the five days preceding the soil gas sampling or on the day of soil gas sampling (September 7, 2010). Weather data, including precipitation and barometric pressure for the day of the sampling event and also for each of the two weeks preceding and following the sample collection date is provided as Appendix D. The weather station is located on the island of Alameda at an elevation of 15 feet, approximately 1.9 miles to the west of the subject site. The subject site is located at an elevation of approximately 12 feet above sea level. An internet link to the weather station information is provided in Appendix D.

HYDROGEOLOGY

Based on review of regional geologic maps from U. S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E. J. Helley and K. R. Lajoie, 1979, the subject site is underlain by Holocene Deposits, Bay mud (Qhbm), which is described as unconsolidated water-saturated dark plastic carbonaceous clay and silty clay. It may contain a few lenses of well-sorted fine sand and silt and a few shelly and peaty layers.

Review of the Geologic map and map database of the Oakland metropolitan area, Alameda, Contra Costa, and San Francisco Counties, California: A Digital Database that was compiled by R.W. Graymer (U. S. Geological Survey Miscellaneous Field Studies, MF-2342, Version 1.0 in 2000), shows the subject site as being underlain by artificial fill (af) which is described as consisting of Man-made deposits of various materials and ages. The materials are further described as some being compacted and quite firm, but fills made before 1965 are nearly everywhere not compacted and consist simply of dumped materials.

Historical information for subsurface conditions at the subject site was obtained from a January 19, 1996 Groundwater Sampling Report prepared by Artesian Environmental Consultants (AEC) that included boring logs for boreholes B-1, B-2, and B-3 drilled by AEC on October 13, 1995. The boreholes were each continuously cored to a depth of 16 feet bgs. The subsurface materials encountered in the boreholes consisted of silty sand or clayey gravel fill to a depth of 4 or 5 feet bgs, which was underlain by clay and silt to the total depth explored of 12 feet bgs in borehole B-1 and to a depth of 14 feet bgs in borehole B-2. In borehole B-3 the fill was underlayin by silty sand to a depth of 7 feet bgs, which was in turn underlain by clay and silt to a depth of 14 feet bgs. In boreholes B-2 and B-3 coarse grained-materials consisting of silty sandy clay, sandy gravel, or silty clayey sand to the total depth explored of 16 feet bgs. There was no core recovery in borehole B-1 between the depths of 12 and 16 feet bgs, suggesting that coarse-grained materials were encountered in this interval. The report text states that groundwater was encountered at depths of approximately

8.5 feet bgs in boreholes B-1 and B-2 and at a depth of approximately 12 feet bgs in borehole B-3. The depth to groundwater in well MW-1 was also reported to be approximately 7 feet bgs. Copies of the report cover, the portion of the report that describes subsurface conditions, the boring location map, and the boring logs are attached with this report as Appendix E.

Historical information for subsurface materials in the vicinity of the subject site was also obtained from the ACDEH Fuel Leak Site Case Closure letter dated February 4, 1998 for the 500 High Street site located at the adjacent property located to the northeast of the subject site. No boring logs were provided, however copies of a figure showing the location of cross section A-A' and a figure of cross section A-A' are attached with this report as Appendix F. The cross section shows a sandy clay zone between the depths of 10 and 15 feet bgs in the vicinity of wells MW-1 and MW-3 to the northeast of the subject site that grades and thickens into a silty sand zone between the depths of 10 feet and the total depth explored of approximately 25 to 27 feet bgs to the north and northwest of the subject site.
Based on the materials encountered to the total depth explored of 10.0 feet bgs during the current investigation in the borehole cores at drilling locations B4 and B5, the subsurface materials encountered at the site consisted predominantly of fill from 0 to 3.0 feet bgs, fine sand from 3.0 to 6.5 and 7.0 feet bgs, respectively, and clay to the total depth explored of 10.0 feet bgs at each location. Groundwater was encountered during drilling in boreholes B4 and B5 at 5.5 and 6.0 feet bgs, respectively, and was subsequently measured at depths of depth of 8.3 and 8.6 feet bgs, respectively.

The measured depth to groundwater from the top of the well casing prior to purging and sampling on April 18, 2011 in well MW1/MW7 was 6.13 feet. There is no historical information regarding water level measurements in groundwater monitoring well MW1/MW7 at the subject site, other than the depth to water from the top of the well casing on March 23, 1995 was 2.85 feet below the top of the well casing.

Historical information for depth to water and groundwater flow direction for groundwater monitoring wells located at the adjacent property located to the northeast of the subject site (500 High Street) was obtained from the ACDEH Fuel Leak Site Case Closure letter dated February 4, 1998 for the 500 High Street site. The historical groundwater flow direction at 500 High Street has ranged from west to southwest and the measured depth to water in the wells has historically ranged from 1.57 to 8.79 feet. The nearest surface water body to the subject site is a tidal canal located approximately 1,000 feet to the southwest of the site that is connected to the San Leandro Bay estuary.

LABORATORY RESULTS

The groundwater sample collected from groundwater monitoring well MW1/MW7 was analyzed at McCampbell Analytical, Inc. in Pittsburg, California (McCampbell) for TPH-G using EPA Methods 5030B/8015B modified; TPH-D and TPH-BO using EPA methods 3510C/8015B; and for VOCs and HVOCs using EPA Method 8260B. The groundwater samples collected from boreholes B4

and B5 were analyzed at McCampbell for TPH-G and for VOCs and HVOCs using methods described for the groundwater sample from well MW1/MW7.

All of the soil gas samples and the duplicate soil gas sample were analyzed at Air Toxics Limited in Folsom, California for TCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride, TPH-G, MBTEX, and the tracer gas 1,1-Difluoroethane (1,1-DFA) using EPA Method TO-15; and for oxygen, methane and carbon dioxide using method ASTM D-1946.

The shroud atmosphere samples collected at locations SG1 and SG5 were analyzed at McCampbell using EPA Method 8260B.

The MW1/MW7 groundwater monitoring well sample results are summarized in Table 1 and the borehole B4 and B5 groundwater grab sample results are summarized in Table 2. The TO-15 soil gas sample results and the shroud atmosphere sample results are summarized in Table 3, and the ASTM D-1946 (oxygen, methane and carbon dioxide) results are summarized in Table 4. Copies of the laboratory analytical reports and chain of custody documentation are attached with this report as Appendix G.

The results in Table 1 for the groundwater sample collected from groundwater monitoring well MW1/MW7 show that TPH-G, TPH-D, and TPH-BO were not detected, and that the only EPA Method 8260 compounds detected were TCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride, and MTBE at concentrations of 87, 51, 23, 1.8 and 5.7 ug/L, respectively. The results in Table 2 show that no analytes were detected above laboratory reporting limits in either of the grab groundwater samples.

The results in Table 3 for the soil gas sample TO-15 analysis results show that none of the HVOCs TCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride were detected in any of the soil gas samples; TPH-G and MBTEX were all detected in sample SG5; and that TPH-G and BTX were detected in the remaining samples with MTBE also detected in sample SG3. The tracer gas 1,1-DFA was detected in samples SG1, SG1-DUP and SG2 at concentrations of 1,600 to 5,600 ug/m3, and was detected in the two shroud atmosphere samples at concentrations of 29,000,000 and 79,000,000 ug/m3.

The results in Table 4 for the soil gas sample ASTM-D 1946 analysis results show that oxygen was detected at concentrations of 18 or 19 percent in samples SG1, SG4 and SG5, and at concentrations of 2.2 and 2.8 percent in samples SG2 and SG3, respectively. Methane was not detected at 0.00026 percent in sample SG4, was detected at concentrations of 0.0016 and 0.0048 percent in samples SG1 and SG5, and was detected at concentrations of 0.15 and 1.7 percent in samples SG2 and SG3, respectively. Carbon dioxide concentrations were 1.2, 3.1 and 0.78 percent at locations SG1, SG4 and SG5, respectively, and were 6.9 and 2.5 percent at locations SG2 and SG3, respectively.

RISK AND HAZARD ANALYSIS

The only complete pathway for contaminant exposure at the subject site is considered to be potential vapor intrusion from soil gas to indoor air. The SFRWQCB May 2008 ESL guidance document "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater" section 2.7 references the DTSC Vapor Intrusion guide (Interim Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air, revised 2/7/05) for interpretation of sample results exceeding ESLs. The ESL guidance document indicates that the recommended approach of DTSC for sensitive land use scenarios is appropriate. The DTSC guidance document ("Guidance For The Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" revised February 7, 2005) recommends that if look up table screening levels are exceeded, that a site-specific evaluation of the site be conducted using appropriate fate and transport modeling (Step 7 in the guidance document). DTSC recommends that the USEPA Johnson and Ettinger (JE) model be used (USEPA Vapor Intrusion Model, 2003). The model predicts risk and hazard from indoor vapor concentrations based on soil gas concentrations. The DTSC Human and Ecological Risk Division (HERD) has used the JE model to develop a California-specific screening-mode spreadsheet for calculation of the predicted risk and hazard resulting from exposure to chemicals from vapor intrusion which include the compounds encountered at the site. DTSC recommends that the California-specific HERD spreadsheet be used. The most recently updated version of the spreadsheet is dated February 2009.

The February 2009 HERD screening-mode JE model spreadsheet was used to calculate the predicted risk and hazard associated with the soil gas sample results. Evaluation of hazard associated with TPH-G using the HERD JE model spreadsheet is not possible because TPH is not one of the chemicals available in the chemical properties lookup table for use in the model. Additionally, TPH is not considered a carcinogen, and it is therefore not possible to calculate risk for TPH-G.

Based on the absence of detected HVOCs in the soil gas samples, the highest TPH-G and MBTEX sample results (all encountered at location SG5) were used to evaluate risk and hazard from soil gas vapor intrusion using the DTSC spreadsheet. All of the DTSC spreadsheet default values were used except for the following changes:

- Line 2-Vadose zone SCS soil type (used to estimate soil vapor permeability) was changed to S (sand); the default is blank.
- Line 2-User defined vadose zone soil vapor permeability was deleted; the default is 1.00E-8 (cm2).
- Line 4-Averaging time for non-carcinogens was changed to 25 years for a commercial/industrial scenario; the default is 30 years (residential scenario).
- Line 4-Exposure duration was changed to 25 years for a commercial/industrial scenario; the default is 30 years (residential scenario).

- Line 4-Exposure frequency was changed to 250 days/yr for a commercial/industrial scenario; the default is 350 days/yr (residential scenario).

The HERD vapor intrusion screening-mode spreadsheet output hazard and risk results for each chemical for sample SG5 (with the exception of TPH-G as described above) are summarized in Table 3, along with the calculated cumulative hazard and risk for each sample.

The spreadsheet model input, interim calculations (intercalcs) and output sheets for each calculation are attached with this report as Appendix H.

Sensitivity analysis of the soil gas model was performed using benzene for a total of eight scenarios of varying temperature, soil type, sample depth and contaminant concentration. For scenario 1, all of the DTSC spreadsheet default values were used except for the following changes:

- Line 2-Soil gas sampling depth was changed to 45.72 cm (1.5 ft); the default is 152.4 cm (5.0 ft).
- Line 2-Vadose zone SCS soil type (used to estimate soil vapor permeability) was changed to SI (silt); the default is blank.
- Line 2-User defined vadose zone soil vapor permeability was deleted; the default is 1.00E-8 (cm2).

The results of the sensitivity analysis are summarized in Table 6, and the model input, intercalcs and output sheets for each calculation are attached with this report as Appendix I.

DISCUSSION AND RECOMMENDATIONS

Review of the available boring logs and cross section shows that silty sand is present below a depth of 10 feet bgs to the north and northwest of the subject site to a depth of at least 25 to 27 feet bgs. The historical depth to groundwater associated with investigation at the 500 high Street property was reported to range from 1.57 to 8.79 feet. The measured depth to groundwater in onsite well MW1/MW7 was reported to be 2.85 feet on March 23, 1995, approximately 7 feet on October 13, 1995 and 6.13 feet on April 18, 2011. The depth to groundwater in borings B-1, B-2 and B-3 on October 13, 1995 was 8.5, 8.5 and 12 feet bgs, respectively. Groundwater was first encountered during drilling in boreholes B4 and B5 on June 30, 2011 at depths of 5.5 and 6.0 feet, respectively, and was subsequently measured in the boreholes at depths of 8.3 and 8.6 feet bgs, respectively. It appears that during wet weather months the groundwater level at and near the site may be within 2 feet of the ground surface, and that during dry weather months the groundwater level at and near the site ranges from approximately 5.5 to 8.5 feet bgs. The historical groundwater flow direction at the 500 High Street site has ranged from west to southwest.

Review of historical water quality data for onsite well MW1/MW7 (see Appendix A of P&D's July 22, 2011 work plan) shows that TPH-G, benzene, and the HVOCs TCE, cis-1,2-DCE and trans-1,2-DCE have been detected in the well, but that sampling has not occurred since October 13, 1995. Review of Table 1 shows that analysis of a water sample collected from the well on April 18, 2011 using USEPA low flow purge methods for TPH using modified EPA Method 8015 and for VOCs using EPA Method 8260B did not show the presence of TPH-G or benzene, but that MTBE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride were detected.

The absence of TPH-G and benzene in the 2011 groundwater sample from well MW1/MW7 suggests that attenuation of the petroleum hydrocarbons may have occurred since 1995. The HVOC concentrations detected in 2011 are consistent with the concentrations detected in 1995, suggesting that HVOC groundwater conditions characterized in 1995 are relatively unchanged. Comparison of the detected concentrations in 2011 with their respective SFRWQCB May 2008 Table A ESL values shows that all of the detected concentrations exceeded their respective Table A ESL values. The detected TCE and cis-1,2-DCE concentrations exceeded their respective Table A ESL values by approximately one order of magnitude and the remaining compounds exceeded their respective Table A ESL values by a factor of 1.1 to 4, indicating that the primary HVOCs of concern in groundwater are TCE and cis-1,2-DCE.

Review of Table 2 shows that TPH-G, MBTEX, and HVOCs analyzed by EPA Method 8260B were not detected in either of the groundwater grab samples collected from boreholes B4 and B5. Based on these groundwater results, the extent of HVOCs has been defined to the south of the subject site (see TCE and cis-1,2-DCE groundwater isoconcentration contours in Figures 3 and 4, respectively). To evaluate the potential for preferential movement of TCE and cis-1,2-DCE in groundwater in filled sloughs or buried paleochannels to the southeast and northwest of the subject site building, P&D recommends collection of groundwater grab samples at proposed locations B6 and B7 as shown on Figures 3 and 4 using methods set forth in P&D's July 22, 2011 work plan.

Based on the reported westerly to southwesterly groundwater flow direction for the historical 500 High Street investigation and the northerly orientation of the TCE and cis-1,2-DCE groundwater concentrations in the vicinity of the subject site, it appears that the movement of TCE and cis-1,2-DCE in groundwater in the vicnity of the subject site may be controlled by naturally occurring preferential pathways (filled sloughs or buried paleochannels) or may have been impacted by the domestic and industrial wells identified at the 500 and 499 High Street properties (see well survey report discussion in the Background section above). P&D recommends that information regarding the location and use of the domestic well at 500 High Street and the destruction of the industrial well at 499 High Street be further investigated.

Review of Table 3 shows that no HVOCs were detected in any of the soil gas samples, and that the only detected soil gas concentrations that exceeded their respective SFRWQCB May 2008 Table E soil gas ESL values for vapor intrusion concerns were in soil gas sample SG5, where the 24,000 ug/m3 TPH-G concentration exceeded the residential (10,000 ug/m3) but not the commercial/industrial (29,000 ug/m3) land use Table E soil gas ESL, and where the 310 ug/m3

benzene concentration exceeded both the residential (84 ug/m3) and commercial/industrial (280 ug/m3) land use Table E soil gas ESL value. The TCE soil gas sample results and the associated TCE groundwater isoconcentration contours are shown in Figure 5, and the cis-1,2-DCE soil gas sample results and the associated cis-1,2-DCE groundwater isoconcentration contours are shown in Figure 6. The TPH-G and benzene soil gas sample results are shown in Figures 7 and 8, respectively.

Comparison of the Table 3 detected tracer gas concentrations in soil gas samples SG1 and SG2 with the shroud atmosphere concentrations shows that the detected tracer gas concentrations in the soil gas samples are substantially less than one percent of the shroud atmosphere concentrations, indicating that the soil gas samples were not invalidated by atmospheric leakage.

Review of the soil gas hazard and risk analysis results at location SG5 in Table 5 shows that the cumulative incremental risk is 2.01 per million and that the hazard is less than 1. Review of Table 5 shows that almost all of the risk is associated with benzene. The sensitivity analysis for the soil gas model in Table 6 shows that the model is insensitive to average soil temperature and soil type, but is sensitive to soil gas sampling depth and soil gas contaminant concentration.

The DTSC recommends that when the calculated cumulative incremental risk from vapor intrusion to indoor air exceeds one per million (1.0E-06), or when the calculated cumulative hazard quotient from vapor intrusion to indoor air exceeds one, that indoor air samples be collected on a semi-annual basis and that permanent sub-slab monitoring points and/or permanent vadose zone monitoring points be installed. The DTSC also recommends that when the calculated cumulative incremental risk from vapor intrusion to indoor air exceeds one hundred per million (1.0E-04), or when the calculated cumulative hazard quotient from vapor intrusion to indoor air exceeds three, that mitigation of indoor air concentrations be performed. Based on the cumulative incremental risk of 2.01 per million at SG5, P&D recommends that an additional soil gas sample be collected at a depth of 5 feet bgs at location SG5 six months after the initial sample collection date of June 22, 2011 in accordance with DTSC guidelines.

The Table 4 oxygen concentrations of 18 or 19 percent at locations SG1, SG4 and SG5 indicate that aerobic degradation of petroleum hydrocarbons is not occurring at these locations, and the corresponding low methane concentrations indicate that anaerobic degradation of HVOCs is not occurring at these locations. By contrast, the Table 4 oxygen concentrations of 2.2 and 2.8 percent at locations SG2 and SG3 and the elevated methane concentrations indicate aerobic degradation of petroleum hydrocarbons and the anaerobic degradation of HVOCs is occurring at these locations.

DISTRIBUTION

A copy of this report will be uploaded to the ACDEH website, in accordance with ACDEH requirements. In addition, a copy of this report will be uploaded to the GeoTracker database.

LIMITATIONS

This report was prepared solely for the use of The Law Offices of David Earl Jacobs. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with the site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgment based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between borings and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly revealed conditions must be evaluated and may invalidate the findings of this report.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

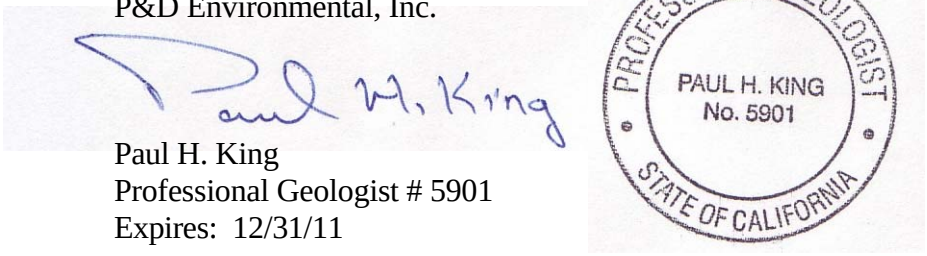
This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities that is used in this report. This report presents our professional judgment based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

November 29, 2011
Report 0547.R2

Should you have any questions, please do not hesitate to contact us at (510) 547-7771.

Sincerely,

P&D Environmental, Inc.



Paul H. King
Professional Geologist # 5901
Expires: 12/31/11

Attachments:

Table 1 – Summary of Monitoring Well Groundwater Sample Analytical Results
Table 2 – Summary of Borehole Groundwater Grab Sample Analytical Results
Table 3 – Summary of Soil Gas Sample TO-15 and Shroud Atmosphere Analytical Results
Table 4 – Summary of Soil Gas Sample ASTM D-1946 Analytical Results
Table 5 – Summary of Soil Gas Risk and Hazard Analysis at Location SG5
Table 6 – Summary of Soil Gas Model Sensitivity Analysis

Figure 1 – Site Location Map
Figure 2 – Site Map Showing Sample Collection Locations
Figure 3 – Site Vicinity Map Showing TCE in Groundwater
Figure 4 – Site Vicinity Map Showing cis-1,2-DCE in Groundwater
Figure 5 – Site Vicinity Map Showing TCE in Soil Gas
Figure 6 – Site Vicinity Map Showing cis-1,2-DCE in Soil Gas
Figure 7 – Site Vicinity Map Showing TPH-G in Soil Gas
Figure 8 – Site Vicinity Map Showing Benzene in Soil Gas
Figure 9 – Typical Soil Gas Sampling Manifold

Appendix A – Groundwater Monitoring/Well Purging Data Sheets
Appendix B – Soil Boring Logs
Appendix C – Soil Gas Sampling Purge Calculations and Field Data Sheets
Appendix D – Weather Information
Appendix E – Historical Boring Logs for 4341 Howard Street Site
Appendix F – Historical Cross Section for 500 High Street Site
Appendix G – Laboratory Analytical Reports and Chain of Custody Documentation
Appendix H – HERD February 2009 Vapor Intrusion Risk and Hazard Spreadsheet Calculations
Appendix I – Soil Gas Model Sensitivity Analysis Risk and Hazard Calculation Work Sheets

PHK/mld/sjc
0547.R2

TABLES

Table 1
Summary of Monitoring Well Groundwater Sample Analytical Results

Sample ID	Sample Date	TPH-G	TPH-D	TPH-BO	MTBE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Other VOCs by EPA Method 8260B
MW1/MW7	4/18/2011	ND<50	ND<50	ND<100	**5.7**	ND<1.7	ND<1.7	ND<1.7	ND<1.7	ND, except TCE = **87**, cis-1,2-DCE = **51**, trans-1,2-DCE = **23**, Vinyl Chloride = **1.8**
ESL		*100*			*5.0*	*1.0*	*40*	*30*	*20*	TCE = 5.0, cis-1,2-DCE = 6.0, trans-1,2-DCE = 10, Vinyl Chloride = 0.5

Abbreviations and Notes:
TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
TPH-BO = Total Petroleum Hydrocarbons as Bunker Oil
MTBE = Methyl tertiary-butyl ether
VOCs = Volatile Organic Compounds
ND = Not detected
ESL= Environmental Screening Level, developed by San Francisco Bay – Regional Water Quality Control Board (SF-RWQCB), from Table A – Shallow Soils, groundwater is a current or potential source of drinking water, updated May 2008.
Values in bold exceed their respective ESL values.
Results and ESLs in micrograms per liter (µg/L) unless otherwise specified.

Table 2
Summary of Borehole Groundwater Grab Sample Analytical Results

Sample ID	Sample Date	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Other VOCs by EPA Method 8260B
B4-W	6/30/2011	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	All ND
B5-W	6/30/2011	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	All ND
ESL		*100*	*5.0*	*1.0*	*40*	*30*	*20*	*Various*

Abbreviations and Notes:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
MTBE = Methyl tertiary-butyl ether
VOCs = Volatile Organic Compounds
ND = Not detected
ESL= Environmental Screening Level, developed by San Francisco Bay – Regional Water Quality Control Board (SF-RWQCB), from Table A – Shallow Soils, groundwater is a current or potential source of drinking water, updated May 2008.
Values in bold exceed their respective ESL values.
Results and ESLs in micrograms per liter (µg/L) unless otherwise specified.

Table 3
Summary of Soil Gas Sample TO-15 and Shroud Atmosphere Analytical Results

Sample ID	Sample Date	TPH-G	MTBE	Benzene	Toluene	Ethylbenzene	m,p-Xylenes	o-Xylenes	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-Difluoroethane
SG1	9/7/2011	6,100	ND<4.8	12	22	ND<5.7	12	ND<5.7	ND<7.1	ND<5.2	ND<5.2	ND<3.4	4,400, a
SG1-DUP	9/7/2011	6,100	ND<4.7	13	21	ND<5.7	13	ND<5.7	ND<7.0	ND<5.2	ND<5.2	ND<3.3	5,600, a
SG2	9/7/2011	2,200	ND<4.3	10	7.2	ND<5.1	6.6	ND<5.1	ND<6.4	ND<4.7	ND<4.7	ND<3.0	1,600, a
SG3	9/7/2011	5,700	130	9.4	30	ND<5.5	12	ND<5.5	ND<6.8	ND<5.0	ND<5.0	ND<3.2	ND<14
SG4	9/7/2011	ND<260	ND<4.6	ND<4.1	ND<4.8	ND<5.5	ND<5.5	ND<5.5	ND<6.8	ND<5.0	ND<5.0	ND<3.2	ND<14
SG5	9/7/2011	**24,000**	73	**310**	27	6.6	28	5.8	ND<6.8	ND<5.0	ND<5.0	ND<3.2	ND<14
SG1 (shroud sample)	9/7/2011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29,000,000
SG5 (shroud sample)	9/7/2011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	79,000,000
ESL [1]		*10,000*	*9,400*	*84*	*63,000*	*980*	*21,000 combined*		*1,200*	*7,300*	*15,000*	*31*	*None*
ESL [2]		*29,000*	*31,000*	*280*	*180,000*	*3,300*	*58,000 combined*		*41,000*	*20,000*	*41,000*	*100*	*None*

Abbreviations and Notes:
TPH-G = Total Petroleum Hydrocarbons as Gasoline
MTBE = Methyl tertiary-butyl ether
TCE = Trichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
trans-1,2-DCE = trans-1,2-Dichloroethene
1,1-Difluoroethane = used as leak detector during sample collection.
a = Laboratory Note: Exceeds Instrument Calibration Range.
ND = Not Detected.
NA = Not Analyzed.
ESL[1]= Environmental Screening Level, developed by San Francisco Bay – Regional Water Quality Control Board (SF-RWQCB), from Table E – Indoor Air and Soil Gas (Vapor Intrusion Concerns) Shallow Soil Gas Screening Levels for Residential Land Use.
ESL[2]= Environmental Screening Level, developed by San Francisco Bay – Regional Water Quality Control Board (SF-RWQCB), from Table E – Indoor Air and Soil Gas (Vapor Intrusion Concerns) Shallow Soil Gas Screening Levels for Commercial/Industrial Land Use.
Values in bold exceed their respective ESL[1] values.
Underlined Values exceed their respective ESL[2] values.
Results and ESLs in micrograms per cubic meter (µg/m3), unless otherwise indicated.

Table 4
Summary of Soil Gas Sample ASTM D-1946 Analytical Results

Sample ID	Sample Date	Oxygen	Methane	Carbon Dioxide
SG1	9/7/2011	18	0.0016	1.2
SG1-DUP	9/7/2011	18	0.0016	1.2
SG2	9/7/2011	2.2	0.15	6.9
SG3	9/7/2011	2.8	1.7	2.5
SG4	9/7/2011	18	ND<0.00026	3.1
SG5	9/7/2011	19	0.0048	0.78

Abbreviations and Notes:
ND = Not Detected.
Results are given in percentage, unless otherwise indicated.

Table 5
Summary of Soil Gas Risk and Hazard Analysis at Location SG5

Johnson and Ettinger model (DTSC 2009 spreadsheet)
Former El Monte RV Service Center
4341 Howard Street
Oakland, CA

Chemical	Concentration (ug/m3)	Sample Result Location	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	CAS#
TPH-G	24,000	SG5	NA	NA	8006-61-9
MTBE	73	SG5	4.70E-09	1.70E-05	1634044
Benzene	310	SG5	2.00E-06	6.50E-03	71432
Toluene	27	SG5	NA	5.60E-05	108883
Ethylbenzene	6.6	SG5	3.40E-09	3.80E-06	100414
m,p-Xylene	28	SG5	NA	1.60E-04	106423 (p-xylene)
o-Xylene	5.8	SG5	NA	3.60E-05	95476
		TOTAL	2.01E-06	6.77E-03	

NOTES:
JE spreadsheet default values were used except soil type was sand (S), and averaging time was changed to 25 years, exposure duration was changed to 25 years, and exposure frequency was changed to 250 days per year for a commercial/industrial land use scenario.

Table 6
Summary of Soil Gas Model Sensitivity Analysis

Johnson and Ettinger model (DTSC 2009 spreadsheet)					
				Incremental	Hazard
				risk from	quotient
				vapor	from vapor
				intrusion to	intrusion to
				indoor air,	indoor air,
		Concentration		carcinogen	noncarcinogen
Chemical		(ug/m^3)		(unitless)	(unitless)
Scenario 1 = Benzene Concentration = 6.8 ug/m3 with Model Default Values Except for					
	Soil = SI and Sample Depth = 45.72 cm (1.5 ft).				
Benzene		6.8		1.5E-07	3.9E-04
Scenario 2 = Scenario 1 values except average soil temperature is 15 degrees C.					
Benzene		6.8		1.5E-07	3.9E-04
Scenario 3 = Scenario 1 values except soil type is CL.					
Benzene		6.8		1.5E-07	3.9E-04
Scenario 4 = Scenario 1 values except soil type is S.					
Benzene		6.8		1.5E-07	3.9E-04
Scenario 5 = Scenario 1 values except soil gas sampling depth is 152.4 cm (5 ft).					
Benzene		6.8		7.5E-08	2.0E-04
Scenario 6 = Scenario 1 values except soil gas sampling depth is 304.8 cm (10 ft).					
Benzene		6.8		4.4E-08	1.2E-04
Scenario 7 = Scenario 1 values except benzene concentration = 100 ug/m3.					
Benzene		100		2.1E-06	5.7E-03
Scenario 8 = Scenario 1 values except benzene concentration = 1,000 ug/m3.					
Benzene		1,000		2.1E-05	5.7E-02

FIGURES

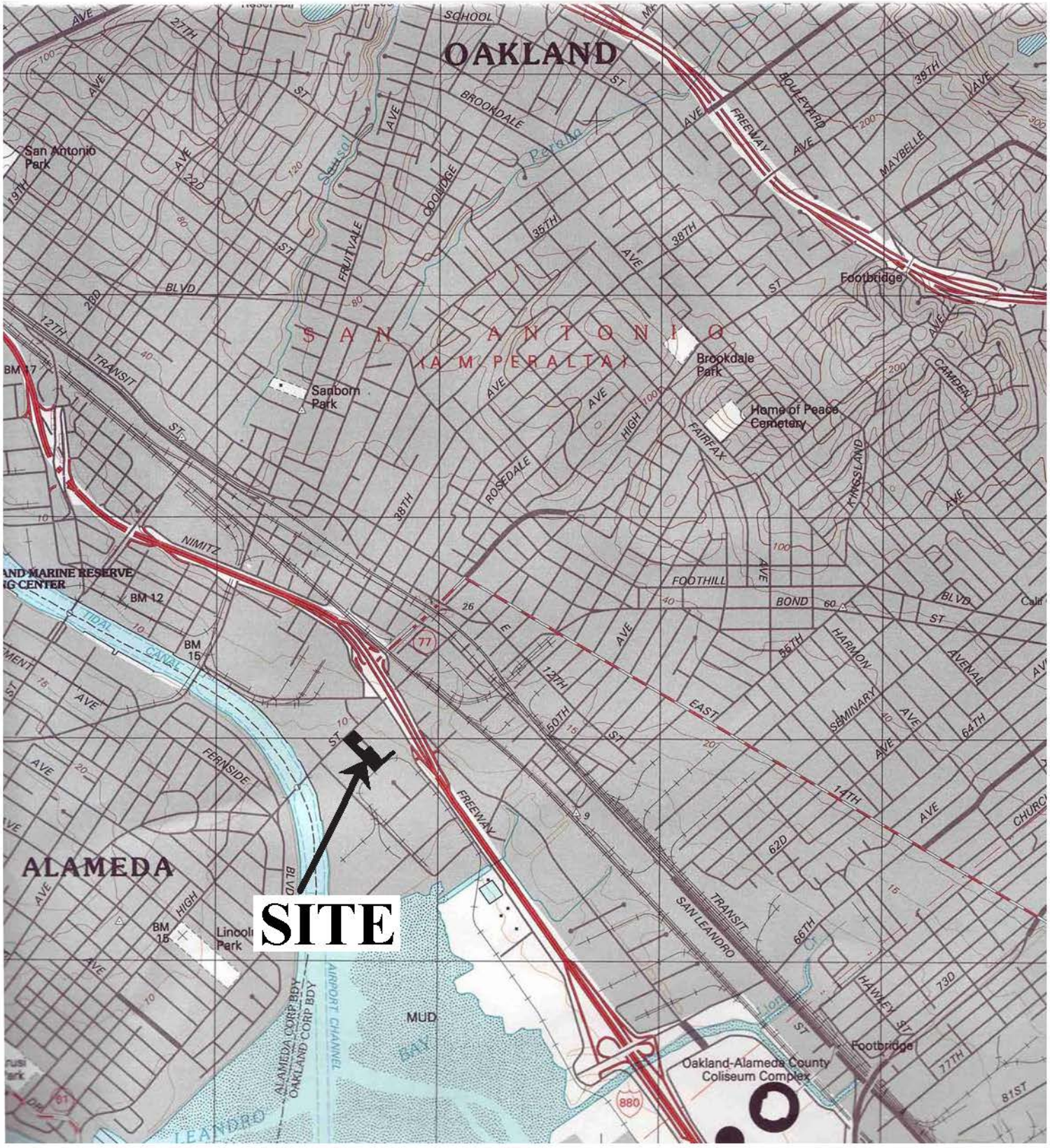


Figure 1
Site Location Map
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

N

Base Map From:
U.S. Geological Survey
Oakland East, California
7.5 Minute Quadrangle
Map edited 1996

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 1,000 2,000

APPROXIMATE SCALE IN FEET

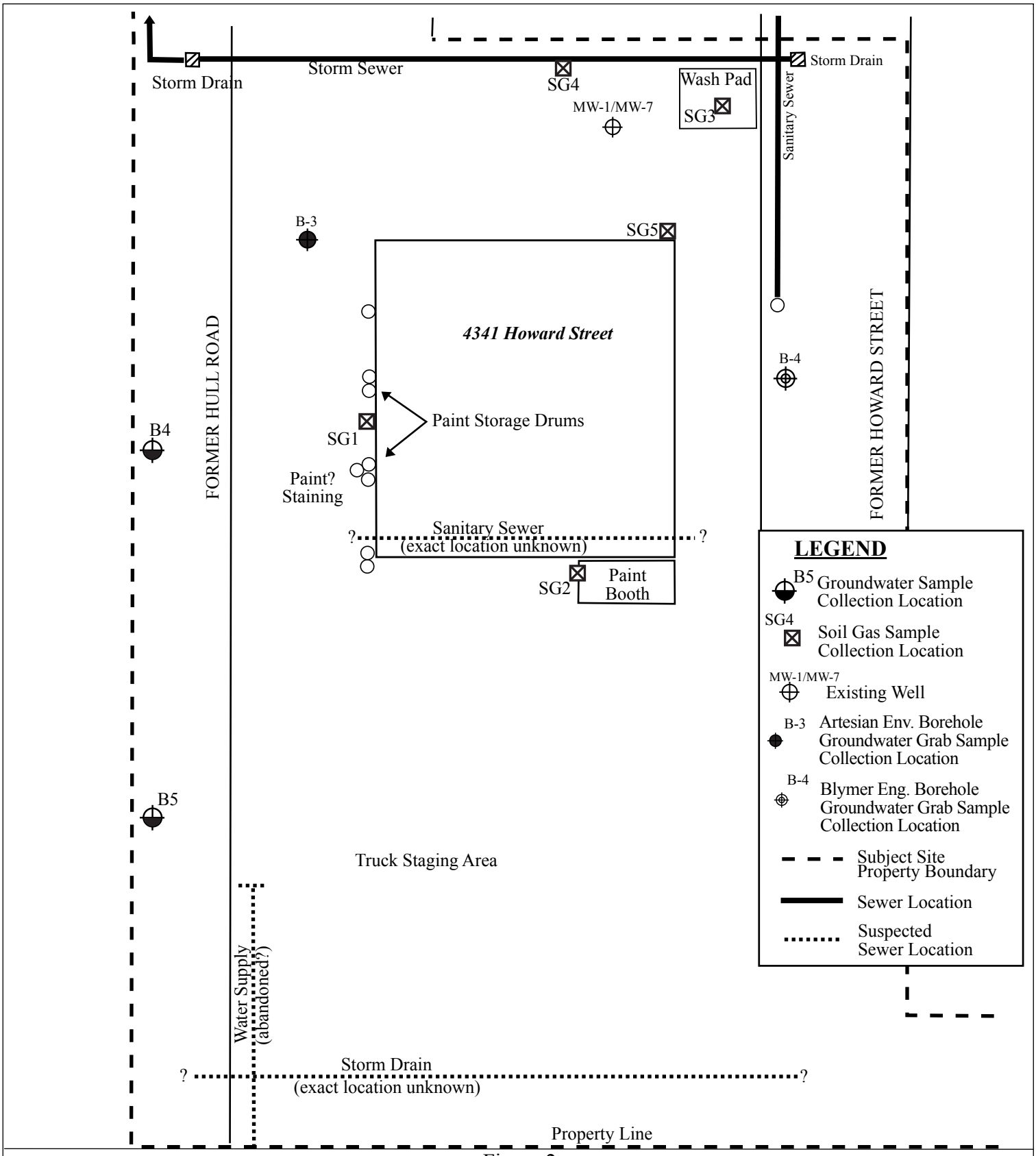


Figure 2
Site Map Showing Sample Collection Locations
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

Base Map From: Artesian Environmental, July 2000	P&D Environmental, Inc. 55 Santa Clara Ave., Suite 240 Oakland, CA 94610	0 20 40 APPROXIMATE SCALE IN FEET N

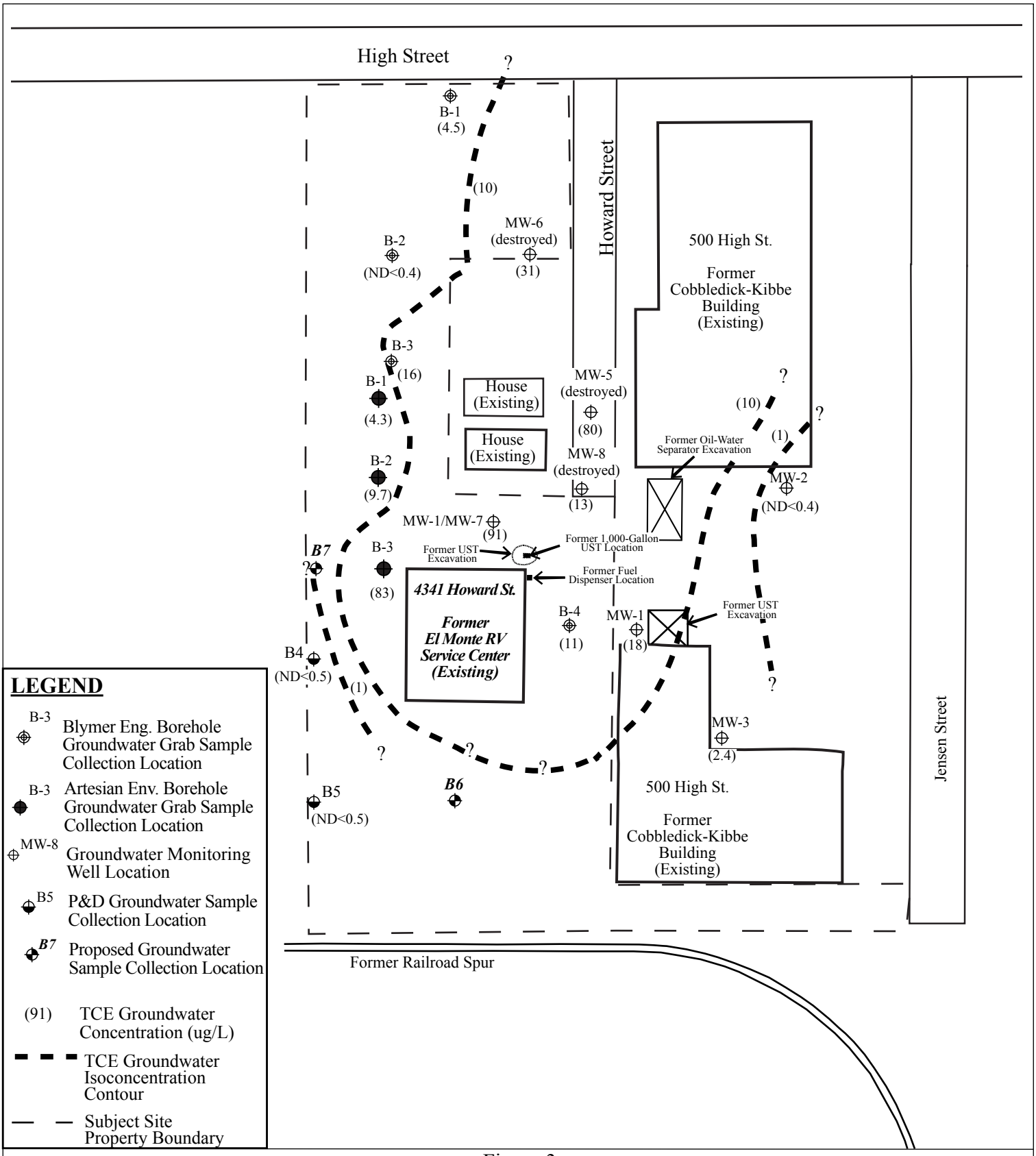


Figure 3
Site Vicinity Map Showing TCE In Groundwater
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

Base Map From: Artesian Environmental, July 2000 and Google Earth, October 2009	P&D Environmental, Inc. 55 Santa Clara Ave., Suite 240 Oakland, CA 94610	0 50 100 APPROXIMATE SCALE IN FEET N

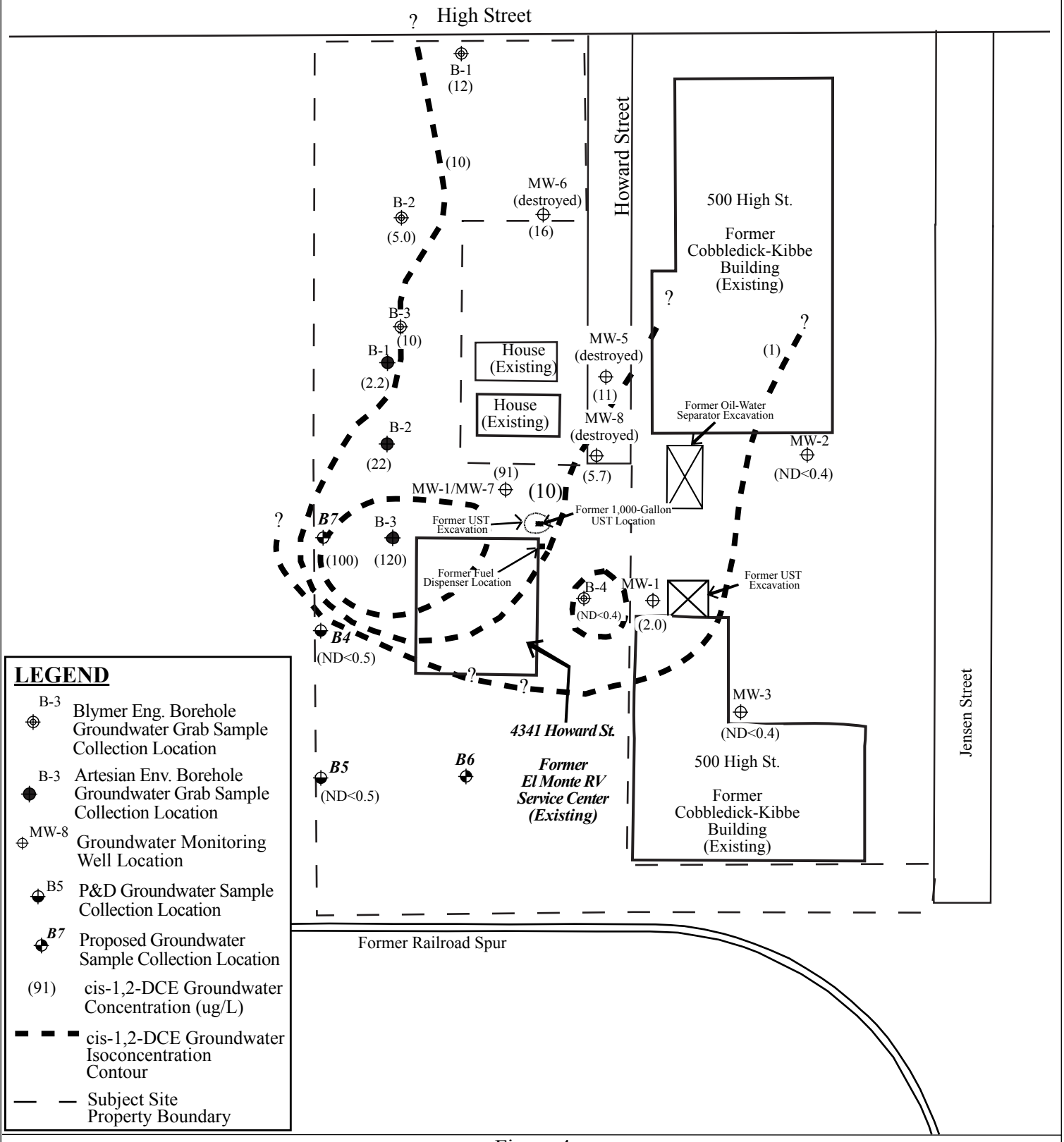


Figure 4
Site Vicinity Map Showing cis-1,2-DCE In Groundwater
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

Base Map From:
Artesian Environmental, July 2000

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 50 100
APPROXIMATE SCALE IN FEET
N

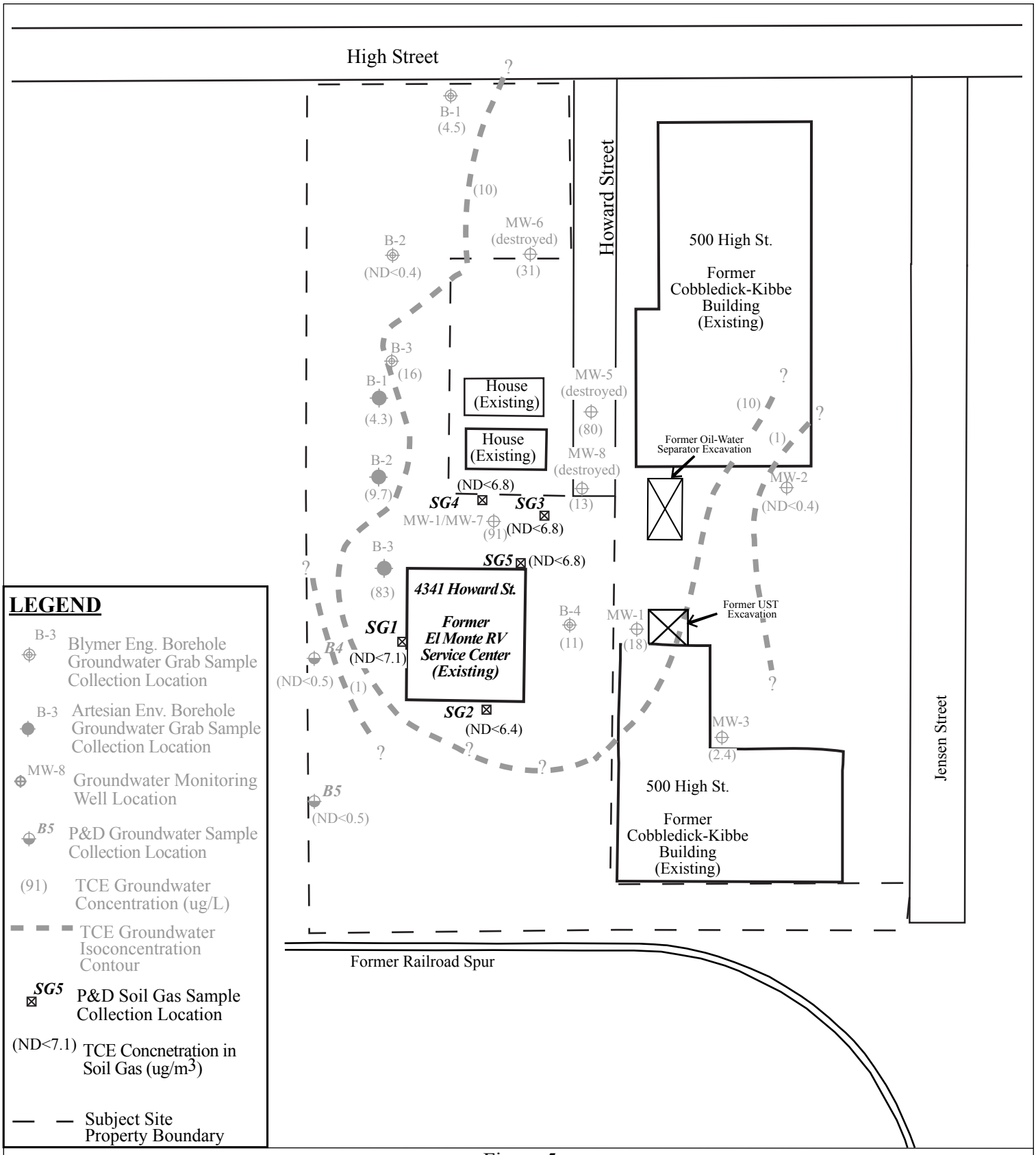


Figure 5
Site Vicinity Map Showing TCE In Soil Gas
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

Base Map From: Artesian Environmental, July 2000 and Google Earth, October 2009	P&D Environmental, Inc. 55 Santa Clara Ave., Suite 240 Oakland, CA 94610	0 50 100 APPROXIMATE SCALE IN FEET N

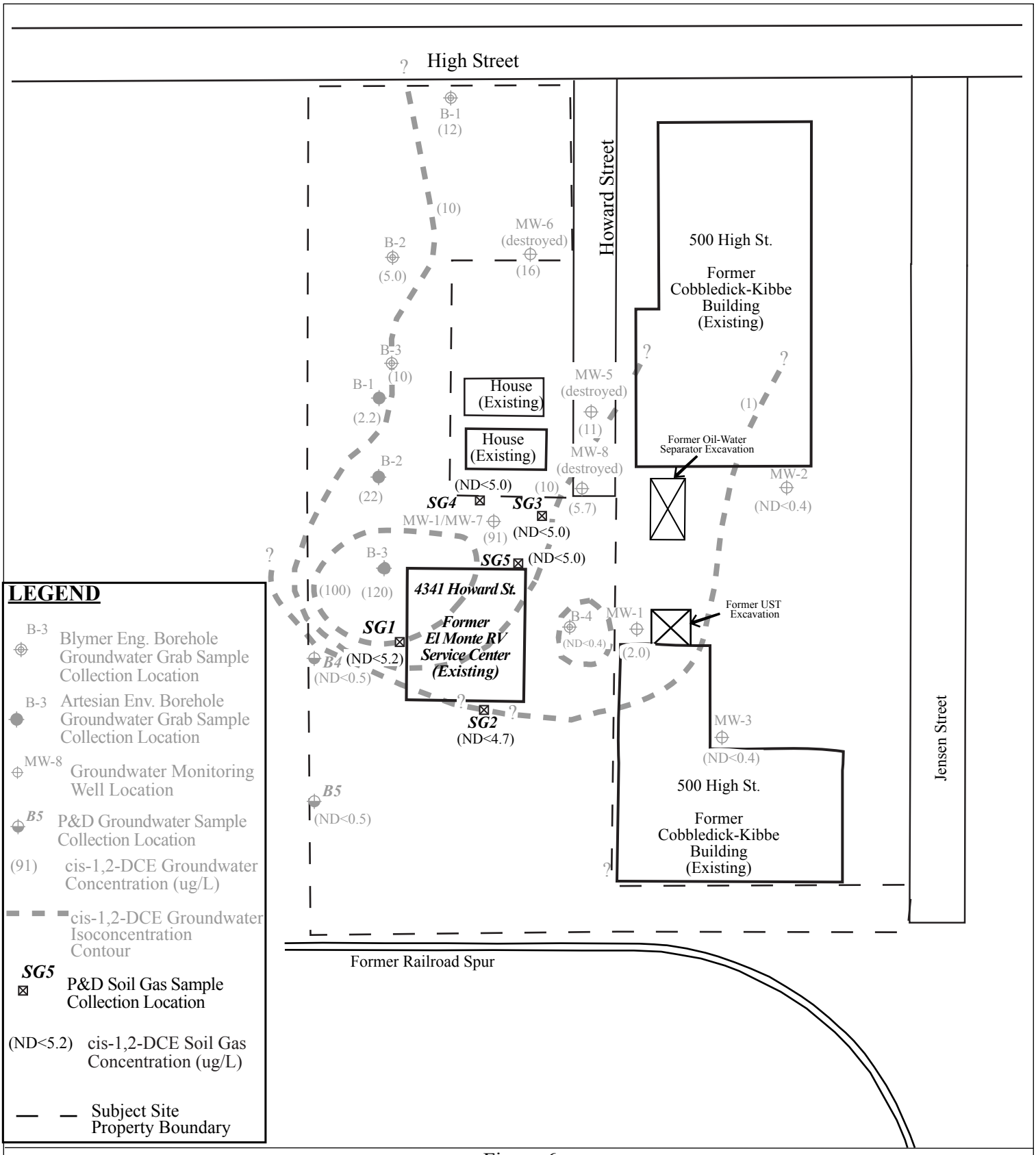


Figure 6
Site Vicinity Map Showing cis-1,2-DCE In Soil Gas
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

Base Map From:
Artesian Environmental, July 2000

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 50 100
APPROXIMATE SCALE IN FEET
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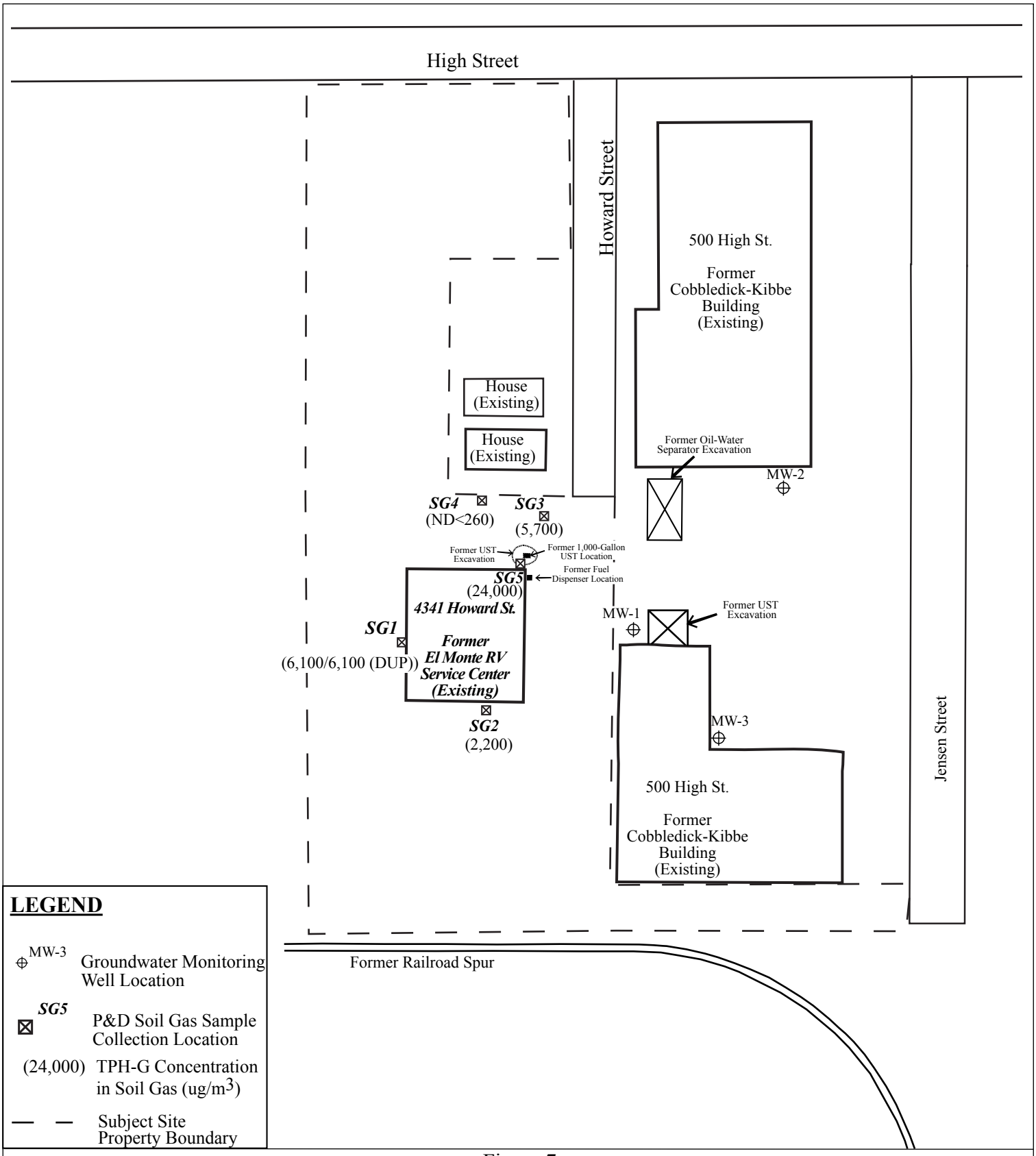


Figure 7
Site Vicinity Map Showing TPH-G In Soil Gas
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

Base Map From: Artesian Environmental, July 2000 and Google Earth, October 2009	P&D Environmental, Inc. 55 Santa Clara Ave., Suite 240 Oakland, CA 94610	0 50 100 APPROXIMATE SCALE IN FEET N

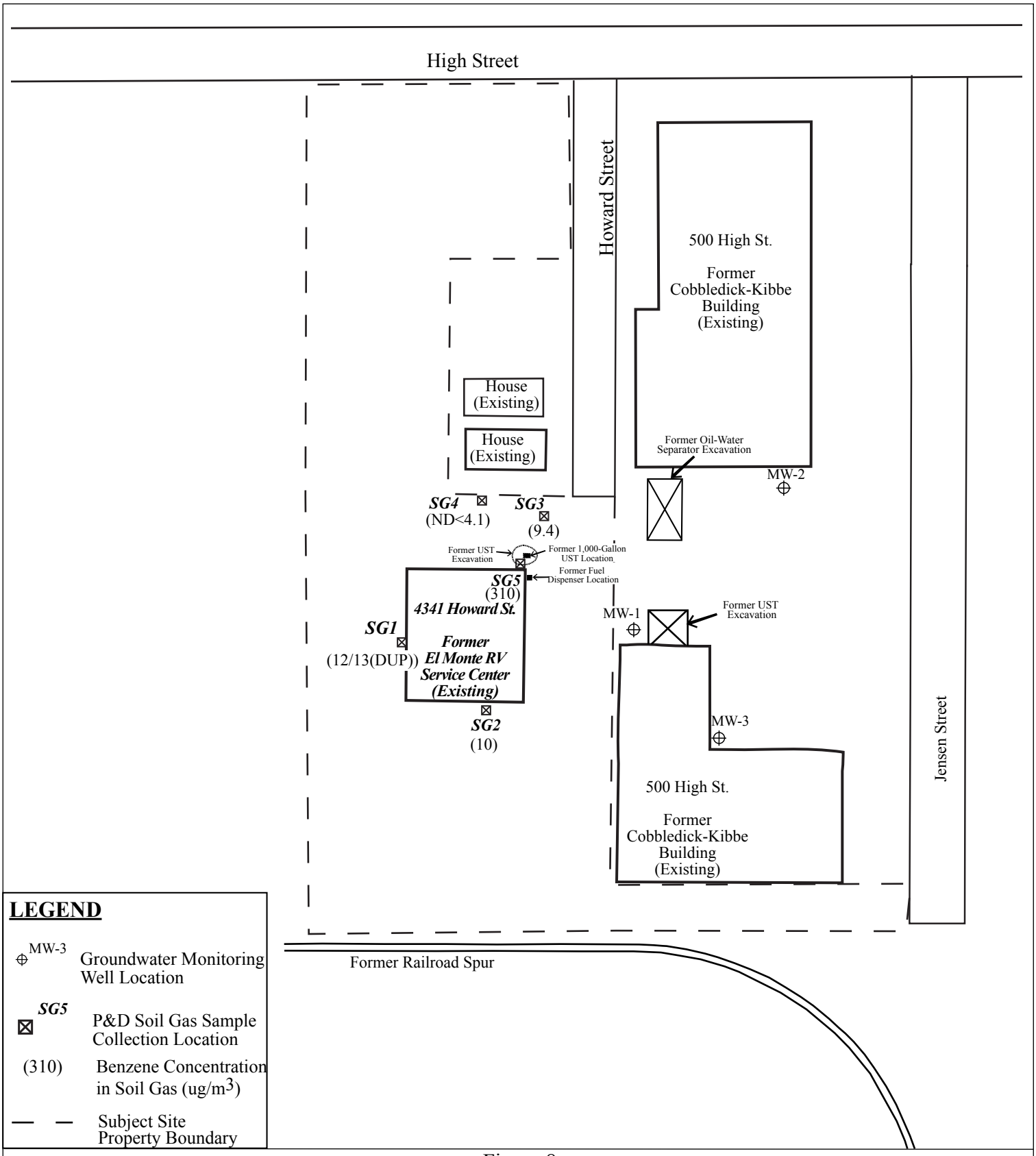


Figure 8
Site Vicinity Map Showing Benzene In Soil Gas
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

Base Map From:
Artesian Environmental, July 2000
and Google Earth, October 2009

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 50 100
APPROXIMATE SCALE IN FEET
N

Figure 9
Typical Soil Gas Sampling Manifold
Former El Monte RV Service Center
4341 Howard Street
Oakland, California

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

APPENDIX A

Groundwater Monitoring/Well Purging Data Sheets

P&D Environmental
Groundwater Monitoring/Well Purging Data Sheet

Site Name 4341 Howard St., Oakland
Well No. MW1/MW7
Job Number 0547
Date 4/18/11
TOC to Water (ft.) 6.13
Sheen None
Well Depth (ft.) 20.6
Free Product Thickness Ø
Well Diameter 2"
Sample Collection Method
Flow Rate (mL/minute) 1140
Peristaltic Pump w new unused PE tubing
Start Purge Time ~340 ml/minute

Time	Vol. Purged (mL)	Dissolved Oxygen (mg/L)	pH	Depth to Water (ft.)	Temperature (C°)	Electrical Conductivity (uS/cm)	Turbidity (NTU)
1141	340	—	7.60	6.16	17.1	1,365	4.62
1145	1,700	—	7.33	6.16	16.6	918	2.34
1149	3,060	—	7.06	6.16	16.6	897	0.48
1152	4,080	—	6.86	6.16	16.5	918	0.67
1156	5,440	—	6.76	6.17	16.4	918	0.65
1158	6,120	—	6.77	6.17	16.4	920	0.06
1200	6,800	—	6.68	6.17	16.3	902	0.00
1203	7,820	—	6.73	6.17	16.3	913	0.00

NOTES

No Sheen+odor. Sample time = 1215 hrs

Stability Parameters
p.H. = +/- 0.1
Sp. Conductivity = +/-3%
Turbidity = +/- 10%
D.O. = +/- 10%

1:28
500-1

APPENDIX B

Soil Boring Logs

P&D ENVIRONMENTAL, INC.

BORING NO.: B4	**PROJECT NO.:** 0547	**PROJECT NAME:** Former El Monte RV Service Center, Oakland, CA	
BORING LOCATION: Adjacent to property boundary approximately 70 ft. west of building		**ELEVATION AND DATUM:** None	
DRILLING AGENCY: Vironex	**DRILLER:** Joel	**DATE & TIME STARTED:** 9/7/11 1030	**DATE & TIME FINISHED:** 9/7/11 1200
DRILLING EQUIPMENT: Geoprobe 6600			
COMPLETION DEPTH: 10.0 Feet	**BEDROCK DEPTH:** Not Encountered	**LOGGED BY:** MLD	**CHECKED BY:** PHK
FIRST WATER DEPTH: 5.5 Feet	**NO. OF SAMPLES:** 1 Water		

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	BLOW COUNT PER 6"	WELL CONSTRUCTION LOG	PID	REMARKS
	0.0 to 0.6 ft. Asphalt and base rock (FILL). 0.6 to 3.0 ft. Brown gravelly silty sand (FILL); medium dense, moist, with abundant coarse gravel to 1.0-inch diameter. No Petroleum Hydrocarbon (PHC) or solvent odor.	FILL		No Well Constructed	0	Borehole continuously cored from 0.0 to 10.0 ft. using a 5.0-foot long 2.0-inch O.D. Geoprobe Macrocore barrel sampler. The sampler was lined with 4.8-foot long 1.5-inch O.D. transparent PVC tubes.
	3.0 to 6.5 ft. Brown fine sand (SP); medium dense, moist to saturated. No PHC or solvent odor. Wet at 5.0 ft. Saturated at 5.5 ft.	SP		▽	0	0-5 ft 3.5 ft recovery 5-10 ft 4.8 ft recovery
5					30	Water encountered during drilling at 5.5 ft. Borehole terminated at 10.0 ft. on 9/7/11.
	6.5 to 10.0 ft. Dark gray clay (CL); soft to medium dense, saturated, with rootlets. Slight sulfur odor. No PHC or solvent odor.	CL		▼	0	Temporary 1.0-inch diameter slotted PVC casing placed in borehole. Water level measured at 9.1 ft. at 1100, and at 8.3 ft. at 1110.
10					0	Sample B4-W collected at 1120; slight solvent odor; no sheen on sample.
						Borehole grouted on 9/7/11 using a tremie pipe and neat cement grout. Mr. Steve Miller, with Alameda County Public Works Agency, on site to observe and document grouting of the borehole.
15						
20						
25						
30						

P&D ENVIRONMENTAL, INC.

BORING NO.: B5	PROJECT NO.: 0547	PROJECT NAME: Former El Monte RV Service Center, Oakland, CA	
BORING LOCATION: Adjacent to property boundary approximately 100 ft. west of building			ELEVATION AND DATUM: None
DRILLING AGENCY: Vironex	DRILLER: Joel	DATE & TIME STARTED: 9/7/11 1000	DATE & TIME FINISHED: 9/7/11 1200
DRILLING EQUIPMENT: Geoprobe 6600			
COMPLETION DEPTH: 10.0 Feet	BEDROCK DEPTH: Not Encountered	LOGGED BY: MLD	CHECKED BY: PHK
FIRST WATER DEPTH: 6.0 Feet	NO. OF SAMPLES: 1 Water		

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	BLOW COUNT PER 6"	WELL CONSTRUCTION LOG	PID	REMARKS
	0.0 to 0.6 ft. Asphalt and base rock (FILL). 0.6 to 3.0 ft. Brown gravelly silty sand (FILL); medium dense, moist, with abundant coarse gravel to 2.0-inch diameter. No Petroleum Hydrocarbon (PHC) or solvent odor.	FILL		No Well Constructed	0	Borehole continuously cored from 0.0 to 10.0 ft. using a 5.0-foot long 2.0-inch O.D. Geoprobe Macrocore barrel sampler. The sampler was lined with 4.8-foot long 1.5-inch O.D. transparent PVC tubes.
	3.0 to 7.0 ft. Brown fine sand (SP); moist to saturated. No PHC or solvent odor. Wet at 5.5 ft. Saturated at 6.0 ft.	SP		▽	0 30	0-5 ft 4.0 ft recovery 5-10 ft 4.8 ft recovery Water encountered during drilling at 6.0 ft. Borehole terminated at 10.0 ft. on 9/7/11.
5	7.0 to 10.0 ft. Dark gray clay (CL); soft, saturated. Slight sulfur odor. No PHC or solvent odor.	CL		▼	0 0	Temporary 1.0-inch diameter slotted PVC casing placed in borehole. Water level measured at 8.6 ft. at 1007, and at 8.6 ft. at 1017. Sample B5-W collected at 1020; no odor and no sheen on sample.
10						Borehole grouted on 9/7/11 using a tremie pipe and neat cement grout. Mr. Steve Miller, with Alameda County Public Works Agency, on site to observe and document grouting of the borehole.
15						
20						
25						
30						

APPENDIX C

Soil Gas Sampling Purge Calculations and Field Data Sheets

Report 0547.R2
Appendix C
7.0 feet tubing, 8 inch sand interval

Soil Gas Purge Volume Calculations

One Purge Volume is calculated as the volume of the tubing interior plus the volume of the sand interval of the borehole.

The tubing interior volume is calculated as follows:

V tubing = pi x (r x r) x h, where pi = 3.14, r = 0.187 in./2, and h = 7 ft.

V tubing = 3.14 x (0.0935 x 0.0935) x (7 ft. x 12 in./ft.) = 2.31 cubic inches.

The sand interval volume is calculated as follows:

V sand interval = pi x (r x r) x h x porosity,
where pi = 3.14 , r = 1.5 in./2, h = 8 in., and porosity = 0.35

V sand interval = 3.14 x (0.75 x 0.75) x 8 x 0.35 = 4.95 cubic inches.

The total volume for one purge volume is V tubing + V sand interval, where

V total = 2.31 cubic inches + 4.95 cubic inches = 7.25 cubic inches.

To convert to cubic centimeters:

V total = 7.25 cubic inches x 16.39 cubic centimeters/cubic inches = 118.8 cubic centimeters.

The total volume for 3 purge volumes is calculated as follows:

V purge total = 118.8 cubic centimeters x 3 = 357 cubic centimeters.

The flow controller has a nominal flow rate of 200 cubic centimeters per minute.

The purge time is calculated as follows:

T purge = 357 cubic centimeters/ 200 cubic centimeters per minute = 1.78 minutes.

Converting the purge time to seconds, 1.78 minutes x 60seconds/ minute = 107 seconds.

Notes:

Yellow hi-lite indicates data entry required.
Blue hi-lite indicates values are calculated.

SOIL GAS SAMPLING DATA SHEET

Address 4341 HOWARD ST, OAKLAND

Job # 0547

Date 9/7/11

P&D Sampler MLD

Drilling Company VIRONEX

Probe Method (check one)
o PRT
☑ Temp Well

Soil Gas Location Designation	Probe Depth (Ft.)	Time Probe Installed	Canister #	Sample Canister Initial Vacuum Check (In. Hg) and time	Start leak check vacuum (In. Hg) and time	End leak check vacuum (In. Hg) and time	ADDITIONAL leak check vacuum (In. Hg) and time	Start PURGE time	End PURGE time	Start of tracer gas equilibration time	Time and conc. (ppm) of tracer gas equilibration	Begin sample collection vacuum (In. Hg) and time	End sample collection vacuum (In. Hg) and time	NOTES
SG 1	5	1115	34584	vac -30 time 1230	vac -29 time 1300	vac -29 time 1310	vac time	time 131500	time 131623	time 132600	conc. 1.4 time 133000	vac -30 time 134000	vac -5 time 135400	1355 0 PPM
SG 1 DUP			34169	vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG 2	5	0930	2059	vac -30 time 1430	vac -29 time 1435	vac -29 time 1445	vac time	time 144600	time 144723	time 144730	conc 1.0 time 145000	vac -30 time 145100	vac -5 time 150235	0 PPM 1504
SG 3	5	0730	2071	vac -30 time 1500	vac -26 time 1505	vac -26 time 1515	vac time	time 153800	time 153723	time 1545	conc 0.8 time 1550	vac -30 time 155200	vac -5 time 160320	0 PPM 1605
SG 4	5	0900	34648	vac -30 time 1600	vac -26 time 1610	vac -26 time 1620	vac time	time 162300	time 162423	time 1625	conc 1.0 time 1630	vac -30 time 163100	vac -5 time 163825	0 PPM 1640
SG 5	5	0830	34603	vac -30 time 1515	vac -28 time 1516	vac -28 time 1526	vac time	time 1540	time 154123	time 154300	conc 0.6 time 154900	vac -30 time 155100	vac -5 time 160212	1.3 PPM 1603
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	

APPENDIX D

Weather Information

http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KCAALAME1&month=9&day=7&year=2011

History for KCAALAME1

Encinal & Lafayette, Alameda, CA

About This Station

Lat: N 37 ° 46 ' 3 " (37.768 °)
Lon: W 122 ° 15 ' 18 " (-122.255 °)
Elevation (ft): 15
Hardware: Davis Vantage Pro 2
Weather Station Software: WeatherDisplay:10.37

« Previous Day | September | 7 | 2011 | View | Next Day »

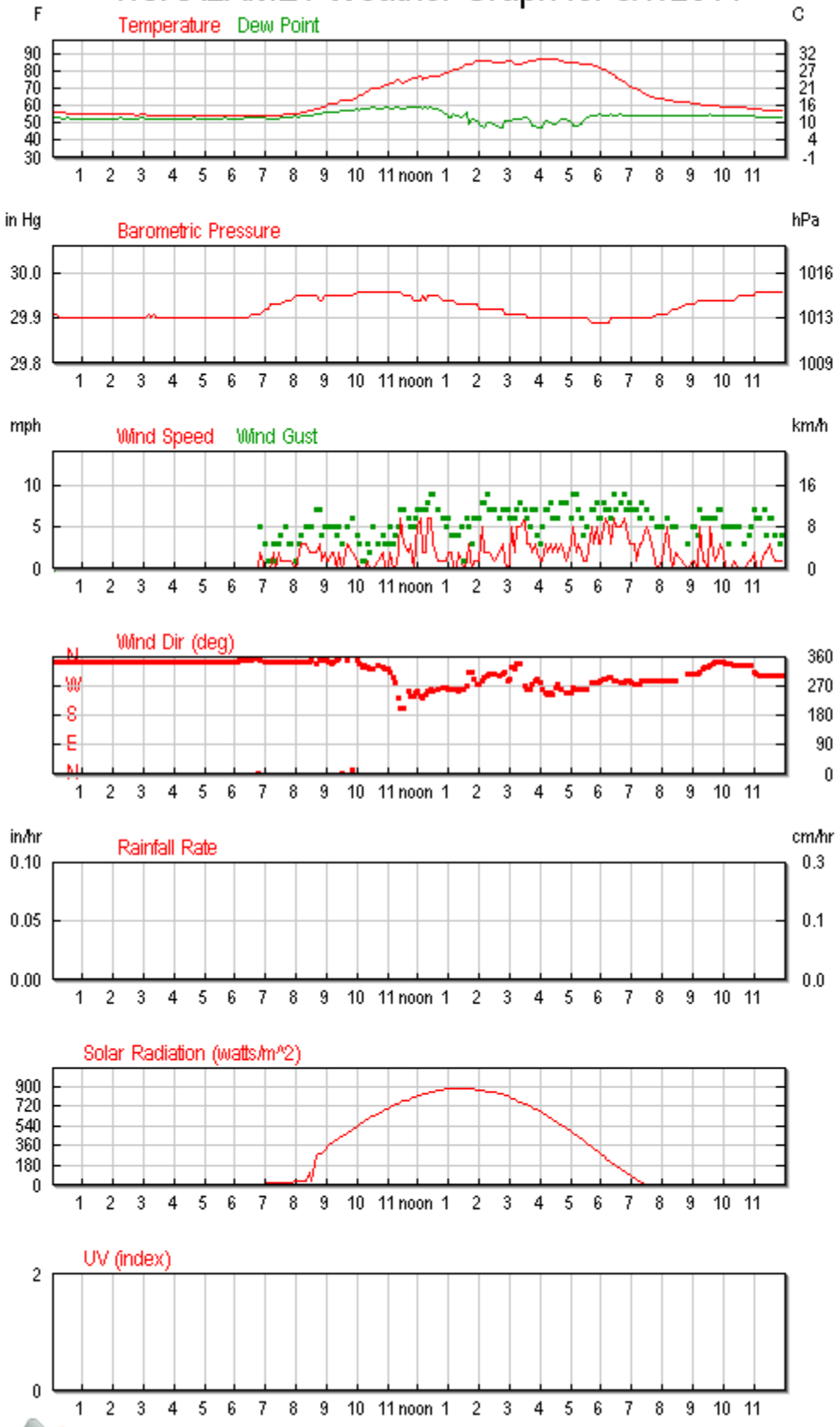
Daily | Weekly | Monthly | Yearly | Custom

	Current:	High:	Low:	Average:
Temperature:	**83.4** °F	**88.2** °F	**54.6** °F	**67.1** °F
Dew Point:	**54.4** °F	**60.3** °F	**47.5** °F	**54.3** °F
Humidity:	37%	95%	25%	70%
Wind Speed:	**9.2**mph	**6.0**mph	-	**1.4**mph
Wind Gust:	**9.2**mph	**9.0**mph	-	-
Wind:	West	-	-	WNW
Pressure:	**29.79**in	**29.96**in	**29.89**in	-
Precipitation:	**0.00**in			
Solar Radiation:	**591.0** watts/m^2			
UV Index:	**0.0**			

Statistics for the rest of the month

	High:	Low:	Average:
Temperature:	**90.8** °F	**53.4** °F	**64.1** °F
Dew Point:	**62.7** °F	**47.5** °F	**56.4** °F
Humidity:	96.0%	25.0%	78.4%
Wind Speed:	**116.2**mph from the WNW	-	**3.3**mph
Wind Gust:	**116.2**mph from the West	-	-
Wind:	-	-	WNW
Pressure:	**30.03**in	**20.30**in	-
Precipitation:	**0.01**in		

KCAALAME1 Weather Graph for 9/7/2011



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wunderground.com

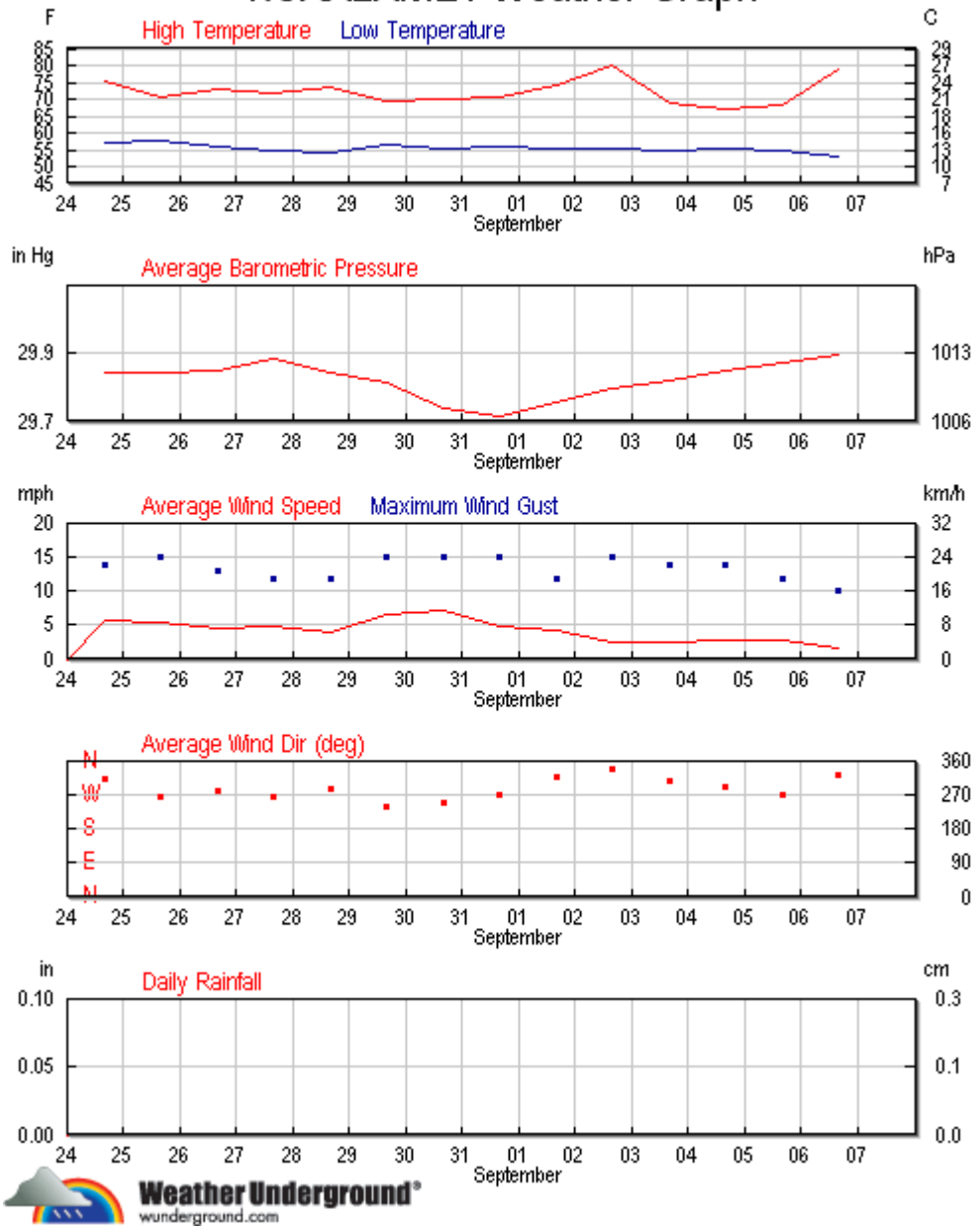
http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KCAALAME1&graphspan=custom&month=8&day=24&year=2011&monthend=9&dayend=7&yearend=2011

August 24 2011 - TO - September 7 2011 Go

Daily Weekly Monthly Yearly **Custom**

	High:	Low:	Average:
Temperature:	**88.2** °F	**53.4** °F	**61.8** °F
Dew Point:	**61.7** °F	**47.5** °F	**55.8** °F
Humidity:	97.0%	25.0%	82.2%
Wind Speed:	**15.0**mph from the West	-	**4.1**mph
Wind Gust:	**15.0**mph from the West	-	-
Wind:	-	-	WNW
Pressure:	**29.96**in	**29.68**in	-
Precipitation:	**0.00**in		

KCAALAME1 Weather Graph



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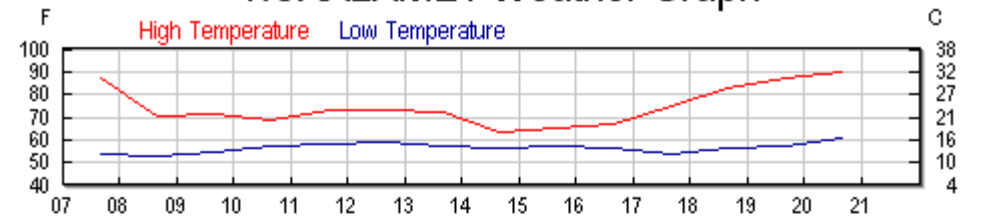
http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KCAALAME1&graphspan=custom&month=9&day=7&year=2011&monthend=9&dayend=21&yearend=2011

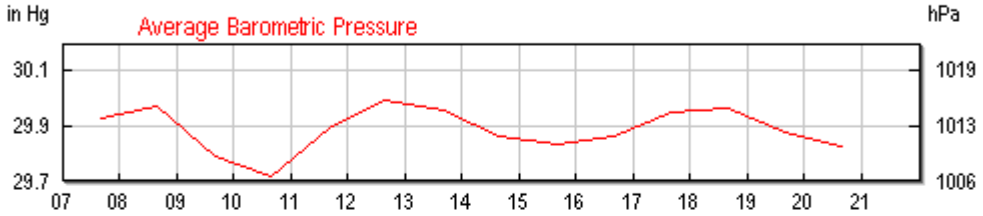
September 7 2011 - TO - September 21 2011 Go

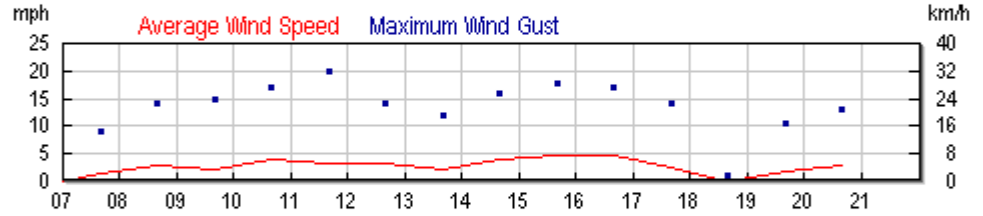
Daily Weekly Monthly Yearly **Custom**

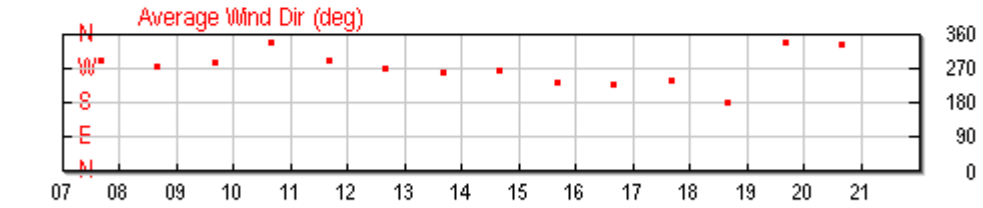
	High:	Low:	Average:
Temperature:	**90.8** °F	**53.8** °F	**64.3** °F
Dew Point:	**61.0** °F	**47.5** °F	**56.3** °F
Humidity:	95.0%	25.0%	77.7%
Wind Speed:	**14.0**mph from the North	-	**2.8**mph
Wind Gust:	**20.0**mph from the West	-	-
Wind:	-	-	West
Pressure:	**30.03**in	**29.64**in	-
Precipitation:	**0.00**in		

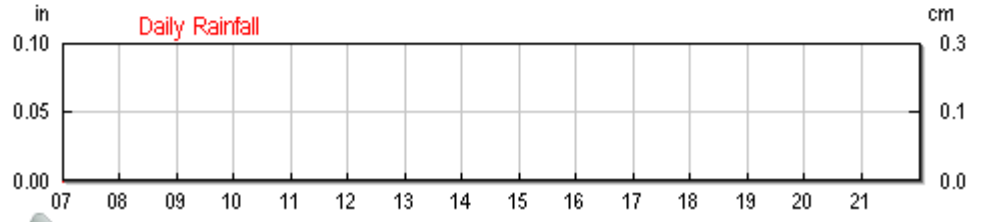
KCAALAME1 Weather Graph











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wunderground.com

APPENDIX E

HISTORICAL BORING LOGS FOR 4341 HOWARD STREET

Selected Portions of Artesian Environmental Consultants January 19, 1996 Groundwater Sampling Report

#2623

GROUNDWATER SAMPLING REPORT

MINOR PROPERTY
4341 HOWARD STREET
OAKLAND, CALIFORNIA

AEC Job No. 1668
AEC Library No. 100-001-08

Prepared For:

Mr. Jim Minor
P. O. Box 726
Diablo, California 94528

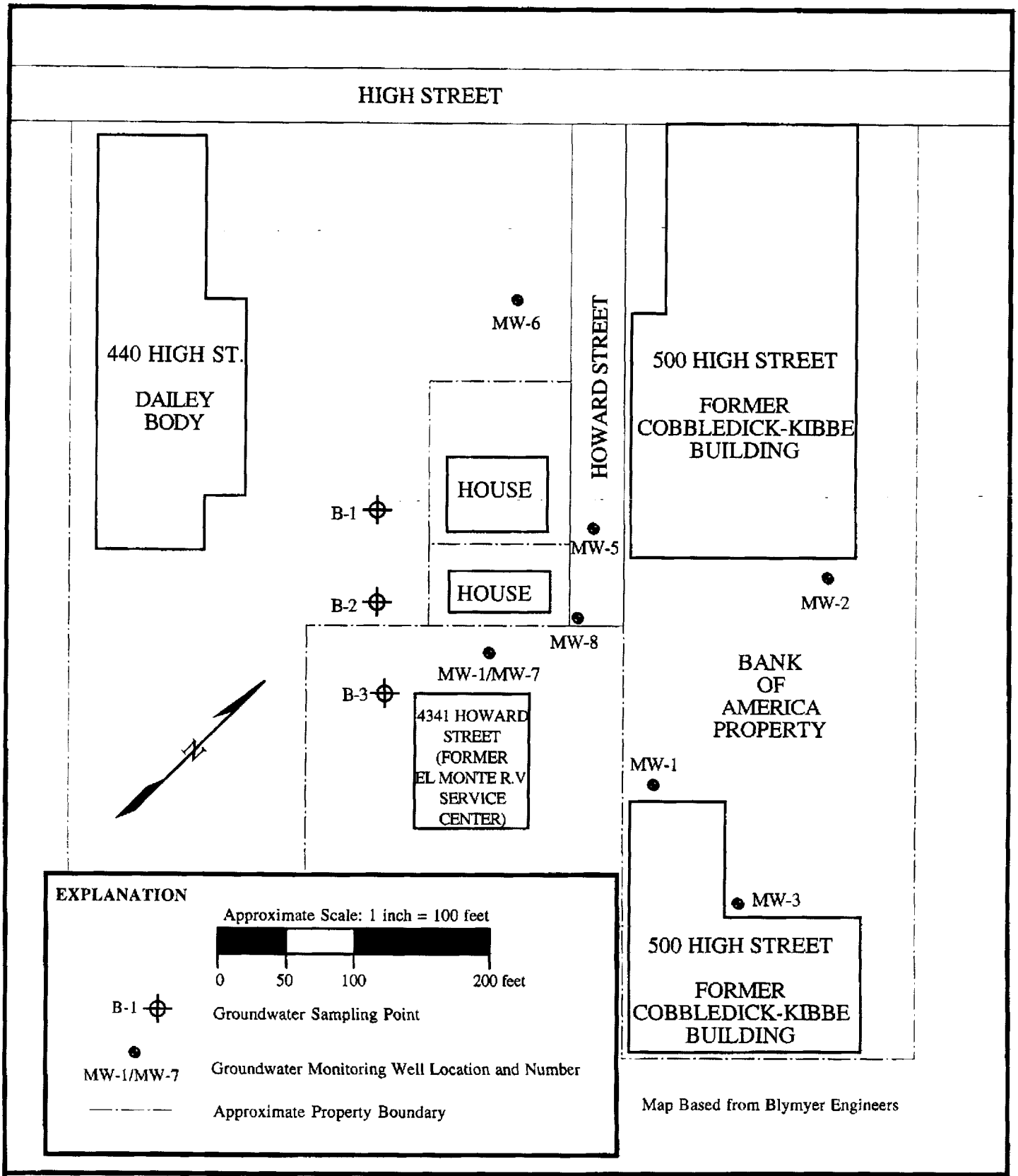
January 19, 1996

CERTIFIED HYDROGEOLOGIST
JAMES A. JACOBS
NO. 88
STATE OF CALIFORNIA

Thomas Fortner
Project Geologist

James A. Jacobs C.H.G. # 88
Principal Hydrogeologist

3100 Kerner Blvd., Suite C · San Rafael, CA · 94901 · (415) 257-4801 · FAX (415) 257-4805



ARTESIAN ENVIRONMENTAL CONSULTANTS 3100 Kerner Blvd., Suite C San Rafael, California 94901 (415) 257-4801 Fax (415) 257-4805	**BORING LOCATION MAP** MINOR PROPERTY 4341 Howard Street Oakland, California

Project No.: 1668	Date: 1/15/96	Prepared By: T. Fortner	Figure 2

6.0 SUBSURFACE CONDITIONS

Borings B-1 through B-3 were drilled into groundwater to a maximum depth of 16 feet. The borings were continuously cored and the soils encountered were visually logged in the field utilizing the Unified Soil Classification System (ASTM D2488-90) under the direction of a California Registered Geologist. Soil from 12 to 16 feet bgs were not recovered from boring B-1. Soil encountered in borings B-1 through B-3 consisted of fill material composed of clayey gravels and silty sands to a depth of 4 to 5 feet. Native soil consisting of silty clay were encountered in the borings from below the fill to a depth of 14 feet. Silty sandy clay was encountered in boring B-2 at a depth of 14 feet. Sandy gravel and silty clayey sand was encountered at 14 feet bgs and 15 feet bgs respectively in boring B-3. Groundwater was encountered at approximately 8.5 feet bgs in borings B-1 and B-2, and at approximately 12 feet bgs in boring B-3. Groundwater was measured to be approximately 7 feet bgs in groundwater monitoring well MW-1. Boring Logs are included as Appendix C.

7.0 LABORATORY ANALYSES

Soil and groundwater samples collected from Borings B-1, B-2, and B-3, and a groundwater sample collected from monitoring well MW-1 were analyzed for purgeable halocarbons using EPA Method 8010. The groundwater sample from MW-1 was also analyzed for TPH-g and BTEX by EPA Method 8015M and EPA Method 8020 respectively.

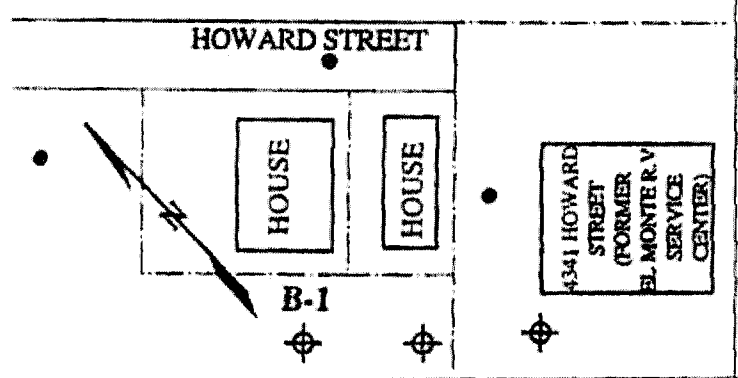
None of the soil samples collected from the vadose zone of each boring contained detectable concentrations of purgeable hydrocarbons. Groundwater samples collected from boring B-1 contained 2.2 ppb cis-1,2-DCE and 4.3 ppb TCE. Groundwater samples collected from boring B-2 contained 3.4 ppb trans-1,2 DCE, 22.0 ppb cis-1,2-DCE and 9.7 ppb TCE. Groundwater samples collected from boring B-3 contained 9.4 ppb trans-1,2 DCE, 120.0 ppb cis-1,2-DCE and 83.0 ppb TCE. Groundwater samples collected from monitoring well MW-1 contained 7.0 ppb trans-1,2 DCE, 91.0 ppb cis-1,2-DCE, 91.0 ppb TCE, and 0.6 ppb benzene. All other targeted analytes were below the laboratory reporting limits. Laboratory Analytical Reports and Chain of Custody Records are included as Appendix D.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Three temporary groundwater sampling points were installed at the request of Mr. Barney Chan of the ACDEH to delineate the downgradient extent of a chlorinated solvent (VOC) plume in shallow groundwater.

Artesian installed and sampled the three temporary groundwater sampling points and sampled existing monitoring well MW-1. Soil and groundwater samples from Borings B-1, B-2, and B-3, and a water sample from groundwater monitoring well MW-1 were analyzed for purgeable halocarbons. Groundwater sample from MW-1 was also analyzed for TPH-g and BTEX. Detectable concentrations of purgeable halocarbons were reported in groundwater samples collected from all three borings and monitoring well MW-1. Groundwater samples from monitoring well MW-1 also contained very low concentrations of benzene.

LOG OF BORING B-1



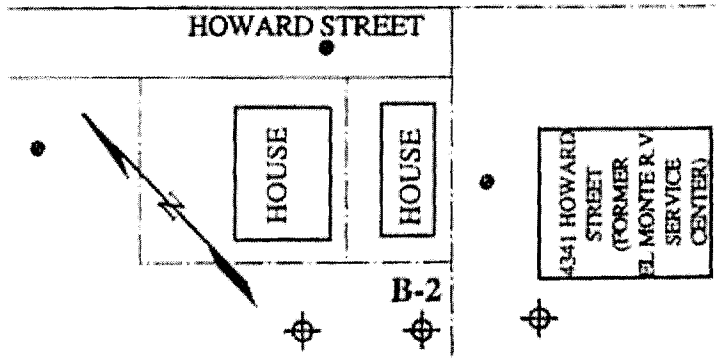
Minor Property
4341 Howard Street
Oakland, California

DATES DRILLED:	10/13/95	SAMPLING METH:	Continuous Core
DRILLING CO.:	Artesian	TOTAL DEPTH:	16.0 feet
DRILL TOOLS:	Geoprobe 5400	LOGGED BY:	J. French
DRILLER:	J. Ross	DATE DEV:	NA
PROJECT MANAGER:	T. Fortner	DRAWN BY:	T. Fortner
ARTESIAN JOB NO.:	1668	DRAW DATE:	1/3/96

ARTESIAN ENVIRONMENTAL CONSULTANTS
3100 KERNER BLVD., SUITE C • SAN RAFAEL, CA 94901
TEL (415) 257-4801; FAX (415) 257-4805

DEPTH (feet)	SOIL SYMBOLS/ FIELD TEST DATA	SOIL DESCRIPTION	SAMPLE NO.	BLOWS /6 in.	PID ppm	COMPLETION DIAGRAM	DESCRIPTION
0		Asphalt: (3" thick)					
		SM: Silty Sand (Fill), green brown, dry, fine sand, some fine to medium gravel, rare gravel.			0		
-5		CH: Silty Clay, black, damp, trace fine to medium sand, very stiff.			0		
	▽	ML: Clayey Silt, black, little coarse sand, some fine gravel, stiff.	B1		0		
-10		ML: Clayey Silt, gray brown, little coarse sand, some plant material, stiff.			0		
					0		Backfilled 0 to 16 feet bgs: Bentonite (3%) cement grout
-15							

LOG OF BORING B-2



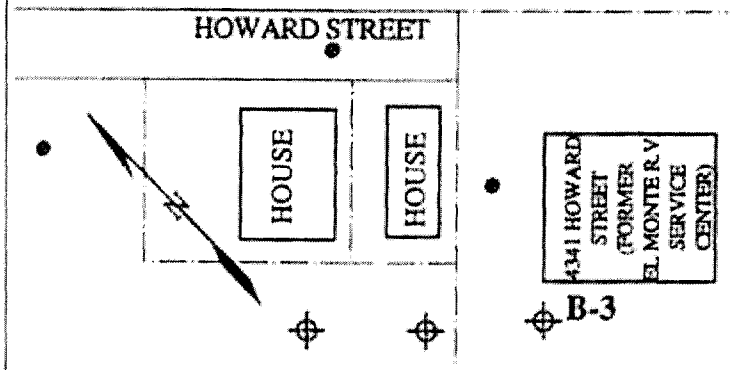
Minor Property
4341 Howard Street
Oakland, California

DATES DRILLED:	10/13/95	SAMPLING METH.:	Continous Core
DRILLING CO.:	Artesian	TOTAL DEPTH:	16.0 feet
DRILL TOOLS:	Geoprobe 5400	LOGGED BY:	J. French
DRILLER:	J. Ross	DATE DEV.:	NA
PROJECT MANAGER:	T. Fortner	DRAWN BY:	T. Fortner
ARTESIAN JOB NO.:	1668	DRAW DATE:	1/3/96

ARTESIAN ENVIRONMENTAL CONSULTANTS
3100 KERNER BLVD., SUITE C • SAN RAFAEL, CA 94901
TEL (415) 257-4801; FAX (415) 257-4805

DEPTH (feet)	SOIL SYMBOLS/ FIELD TEST DATA	SOIL DESCRIPTION	SAMPLE NO.	BLOWS /6 in.	PID ppm	COMPLETION DIAGRAM	DESCRIPTION
0		Asphalt: (3" thick)					
		SM: Silty Sand (Fill), green brown, dry, fine to medium sand, some fine to medium gravel, trace clay.			0		
-5		CH: Clay, black, damp, trace fine to medium sand, very stiff.			0		
	▽		B2		0		
-10		ML: Clayey Silt, gray brown, damp, little fine to medium sand, some fine to medium gravel, stiff.			0		
		ML: Claycy Silt, light brown, little very fine sand, some root hairs, stiff.			0		
-15		SC: Silty Sandy Clay, orange brown, abundant organic material, occasional coarse sand.			0		Backfilled 0 to 16 feet bgs: Bentonite (3%) cement grout.

LOG OF BORING B-3



Minor Property
4341 Howard Street
Oakland, California

DATES DRILLED:	10/13/95	SAMPLING METH.:	Continous Core
DRILLING CO.:	Artesian	TOTAL DEPTH:	16.0 feet
DRILL TOOLS:	Geoprobe 5400	LOGGED BY:	J. French
DRILLER:	J. Ross	DATE DEV.:	NA
PROJECT MANAGER:	T. Fortner	DRAWN BY:	T. Fortner
ARTESIAN JOB NO.:	1668	DRAW DATE:	1/3/96

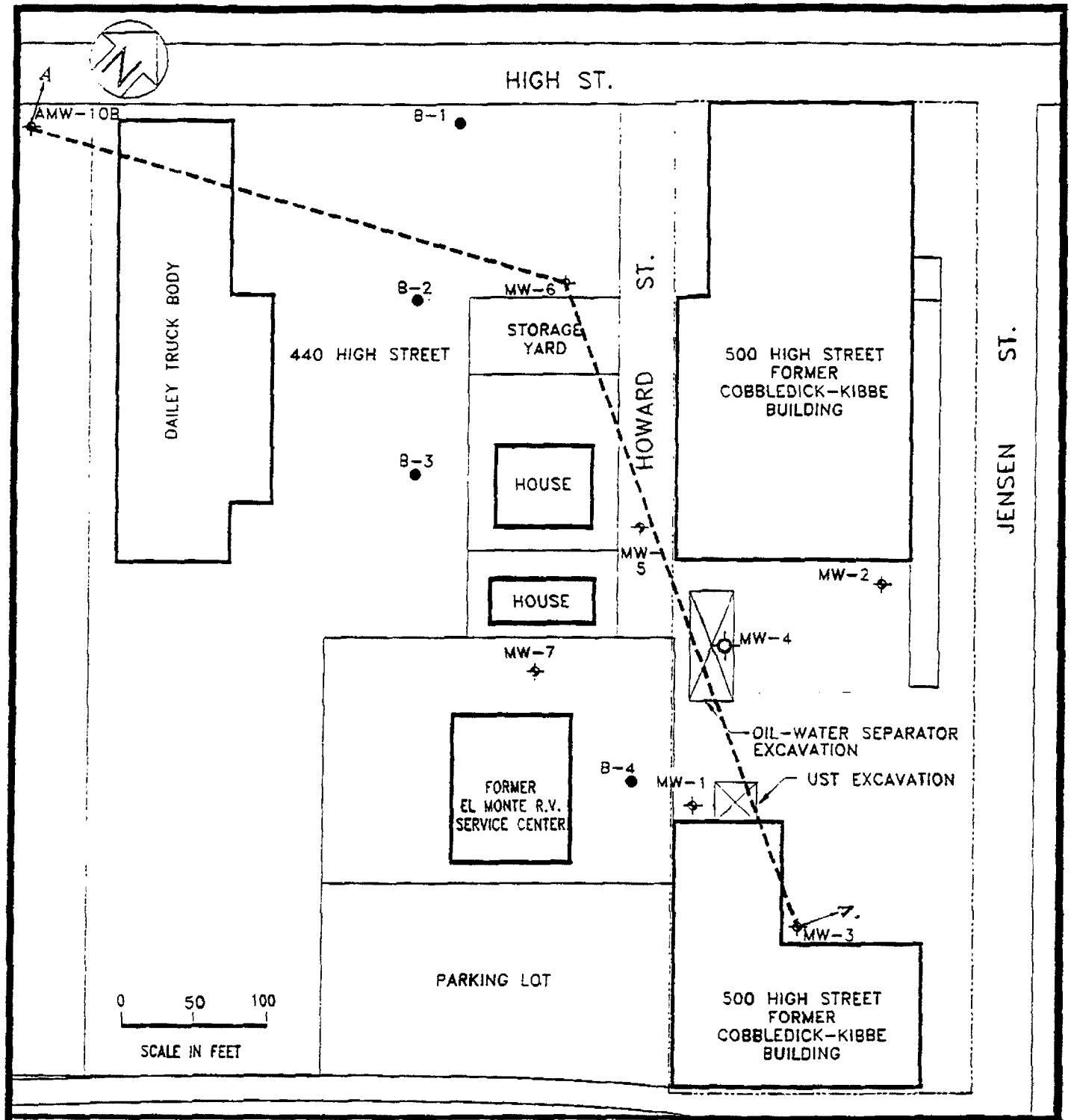
ARTESIAN ENVIRONMENTAL CONSULTANTS
3100 KERNER BLVD., SUITE C • SAN RAFAEL, CA 94901
TEL (415) 257-4801; FAX (415) 257-4805

DEPTH (feet)	SOIL SYMBOLS/ FIELD TEST DATA	SOIL DESCRIPTION	SAMPLE NO.	BLOWS /6 in.	PID ppm	COMPLETION DIAGRAM	DESCRIPTION
0		Asphalt: (3" thick)					
		GC: Clayey Gravel (Fill), gray brown, occasional silt and fine sand, abundant fine to medium gravel, stiff.			0		
-5		SM: Silty Sand, green brown, damp, fine to medium sand, some clay.			0		
		CH: Silty Clay, black, damp, trace coarse sand, some root hairs, very stiff.			0		
-10	▽	ML: Clayey Silt, gray, some root hairs, some fine to medium gravel, stiff.	B3		0		
		SC: Sandy Gravel, gray brown, abundant fine to coarse sand and fine to coarse gravel			0		
-15		SM: Silty Clayey Sand, brown, abundant organic material, trace coarse sand.			0		Backfilled 0 to 16 feet bgs: Bentonite (3%) cement grout.

APPENDIX F

HISTORICAL CROSS SECTION A-A' FOR 500 HIGH STREET

Selected Portions of Alameda County Health Care Services February 4, 1998 Fuel Leak Case Closure Former Cobbledick-Kibbe Site



BLYMYER ENGINEERS, INC.

BEI JOB NO.	DATE
92242	9/13/94

LEGEND
- MONITORING WELL LOCATION
- HYDROPUNCH BORE LOCATION
- FORMER WELL LOCATION
- SECTION LINE

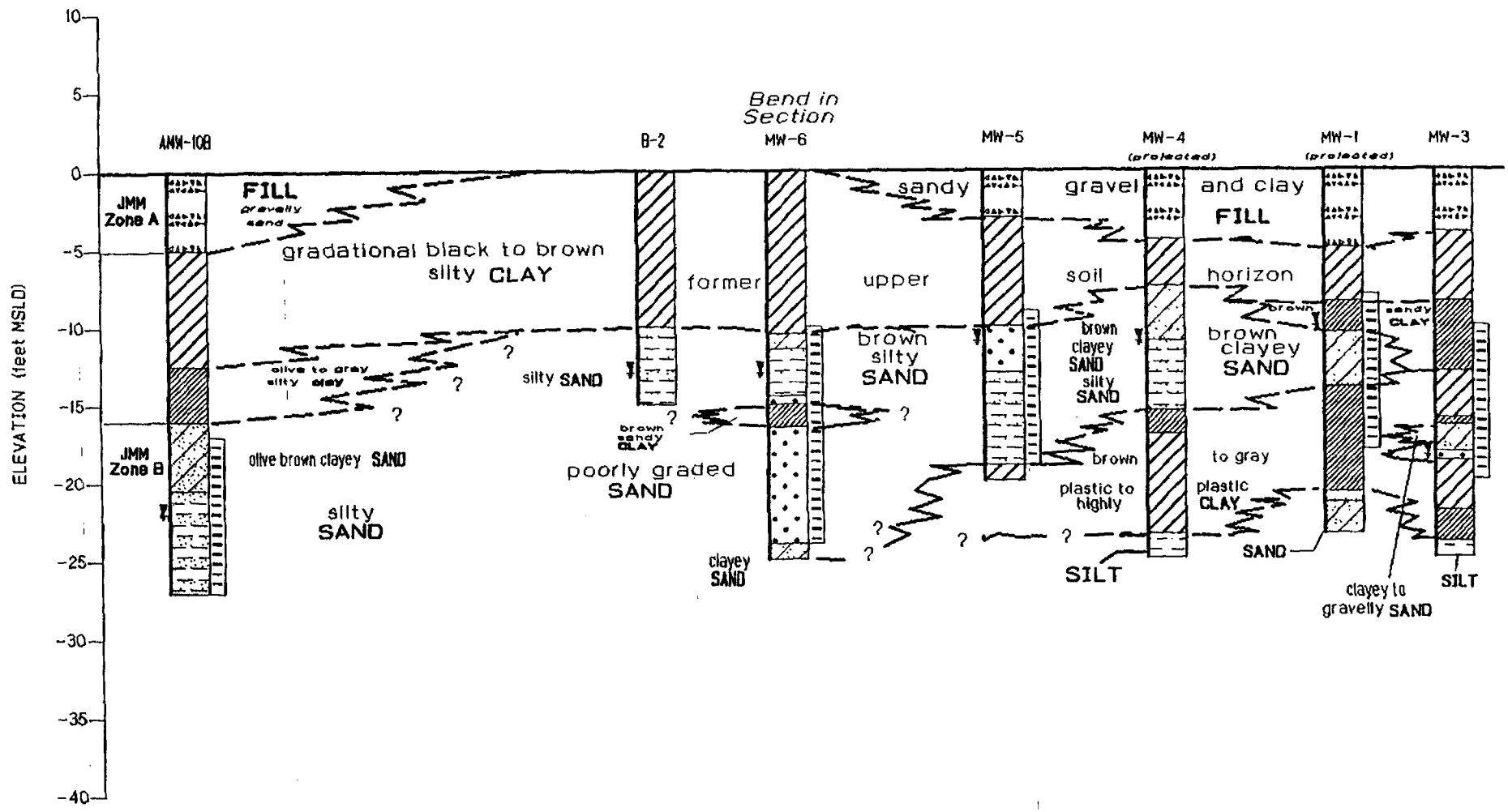
SITE VICINITY PLAN

BANK OF AMERICA
OAKLAND, CA

FIGURE 2

H:\PUBLIC\ACADLW\922422A

CROSS SECTION A-A'



LEGEND

- Fill
- Plastic CLAY
- Low Plastic CLAY
- SILT
- Clayey SAND
- Poorly Graded SAND
- Silty SAND
- Inorganic SILT
- Poorly graded GRAVEL
- Water Level
- Screened Interval

0 130

feet

Vertical Exaggeration = 13.00

Figure 3
Bank of America
500 High Street
Oakland, CA
BEI Job No. 92242

Blymyer Engineers, Inc.

APPENDIX G

Laboratory Analytical Results and Chain of Custody Documentation

- **McCampbell W/O # 1104514 Monitoring Well MW1/MW7 Groundwater**
- **McCampbell W/O # 1109183 Boreholes B4 and B5 Groundwater**
- **Air Toxics W/O # 1109212A Soil Gas Samples SG1 through SG5, and SG1 Duplicate TPH-G, MBTEX, Chlorinated Solvents, and 1,1-Difluoroethane Analysis by Modified TO-15**
- **Air Toxics W/O # 1109212B Soil Gas Samples SG1 through SG5, and SG1 Duplicate Oxygen, Methane, and Carbon Dioxide Analysis by ASTM D – 1946**
- **McCampbell W/O# 1109181 Soil Gas Shroud Tedlar Bag Analysis for 1,1-Difluoroethane**

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

P & D Environmental	Client Project ID: #0547; 4341 Howard St., Oakland	Date Sampled: 04/18/11
		Date Received: 04/18/11
55 Santa Clara, Ste.240	Client Contact: Steve Carmack	Date Reported: 04/21/11
Oakland, CA 94610	Client P.O.:	Date Completed: 04/21/11

WorkOrder: 1104514

April 21, 2011

Dear Steve:

Enclosed within are:

1) The results of the **1** analyzed sample from your project: **#0547; 4341 Howard St., Oakland,**
2) A QC report for the above sample,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

P & D ENVIRONMENTAL, INC.
55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

1104514

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NUMBER:	PROJECT NAME:
0547	4341 Howard St., Oakland

SAMPLED BY: (PRINTED AND SIGNATURE)
Steve Carmack

SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	ANALYSIS(ES): TPH-Multi(G,D,MO)	EPA 8260	PRESERVATIVE	REMARKS
+ MW1/MW7	4/18/11	1715	H_2O		7	X	X	ICE	Normal Turnaround

ICE / t° 24°
GOOD CONDITION ✓ APPROPRIATE
HEAD SPACE ABSENT ✓ CONTAINERS ✓
DECHLORINATED IN LAB ___ PRESERVED IN LAB ___
VOAS | O&G | METALS | OTHER
PRESERVATION ✓

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
	4/18/11	1455	
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
	4/18/11	1615	
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)

TOTAL NO. OF SAMPLES (THIS SHIPMENT): 1
TOTAL NO. OF CONTAINERS (THIS SHIPMENT): 7
LABORATORY: McCampbell Analytical
LABORATORY CONTACT: Angela Rydelins
LABORATORY PHONE NUMBER: (877) 252-9262
SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( )YES (X)NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS: All bottles preserved w/ HCL.

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1104514 **ClientCode: PDEO**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Steve Carmack
P & D Environmental
55 Santa Clara, Ste.240
Oakland, CA 94610
(510) 658-6916 FAX 510-834-0152

Email: lab@pdenviro.com
cc:
PO:
ProjectNo: #0547; 4341 Howard St., Oakland

Bill to:
Accounts Payable
P & D Environmental
55 Santa Clara, Ste.240
Oakland, CA 94610

Requested TAT: 5 days

Date Received: **04/18/2011**
Date Printed: **04/18/2011**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1104514-001	MW1/MW7	Water	4/18/2011 12:15	☐	B	A	A									

Test Legend:

1	8260B_W	2	G-MBTEX_W	3	TPH_W	4		5	
6		7		8		9		10	
11		12							

The following SampID: 001A contains testgroup.

Prepared by: Melissa Valles

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Sample Receipt Checklist

Client Name: **P & D Environmental**
Date and Time Received: **4/18/2011 5:37:38 PM**

Project Name: **#0547; 4341 Howard St., Oakland**
Checklist completed and reviewed by: Melissa Valles

WorkOrder N°: **1104514** Matrix Water
Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 2.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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P & D Environmental	Client Project ID: #0547; 4341 Howard St., Oakland	Date Sampled: 04/18/11
		Date Received: 04/18/11
55 Santa Clara, Ste.240	Client Contact: Steve Carmack	Date Extracted: 04/20/11
Oakland, CA 94610	Client P.O.:	Date Analyzed: 04/20/11

Volatile Organics by P&T and GC/MS (Basic Target List)*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 1104514

Lab ID	1104514-001B
Client ID	MW1/MW7
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Acetone	ND<33	3.3	10	tert-Amyl methyl ether (TAME)	ND<1.7	3.3	0.5
Benzene	ND<1.7	3.3	0.5	Bromobenzene	ND<1.7	3.3	0.5
Bromochloromethane	ND<1.7	3.3	0.5	Bromodichloromethane	ND<1.7	3.3	0.5
Bromoform	ND<1.7	3.3	0.5	Bromomethane	ND<1.7	3.3	0.5
2-Butanone (MEK)	ND<6.7	3.3	2.0	t-Butyl alcohol (TBA)	ND<6.7	3.3	2.0
n-Butyl benzene	ND<1.7	3.3	0.5	sec-Butyl benzene	ND<1.7	3.3	0.5
tert-Butyl benzene	ND<1.7	3.3	0.5	Carbon Disulfide	ND<1.7	3.3	0.5
Carbon Tetrachloride	ND<1.7	3.3	0.5	Chlorobenzene	ND<1.7	3.3	0.5
Chloroethane	ND<1.7	3.3	0.5	Chloroform	ND<1.7	3.3	0.5
Chloromethane	ND<1.7	3.3	0.5	2-Chlorotoluene	ND<1.7	3.3	0.5
4-Chlorotoluene	ND<1.7	3.3	0.5	Dibromochloromethane	ND<1.7	3.3	0.5
1,2-Dibromo-3-chloropropane	ND<0.67	3.3	0.2	1,2-Dibromoethane (EDB)	ND<1.7	3.3	0.5
Dibromomethane	ND<1.7	3.3	0.5	1,2-Dichlorobenzene	ND<1.7	3.3	0.5
1,3-Dichlorobenzene	ND<1.7	3.3	0.5	1,4-Dichlorobenzene	ND<1.7	3.3	0.5
Dichlorodifluoromethane	ND<1.7	3.3	0.5	1,1-Dichloroethane	ND<1.7	3.3	0.5
1,2-Dichloroethane (1,2-DCA)	ND<1.7	3.3	0.5	1,1-Dichloroethene	ND<1.7	3.3	0.5
cis-1,2-Dichloroethene	51	3.3	0.5	trans-1,2-Dichloroethene	23	3.3	0.5
1,2-Dichloropropane	ND<1.7	3.3	0.5	1,3-Dichloropropane	ND<1.7	3.3	0.5
2,2-Dichloropropane	ND<1.7	3.3	0.5	1,1-Dichloropropene	ND<1.7	3.3	0.5
cis-1,3-Dichloropropene	ND<1.7	3.3	0.5	trans-1,3-Dichloropropene	ND<1.7	3.3	0.5
Diisopropyl ether (DIPE)	ND<1.7	3.3	0.5	Ethylbenzene	ND<1.7	3.3	0.5
Ethyl tert-butyl ether (ETBE)	ND<1.7	3.3	0.5	Freon 113	ND<33	3.3	10
Hexachlorobutadiene	ND<1.7	3.3	0.5	Hexachloroethane	ND<1.7	3.3	0.5
2-Hexanone	ND<1.7	3.3	0.5	Isopropylbenzene	ND<1.7	3.3	0.5
4-Isopropyl toluene	ND<1.7	3.3	0.5	Methyl-t-butyl ether (MTBE)	5.7	3.3	0.5
Methylene chloride	ND<1.7	3.3	0.5	4-Methyl-2-pentanone (MIBK)	ND<1.7	3.3	0.5
Naphthalene	ND<1.7	3.3	0.5	n-Propyl benzene	ND<1.7	3.3	0.5
Styrene	ND<1.7	3.3	0.5	1,1,1,2-Tetrachloroethane	ND<1.7	3.3	0.5
1,1,2,2-Tetrachloroethane	ND<1.7	3.3	0.5	Tetrachloroethene	ND<1.7	3.3	0.5
Toluene	ND<1.7	3.3	0.5	1,2,3-Trichlorobenzene	ND<1.7	3.3	0.5
1,2,4-Trichlorobenzene	ND<1.7	3.3	0.5	1,1,1-Trichloroethane	ND<1.7	3.3	0.5
1,1,2-Trichloroethane	ND<1.7	3.3	0.5	Trichloroethene	87	3.3	0.5
Trichlorofluoromethane	ND<1.7	3.3	0.5	1,2,3-Trichloropropane	ND<1.7	3.3	0.5
1,2,4-Trimethylbenzene	ND<1.7	3.3	0.5	1,3,5-Trimethylbenzene	ND<1.7	3.3	0.5
Vinyl Chloride	1.8	3.3	0.5	Xylenes, Total	ND<1.7	3.3	0.5

Surrogate Recoveries (%)

%SS1:	98	%SS2:	100
%SS3:	99		

Comments:

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

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P & D Environmental	Client Project ID: #0547; 4341 Howard St., Oakland	Date Sampled: 04/18/11
55 Santa Clara, Ste.240		Date Received: 04/18/11
	Client Contact: Steve Carmack	Date Extracted: 04/19/11
Oakland, CA 94610	Client P.O.:	Date Analyzed 04/19/11

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline *

Extraction method SW5030B Analytical methods SW8015Bm Work Order: 1104514

Lab ID	Client ID	Matrix	TPH(g)	DF	% SS	Comments
001A	MW1/MW7	W	ND	1	94	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

* water and vapor samples are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference. %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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P & D Environmental	Client Project ID: #0547; 4341 Howard St., Oakland	Date Sampled: 04/18/11
		Date Received: 04/18/11
55 Santa Clara, Ste.240	Client Contact: Steve Carmack	Date Extracted: 04/18/11
Oakland, CA 94610	Client P.O.:	Date Analyzed: 04/20/11

Total Extractable Petroleum Hydrocarbons*

Extraction method: SW3510C Analytical methods: SW8015B Work Order: 1104514

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	TPH-Bunker Oil (C10-C36)	DF	% SS	Comments
1104514-001A	MW1/MW7	W	ND	ND	1	96	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	100	µg/L
	S	NA	NA	mg/Kg

* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 57730 WorkOrder 1104514

EPA Method SW8260B **Extraction SW5030B** **Spiked Sample ID: 1104492-006B**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	10	89.5	92.7	3.42	74	73.5	0.659	70 - 130	30	70 - 130	30
Benzene	ND	10	104	105	0.981	106	104	1.86	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	96.6	104	7.00	76.1	76.9	1.03	70 - 130	30	70 - 130	30
Chlorobenzene	ND	10	106	106	0	110	107	3.20	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	103	104	0.990	93.9	92.5	1.46	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	122	127	4.10	106	104	1.66	70 - 130	30	70 - 130	30
1,1-Dichloroethene	ND	10	109	108	0.201	116	112	3.14	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	126	130	3.52	109	109	0	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	110	113	2.41	95.5	93.9	1.63	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	4.0	10	91.8	100	6.08	92	91	1.05	70 - 130	30	70 - 130	30
Toluene	ND	10	98.3	97.4	1.00	111	107	3.96	70 - 130	30	70 - 130	30
Trichloroethene	ND	10	97.7	99.3	1.60	99.8	97.4	2.42	70 - 130	30	70 - 130	30
%SS1:	99	25	98	100	1.94	95	96	0.632	70 - 130	30	70 - 130	30
%SS2:	97	25	97	96	0.594	107	107	0	70 - 130	30	70 - 130	30
%SS3:	100	2.5	88	87	0.572	100	97	2.64	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 57730 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1104514-001B	04/18/11 12:15 PM	04/20/11	04/20/11 2:23 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644

QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 57746 WorkOrder 1104514

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1104511-005A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	94.4	97	2.77	99.7	91.8	8.26	70 - 130	20	70 - 130	20
MTBE	ND	10	105	106	0.400	110	110	0	70 - 130	20	70 - 130	20
Benzene	ND	10	95.5	100	4.65	97.7	99.9	2.18	70 - 130	20	70 - 130	20
Toluene	ND	10	86.1	89.4	3.72	87.7	89.2	1.73	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	89.2	92.4	3.55	90.2	91.4	1.33	70 - 130	20	70 - 130	20
Xylenes	ND	30	104	107	3.43	104	107	2.89	70 - 130	20	70 - 130	20
%SS:	100	10	92	94	2.89	94	97	3.73	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 57746 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1104514-001A	04/18/11 12:15 PM	04/19/11	04/19/11 9:52 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.

DHS ELAP Certification 1644 QA/QC Officer

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"When Quality Counts"

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QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 57747 WorkOrder 1104514

EPA Method SW8015B **Extraction SW3510C** **Spiked Sample ID: N/A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	90.5	91.3	0.872	N/A	N/A	70 - 130	30
%SS:	N/A	625	N/A	N/A	N/A	88	88	0	N/A	N/A	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 57747 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1104514-001A	04/18/11 12:15 PM	04/18/11	04/20/11 2:19 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

DHS ELAP Certification 1644

QA/QC Officer

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Analytical Report

P & D Environmental 55 Santa Clara, Ste.240 Oakland, CA 94610	Client Project ID: #0547; Former El Monte RV Service Center, 4341 How	Date Sampled: 09/07/11
		Date Received: 09/08/11
	Client Contact: Michael Deschenes	Date Reported: 09/14/11
	Client P.O.:	Date Completed: 09/12/11

WorkOrder: 1109183

September 14, 2011

Dear Michael:

Enclosed within are:

1) The results of the **2** analyzed samples from your project: **#0547; Former El Monte RV Service Center, 4341**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

The analytical results relate only to the items tested.

CHAIN OF CUSTODY RECORD

1109183

PAGE 1 OF 1

P&D ENVIRONMENTAL, INC.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER: 0547

PROJECT NAME: FORMER EL MONTE RV SERVICE CENTER 4341 HOWARD ST, OAKLAND

SAMPLED BY: (PRINTED & SIGNATURE) MICHAEL DESCHENES

SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	ANALYSIS(ES): TPH-G BY 5030 WITH MODIFIED	EPA 8015	HVOCs AND MBTEX BY 8260B	PRESERVATIVE	REMARKS
+46 B4-W	9/7/11	1120	H2O		6	X		X	ICE	NORMAL TURN AROUND
+40 B5-W	9/7/11	1020	H2O		6	X		X	ICE	" " "

ICE/t° 5.0
GOOD CONDITION
HEAD SPACE ABSENT
DECHLORINATED IN LAB
PRESERVATION

APPROPRIATE CONTAINERS
PRESERVED IN LAB

VOAS	O&G	METALS	OTHER

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Michael Deschenes	9/8/11	1530	
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
	9/8/11	1695	
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)

Total No. of Samples (This Shipment): 2
Total No. of Containers (This Shipment): 12

LABORATORY: MC CAMPBELL ANALYTICAL

LABORATORY CONTACT: ANGELA RYDELIUS

LABORATORY PHONE NUMBER: (925) 252-9262

SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( ) YES (X) NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS: ALL BOTTLES PRESERVED WITH HCL

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1109183 **ClientCode: PDEO**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Michael Deschenes
P & D Environmental
55 Santa Clara, Ste.240
Oakland, CA 94610
(510) 658-6916 FAX: 510-834-0152

Email: lab@pdenviro.com
cc:
PO:
ProjectNo: #0547; Former El Monte RV Service Center, 4341 Howard St., Oakland

Bill to:
Accounts Payable
P & D Environmental
55 Santa Clara, Ste.240
Oakland, CA 94610

Requested TAT: **5 days**

Date Received: **09/08/2011**
Date Printed: **09/08/2011**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1109183-001	B4-W	Water	9/7/2011 11:20	☐	B	A										
1109183-002	B5-W	Water	9/7/2011 10:20	☐	B	A										

Test Legend:

1	8010BMS_W	2	G-MBTEX_W	3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Zoraida Cortez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Sample Receipt Checklist

Client Name: **P & D Environmental**

Date and Time Received: **9/8/2011 5:41:03 PM**

Project Name: **#0547; Former El Monte RV Service Center, 4341 Howard S**

Checklist completed and reviewed by: Zoraida Cortez

WorkOrder N°: **1109183** Matrix: Water

Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 5°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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http://www.mccampbell.com / E-mail: main@mccampbell.com

P & D Environmental	Client Project ID: #0547; Former El Monte RV Service Center, 4341 How	Date Sampled: 09/07/11
		Date Received: 09/08/11
55 Santa Clara, Ste.240	Client Contact: Michael Deschenes	Date Extracted 09/12/11
Oakland, CA 94610	Client P.O.:	Date Analyzed 09/12/11

Halogenated Volatile Organics by P&T and GC-MS (8010 Basic Target List)*

Extraction Method: SW5030B | Analytical Method: SW8260B | Work Order: 1109183

Lab ID	1109183-001B
Client ID	B4-W
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Benzene	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	Chloroform	ND	1.0	0.5
Chloromethane	ND	1.0	0.5	Dibromochloromethane	ND	1.0	0.5
1,2-Dibromoethane (EDB)	ND	1.0	0.5	1,2-Dichlorobenzene	ND	1.0	0.5
1,3-Dichlorobenzene	ND	1.0	0.5	1,4-Dichlorobenzene	ND	1.0	0.5
Dichlorodifluoromethane	ND	1.0	0.5	1,1-Dichloroethane	ND	1.0	0.5
1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5	1,1-Dichloroethene	ND	1.0	0.5
cis-1,2-Dichloroethene	ND	1.0	0.5	trans-1,2-Dichloroethene	ND	1.0	0.5
1,2-Dichloropropane	ND	1.0	0.5	cis-1,3-Dichloropropene	ND	1.0	0.5
trans-1,3-Dichloropropene	ND	1.0	0.5	Freon 113	ND	1.0	10
Ethylbenzene	ND	1.0	0.5	Methyl-t-butyl ether (MTBE)	ND	1.0	0.5
Methylene chloride	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,2,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	Vinyl Chloride	ND	1.0	0.5
Xylenes	ND	1.0	0.5				

Surrogate Recoveries (%)

%SS1:	95	%SS2:	97
%SS3:	93		

Comments: b1

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

surrogate diluted out of range or surrogate coelutes with another peak.

b1) aqueous sample that contains greater than ~1 vol. % sediment

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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P & D Environmental	Client Project ID: #0547; Former El Monte RV Service Center, 4341 How	Date Sampled: 09/07/11
		Date Received: 09/08/11
55 Santa Clara, Ste.240	Client Contact: Michael Deschenes	Date Extracted 09/10/11
Oakland, CA 94610	Client P.O.:	Date Analyzed 09/10/11

Halogenated Volatile Organics by P&T and GC-MS (8010 Basic Target List)*

Extraction Method: SW5030B | Analytical Method: SW8260B | Work Order: 1109183

Lab ID	1109183-002B
Client ID	B5-W
Matrix	Water

Compound	Concentration *	DF	Reporting Limit	Compound	Concentration *	DF	Reporting Limit
Benzene	ND	1.0	0.5	Bromodichloromethane	ND	1.0	0.5
Bromoform	ND	1.0	0.5	Bromomethane	ND	1.0	0.5
Carbon Tetrachloride	ND	1.0	0.5	Chlorobenzene	ND	1.0	0.5
Chloroethane	ND	1.0	0.5	Chloroform	ND	1.0	0.5
Chloromethane	ND	1.0	0.5	Dibromochloromethane	ND	1.0	0.5
1,2-Dibromoethane (EDB)	ND	1.0	0.5	1,2-Dichlorobenzene	ND	1.0	0.5
1,3-Dichlorobenzene	ND	1.0	0.5	1,4-Dichlorobenzene	ND	1.0	0.5
Dichlorodifluoromethane	ND	1.0	0.5	1,1-Dichloroethane	ND	1.0	0.5
1,2-Dichloroethane (1,2-DCA)	ND	1.0	0.5	1,1-Dichloroethene	ND	1.0	0.5
cis-1,2-Dichloroethene	ND	1.0	0.5	trans-1,2-Dichloroethene	ND	1.0	0.5
1,2-Dichloropropane	ND	1.0	0.5	cis-1,3-Dichloropropene	ND	1.0	0.5
trans-1,3-Dichloropropene	ND	1.0	0.5	Freon 113	ND	1.0	10
Ethylbenzene	ND	1.0	0.5	Methyl-t-butyl ether (MTBE)	ND	1.0	0.5
Methylene chloride	ND	1.0	0.5	1,1,1,2-Tetrachloroethane	ND	1.0	0.5
1,1,2,2-Tetrachloroethane	ND	1.0	0.5	Tetrachloroethene	ND	1.0	0.5
Toluene	ND	1.0	0.5	1,1,1-Trichloroethane	ND	1.0	0.5
1,1,2-Trichloroethane	ND	1.0	0.5	Trichloroethene	ND	1.0	0.5
Trichlorofluoromethane	ND	1.0	0.5	Vinyl Chloride	ND	1.0	0.5
Xylenes	ND	1.0	0.5				

Surrogate Recoveries (%)

%SS1:	96	%SS2:	97
%SS3:	96		

Comments: b1

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

surrogate diluted out of range or surrogate coelutes with another peak.

b1) aqueous sample that contains greater than ~1 vol. % sediment

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Angela Rydelius, Lab Manager

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P & D Environmental	Client Project ID: #0547; Former El Monte RV Service Center, 4341 How	Date Sampled: 09/07/11
		Date Received: 09/08/11
55 Santa Clara, Ste.240	Client Contact: Michael Deschenes	Date Extracted 09/09/11
Oakland, CA 94610	Client P.O.:	Date Analyzed 09/09/11

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*

Extraction method: SW5030B Analytical methods: SW8015Bm Work Order: 1109183

Lab ID	Client ID	Matrix	TPH(g)	DF	% SS	Comments
001A	B4-W	W	ND	1	97	b1
002A	B5-W	W	ND	1	98	b1

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

* water and vapor samples are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference. %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:
b1) aqueous sample that contains greater than ~1 vol. % sediment

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Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water | QC Matrix: Water | BatchID: 60933 | WorkOrder: 1109183

EPA Method: SW8260B | **Extraction: SW5030B** | **Spiked Sample ID: 1109184-008A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Chlorobenzene	ND	10	99.2	102	3.08	97	103	6.12	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	103	106	2.87	89.1	96.1	7.57	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	105	107	1.20	102	106	4.27	70 - 130	30	70 - 130	30
1,1-Dichloroethene	ND	10	92.3	94.6	2.49	112	120	6.96	70 - 130	30	70 - 130	30
Trichloroethene	ND	10	93.9	96.5	2.73	99.8	106	5.86	70 - 130	30	70 - 130	30
%SS1:	101	25	100	99	0.824	101	101	0	70 - 130	30	70 - 130	30
%SS2:	91	25	91	91	0	98	98	0	70 - 130	30	70 - 130	30
%SS3:	101	2.5	95	92	3.03	90	88	2.37	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 60933 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1109183-001B	09/07/11 11:20 AM	09/12/11	09/12/11 5:15 PM	1109183-002B	09/07/11 10:20 AM	09/10/11	09/10/11 3:18 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and freon 113 may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644

QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water | QC Matrix: Water | BatchID: 60913 | WorkOrder: 1109183

EPA Method: SW8021B/8015Bm **Extraction: SW5030B** **Spiked Sample ID: 1109189-003A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	93.1	95.3	2.27	93.6	95.7	2.27	70 - 130	20	70 - 130	20
MTBE	ND	10	107	109	2.16	103	106	2.97	70 - 130	20	70 - 130	20
Benzene	ND	10	102	107	5.16	102	105	2.85	70 - 130	20	70 - 130	20
Toluene	ND	10	90.7	95.8	5.41	92.7	94.7	2.21	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	93	96.8	3.99	94.2	97	3.00	70 - 130	20	70 - 130	20
Xylenes	ND	30	107	111	4.09	108	112	3.52	70 - 130	20	70 - 130	20
%SS:	106	10	99	103	3.86	98	101	3.60	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 60913 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1109183-001A	09/07/11 11:20 AM	09/09/11	09/09/11 8:02 PM	1109183-002A	09/07/11 10:20 AM	09/09/11	09/09/11 8:32 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.

DHS ELAP Certification 1644

QA/QC Officer

Air Toxics LTD.
Laboratory Services Since 1989

9/23/2011
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Former El Monte RV Service Center
Project #: 0547
Workorder #: 1109212A

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 9/12/2011 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1109212A

Work Order Summary

CLIENT:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610	**BILL TO:**	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610
PHONE:	510-658-6916	**P.O. #**	
FAX:	510-834-0772	**PROJECT #**	0547 Former El Monte RV Service Center
DATE RECEIVED:	09/12/2011	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	09/23/2011		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SG 1	Modified TO-15	7.0 "Hg	15 psi
02A	SG 1 DUP	Modified TO-15	6.8 "Hg	15 psi
03A	SG 2	Modified TO-15	4.4 "Hg	15 psi
04A	SG 3	Modified TO-15	6.0 "Hg	15 psi
05A	SG 4	Modified TO-15	6.2 "Hg	15 psi
06A	SG 5	Modified TO-15	6.0 "Hg	15 psi
07A	Lab Blank	Modified TO-15	NA	NA
08A	CCV	Modified TO-15	NA	NA
09A	LCS	Modified TO-15	NA	NA
09AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Linda D. Frumarn DATE: 09/23/11

Laboratory Director

Certfication numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089,
NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
EPA Method TO-15
P & D Environmental
Workorder# 1109212A

Six 1 Liter Summa Canister samples were received on September 12, 2011. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV and/or LCS.
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SG 1

Lab ID#: 1109212A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.3	3.7	4.2	12
Toluene	1.3	5.7	5.0	22
m,p-Xylene	1.3	2.8	5.7	12
TPH ref. to Gasoline (MW=100)	66	1500	270	6100
1,1-Difluoroethane	5.3	1600 E	14	4400 E

Client Sample ID: SG 1 DUP

Lab ID#: 1109212A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.3	4.1	4.2	13
Toluene	1.3	5.6	4.9	21
m,p-Xylene	1.3	2.9	5.7	13
TPH ref. to Gasoline (MW=100)	65	1500	270	6100
1,1-Difluoroethane	5.2	2000 E	14	5600 E

Client Sample ID: SG 2

Lab ID#: 1109212A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.2	3.1	3.8	10
Toluene	1.2	1.9	4.5	7.2
m,p-Xylene	1.2	1.5	5.1	6.6
TPH ref. to Gasoline (MW=100)	59	550	240	2200
1,1-Difluoroethane	4.7	580 E	13	1600 E

Client Sample ID: SG 3

Lab ID#: 1109212A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	1.3	37	4.5	130

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SG 3

Lab ID#: 1109212A-04A

Benzene	1.3	2.9	4.0	9.4
Toluene	1.3	8.0	4.7	30
m,p-Xylene	1.3	2.9	5.5	12
TPH ref. to Gasoline (MW=100)	63	1400	260	5700

Client Sample ID: SG 4

Lab ID#: 1109212A-05A

No Detections Were Found.

Client Sample ID: SG 5

Lab ID#: 1109212A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methyl tert-butyl ether	1.3	20	4.5	73
Benzene	1.3	97	4.0	310
Toluene	1.3	7.2	4.7	27
Ethyl Benzene	1.3	1.5	5.5	6.6
m,p-Xylene	1.3	6.3	5.5	28
o-Xylene	1.3	1.3	5.5	5.8
TPH ref. to Gasoline (MW=100)	63	5800	260	24000

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 1

Lab ID#: 1109212A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091525**	**Date of Collection: 9/7/11 1:54:00 PM**	
Dil. Factor:	**2.64**	**Date of Analysis: 9/15/11 08:39 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.4	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.8	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.2	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.2	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.3	Not Detected
Benzene	1.3	3.7	4.2	12
Tetrachloroethene	1.3	Not Detected	9.0	Not Detected
Toluene	1.3	5.7	5.0	22
Trichloroethene	1.3	Not Detected	7.1	Not Detected
Ethyl Benzene	1.3	Not Detected	5.7	Not Detected
m,p-Xylene	1.3	2.8	5.7	12
o-Xylene	1.3	Not Detected	5.7	Not Detected
TPH ref. to Gasoline (MW=100)	66	1500	270	6100
1,1-Difluoroethane	5.3	1600 E	14	4400 E

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	110	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 1 DUP

Lab ID#: 1109212A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091524**	**Date of Collection:**	**9/7/11 1:54:00 PM**
Dil. Factor:	**2.61**	**Date of Analysis:**	**9/15/11 07:33 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.7	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.2	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.2	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.1	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.2	Not Detected
Benzene	1.3	4.1	4.2	13
Tetrachloroethene	1.3	Not Detected	8.8	Not Detected
Toluene	1.3	5.6	4.9	21
Trichloroethene	1.3	Not Detected	7.0	Not Detected
Ethyl Benzene	1.3	Not Detected	5.7	Not Detected
m,p-Xylene	1.3	2.9	5.7	13
o-Xylene	1.3	Not Detected	5.7	Not Detected
TPH ref. to Gasoline (MW=100)	65	1500	270	6100
1,1-Difluoroethane	5.2	2000 E	14	5600 E

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	109	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 2

Lab ID#: 1109212A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091528**	**Date of Collection: 9/7/11 3:02:00 PM**	
Dil. Factor:	**2.37**	**Date of Analysis: 9/15/11 10:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.3	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.4	Not Detected
Benzene	1.2	3.1	3.8	10
Tetrachloroethene	1.2	Not Detected	8.0	Not Detected
Toluene	1.2	1.9	4.5	7.2
Trichloroethene	1.2	Not Detected	6.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.1	Not Detected
m,p-Xylene	1.2	1.5	5.1	6.6
o-Xylene	1.2	Not Detected	5.1	Not Detected
TPH ref. to Gasoline (MW=100)	59	550	240	2200
1,1-Difluoroethane	4.7	580 E	13	1600 E

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	112	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 3

Lab ID#: 1109212A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091527**	**Date of Collection: 9/7/11 4:03:00 PM**	
Dil. Factor:	**2.52**	**Date of Analysis: 9/15/11 09:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Methyl tert-butyl ether	1.3	37	4.5	130
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Carbon Tetrachloride	1.3	Not Detected	7.9	Not Detected
Benzene	1.3	2.9	4.0	9.4
Tetrachloroethene	1.3	Not Detected	8.5	Not Detected
Toluene	1.3	8.0	4.7	30
Trichloroethene	1.3	Not Detected	6.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	2.9	5.5	12
o-Xylene	1.3	Not Detected	5.5	Not Detected
TPH ref. to Gasoline (MW=100)	63	1400	260	5700
1,1-Difluoroethane	5.0	Not Detected	14	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	112	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 4

Lab ID#: 1109212A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091529**	**Date of Collection: 9/7/11 4:38:00 PM**	
Dil. Factor:	**2.55**	**Date of Analysis: 9/15/11 10:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Methyl tert-butyl ether	1.3	Not Detected	4.6	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	7.0	Not Detected
Carbon Tetrachloride	1.3	Not Detected	8.0	Not Detected
Benzene	1.3	Not Detected	4.1	Not Detected
Tetrachloroethene	1.3	Not Detected	8.6	Not Detected
Toluene	1.3	Not Detected	4.8	Not Detected
Trichloroethene	1.3	Not Detected	6.8	Not Detected
Ethyl Benzene	1.3	Not Detected	5.5	Not Detected
m,p-Xylene	1.3	Not Detected	5.5	Not Detected
o-Xylene	1.3	Not Detected	5.5	Not Detected
TPH ref. to Gasoline (MW=100)	64	Not Detected	260	Not Detected
1,1-Difluoroethane	5.1	Not Detected	14	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	90	70-130
4-Bromofluorobenzene	110	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 5

Lab ID#: 1109212A-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091530**	**Date of Collection: 9/7/11 4:02:00 PM**	
Dil. Factor:	**2.52**	**Date of Analysis: 9/15/11 11:17 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
Methyl tert-butyl ether	1.3	20	4.5	73
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
1,1,1-Trichloroethane	1.3	Not Detected	6.9	Not Detected
Carbon Tetrachloride	1.3	Not Detected	7.9	Not Detected
Benzene	1.3	97	4.0	310
Tetrachloroethene	1.3	Not Detected	8.5	Not Detected
Toluene	1.3	7.2	4.7	27
Trichloroethene	1.3	Not Detected	6.8	Not Detected
Ethyl Benzene	1.3	1.5	5.5	6.6
m,p-Xylene	1.3	6.3	5.5	28
o-Xylene	1.3	1.3	5.5	5.8
TPH ref. to Gasoline (MW=100)	63	5800	260	24000
1,1-Difluoroethane	5.0	Not Detected	14	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	108	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1109212A-07A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091508a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/15/11 11:21 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TPH ref. to Gasoline (MW=100)	25	Not Detected	100	Not Detected
1,1-Difluoroethane	2.0	Not Detected	5.4	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	111	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1109212A-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/15/11 09:00 AM**	

Compound	%Recovery
Vinyl Chloride	94
Methyl tert-butyl ether	98
trans-1,2-Dichloroethene	98
cis-1,2-Dichloroethene	103
1,1,1-Trichloroethane	97
Carbon Tetrachloride	98
Benzene	99
Tetrachloroethene	94
Toluene	99
Trichloroethene	96
Ethyl Benzene	95
m,p-Xylene	97
o-Xylene	96
TPH ref. to Gasoline (MW=100)	100
1,1-Difluoroethane	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	109	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1109212A-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/15/11 09:57 AM**	

Compound	%Recovery
Vinyl Chloride	95
Methyl tert-butyl ether	99
trans-1,2-Dichloroethene	109
cis-1,2-Dichloroethene	100
1,1,1-Trichloroethane	96
Carbon Tetrachloride	96
Benzene	97
Tetrachloroethene	93
Toluene	96
Trichloroethene	94
Ethyl Benzene	95
m,p-Xylene	100
o-Xylene	100
TPH ref. to Gasoline (MW=100)	Not Spiked
1,1-Difluoroethane	Not Spiked

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	111	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCSD

Lab ID#: 1109212A-09AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p091505**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/15/11 10:15 AM**	

Compound	%Recovery
Vinyl Chloride	94
Methyl tert-butyl ether	97
trans-1,2-Dichloroethene	109
cis-1,2-Dichloroethene	99
1,1,1-Trichloroethane	96
Carbon Tetrachloride	95
Benzene	95
Tetrachloroethene	94
Toluene	95
Trichloroethene	93
Ethyl Benzene	93
m,p-Xylene	97
o-Xylene	96
TPH ref. to Gasoline (MW=100)	Not Spiked
1,1-Difluoroethane	Not Spiked

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	112	70-130

CHAIN OF CUSTODY RECORD

1109212

PAGE 1 OF 1

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER: 0547

PROJECT NAME: FORMER EL MONTE RV SERVICE CENTER 4341 HOWARD ST. OAKLAND

SAMPLED BY: (PRINTED & SIGNATURE) MICHAEL DESCHENES Michael Deschenes

	SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION (Init. Vac. / Summa # / Final Vac. / PID (PPM))	NUMBER OF CONTAINERS	ANALYSIS(ES): SEE ATTACHED SAMPLE ANALYSIS SHEET	PRESERVATIVE	REMARKS
01A	SG1	9/7/11	135400	SOIL GAS	-30 / 34584 / -5 / 0	1	X	NONE	NORMAL TURN AROUND
02A	SG1 DUP	"	135400	"	-30 / 34169 / -5 / 0	1	X	"	"
03A	SG2	"	150235	"	-30 / 2059 / -5 / 0	1	X	"	"
04A	SG3	"	160320	"	-30 / 2071 / -5 / 0	1	X	"	"
05A	SG4	"	163825	"	-30 / 34648 / -5 / 0	1	X	"	"
06A	SG5	"	160212	"	-30 / 34603 / -5 / 1.3	1	X	"	"

RELINQUISHED BY: (SIGNATURE) Michael Deschenes	DATE 9/8/11	TIME 1870	RECEIVED BY: (SIGNATURE) FED EX	Total No. of Samples (This Shipment) 6 / Total No. of Containers (This Shipment) 6	LABORATORY: AIR TOXICS LTD.
RELINQUISHED BY: (SIGNATURE)	DATE 9.12.11	TIME 1150	RECEIVED BY: (SIGNATURE) JM ATL	LABORATORY CONTACT: KYLE VAGADORI	LABORATORY PHONE NUMBER: (916) 985-1000
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	SAMPLE ANALYSIS REQUEST SHEET ATTACHED: (X) YES ( ) NO	

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS: DIFLUOROETHANE WAS OUR TRACER GAS
HIGHEST CONCENTRATION: 1.4 PPM

1109212

Former El Monte RV Service Center
Job # 0547
Samples Collected 9/7/11

SAMPLE ANALYSIS REQUEST SHEET

- TO-15 for TPH-G, MTBE, Benzene, Toluene, Ethylbenzene, m,p-Xylenes, o-Xylenes, Tetrachloroethene, Trichloroethene, 1,1,1-Trichloroethane, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene,Carbon Tetrachloride, Vinyl Chloride, and our tracer gas Difluoroethane.

- ASTM 1946 for Oxygen, Methane, and Carbon Dioxide.

Air Toxics LTD.
Laboratory Services Since 1989

9/23/2011
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Former El Monte RV Service Center
Project #: 0547
Workorder #: 1109212B

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 9/12/2011 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1109212B

Work Order Summary

CLIENT:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610	**BILL TO:**	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610
PHONE:	510-658-6916	**P.O. #**	
FAX:	510-834-0772	**PROJECT #**	0547 Former El Monte RV Service Center
DATE RECEIVED:	09/12/2011	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	09/23/2011		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SG 1	Modified ASTM D-1946	7.0 "Hg	15 psi
02A	SG 1 DUP	Modified ASTM D-1946	6.8 "Hg	15 psi
03A	SG 2	Modified ASTM D-1946	4.4 "Hg	15 psi
04A	SG 3	Modified ASTM D-1946	6.0 "Hg	15 psi
05A	SG 4	Modified ASTM D-1946	6.2 "Hg	15 psi
06A	SG 5	Modified ASTM D-1946	6.0 "Hg	15 psi
07A	Lab Blank	Modified ASTM D-1946	NA	NA
08A	LCS	Modified ASTM D-1946	NA	NA
08AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Linda D. Frumarn DATE: 09/23/11

Laboratory Director

Certfication numbers: AZ Licensure AZ0719, CA NELAP - 02110CA, LA NELAP - 02089,
NY NELAP - 11291, TX NELAP - T104704434-11-3, UT NELAP -CA009332011-1, WA NELAP - C935
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/11 , Expiration date: 06/30/12.
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified ASTM D-1946
P & D Environmental
Workorder# 1109212B

Six 1 Liter Summa Canister samples were received on September 12, 2011. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

Client Sample ID: SG 1

Lab ID#: 1109212B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	18
Methane	0.00026	0.0016
Carbon Dioxide	0.026	1.2

Client Sample ID: SG 1 DUP

Lab ID#: 1109212B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	18
Methane	0.00026	0.0016
Carbon Dioxide	0.026	1.2

Client Sample ID: SG 2

Lab ID#: 1109212B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	2.2
Methane	0.00024	0.15
Carbon Dioxide	0.024	6.9

Client Sample ID: SG 3

Lab ID#: 1109212B-04A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	2.8
Methane	0.00025	1.7
Carbon Dioxide	0.025	2.5

Client Sample ID: SG 4

Lab ID#: 1109212B-05A

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

Client Sample ID: SG 4

Lab ID#: 1109212B-05A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	18
Carbon Dioxide	0.026	3.1

Client Sample ID: SG 5

Lab ID#: 1109212B-06A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	19
Methane	0.00025	0.0048
Carbon Dioxide	0.025	0.78

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 1

Lab ID#: 1109212B-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091515**	**Date of Collection: 9/7/11 1:54:00 PM**	
Dil. Factor:	**2.64**	**Date of Analysis: 9/15/11 02:18 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	18
Methane	0.00026	0.0016
Carbon Dioxide	0.026	1.2

Container Type: 1 Liter Summa Canister

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 1 DUP

Lab ID#: 1109212B-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091517**	**Date of Collection: 9/7/11 1:54:00 PM**	
Dil. Factor:	**2.61**	**Date of Analysis: 9/15/11 03:08 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Oxygen	0.26	18
Methane	0.00026	0.0016
Carbon Dioxide	0.026	1.2

Container Type: 1 Liter Summa Canister

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 2

Lab ID#: 1109212B-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091516**	**Date of Collection: 9/7/11 3:02:00 PM**	
Dil. Factor:	**2.37**	**Date of Analysis: 9/15/11 02:46 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	2.2
Methane	0.00024	0.15
Carbon Dioxide	0.024	6.9

Container Type: 1 Liter Summa Canister

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 3

Lab ID#: 1109212B-04A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091519**	**Date of Collection: 9/7/11 4:03:00 PM**	
Dil. Factor:	**2.52**	**Date of Analysis: 9/15/11 03:54 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	2.8
Methane	0.00025	1.7
Carbon Dioxide	0.025	2.5

Container Type: 1 Liter Summa Canister

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 4

Lab ID#: 1109212B-05A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091520**	**Date of Collection: 9/7/11 4:38:00 PM**	
Dil. Factor:	**2.55**	**Date of Analysis: 9/15/11 04:22 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Oxygen	0.26	18
Methane	0.00026	Not Detected
Carbon Dioxide	0.026	3.1

Container Type: 1 Liter Summa Canister

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG 5

Lab ID#: 1109212B-06A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091521**	**Date of Collection: 9/7/11 4:02:00 PM**	
Dil. Factor:	**2.52**	**Date of Analysis: 9/15/11 04:46 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	19
Methane	0.00025	0.0048
Carbon Dioxide	0.025	0.78

Container Type: 1 Liter Summa Canister

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1109212B-07A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091507**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/15/11 10:15 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected

Container Type: NA - Not Applicable

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1109212B-08A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/15/11 08:36 AM**	

Compound	%Recovery
Oxygen	101
Methane	99
Carbon Dioxide	99

Container Type: NA - Not Applicable

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCSD

Lab ID#: 1109212B-08AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9091529**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/15/11 08:25 PM**	

Compound	%Recovery
Oxygen	100
Methane	102
Carbon Dioxide	99

Container Type: NA - Not Applicable

CHAIN OF CUSTODY RECORD

1109212

PAGE 1 OF 1

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER: 0547

PROJECT NAME: FORMER EL MONTE RV SERVICE CENTER 4341 HOWARD ST. OAKLAND

SAMPLED BY: (PRINTED & SIGNATURE) MICHAEL DESCHENES Michael Deschenes

	SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION (Init. Vac. / Summa # / Final Vac. / PID (PPM))	NUMBER OF CONTAINERS	ANALYSIS(ES): SEE ATTACHED SAMPLE ANALYSIS SHEET	PRESERVATIVE	REMARKS
01A	SG1	9/7/11	135400	SOIL GAS	-30 / 34584 / -5 / 0	1	X	NONE	NORMAL TURN AROUND
02A	SG1 DUP	"	135400	"	-30 / 34169 / -5 / 0	1	X	"	"
03A	SG2	"	150235	"	-30 / 2059 / -5 / 0	1	X	"	"
04A	SG3	"	160320	"	-30 / 2071 / -5 / 0	1	X	"	"
05A	SG4	"	163825	"	-30 / 34648 / -5 / 0	1	X	"	"
06A	SG5	"	160212	"	-30 / 34603 / -5 / 1.3	1	X	"	"

RELINQUISHED BY: (SIGNATURE) Michael Deschenes	DATE 9/8/11	TIME 1870	RECEIVED BY: (SIGNATURE) FED EX	Total No. of Samples (This Shipment) 6 / Total No. of Containers (This Shipment) 6	LABORATORY: AIR TOXICS LTD.
RELINQUISHED BY: (SIGNATURE)	DATE 9.12.11	TIME 1150	RECEIVED BY: (SIGNATURE) JM ATL	LABORATORY CONTACT: KYLE VAGADORI	LABORATORY PHONE NUMBER: (916) 985-1000
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	SAMPLE ANALYSIS REQUEST SHEET ATTACHED: (X) YES ( ) NO	

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS: DIFLUOROETHANE WAS OUR TRACER GAS
HIGHEST CONCENTRATION: 1.4 PPM

1109212

Former El Monte RV Service Center
Job # 0547
Samples Collected 9/7/11

SAMPLE ANALYSIS REQUEST SHEET

- TO-15 for TPH-G, MTBE, Benzene, Toluene, Ethylbenzene, m,p-Xylenes, o-Xylenes, Tetrachloroethene, Trichloroethene, 1,1,1-Trichloroethane, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene,Carbon Tetrachloride, Vinyl Chloride, and our tracer gas Difluoroethane.

- ASTM 1946 for Oxygen, Methane, and Carbon Dioxide.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

P & D Environmental 55 Santa Clara, Ste.240 Oakland, CA 94610	Client Project ID: #0547; Former El Monte RV Service Center, 4341 How	Date Sampled: 09/07/11
		Date Received: 09/08/11
	Client Contact: Michael Deschenes	Date Reported: 09/13/11
	Client P.O.:	Date Completed: 09/13/11

WorkOrder: 1109181

September 13, 2011

Dear Michael:

Enclosed within are:

1) The results of the **2** analyzed samples from your project: **#0547; Former El Monte RV Service Center, 4341**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

The analytical results relate only to the items tested.

CHAIN OF CUSTODY RECORD 1109181

PAGE 1 OF 1

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave., Suite 240
Oakland, CA 94610
(510) 658-6916

PROJECT NUMBER: 0547

PROJECT NAME: FORMER EL MONTE RV SERVICE CENTER 4341 HOWARD ST., OAKLAND

SAMPLED BY: (PRINTED & SIGNATURE) MICHAEL DESCHENES Michael Deschenes

SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION	NUMBER OF CONTAINERS	ANALYSIS(ES): DICHLOROETHANE BY 8260	PRESERVATIVE	REMARKS
SG1	9/7/11	1300	AIR	SHROUD	1		NONE	NORMAL TURN AROUND
SG5	9/7/11	1555	AIR	"	1		NONE	" " "

ICE? n/a
GOOD CONDITION ✓
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE ✓
CONTAINERS
PRESERVED IN LAB

	VOAS	O&G	METALS	OTHER
PRESERVATION				

RELINQUISHED BY: (SIGNATURE) Michael Deschenes	DATE 9/8/11	TIME 1536	RECEIVED BY: (SIGNATURE)	Total No. of Samples (This Shipment) 2 Total No. of Containers (This Shipment) 2	LABORATORY: MCCAMPBELL ANALYTICAL
RELINQUISHED BY: (SIGNATURE)	DATE 9/8/11	TIME 1645	RECEIVED BY: (SIGNATURE)	LABORATORY CONTACT: ANGELA RYDELIUS	LABORATORY PHONE NUMBER: (925) 252-9262
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)	SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( ) YES (X) NO	

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS: TEDLAR BAGS

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1109181 **ClientCode: PDEO**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Michael Deschenes
P & D Environmental
55 Santa Clara, Ste.240
Oakland, CA 94610
(510) 658-6916 FAX: 510-834-0152

Email: lab@pdenviro.com
cc:
PO:
ProjectNo: #0547; Former El Monte RV Service Center, 4341 Howard St., Oakland

Bill to:
Accounts Payable
P & D Environmental
55 Santa Clara, Ste.240
Oakland, CA 94610

Requested TAT: **5 days**

Date Received: **09/08/2011**
Date Printed: **09/08/2011**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1109181-001	SG1	Air	9/7/2011 13:00	☐	A											
1109181-002	SG5	Air	9/7/2011 15:55	☐	A											

Test Legend:

1	8260VOC_A(UG/M3)	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Zoraida Cortez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name: **P & D Environmental**

Date and Time Received: **9/8/2011 5:14:17 PM**

Project Name: **#0547; Former El Monte RV Service Center, 4341 Howard S**

Checklist completed and reviewed by: Zoraida Cortez

WorkOrder N°: **1109181** Matrix: Air

Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp:		NA ☑
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☐	No ☑	

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

P & D Environmental	Client Project ID: #0547; Former El Monte RV Service Center, 4341 How	Date Sampled: 09/07/11
		Date Received: 09/08/11
55 Santa Clara, Ste.240	Client Contact: Michael Deschenes	Date Extracted 09/09/11
Oakland, CA 94610	Client P.O.:	Date Analyzed 09/09/11

Volatile Organics by P&T and GC/MS (µg/m³)*

Extraction method: SW5030B Analytical methods: SW8260B Work Order: 1109181

Lab ID	Client ID	Matrix	1,1-Difluoroethane as Dichlorodifluoromethane	DF	% SS	Comments
001A	SG1	A	29,000,000	2000	95	
002A	SG5	A	79,000,000	5000	94	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	250	µg/m³
	S	NA	NA

* vapor samples are reported in µg/m³, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis; %SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Air | QC Matrix: Water | BatchID: 60933 | WorkOrder: 1109181

EPA Method: SW8260B | **Extraction: SW5030B** | **Spiked Sample ID: 1109184-008A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	10	88.4	90.4	2.26	80.1	85.7	6.68	70 - 130	30	70 - 130	30
Benzene	ND	10	100	104	3.69	98.9	105	5.97	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	105	110	4.29	92.5	107	14.5	70 - 130	30	70 - 130	30
Chlorobenzene	ND	10	99.2	102	3.08	97	103	6.12	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	103	106	2.87	89.1	96.1	7.57	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	105	107	1.20	102	106	4.27	70 - 130	30	70 - 130	30
1,1-Dichloroethene	ND	10	92.3	94.6	2.49	112	120	6.96	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	106	107	1.40	107	114	5.55	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	103	103	0	96.7	103	6.21	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	10	109	109	0	97.1	102	4.69	70 - 130	30	70 - 130	30
Toluene	ND	10	97.2	100	2.93	94.6	101	6.87	70 - 130	30	70 - 130	30
Trichloroethene	ND	10	93.9	96.5	2.73	99.8	106	5.86	70 - 130	30	70 - 130	30
%SS1:	101	25	100	99	0.824	101	101	0	70 - 130	30	70 - 130	30
%SS2:	91	25	91	91	0	98	98	0	70 - 130	30	70 - 130	30
%SS3:	101	2.5	95	92	3.03	90	88	2.37	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 60933 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1109181-001A	09/07/11 1:00 PM	09/09/11	09/09/11 4:23 PM	1109181-002A	09/07/11 3:55 PM	09/09/11	09/09/11 5:45 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644

QA/QC Officer

APPENDIX H

HERD February 2009 Vapor Intrusion Risk and Hazard Spreadsheet Calculations

SG5
MTBE 73 ug/m3

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
1634044	7.30E+01			MTBE

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	S		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

Report 0547.R2
Appendix H

SG5
MTBE 73 ug/m3

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.257	1.02E-07	0.703	7.15E-08	4,000	7.30E+01	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,113	5.99E-04	2.46E-02	1.80E-04	7.99E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	7.30E+01	1.25	8.33E+01	7.99E-03	5.00E+03	1.14E+09	1.01E-03	7.38E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.6E-07	3.0E+00

END

RESULTS SHEET

SG5
MTBE 73 ug/m3

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.7E-09	1.7E-05

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	3.10E+02			Benzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	S		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.257	1.02E-07	0.703	7.15E-08	4,000	3.10E+02	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	3.10E+02	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	9.22E-04	2.86E-01

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

SG5
Benzene 310 ug/m3

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.0E-06	6.5E-03

MESSAGE SUMMARY BELOW:

END

SG5
Toluene 27 ug/m3

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
108883	2.70E+01			Toluene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	S		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

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Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.257	1.02E-07	0.703	7.15E-08	4,000	2.70E+01	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm-m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	9,001	6.29E-03	2.58E-01	1.80E-04	6.79E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	2.70E+01	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	2.47E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	3.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	5.6E-05

MESSAGE SUMMARY BELOW:

END

SG5
Ethylbenzene 6.6 ug/m3

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
100414	6.60E+00			Ethylbenzene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	S		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

SG5
Ethylbenzene 6.6 ug/m3

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.257	1.02E-07	0.703	7.15E-08	4,000	6.60E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm-m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	9,994	7.43E-03	3.05E-01	1.80E-04	5.85E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	6.60E+00	1.25	8.33E+01	5.85E-03	5.00E+03	2.36E+12	8.32E-04	5.49E-03

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.5E-06	1.0E+00

END

RESULTS SHEET

SG5
Ethylbenzene 6.6 ug/m3

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.4E-09	3.8E-06

MESSAGE SUMMARY BELOW:

END

SG5
m,p-Xylene 28 ug/m3

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
106423	2.80E+01			p-Xylene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	S		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

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Appendix H

SG5
m,p-Xylene 28 ug/m3

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.257	1.02E-07	0.703	7.15E-08	4,000	2.80E+01	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	10,083	7.22E-03	2.96E-01	1.80E-04	6.00E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, exp(Pe^f) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	2.80E+01	1.25	8.33E+01	6.00E-03	5.00E+03	1.17E+12	8.45E-04	2.37E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

RESULTS SHEET

SG5
m,p-Xylene 28 ug/m3

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.6E-04

MESSAGE SUMMARY BELOW:

END

SG5
o-Xylene 5.8 ug/m3

SG-SCREEN
PA Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
95476	5.80E+00			o-Xylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	S		

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.5	0.43	0.15	5

MORE ↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	25	25	250

END

SG5
o-Xylene 5.8 ug/m3

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.257	1.02E-07	0.703	7.15E-08	4,000	5.80E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm-m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	10,245	4.88E-03	2.00E-01	1.80E-04	6.79E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	5.80E+00	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	5.31E-03

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

RESULTS SHEET

SG5
o-Xylene 5.8 ug/m3

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.6E-05

MESSAGE SUMMARY BELOW:

END

APPENDIX I

Soil Gas Model Sensitivity Analysis Risk and Hazard Calculation Work Sheets

DATA ENTRY SHEET

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	6.80E+00			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	45.72	24	SI		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
30.72	0.280	0.263	6.91E-09	0.833	5.75E-09	4,000	6.80E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	30.72

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	6.80E+00	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	1.79E-03	1.22E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.5E-07	3.9E-04

MESSAGE SUMMARY BELOW:

END

Benzene 6.8 ug/m3
Scenario 2

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	6.80E+00			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	45.72	15	SI		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

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Appendix I

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
30.72	0.280	0.263	6.80E-09	0.833	5.67E-09	4,000	6.80E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	8,071	3.45E-03	1.46E-01	1.77E-04	6.86E-03	30.72

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	6.80E+00	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	1.79E-03	1.22E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.5E-07	3.9E-04

MESSAGE SUMMARY BELOW:

END

Benzene 6.8 ug/m3
Scenario 3

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	6.80E+00			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	45.72	24	CL		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
CL	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

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Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^v (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
30.72	0.280	0.202	1.29E-09	0.891	1.15E-09	4,000	6.80E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_v (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	30.72

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	6.80E+00	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	1.79E-03	1.22E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

Benzene 6.8 ug/m3
Scenario 3

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.5E-07	3.9E-04

MESSAGE SUMMARY BELOW:

END

Benzene 6.8 ug/m3
Scenario 4

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	6.80E+00			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	45.72	24	S		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
S	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

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Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
30.72	0.280	0.257	1.02E-07	0.703	7.15E-08	4,000	6.80E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	30.72

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	6.80E+00	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	1.79E-03	1.22E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

Benzene 6.8 ug/m3
Scenario 4

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.5E-07	3.9E-04

MESSAGE SUMMARY BELOW:

END

Benzene 6.8 ug/m3
Scenario 5

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	6.80E+00			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152.4	24	SI		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

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Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137.4	0.280	0.263	6.91E-09	0.833	5.75E-09	4,000	6.80E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	137.4

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	6.80E+00	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	9.22E-04	6.27E-03

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

Benzene 6.8 ug/m3
Scenario 5

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
7.5E-08	2.0E-04

MESSAGE SUMMARY BELOW:

END

Benzene 6.8 ug/m3
Scenario 6

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	6.80E+00			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	304.8	24	SI		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
289.8	0.280	0.263	6.91E-09	0.833	5.75E-09	4,000	6.80E+00	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	289.8

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	6.80E+00	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	5.44E-04	3.70E-03

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

Benzene 6.8 ug/m3
Scenario 6

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.4E-08	1.2E-04

MESSAGE SUMMARY BELOW:

END

Benzene 100 ug/m3
Scenario 7

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+02			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	45.72	24	SI		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

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Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
30.72	0.280	0.263	6.91E-09	0.833	5.75E-09	4,000	1.00E+02	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m^3/mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	30.72

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.00E+02	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	1.79E-03	1.79E-01

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.1E-06	5.7E-03

MESSAGE SUMMARY BELOW:

END

Benzene 1,000 ug/m3
Scenario 8

SG-SCREEN
A Version 2.0; 04/03

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
71432	1.00E+03			Benzene

MORE

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (^oC)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	45.72	24	SI		

MORE

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SI	1.5	0.43	0.15	5

MORE

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
70	30	30	350

END

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Appendix I

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
30.72	0.280	0.263	6.91E-09	0.833	5.75E-09	4,000	1.00E+03	3.39E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	30.72

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.00E+03	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	1.79E-03	1.79E+00

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.1E-05	5.7E-02

MESSAGE SUMMARY BELOW:

END