

June 16, 2003  
Report 0274.R1  
RGA Job # WEST8698

RO319  
Alameda County  
AUG 11 2003  
Environmental Health



Mr. Al Avendano  
3228 Hyde Street  
Oakland, CA 94601

**SUBJECT: SUBSURFACE INVESTIGATION REPORT (B1 - B6) AND  
SENSITIVE RECEPTOR SURVEY**  
Fuel Leak Case RO0000319  
Former Western Stucco Products Site  
5115 East Eighth Street  
Oakland, California 94601

Dear Mr. Avendano:

RGA Environmental, Inc., (RGA) is pleased to present this report documenting the collection of six groundwater grab samples and three soil samples from boreholes B1 through B6 drilled onsite on March 25, 2003 and the collection of groundwater samples from four previously existing onsite groundwater monitoring wells on March 26, 2003. In addition, a sensitive receptor survey and a review of potentially impacted surface water locations in the vicinity of the site were performed.

This work was performed in accordance with RGA's Subsurface Investigation Work Plan (Work Plan 0274.W1) dated July 16, 2002, RGA's Work Plan Addendum dated July 19, 2002, and a letter from the Alameda County Department of Environmental Health (ACDEH) dated July 19, 2002 approving the Work Plan and Work Plan Addendum. A Site Location Map (Figure 1) and Site Plan showing the borehole locations (Figure 2) are attached with this report.

All work was performed under the direct supervision of an appropriately registered professional and in accordance with guidelines set forth in the document "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991.

#### **BACKGROUND**

The site consists of a flat, surfaced parking lot and building. Based on a conversation with Mr. Al Avendano of Western Stucco Products, the features identified on the Site Plan as Stucco Products Bins are empty. The nearest surface water body is San Leandro Bay, which is located approximately 2,700 feet southwest of the site.

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RGA's understanding of the site history is based upon review of a Quarterly Monitoring and Summary Report dated March, 2002 prepared by EBA Engineering. Review of the report indicates that one 8,000-gallon diesel steel UST and one 8,000-gallon gasoline steel UST were removed from the site on March 26, 1991. Four holes with a maximum diameter of 1/2-inch were observed in the gasoline UST. Each UST was removed from a separate excavation.

Groundwater was encountered in the UST pits at a depth of nine feet below the ground surface. Approximately 4,000 gallons of groundwater was pumped from the UST pits prior to groundwater sampling in the UST pits. Petroleum hydrocarbons were detected in soil and water samples collected from each of the UST pits. Remedial actions consisted of excavation and disposal of approximately 130 cubic yards of soil in the vicinity of the former USTs.

In June, 1997 the ACDEH requested that a work plan be submitted for additional site characterization. A July 24, 1997 work plan prepared by EBA proposed drilling six soil borings to a depth of 20 feet for the collection of groundwater samples. The work plan was approved in a letter from the ACDEH dated August 4, 1997.

On September 26, 1997, a total of seven soil borings designated as EBA-1 through EBA-7 were drilled in the vicinity of the UST pits. Groundwater grab samples were obtained from three of the borings (EBA-1, EBA-3, and EBA-6), and soil samples were obtained from all of the boreholes with the exception of EBA-3. The soil samples were collected at depths ranging from 3.0 to 7.5 below the ground surface. Droplets of separate phase hydrocarbons were noted on the groundwater sample collected from borehole EBA-3 (located immediately downgradient of the former diesel UST pit).

All of the soil and groundwater samples were analyzed for TPH-D, TPH-G, BTEX and MTBE, with the exception of the water sample from borehole EBA-6, where TPH-D was not analyzed. MTBE was not detected in any of the samples. Petroleum hydrocarbons were noticeably absent from the soil samples with the exception of the sample from EBA-7 (collected at a depth of 3.0 feet), where TPH-G was detected at 2,300 ppm. TPH-G and BTEX were detected in all three of the water samples, and TPH-D was detected in EBA-1 and EBA-3 (TPH-D analysis was not performed for the water sample from EBA-6). The report for the investigation concluded that soil and groundwater had been impacted by petroleum hydrocarbons, and recommended that three groundwater monitoring wells be installed and sampled on a quarterly basis. The soil boring and well locations are shown in Figure 2 of this report.

In February, 2001 EBA oversaw the installation of three monitoring wells (MW1- through MW-3) and one observation well (OW-1) at the site. The results of four monitoring and sampling events between February 6 and November 26, 2001 have resulted in highly variable groundwater flow directions and relatively consistent petroleum hydrocarbon concentrations in water. The variable groundwater flow directions have been attributed to water level fluctuations in well MW-1 not being consistent with the other wells at the site. However, the regional groundwater flow direction is assumed to be

southwesterly towards San Leandro Bay. The measured depth to water in the wells after development has ranged from 2.37 to 7.81 feet (with one exception), with the majority of measurements showing the measured depth to water to be less than 6.0 feet. Historical water quality results from the four monitoring and sampling events are summarized in Table 5 of this report.

In accordance with an October 8, 2001 ACDEH request, soil and groundwater sample results were evaluated using San Francisco Bay Regional Water Quality Control Board (RWQCB) August, 2000 Table B risk based screening levels (RBSLs) and City of Oakland risk based corrective action (RBCA) guidelines for an industrial/commercial site with clayey silt soil. Inhalation of outdoor air was selected as the route of exposure for soil contamination. Ingestion was selected as the route of exposure for groundwater contamination, although the report stated that the possibility of this type of exposure at the site was extremely low.

The report states that the RBSL for TPH-G in soil was exceeded in only one sample, and the RBSL for TPH-D for soil was exceeded in only one sample. Similarly, the RBSL for TPH-G in water from the wells was exceeded in well MW-2, OW-1, and on two occasions in well MW-1. The RBSL for TPH-D in water from the wells was exceeded in only OW-1.

The RBCA guidelines do not address TPH-G or TPH-D. They only address BTEX concentrations. No BTEX concentrations in soil exceeded the RBCA guidelines. The only BTEX constituent that exceeded the RBCA guidelines in groundwater samples from the wells was 1.1 ug/L of benzene in well MW-2 during the initial sampling event in 2001 (the RBCA guideline for benzene in ingested groundwater is 1.0 ug/L). As stated before, groundwater ingestion is not a likely route of exposure at the site. BTEX compounds have not been detected in groundwater samples from the wells during any of the other monitoring or sampling events. However, review of the three groundwater grab sample results from boreholes EBA-1 and EBA-3 (located immediately downgradient of the former UST pits) and EBA-6 (also located downgradient of the former UST pits) shows that benzene concentrations were exceeded in all of the samples, toluene concentrations were exceeded in one of the samples, and ethylbenzene and xylene concentrations were exceeded in two of the samples.

In a letter dated May 1, 2002 from the ACDEH, characterization of the extent of petroleum hydrocarbons in soil and groundwater was requested. In addition, a sensitive receptor survey and a review of potential impacts to surface water in the vicinity of the site were requested.

This work was performed in accordance with RGA's Subsurface Investigation Work Plan (Work Plan 0274.W1) dated July 16, 2002 and Work Plan Addendum dated July 19, 2002, a letter from the Alameda County Department of Environmental Health dated July 19, 2002 approving the Work Plan and Work Plan Addendum, and RGA's proposal 031703.P1 dated March 17, 2003.

## FIELD ACTIVITIES

On March 25, 2003, RGA personnel oversaw the drilling of 6 boreholes at the subject site, designated as borings B1 through B6. The borings were drilled to depths of 12 or 16 feet below grade. The drilling was done by Vironex, Inc. of Hayward, California using Geoprobe push technology. Following sample collection, the boreholes were backfilled with neat cement grout by Vironex, Inc. Based on limited site access resulting from the presence heavy equipment, it was necessary to re-locate boring location B3 approximately 10 feet to the north of the location shown in the work plan. The four previously existing onsite groundwater monitoring wells (designated as MW1 through MW3 and OW1) were purged and sampled on March 26, 2003. The locations of the boreholes and groundwater monitoring wells are shown on the attached Site Plan, Figure 2.

Prior to performing field work, permits were obtained from the Alameda County Environmental Health Services (ACEHS) and Underground Safety Alert was notified for buried utility location, and a site health and safety plan was prepared.

### Soil Boring and Groundwater Grab Sample Collection

The boreholes were drilled using truck-mounted 2.5-inch outside diameter Geoprobe push technology. The boreholes were continuously cored in four-foot intervals to the total depths explored of 16.0 feet in boreholes B1 and B6 and 12.0 feet in boreholes B2 through B5. Groundwater was encountered during drilling in boreholes B1, B3, B4 and B5, and was measured shortly after completion of drilling at depths of 4.0 to 4.3 feet. In boreholes B2 and B6, groundwater was not encountered during drilling, and was measured in the boreholes approximately two hours after completion of drilling at depths of 10.0 and 10.5 feet, respectively.

Continuous cores were collected from the boreholes at four-foot intervals using a Geoprobe core sampler lined with cellulose acetate tubes. The soil cores were classified lithologically in the field in accordance with standard geologic field techniques and the Unified Soil Classification System. Subsurface conditions observed in the soil cores and boreholes were recorded on boring logs. Copies of the boring logs for all of the boreholes are attached with this report.

In accordance with the work plan, soil samples were retained for laboratory analysis from boreholes B1, B2 and B3 at a depth of 3.0 feet. The samples retained for laboratory analysis as follows. Soil in the 6-inch interval between the 3.0 and 3.5-foot depth was retained in the cellulose acetate tube by cutting the desired interval with a utility knife. The ends of the tube were sequentially covered with aluminum foil and plastic endcaps. The sample tube was then labeled and stored in a cooler with ice pending delivery to McCampbell Analytical, Inc. (McCampbell) in Pacheco, California. McCampbell is a State-accredited hazardous waste testing laboratory. Chain of custody procedures were observed for all sample handling.

One groundwater grab sample was collected from each borehole using a stainless steel bailer. No sheen or separate phase layers of petroleum hydrocarbons were observed and no odors were detected in any of the water from any of the boreholes. All water samples were transferred to 1-liter amber bottles and 40-milliliter glass Volatile Organic Analysis (VOA) vials containing hydrochloric acid preservative, which were sealed with Teflon-lined screw caps. The VOAs were overturned and tapped to ensure that air bubbles were not present. The samples were labeled and then placed into a cooler with ice pending delivery to McCampbell. Chain of custody procedures were followed for all sample handling.

The drilling and groundwater grab sample collection equipment were cleaned with an Alconox solution wash followed by a clean water rinse prior to each use. Soil from the boreholes was placed into a DOT-approved 55-gallon drum and stored onsite pending appropriate disposal. Following groundwater sample collection, the boreholes were filled with neat cement grout.

#### Groundwater Monitoring Well Sample Collection

On March 26, 2003 groundwater monitoring wells MW1, MW2, MW3, and OW1 were monitored and sampled by RGA personnel. The groundwater monitoring wells were monitored for depth to water and the presence of free product or sheen. Depth to water was measured to the nearest 0.01 foot using an electric water level indicator. Following removal of the well caps, the water level in the wells was allowed to equilibrate for approximately one hour. Periodic water level measurements were made during the equilibration period to document that water levels were no longer changing in the wells prior to final measurement. The measured depth to water in wells MW1, MW2, MW3, and OW1 was 7.01, 7.11, 6.69, and 7.06 feet, respectively. The presence of free product or sheen was evaluated using a transparent bailer. No free product or sheen was observed in any of the wells. Final depth to water level measurements and calculated groundwater surface elevations are presented in Table 1.

After the wells were monitored, wells MW1, MW2, MW3 and OW1 were sampled. Prior to sampling, the groundwater monitoring wells were purged of a minimum of three casing volumes of water or until they were purged dry. During purging operations, the field parameters of electrical conductivity, temperature and pH were monitored. Once the field parameters were observed to stabilize, and a minimum of three casing volumes had been purged or the wells were purged dry, water samples were collected using a clean Teflon bailer. The water samples were transferred to 1-liter amber bottles and 40-milliliter glass VOA vials containing hydrochloric acid preservative, which were sealed with Teflon-lined screw caps. The VOA vials were overturned and tapped to assure that no air bubbles were present.

The sample containers were then transferred to a cooler with ice, pending transport to McCampbell. Chain of custody documentation accompanied the samples to the laboratory. Records of the field parameters measured during well purging are attached with this report.

## GEOLOGY AND 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 Bay Mud (Qhbm). Bay Mud is described as typically consisting of unconsolidated water-saturated dark plastic carbonaceous clay and silty clay. San Leandro Bay (a portion of San Francisco Bay) is located approximately 2,400 feet to the southwest of the site.

The subsurface materials encountered in the boreholes consisted of sand, gravel, and sandy or gravelly clay to a depth of approximately 2.5 to 5.0 feet below the ground surface in boreholes B1 through B4. These materials were underlain by Bay Mud to the total depth explored of 12.0 or 16.0 feet. In boreholes B5 and B6, fill material consisting of clayey silt, silty clay, or bricks and gravel was encountered to a depth of approximately 3.0 or 3.3 feet, beneath which Bay Mud was encountered to the total depth explored of 12.0 or 16.0 feet. In boreholes B1 and B3, coarse grained materials (sand and gravel not containing clay or silt) were encountered beneath the water table between the depths of 9.5 and 11.0 feet, and between 9.0 and 12.0 feet, respectively.

Slight petroleum hydrocarbon odors were detected at various depths in boreholes B1, B2, B3 and B6. No petroleum hydrocarbon odors were detected in boreholes B4 and B5. In borehole B3, a black spot that exhibited sheen was encountered at a depth of 11.6 feet, and in borehole B6 a strong petroleum hydrocarbon odors was detected where the soil was saturated, between the depths of 8.5 and 13.5 feet.

Groundwater was encountered during drilling in boreholes B1, B3, B4 and B5, and was measured shortly after completion of drilling at depths of 4.0 to 4.3 feet. In boreholes B2 and B6, groundwater was not encountered during drilling, and was measured in the boreholes approximately two hours after completion of drilling at depths of 10.0 and 10.5 feet, respectively.

On March 26, 2003 the measured depth to water in wells MW1, MW2, MW3, and OW1 was 7.01, 7.11, 6.69, and 7.06 feet, respectively. Based on the measured depth to groundwater in wells MW1, MW2 and MW3, the apparent groundwater flow direction at the site on March 26, 2003 was calculated to be to the southeast with a gradient of 0.011. Groundwater monitoring data collected on March 26, 2003 are presented in Table 1. The groundwater flow direction at the site on March 26, 2003 is shown on Figure 2.

## LABORATORY RESULTS

All of the groundwater grab samples from boreholes B1 through B6, the three soil samples from boreholes B1 through B3, and all of the groundwater samples from the groundwater monitoring

wells (MW1, MW2, MW3, and OW1) were analyzed for Total Petroleum Hydrocarbons as Diesel (TPH-D) and Total Petroleum Hydrocarbons as Motor Oil (TPH-MO) using EPA Method 3510 or 3550 in conjunction with modified EPA Method 8015; Total Petroleum Hydrocarbons as Gasoline (TPH-G) using EPA Method 5030 in conjunction with modified EPA Method 8015; methyl tert-butyl ether (MTBE) and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021; and for confirmation analysis of positive MTBE results using EPA Method 8260.

The sample results for the groundwater grab samples collected from the boreholes showed that TPH-D was detected in all of the groundwater samples at concentrations of 0.19 and 0.076 ppm in B4 and B5, 9.5 and 4.5 ppm in B1 and B2, and 83 and 43 ppm in B3 and B6. Review of the laboratory analytical reports shows that the TPH-D results are identified as both diesel and kerosene-range compounds in B1, are identified as Stoddard solvent in B2 and B3, and are identified as Stoddard solvent and oil-range compounds in B4.

TPH-MO was not detected in boreholes B1, B3 and B5. In the remaining boreholes, TPH-MO was detected in B2 and B4 at concentrations of 0.28 and 0.53 ppm, and in B6 at a concentration of 2.8 ppm. TPH-G was detected in B1, B2, B3 and B6 at concentrations ranging from 1.2 to 8.5 ppm. Review of the laboratory analytical reports shows that the TPH-G results are identified as aged gasoline or diesel range compounds in B1, B2 and B6. In B3, the sample results are identified as heavier gasoline-range compounds. BTEX compounds were not detected in any of the samples with the exception of total xylenes, which were detected in B2, B3 and B6 at concentrations ranging from 0.0021 to 0.0054 ppm, and 0.00092 ppm ethylbenzene in B6. MTBE was not detected in any of the samples except for B6 at a concentration of 0.033 ppm. Confirmation analysis with EPA Method 8260 detected MTBE at a concentration of 0.028 ppm for B6. The groundwater grab sample results are summarized in Table 2.

The results for the soil samples collected in boreholes B1, B2, and B3 at a depth of 3.0 feet showed that TPH-D was detected in all three soil samples at concentrations ranging from 1.1 to 16 ppm. Review of the laboratory reports shows that the TPH-D results were identified as Stoddard solvent in B1, oil-range compounds in B2, and gasoline-range compounds in B3. TPH-MO was not detected in B1 and B3, and was detected in B2 at a concentration of 550. TPH-G was not detected in B2, and was detected in B1 and B3 at concentrations of 24 and 1.7 ppm, respectively. Review of the laboratory reports show that the TPH-G results are identified as gasoline-range compounds in B1 and have no recognizable pattern in B3. MTBE and BTEX compounds were not detected in any of the soil samples. The borehole soil sample results are summarized in Table 3.

The results for the groundwater samples collected from the four groundwater monitoring wells showed that TPH-D was detected in all of the wells at concentrations ranging from 0.13 to 1.6 ppm. Review of the laboratory analytical reports shows that the TPH-D results were identified as

gasoline-range compounds in MW2, and were identified as kerosene-range compounds in MW3 and OW1. TPH-MO was not detected in any of the samples, and TPH-G was not detected in MW1. TPH-G was detected in MW2, MW3 and OW1 at concentrations ranging from 0.21 to 1.1 ppm. Review of the laboratory analytical reports shows that the TPH-G results for MW3 and OW1 are identified as aged gasoline or diesel-range compounds, and that the results in OW1 have no recognizable pattern. MTBE was not detected in any of the samples. BTEX was not detected in the samples with the exception of benzene, ethylbenzene and total xylenes in MW2 at concentrations ranging from 0.00074 to 0.0019 ppm, and 0.0026 ppm total xylenes in OW1. The well sample results are summarized in Table 4. Copies of the laboratory analytical reports and chain of custody documentation are attached with this report.

Review of the laboratory analytical reports shows that the TPH-D results for the groundwater grab samples in boreholes B2 and B3 consist of Stoddard solvent, and the TPH-D result in borehole B4 consists of both Stoddard solvent and oil-range compounds. Similarly, the TPH-G results in B1, B2 and B6 consist of aged gasoline or diesel range compounds.

#### SENSITIVE RECEPTOR SURVEY

A request was submitted to the California Department of Water Resources (DWR) for identification of domestic and municipal wells within a 2,000-foot radius of the subject site. The survey included Township 02 South, Range 03 West, Sections 8, 9, 16 and 17. A total of six wells were identified on April 24, 2003 by the DWR, as follows.

Document ID Number	Well Location
01-1319	2S/3W-16D
01-1352	2S/3W-17
01-1353	2S/3W-17
01-1354	2S/3W-17
01-1355	2S/3W-17
Unknown	2S/3W (the map on the Water Well Drillers Report shows the site to be on top of a hill near Crow Canyon Road in San Leandro)

One of the well locations included the Township, Range, section and tract number. Four of the well locations identified the Township, Range and section numbers. One well location only identified the Township and Range numbers.

Review of maps showing the Township, Range, section, and tract numbers for the wells identified during the well survey shows that five wells could be located within a 2,000 foot radius of the subject site. One of these wells is located between 1,800 and 3,300 feet to the west of the site. The other four wells are between 0 and 5,700 feet from the site, in an unknown direction from the



site. Based on the available well location information, it was not possible to accurately identify the precise well locations.

#### REVIEW OF POTENTIALLY IMPACTED SURFACE WATER BODIES

Review of U.S. Geological Survey 7.5 Minute Oakland East, Calif. Quadrangle (Photorevised in 1980) identified the following surface water bodies in the vicinity of the subject site as follows.

<u>Water Body Name</u>	<u>Distance in Feet</u>	<u>Direction from Site</u>
San Leandro Bay Canal	2,000	Southwest
San Leandro Bay	2,700	Southwest
Brooklyn Basin Tidal Canal	3,900	West
Lion Creek	4,500	East

#### DISCUSSION AND RECOMMENDATIONS

A total of six soil borings designated as B1 through B6 were drilled at the subject site on March 25, 2005 to evaluate the presence or extent of petroleum hydrocarbons in groundwater in the vicinity of the former UST pits. One groundwater grab sample was collected from each of the six boreholes, and one soil sample was collected from each of boreholes B1, B2, and B3. The four onsite groundwater monitoring wells designated as MW1 through MW3 and OW1 were sampled on March 26, 2003. In addition, a sensitive receptor survey and a review of potentially impacted surface water bodies was performed.

Groundwater was measured in four of the six boreholes at a depth of approximately 4.0 to 4.3 feet below the ground surface. Groundwater was not initially encountered in two of the boreholes during drilling, and was subsequently measured at a depth of approximately 10 feet. The measured depth to groundwater in the groundwater monitoring wells ranged from 6.69 to 7.11 feet. The subsurface materials encountered in the boreholes consisted of fill and sandy and gravely layers underlain by Bay Mud. Based on the measured depth to groundwater in the groundwater monitoring wells, the groundwater flow direction at the site on March 26, 2003 was calculated to be to the southeast. This groundwater flow direction is not consistent with a westerly flow direction towards San Francisco Bay.

All of the borehole groundwater grab samples, soil samples, and well groundwater samples were analyzed for TPH-D, TPH-MO, and TPH-G, MTBE, and BTEX. The analytical results showed that TPH-D was detected in all of the borehole groundwater grab samples, in all of the borehole soil samples, and in all of the groundwater monitoring well water samples. TPH-G was detected in all borehole groundwater grab samples except borehole B4 and B5, in all soil samples except borehole B2, and in all wells except MW1. TPH-MO was detected in the groundwater grab sample from B2, B3, and B6, as well as in the soil sample from borehole B2.

MTBE was not detected in any of the borehole groundwater grab samples or groundwater monitoring well samples except borehole B6. MTBE confirmation analysis by EPA Method 8260 showed a concentration of 0.028 ppm. BTEX compounds were not detected in the boreholes except for ethylbenzene in borehole B6, and xylenes in boreholes B2, B3, and B6. BTEX was not detected in the groundwater monitoring wells except for benzene, ethylbenzene, and xylenes in MW2, and xylenes in MW1.

Review of TPH-D and TPH-G concentrations in groundwater from historical borings EBA-1 through EBA-7 and from the current investigation (borings B1 through B6, and wells MW1 through MW3 and OW1) shows that TPH-D and TPH-G concentrations exceeding 1 ppm are located in the vicinity of the former UST pits and in the western portion of the site. An area of TPH-D and TPH-G less than 1 ppm separates the UST pit area on the east side of the site from the western portion of the site where TPH-D and TPH-G concentrations exceeding 1 ppm are encountered. Furthermore, TPH-D and TPH-G concentrations exceeding 10 ppm are present in only a few limited locations (TPH-D was detected at EBA-3, B3 and B6 at concentrations of 250, 83 and 43 ppm, respectively, and TPH-G was detected at EBA-3 and EBA-6 at concentrations of 340 and 590 ppm, respectively).

Review of the laboratory analytical reports shows that the TPH-D results for the groundwater grab samples in boreholes B2 and B3 consist of Stoddard solvent, and the TPH-D result in borehole B4 consists of both Stoddard solvent and oil-range compounds. The TPH-D result in borehole B1 and wells MW3 and OW1 consists of kerosene-range compounds. Similarly, the TPH-G results in boreholes B1, B2 and B6 and wells MW3 and OW1 consist of aged gasoline or diesel-range compounds. Laboratory reports were not available for review of the chromatogram interpretation for samples EBA-1 through EBA-7.

Based on laboratory interpretation of the chromatograms for the water results, the petroleum hydrocarbons detected in groundwater on the western portion of the site appear to be predominantly Stoddard solvent or kerosene, and do not appear to be related to the UST pits.

Review of TPH-D and TPH-G concentrations in groundwater from historical borings EBA-1 through EBA-7 and from the current investigation (borings B1 through B3) shows that TPH-D and TPH-G were not detected in soil except in the western portion of the site (B1, B2, B3, EBA6 and EBA-7), with the exception of 10 ppm TPH-G at EBA-4. TPH-G was detected at EBA-7 at 2,300 ppm. In addition, TPH-MO was detected at B2 at 550 ppm.

Review of BTEX concentrations in groundwater from historical borings EBA-1 through EBA-7 and from the current investigation (borings B1 through B6, and wells MW1 through MW3 and OW1) shows that relatively low concentrations of BTEX are present through the central portion

of the site. Similarly, review of BTEX concentrations in soil shows that relatively low concentrations of BTEX compounds were detected at only three isolated areas (EBA-4, EBA-6, EBA-7). Review of the laboratory reports identifies several of the TPH sample results as consisting of aged gasoline or diesel. The relatively low BTEX concentrations suggest a highly degraded and aged release where gasoline was present.

The isolated areas of elevated TPH concentrations in both soil (B2, EBA-7) and water (B3, EBA-3, EBA-6) suggests localized areas of petroleum hydrocarbon impact, possibly resulting from isolated incidents associated with prior site use, or from uncontrolled degraded fill that may have been used to level the site.

The results of the sensitive receptor survey show that as many as 5 wells could be located within 2,000 feet of the site. However, based on the available information, it is not possible to accurately locate these wells.

The findings of the review of potentially impacted surface water bodies in the vicinity of the site showed that the closest surface water body is approximately 2,000 feet from the site. Based on the concentrations of petroleum hydrocarbons in soil and water at the site and the distances to the nearby surface water bodies, it is our opinion that the likelihood of impact to the surface water bodies in the vicinity of the site is exceedingly remote.

RGA recommends that no further action be performed and that case closure be requested.

#### DISTRIBUTION

Copies of this report should be sent to Mr. Amir Gholami at the ACDEH. Copies of the report should be accompanied by a transmittal letter signed by Al Avendano.

#### LIMITATIONS

This report was prepared solely for the use of Al Avendano. The content and conclusions provided by RGA 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 judgement 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.

June 16, 2003  
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RGA Job # WEST8698

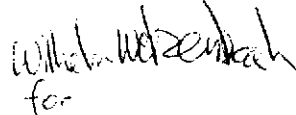
This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the 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. RGA is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgement 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.

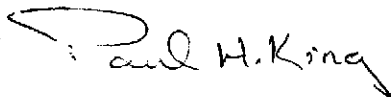
Should you have any questions or comments, please do not hesitate to contact us at (510) 547-7771.

Sincerely,

RGA Environmental, Inc.



for  
Karin Schroeter  
Project Manager



Paul H. King  
California Registered Geologist # 5901  
Expires: 12/31/03

Attachments: Tables 1, 2, 3, 4, & 5  
Site Location Map (Figure 1)  
Site Plan (Figure 2)  
Soil Boring Logs  
Field Parameter Forms  
Laboratory Analytical Reports  
Chain of Custody Documentation

PHK/wrw  
0274.R1

June 16, 2003  
Report 0274.R1  
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TABLE 1  
WELL MONITORING DATA

Well No.	Date Monitored	Top of Casing Elev. * (ft.)	Depth to Water (ft.)	Water Table Elev. (ft.)
MW1	03/26/03	7.01	3.32	3.69
MW2	03/26/03	7.11	3.89	3.22
MW3	03/26/03	6.69	3.77	2.92
OW1	03/26/03	7.06	4.05	3.01

Notes:

Elev. = Elevation

Ft. = Feet

\* = Top of casing elevations obtained from EBA Engineering March 18, 2002 Quarterly Monitoring and Summary Report.

TABLE 2  
SUMMARY OF LABORATORY ANALYTICAL RESULTS  
BOREHOLE GROUNDWATER GRAB SAMPLES  
(Collected on March 25, 2003)

Well No.	TPH-D	TPH-MO	TPH-G	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
B1	9.5,a,f	ND<0.25	2.8,c	ND<0.005	ND	ND	ND	ND
B2	4.5,g	0.28	1.2,c	ND<0.005	ND	ND	ND	0.0054
B3	83,g,h	ND<25	8.1,b,h,j	ND<0.025	ND<0.0025	0.0040	ND<0.0025	0.0052
B4	0.19,e,g	0.53	ND<0.05	ND<0.005	ND	ND	ND	ND
B5	0.076,a	ND<0.25	ND<0.05	ND<0.005	ND	ND	ND	ND
B6	43,a,h	2.8	2.5,c,h	0.033*	ND	ND	0.00092	0.0021

NOTES:

TPH-D = Total Petroleum Hydrocarbons as Diesel.

TPH-MO = Total Petroleum Hydrocarbons as Motor Oil.

TPH-G = Total Petroleum Hydrocarbons as Gasoline.

MTBE = Methyl t-butyl ether.

\* = MTBE confirmation analysis by EPA Method 8260 detected 0.028 ug/mL (ppm).

ND = Not Detected. (Detection limit is 0.0005 ppm, unless otherwise noted.)

a = Laboratory Analytical Report Note: Unmodified diesel range compounds are significant.

b = Laboratory Analytical Report Note: Heavier gasoline range compounds are significant.

c = Laboratory Analytical Report Note: Aged gasoline or diesel range compounds are significant.

e = Laboratory Analytical Report Note: Oil range compounds are significant.

f = Laboratory Analytical Report Note: Kerosene range compounds are significant.

g = Laboratory Analytical Report Note: Stoddard solvent range compounds are significant.

h = Laboratory Analytical Report Note: Lighter than water sheen on sample.

j = Laboratory Analytical Report Note: No recognizable pattern.

Results reported in ppm, unless otherwise noted.

June 16, 2003  
Report 0274.R1  
RGA Job # WEST8698

TABLE 3  
SUMMARY OF LABORATORY ANALYTICAL RESULTS  
BOREHOLE SOIL SAMPLES  
Collected on March 25, 2003)

Bore -hole No.	TPH-D	TPH- MO	TPH-G	MTBE	Benzene	Toluene	Ethyl- benzene.	Total Xylenes
B1-3	6.1,g	ND<5.0	24,c	ND<0.01	ND<0.01	ND<0.01	ND<0.01	ND<0.01
B2-3	16,e	550	ND<1.0	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05
B3-3	1.1,d	ND<5.0	1.7,j	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05

NOTES:

TPH-D = Total Petroleum Hydrocarbons as Diesel.

TPH-MO = Total Petroleum Hydrocarbons as Motor Oil.

TPH-G = Total Petroleum Hydrocarbons as Gasoline.

MTBE = Methy t-butyl ether.

ND = Not Detected. (Detection limit is 0.0005 ppm, unless otherwise noted.)

c = Laboratory Analytical Report Note: Aged gasoline or diesel range compounds are significant.

d = Laboratory Analytical Report Note: Gasoline range compounds are significant.

e = Laboratory Analytical Report Note: Oil range compounds are significant.

g = Laboratory Analytical Report Note: Stoddard solvent range compounds are significant.

j = Laboratory Analytical Report Note: No recognizable pattern.

Results reported in ppm, unless otherwise noted.

June 16, 2003  
Report 0274.R1  
RGA Job # WEST8698

TABLE 4  
SUMMARY OF LABORATORY ANALYTICAL RESULTS  
GROUNDWATER MONITORING WELL SAMPLES  
(Collected on March 27, 2003)

Well No.	TPH-D	TPH-MO	TPH-G	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW1	0.13	ND<0.25	ND<0.05	ND<0.005	ND	ND	ND	ND
MW2	0.6,d	ND<0.25	0.86	ND<0.005	0.0018	ND	0.00074	0.0019
MW3	0.67,f	ND<0.25	0.21,c	ND<0.005	ND	ND	ND	ND
OW1	1.6,f	ND<0.25	1.1,c,j	ND<0.005	ND	ND	ND	0.0026

NOTES:

TPH-D = Total Petroleum Hydrocarbons as Diesel.

TPH-MO = Total Petroleum Hydrocarbons as Motor Oil.

TPH-G = Total Petroleum Hydrocarbons as Gasoline.

MTBE = Methyl tert-butyl ether.

ND = Not Detected. (Detection limit is 0.0005 ppm, unless otherwise noted.)

c = Laboratory Analytical Report Note: Aged gasoline or diesel range compounds are significant.

d = Laboratory Analytical Report Note: Gasoline range compounds are significant.

f = Laboratory Analytical Report Note: Kerosene range compounds are significant.

j = Laboratory Analytical Report Note: No recognizable pattern.

Results reported in ppm, unless otherwise noted.



June 16, 2003  
 Report 0274.R1  
 RGA Job # WEST8698

TABLE 5  
 SUMMARY OF LABORATORY ANALYTICAL RESULTS  
 GROUNDWATER MONITORING WELL SAMPLES  
 (Samples Collected by EBA Engineering)

Well No.	Date Sampled	TPH-D	TPH-G	MTBE	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW1	11/26/01	0.14	0.46	ND	ND	ND	ND	ND
	08/28/01	0.13	0.54	ND	ND	ND	ND	ND
	05/03/01	0.49	0.45	ND	ND	ND	ND	ND
	02/6/01	0.26	0.95	ND	ND	ND	ND	ND
MW2	11/26/01	0.47	3.4	ND	ND	ND	ND	ND
	08/28/01	0.097	1.7	ND	ND	ND	ND	ND
	05/03/01	0.53	2.4	ND	ND	ND	ND	ND
	02/6/01	0.53	2.6	0.0011	0.00043	0.00087	0.0017	ND
MW3	11/26/01	0.12	0.33	ND	ND	ND	ND	ND
	08/28/01	0.13	0.49	ND	ND	ND	ND	ND
	05/03/01	0.42	0.26	ND	ND	ND	ND	ND
	02/6/01	0.25	0.34	ND	ND	ND	ND	ND
OW1	11/26/01	1.2	1.9	ND	ND	ND	ND	ND
	08/28/01	8.2	2.4	ND	ND	ND	ND	ND
	05/03/01	NS	NS	NS	NS	NS	NS	NS
	02/6/01	NS	NS	NS	NS	NS	NS	NS

NOTES:

TPH-D = Total Petroleum Hydrocarbons as Diesel.  
 TPH-G = Total Petroleum Hydrocarbons as Gasoline.  
 MTBE = Methyl tert-butyl ether.  
 ND = Not Detected.  
 NS = Not Sampled.  
 Results reported in ppm, unless otherwise noted.

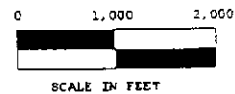


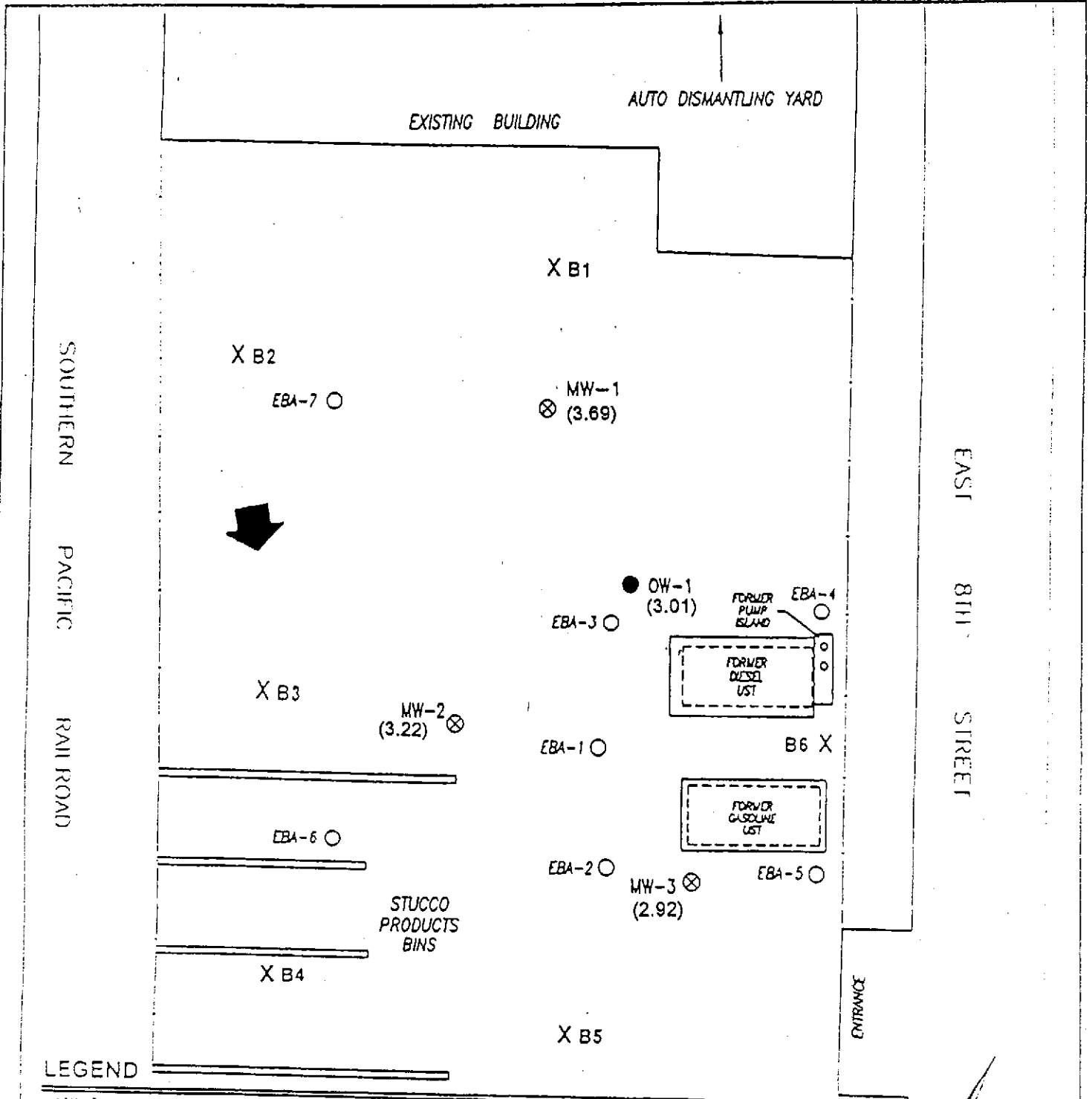
FIGURE 1  
 SITE LOCATION MAP  
 Western Stucco Products  
 5115 East Eighth, Oakland, California



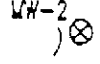

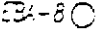

Base Map From:  
 U.S. Geological Survey  
 Oakland East, Calif.  
 7.5 Minute Quadrangle  
 Photorevised 1980


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 4701 Doyle Street  
 Suite 14  
 Emeryville, CA 94608





**LEGEND**

- 
**MW-2** MONITORING WELL  
 (Groundwater Surface Elevation; March 26, 2003)
- 
**OW-1** OBSERVATION/EXTRACTION WELL  
 (Groundwater Surface Elevation; March 26, 2003)
- 
**EBA-8** SOIL BORING
- 
**X** Borehole Location, March 2003

 Groundwater Flow Direction on March 26, 2003

SCALE: 1" = 2'

**FIGURE 2**  
**SITE PLAN**  
 Western Stucco Products  
 5115 East Eighth, Oakland, California

Base Map From:  
 EBA Engineering  
 Santa Rosa, CA  
 March 2002

RGA Environmental, Inc.  
 4701 Doyle Street, Suite 14  
 Emeryville, CA 94608

**SCALE**  
 See Figure

BORING NO.: B1		PROJECT NO.: WEST 8698		PROJECT NAME: Former Western Stucco		
BORING LOCATION: 5115 E. 8TH ST., OAKLAND, CA		ELEVATION AND DATUM: NONE				
DRILLING AGENCY: VIRONEX		DRILLER: TIM		DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: GEOPROBE 5400				3/25/03	3/25/03	
COMPLETION DEPTH: 16.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:	
FIRST WATER DEPTH: 4.1 FEET		NO. OF SAMPLES: 1 WATER, 1 SOIL		WRW		
DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS
	4 in. Concrete Slab		No Well Constructed			Borehole continuously cored with 2.5 inch OD 4 foot long core barrel lined with cellulose acetate sleeves.  Groundwater first encountered at 4.1 ft., 8:35 am, 3/25/03.
	4 in. Baserock (FILL), (Gravel < 0.75 in.)	FILL				
	0.75 to 1.75 ft. Brown and gray gravelly sand (FILL), loose, dry, slight PHC odor.	CL Bay				
5	1.75 to 2.5 ft. Blackish brown gravelly clay (CL), medium stiff, slightly moist, no PHC odor.	Mud				
	2.5 to 5.0 ft. Black clay (Bay Mud), stiff, slightly moist, slight PHC odor.	Bay Mud				
10	5.0 to 9.5 ft. Gray clay (Bay Mud), stiff, slightly moist, no PHC odor.	SW				
	9.5 to 11.0 ft. Gray and brown gravelly sand (SW), medium dense, slightly moist, no PHC odor.	Bay Mud				
15	11.0 to 16.0 ft. Brownish gray clay (Bay Mud), stiff, moist, slight PHC odor, some black staining.					Collected water sample with stainless steel bailer.
20						Borehole terminated at 16.0 feet.  Borehole grouted with neat cement grout 3/25/03.
25						
30						

BORING NO.: B2		PROJECT NO.: WEST 8698		PROJECT NAME: Former Western Stucco	
BORING LOCATION: 5115 E. 8TH ST., OAKLAND, CA			ELEVATION AND DATUM: NONE		
DRILLING AGENCY: VIRONEX		DRILLER: TIM		DATE & TIME STARTED:	DATE & TIME FINISHED:
DRILLING EQUIPMENT: GEOPROBE 5400				3/25/03	3/25/03
COMPLETION DEPTH: 11.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:
FIRST WATER DEPTH: 10.0 FEET		NO. OF SAMPLES: 1 WATER, 1 SOIL		WRW	

DEPTH (FT)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS
	3 in. Concrete.		No Well Constructed			Borehole continuously cored with 2.5 inch OD 4 foot long core barrel lined with cellulose acetate sleeves.  Collected water sample with stainless steel bailer.  Groundwater measured at 10.0 ft., 12:25 pm, 3/25/03. Water entered slowly. Measurement taken approximately 2 hours after drilling completed.
	3 in. to 6 in. Baserock (FILL) (Gravel < 0.75 in. diam.)	FILL				
	6 in. to 2.25 ft. Grayish white sandy gravel (gravel < 0.75 in. diam.) (FILL), loose, dry, No PHC odor.	SM				
5	2.25 to 3.0 ft. Brown sandy gravel (< 0.75 in. diam.) (FILL), med. dense, dry, no PHC odor.	Bay Mud				
10	3.0 to 5.0 ft. Brown sandy silt, some gravel (< 0.5 in.) (SM), soft, moist to saturated, no PHC odor	Bay Mud				
15	5.0 to 8.0 ft. Black clay (Bay Mud), med. stiff, wet, slight PHC odor.					
	8.0 to 11.0 ft. Gray clay with some gravel (< 0.5 in. diam.) (Bay Mud), soft, wet, some red mottling, no PHC odor.					Borehole terminated at 16.0 feet.  Borehole grouted with neat cement grout 3/25/03.
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25						
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BORING NO.: B3		PROJECT NO.: WEST 8698		PROJECT NAME: Former Western Stucco		
BORING LOCATION: 5115 E. 8TH ST., OAKLAND, CA			ELEVATION AND DATUM: NONE			
DRILLING AGENCY: VIRONEX		DRILLER: TIM		DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: GEOPROBE 5400				3/25/03	3/25/03	
COMPLETION DEPTH: 12.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:	
FIRST WATER DEPTH: 4.0 FEET		NO. OF SAMPLES: 1 WATER, 1 SOIL		WRW		
DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS
	3 in. Concrete.		No Well Constructed			Borehole continuously cored with 2.5 inch OD 4 foot long core barrel lined with cellulose acetate sleeves.  Groundwater first encountered at 4.0 ft., 10:45 AM, 3/25/03.  Collected water sample with stainless steel bailer.
	3 in. to 1.0 ft. Black and brown sandy gravelly clay (gravel < 1 in. diam.) (FILL), dry, no PHC odor, some tar balls.	CL				
5	1.0 to 3.0 ft. Dark gray sandy clay (CL), hard, dry, some red and yellow mottling, no PHC odor.	SC				
	3.0 to 5.0 ft. Gray clayey sand (SC), stiff, wet, no PHC odor.	Bay Mud				
10	5.0 to 6.5 ft. Black clay (Bay Mud), med. stiff, moist, slight PHC odor.	Bay Mud				
	6.5 to 9.0 ft. Gray clay (Bay Mud), soft, slightly moist, no PHC odor.	GW				
15	9.0 to 12.0 ft. Gray sandy gravel (GW), med. dense, wet, strong PHC odor, black spot with sheen at 11.6 ft.					Borehole terminated at 12.0 feet.  Borehole grouted with neat cement grout 3/25/03.
20						
25						
30						

BORING NO.: B4		PROJECT NO.: WEST 8698		PROJECT NAME: Former Western Stucco		
BORING LOCATION: 5115 E. 8TH ST., OAKLAND, CA			ELEVATION AND DATUM: NONE			
DRILLING AGENCY: VIRONEX		DRILLER: TIM		DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: GEOPROBE 5400				3/25/03	3/25/03	
COMPLETION DEPTH: 12.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:	
FIRST WATER DEPTH: 4.1 FEET		NO. OF SAMPLES: 1 WATER		WRW		
DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">3</div> <div style="margin-bottom: 10px;">4</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">6</div> <div style="margin-bottom: 10px;">7</div> <div style="margin-bottom: 10px;">8</div> <div style="margin-bottom: 10px;">9</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">11</div> <div style="margin-bottom: 10px;">12</div> <div style="margin-bottom: 10px;">13</div> <div style="margin-bottom: 10px;">14</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">16</div> <div style="margin-bottom: 10px;">17</div> <div style="margin-bottom: 10px;">18</div> <div style="margin-bottom: 10px;">19</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">21</div> <div style="margin-bottom: 10px;">22</div> <div style="margin-bottom: 10px;">23</div> <div style="margin-bottom: 10px;">24</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">26</div> <div style="margin-bottom: 10px;">27</div> <div style="margin-bottom: 10px;">28</div> <div style="margin-bottom: 10px;">29</div> <div style="margin-bottom: 10px;">30</div> </div>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">3 in. Concrete.</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">3 in. to 1.0 ft. Baserock (gravel &lt; 1 in. diam.) (FILL).</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">1.0 to 2.0 ft. Brown clayey sand (FILL), dry, no PHC odor.</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">2.0 to 4.0 ft. Brown sandy clay (CL), stiff, slightly moist, no PHC odor.</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">4.0 to 7.0 ft. Black/gray clay (Bay Mud), med. stiff, moist, no PHC odor.</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">7.0 to 9.0 ft. Gray clay (Bay Mud), soft, moist, no PHC odor.</div> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">9.0 to 12.0 ft. Gray clay with coarse yellow and brown sand (Bay Mud), med. stiff, wet, no PHC odor.</div>	<div style="margin-bottom: 5px;">FILL</div> <div style="margin-bottom: 5px;">CL</div> <div style="margin-bottom: 5px;">Bay Mud</div> <div style="margin-bottom: 5px;">Bay Mud</div> <div style="margin-bottom: 5px;">Bay Mud</div>	<div style="margin-bottom: 5px;">No Well Constructed</div>			<div style="margin-bottom: 10px;">Borehole continuously cored with 2.5 inch OD 4 foot long core barrel lined with cellulose acetate sleeves.</div> <div style="margin-bottom: 10px;">Groundwater first encountered at 4.1 ft., 1:35 PM, 3/25/03.</div> <div style="margin-bottom: 10px;">Collected water sample with a stainless steel bailer.</div> <div style="margin-bottom: 10px;">Borehole terminated at 12.0 feet.</div> <div style="margin-bottom: 10px;">Borehole grouted with neat cement grout 3/25/03.</div>

BORING NO.: B5		PROJECT NO.: WEST 8698		PROJECT NAME: Former Western Stucco	
BORING LOCATION: 5115 E. 8TH ST., OAKLAND, CA			ELEVATION AND DATUM: NONE		
DRILLING AGENCY: VIRONEX		DRILLER: TIM		DATE & TIME STARTED:	DATE & TIME FINISHED:
DRILLING EQUIPMENT: GEOPROBE 5400				3/25/03	3/25/03
COMPLETION DEPTH: 12.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:
FIRST WATER DEPTH: 4.3 FEET		NO. OF SAMPLES: 1 WATER		WRW	

DEPTH-(FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6'	PID	REMARKS
	3 in. Concrete.	FILL	No Well Constructed			Borehole continuously cored with 2.5 inch OD 4 foot long core barrel lined with cellulose acetate sleeves.  Groundwater first encountered at 4.3 ft., 1:05 PM, 3/25/03.
	3 in. to 1.5 ft. Baserock (gravel < 0.75 in. diam.) (FILL).					
5	1.5 to 3.0 ft. Dark brown clayey silt (FILL), dry, no PHC odor.	▼ Bay Mud				
	3.0 to 3.3 ft. Orange brick and gravel (FILL), (gravel < 1 in. dia.) no PHC odor.	Bay Mud				
	3.3 to 6.0 ft. Black clay (Bay Mud), med. stiff, slightly moist, no PHC odor.	Bay Mud				
10	6.0 to 9.0 ft. Gray clay (Bay Mud), soft, moist, slightly brown mottling, no PHC odor.	Bay Mud				Collected water sample with a stainless steel bailer.
15	9.0 to 12.0 ft. Gray clay with coarse yellow to brown sand (Bay Mud), med. stiff, moist, no PHC odor.					Borehole terminated at 12.0 feet.  Borehole grouted with neat cement grout 3/25/03.
20						
25						
30						



BORING NO.: B6		PROJECT NO.: WEST 8698		PROJECT NAME: Former Western Stucco		
BORING LOCATION: 5115 E. 8TH ST., OAKLAND, CA		ELEVATION AND DATUM: NONE				
DRILLING AGENCY: VIRONEX		DRILLER: TIM		DATE & TIME STARTED:	DATE & TIME FINISHED:	
DRILLING EQUIPMENT: GEOPROBE 5400				3/25/03	3/25/03	
COMPLETION DEPTH: 16.0 FEET		BEDROCK DEPTH: NONE ENCOUNTERED		LOGGED BY:	CHECKED BY:	
FIRST WATER DEPTH: 10.5 FEET		NO. OF SAMPLES: 1 WATER		WRW		
DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS
	3 in. Concrete.	FILL	No Well Constructed			Borehole continuously cored with 2.5 inch OD 4 foot long core barrel lined with cellulose acetate sleeves.  Groundwater measured at 10.5 ft., 2:05 PM, 3/25/03. Water entered hole slowly. Measurement taken approximately 2 hours after drilling completed.  Collected water sample with stainless steel bailer.
	3 in. to 1.5 ft. Baserock (gravel < 1 in. diam.) (FILL).					
5	1.5 to 3.0 ft. Gray silty clay (FILL), slightly moist, no PHC odor.	SP				
	3.0 to 3.3 ft. Brown sand (SP), loose, slightly moist, no PHC odor.	Bay Mud				
	3.3 to 5.0 ft. Black clay (Bay Mud), med. stiff, slightly moist, slight PHC odor.	Bay Mud				
10	5.0 to 8.5 ft. Gray clay (Bay Mud), soft, slightly moist, red and yellow mottling, slight PHC odor.	▼				
	8.5 to 13.5 ft. Gray sandy clay (Bay Mud), med. stiff, mostly wet, white and orange specs, strong PHC odor at 13.0 ft. where soil is saturated.	Bay Mud				
15	13.5 to 16.0 ft. Gray clay (Bay Mud), soft, wet, no PHC odor.	Bay Mud				Borehole terminated at 16.0 feet.  Borehole grouted with neat cement grout 3/25/03.
20						
25						
30						

RGA ENVIRONMENTAL  
GROUNDWATER MONITORING/WELL PURGING  
DATA SHEET

Site Name West Stucco  
 Job No. WEST 8698  
 TOC to Water (ft.) 3.32  
 Well Depth (ft.) 20  
 Well Diameter 2"  
 Gal./Casing Vol. 2.7

Well No. MW1  
 Date 3/26/03  
 Sheen NONE  
 Free Product Thickness 0  
 Sample Collection Method Teflon bailer

TIME	GAL. PURGED	pH	TEMPERATURE (°F)	ELECTRICAL CONDUCTIVITY (uS/cm) * 100
<u>2:45</u>	<u>0.5</u>	<u>7.37</u>	<u>69.0</u>	<u>1.23</u>
<u>2:47</u>	<u>2 1.5</u>	<u>pumped</u>	<u>dry</u>	
	<u>4</u>			
	<u>6</u>			
	<u>8</u>			
	<u>9</u>			

NOTES:  
 \_\_\_\_\_  
 \_\_\_\_\_

RGA ENVIRONMENTAL  
GROUNDWATER MONITORING/WELL PURGING  
DATA SHEET

Site Name West. Stucco  
 Job No. WEST 8698  
 TOC to Water (ft.) 389  
 Well Depth (ft.) 20  
 Well Diameter 2"  
 Gal./Casing Vol. 2.6

Well No. MW2  
 Date 3/26/03  
 Sheen NONE  
 Free Product Thickness Ø  
 Sample Collection Method Teflon bailer

$\Sigma = 7.8$

TIME	GAL. PURGED	pH	TEMPERATURE (°F)	ELECTRICAL CONDUCTIVITY (µS/cm) * 100.
<u>2:59</u>	<u>0.5</u> <u>1.</u>	<u>7.61</u>	<u>65.8</u>	<u>0.96</u>
<u>2:59</u>	<u>2</u>	<u>7.57</u>	<u>65.7</u>	<u>0.92</u>
<u>3:00</u>	<u>4</u>	<u>7.55</u>	<u>65.0</u>	<u>0.86</u>
<u>3:01</u>	<u>4.5</u> <u>8</u>	<u>pumped</u>	<u>dry</u>	

NOTES: well plug not in at 1st opening observation.  
Water in surface can at top of well.  
well box











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## QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0303484

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6347		Spiked Sample ID: 0303483-003A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD Acceptance Criteria (%)		
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	60	111	111	0.154	102	104	2.54	80	120
MTBE	ND	10	116	114	1.84	85.9	87	1.23	80	120
Benzene	ND	10	102	103	0.973	91.7	96.8	5.42	80	120
Toluene	ND	10	97.4	101	3.31	91.5	96.6	5.40	80	120
Ethylbenzenc	ND	10	96.8	97.6	0.777	92.8	97.3	4.75	80	120
Xylenes	ND	30	92.3	93	0.719	95	99.7	4.79	80	120
%SS:	101	100	91.3	93.1	1.92	86.2	88.4	2.46	80	120

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

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.





### QC SUMMARY REPORT FOR SW8015C

Matrix: W

WorkOrder: 0303484

EPA Method: SW8015C		Extraction: SW3510C			BatchID: 6349			Spiked Sample ID: N/A		
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(d)	N/A	7500	N/A	N/A	N/A	123	127	3.81	70	130
%SS:	N/A	100	N/A	N/A	N/A	107	110	2.28	70	130
All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions: NONE										

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

# McC Campbell Analytical Inc.



110 Second Avenue South, #D7  
Pacheco, CA 94553-5560  
(925) 798-1620

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 0303484

**Client:**

RGA Environmental  
4701 Doyle Street, Suite #14  
Emeryville, CA 94608-2947

TEL: (510) 547-7771  
FAX: (510) 547-1983  
ProjectNo: West 8698; Former Western Stucco  
PO:

Date Received: 3/27/03  
Date Printed: 3/27/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests	
					SW8015C	8021B/8015
0303484-001	MW1	Water	3/26/03		B	A
0303484-002	MW2	Water	3/26/03		B	A
0303484-003	MW3	Water	3/26/03		B	A
0303484-004	OW1	Water	3/26/03		B	A

Prepared by: Melissa Valles

**Comments:**

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

gal

0303484



ENVIRONMENTAL INC.  
4701 DOYLE ST. #14 TEL: (510) 547-7771  
FAX: (510) 547-1983 EMERYVILLE, CA 94608

# CHAIN OF CUSTODY

Project Number: WEST 8698  
Project Name: Former Western Shocco  
Sampled By: (Printed and Signature): Wilhelm Welzenbach Wilhelm Welzenbach

No. of Containers:	Analysis(es):		Preservatives	Remarks
	<u>TPH</u>	<u>MULTI TRACE</u>		
	<u>MTBE</u>	<u>BTEX</u>		
	<u>by Solid</u>			

Sample Number	Date	Time	Type	Sample Location	No. of Containers	TPH	MULTI TRACE	MTBE	BTEX	by Solid	Preservatives	Remarks
<u>MW1</u>	<u>3/26/03</u>		<u>Water</u>		<u>6</u>	<u>X</u>	<u>X</u>				<u>X</u>	<u>Normal Turn Time</u>
<u>MW2</u>	<u>I</u>		<u>I</u>		<u>7</u>	<u>X</u>	<u>X</u>				<u>X</u>	<u>"</u>
<u>MW3</u>	<u>I</u>		<u>I</u>		<u>7</u>	<u>X</u>	<u>X</u>				<u>X</u>	<u>"</u>
<u>OW1</u>	<u>I</u>		<u>I</u>		<u>7</u>	<u>X</u>	<u>X</u>				<u>X</u>	<u>"</u>

ICAP  PRESERVATION  VOA  O&G  METALS  OTHER   
 GOOD CONNECTION  APPROPRIATE CONTAINERS   
 DECONTAMINATED IN LAB  PRESERVED IN LAB

Relinquished By: (Signature): Wilhelm Welzenbach Date: 3/27/03 Time: 11:32 Received By: (Signature): D. Roth 235 Total No. of Samples: 4 Total No. of Containers: 27 Laboratory: McCampbell Analytical  
 Relinquished By: (Signature): D. Roth 235 Date: 3/27/03 Time: 1245 Received By: (Signature): Miki Veltch Laboratory Contact: Angela Rydelius Laboratory Phone Number: 925-798-1620  
 Relinquished By: (Signature): \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received For Laboratory By: (Signature): \_\_\_\_\_ Sample Analysis Request Sheet Attached ( ) Yes (X) No

Comments: If MTBE detected, follow up with 8260 MTBE confirmation.  
(Note: VOAs preserved with HCl.)







McC Campbell Analytical Inc.

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 Telephone : 925-798-1620 Fax : 925-798-1622  
 http://www.mcccampbell.com E-mail: main@mcccampbell.com

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: S

WorkOrder: 0303450

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6304		Spiked Sample ID: 0303430-001A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	ND	0.60	116	110	5.71	116	115	0.643	80	120
MTBE	ND	0.10	103	101	1.21	96.5	92.3	4.47	80	120
Benzene	ND	0.10	98.7	97	1.74	103	102	0.347	80	120
Toluene	ND	0.10	88.9	87.8	1.18	92.3	92.9	0.661	80	120
Ethylbenzene	ND	0.10	99.5	97.3	2.20	101	104	3.27	80	120
Xylenes	ND	0.30	93.3	92.7	0.717	93.3	96.7	3.51	80	120
%SS:	105	100	95	95.6	0.655	98.1	98.8	0.668	80	120

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

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



McC Campbell Analytical Inc.

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 Telephone : 925-798-1620 Fax : 925-798-1622  
<http://www.mccampbell.com> E-mail: [main@mccampbell.com](mailto:main@mccampbell.com)

### QC SUMMARY REPORT FOR SW8015C

Matrix: S

WorkOrder: 0303450

EPA Method: SW8015C		Extraction: SW3550C			BatchID: 6322		Spiked Sample ID: 0303224-007A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD		Acceptance Criteria (%)	
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High	
TPH(d)	ND	150	103	106	2.58	99.3	97.2	2.10	70	130	
%SS:	89.2	100	93.4	95.3	2.07	92.7	89.8	3.16	70	130	
All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions: NONE											

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

**McC Campbell Analytical Inc.**



110 Second Avenue South, #D7  
Pacheco, CA 94553-5560  
(925) 798-1620

**CHAIN-OF-CUSTODY RECORD**

WorkOrder: 0303450

Client:

RGA Environmental  
4701 Doyle Street, Suite #14  
Emeryville, CA 94608-2947

TEL: (510) 547-7771  
FAX: (510) 547-1983  
ProjectNo: West 8698; Former Western Stucco  
PO:

Date Received: 3/26/03  
Date Printed: 3/26/03

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests	
					SW8015C	8021B/8015
0303450-001	B1-3	Soil	3/25/03		A	A
0303450-002	B2-3	Soil	3/25/03		A	A
0303450-003	B3-3	Soil	3/25/03		A	A

Prepared by: Maria Venegas

Comments:

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





ENVIRONMENTAL INC.

4701 DOYLE ST #14

TEL: (510) 547-7771

FAX: (510) 547-1983

EMERYVILLE, CA 94608

0303450

# CHAIN OF CUSTODY

Project Number: WEST 8698  
 Project Name: Former Western Strucc  
 Sampled By: (Printed and Signature): Wilhelm Welzenbach *Wilhelm Welzenbach*

Sample Number	Date	Time	Type	Sample Location	No. of Containers	Analysis(es):				Preservatives	Remarks
						TPH	Multitrace	MTBE + BTEX by 8020			
B1-3	3/25/03		Soil		1	X	X			X	Normal Turn Time
B2-3	"		"		1	X	X			X	"
B3-3	"		"		1	X	X			X	"

Relinquished By: (Signature): *Wilhelm Welzenbach* Date: 3-24-03 Time: 10:30  
 Received By: (Signature): Lan 218  
 Total No. of Samples: 3 Total No. of Containers: 3 Laboratory: McCampbell Analyt

Relinquished By: (Signature): # 210 Date: 3/26/03 Time: 12:00  
 Received By: (Signature): *Angela Hydellius* Laboratory Contact: Angela Hydellius Laboratory Phone Number: 925-998-1620

Relinquished By: (Signature): \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received For Laboratory By: (Signature): \_\_\_\_\_  
 Sample Analysis Request Sheet Attached ( ) Yes (X) No

Comments: IF MTBE detected, please follow with 8260 MTBE confirmation.

ICEP  GOOD CONDITION  
 HEAD SPACE ABSENT  
 PRESERVED IN LAB

PRESERVATION APPROPRIATE  
 CONTAINERS PRESERVED IN LAB

VOAS  O&G  METALS  OTHER









McC Campbell Analytical Inc.

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

### QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W

WorkOrder: 0303449

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6331			Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	N/A	60	N/A	N/A	N/A	94.9	94.8	0.0628	80	120
MTBE	N/A	10	N/A	N/A	N/A	99	113	12.9	80	120
Benzene	N/A	10	N/A	N/A	N/A	115	119	3.09	80	120
Toluene	N/A	10	N/A	N/A	N/A	112	116	2.66	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	116	118	2.37	80	120
Xylenes	N/A	30	N/A	N/A	N/A	113	117	2.90	80	120
%SS:	N/A	100	N/A	N/A	N/A	91.5	91.8	0.356	80	120

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

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



**QC SUMMARY REPORT FOR SW8021B/8015Cm**

Matrix: W

WorkOrder: 0303449

EPA Method: SW8021B/8015Cm		Extraction: SW5030B		BatchID: 6331		Spiked Sample ID: N/A				
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(gas)	N/A	60	N/A	N/A	N/A	94.9	94.8	0.0628	80	120
MTBE	N/A	10	N/A	N/A	N/A	99	113	12.9	80	120
Benzene	N/A	10	N/A	N/A	N/A	115	119	3.09	80	120
Toluene	N/A	10	N/A	N/A	N/A	112	116	2.66	80	120
Ethylbenzene	N/A	10	N/A	N/A	N/A	116	118	2.37	80	120
Xylenes	N/A	30	N/A	N/A	N/A	113	117	2.90	80	120
%SS:	N/A	100	N/A	N/A	N/A	91.5	91.8	0.356	80	120

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

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

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.

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

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.



McC Campbell Analytical Inc.

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

### QC SUMMARY REPORT FOR SW8015C

Matrix: W

WorkOrder: 0303449

EPA Method: SW8015C		Extraction: SW3510C			BatchID: 6330		Spiked Sample ID: N/A			
Compound	Sample	Spiked	MS*	MSD*	MS-MSD*	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(d)	N/A	7500	N/A	N/A	N/A	94.8	99.2	1.96	70	130
%SS:	N/A	100	N/A	N/A	N/A	102	107	1.98	70	130

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

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

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.

% Recovery =  $100 * (MS - \text{Sample}) / (\text{Amount Spiked})$ ; RPD =  $100 * (MS - MSD) / (MS + MSD) * 2$ .

\* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.