BSK & Associates, Geotechnical Consultants, Inc.

LETTER OF TRANSMITTAL

TO: Alameda County Environmental Health Services 1131 Harbor Bay Parkway, No. 250 Alameda, California 94502-6577 **ATTENTION:** Ms. Juliet Shin	**DATE:** November 14, 1996 | **PROJECT NO.** 04-40-0086 **RE:** Joe Sio Chevrolet Supplemental Investigation/Groundwater Monitoring Albany, California

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REMARKS:

COPY TO: Flo Ann Connors, 1658 Del Dayo Drive, Carmichael, CA 95608 **SIGNED:** Khaled Kal
Jay Labadie, 16 Santa Ana Avenue, Clovis, CA 93612

SEMI-ANNUAL
GROUNDWATER MONITORING,
SUPPLEMENTAL INVESTIGATION,
AND
RISK ASSESSMENT REPORT

JOE SIO CHEVROLET
914-916 San Pablo Avenue
Albany, California
STID-3808

November 14, 1996

Prepared for:
MS. FLORENCE ANN CONNORS
Executor for the Estate of Josephine A. Dibble
1658 Del Dayo Drive
Carmichael, California 95608

Prepared by:

BSK & ASSOCIATES
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Project No. 04-40-0086/04-40-0092

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November 14, 1996
Project No. 04-40-0086/04-40-0092

Ms. Florence Ann Connors
Executor for the Estate of Josephine A. Dibble
1658 Del Dayo Drive
Carmichael, California 95608

Subject: **SEMI-ANNUAL GROUNDWATER MONITORING, SUPPLEMENTAL INVESTIGATION AND RISK ASSESSMENT REPORT**
Joe Sio Chevrolet
914-916 San Pablo Avenue, Albany, California
STID No. 3808

Dear Ms. Connors:

BSK & Associates is pleased to present this *Semi-Annual Groundwater Monitoring, Supplemental Investigation, and Risk Assessment Report* for the property located at 914-916 San Pablo Avenue in Albany, California. The scope of work described was completed in accordance with Alameda County Environmental Health Services (ACEHS) requests and the ACEHS-approved *Supplemental Investigation and Tier 2 Risk Assessment Work Plan* (Work Plan), dated September 4, 1996. The field activities for the semi-annual groundwater monitoring and supplemental investigation were conducted on September 25, 1996.

BACKGROUND

Documents

BSK & Associates reviewed the following documents to prepare this report:

United States Environmental Protection Agency. 1996. Region 9 Preliminary Remediation Goals (PRGs) 1996. August 1, 1996.

Philip Environmental Services Corporation. 1996. Semi-Annual Groundwater Monitoring Report - March 1996, Joe Sio Chevrolet, 914-916 San Pablo Avenue, Albany, California. STID-3808. May 2, 1996.

Regional Water Quality Control Board - San Francisco Bay Region. 1996. Supplemental Instructions to State Water Board December 8, 1995, Interim Guidance on Required Cleanup at Low Risk Fuel Sites, dated January 5, 1996.

Groundwater Services, Inc. 1995. Tier 2 Guidance Manual for Risk-Based Corrective Action. 1995.

State Water Resources Control Board. 1995. Lawrence Livermore National Laboratory (LLNL) Report on Leaking Underground Storage Tank (UST) Cleanup, dated December 8, 1995.

Lawrence Livermore National Laboratory. 1995. Recommendations to Improve the Cleanup Process for California's Leaking Underground Fuel Tanks, dated October 16, 1995.

American Society for Testing and Materials. 1995. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites. E-1739-95, approved September 10, 1995.

California Regional Water Quality Control Board - Central Valley Region. 1995. A Compilation of Water Quality Goals. June 1995.

Philip Environmental Services Corporation. 1995. Quarterly Groundwater Monitoring Report -Second Quarter 1995, Joe Sio Chevrolet, 914-916 San Pablo Avenue, Albany, California. STID-3808. May 15, 1995.

Burlington Environmental Inc. 1994. Quarterly Groundwater Monitoring Report - Second Quarter 1994, Joe Sio Chevrolet, 914-916 San Pablo Avenue, Albany, California. STID-3808. May 31, 1994.

Metcalf & Eddy, Inc. 1993. Chemical and Physical Characteristics of Crude Oil, Gasoline, and Diesel Fuel: A Comparitive Study. September 17, 1993

Chow, V.T., D.R. Maidment, and L.W. Mays. 1988. Applied Hydrology. McGraw Hill, Inc..

Alameda County Flood Control And Water Conservation District. 1988. Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California. 205(J) Report. June 1988.

Site Description

The site, an active car dealership operated by Joe Sio Chevrolet, is located in a mixed commercial/residential area near the intersection of San Pablo Avenue and Solano Avenue in Albany, California (see Figure 1). The site consists of a concrete-floored showroom and service area, and an asphalt/concrete covered parking area.

The site is located at an elevation of approximately 40 feet above mean sea level. Average annual rainfall is approximately 20 inches (Alameda County Flood Control and Water Conservation District, 1988). Nearby water bodies include San Francisco Bay located 0.60 miles west of the site, Codornices Creek located 0.45 miles south of the site, and Cerrito Creek located 0.60 miles north of the site. Albany Hill, a prominent topography high, is located 0.75 miles northwest of the site. The first water-bearing zone, located within the Bay Muds, is not known to be used as a drinking water source due to generally low yield and high total dissolved solid content.

Previous Work

The following summary of previous activities is based on the last monitoring report (Philip Environmental Services Corporation, 1996). In 1989, Petroleum Engineering, Inc. removed one 550-gallon gasoline underground storage tank from beneath the sidewalk between the former building and San Pablo Avenue, and one 550-gallon waste oil underground storage tank from adjacent to the southwest corner of the former building (see Figure 2). Soil samples collected from beneath the former gasoline tank contained 1,300 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons as gasoline (TPHg). Soil samples collected from beneath the former waste oil tank did not contain detectable petroleum hydrocarbons, except for trace concentrations of toluene and total xylenes. As a result of the petroleum hydrocarbons encountered beneath the former gasoline tank, ACEHS requested additional investigation and remediation at the site.

In July 1991, Aqua Terra Technologies (ATT) of Walnut Creek, California, installed three groundwater monitoring wells at the site: well MW-1 located within the backfill of the gasoline tank excavation; well MW-2 located in the north-central portion of the site; and well MW-3 located adjacent to the former waste oil tank (see Figure 2). Based on the ATT boring logs presented by Burlington Environmental Inc. (Burlington) (1994), (1) the soils to a depth of 30 feet BGS beneath the site are sandy clays to clayey sands with thin sand lenses, (2) groundwater was first-encountered during drilling at depths between 15 and 23 feet BGS, (3) groundwater rose within each boring to a static water level of approximately 10 feet BGS, and (4) well MW-1 was noted to be very slow producing. The three wells were constructed to screen from the approximate total boring depth to above the static water level. At well MW-1, this construction may have allowed groundwater to contact previously unsaturated impacted soil and acted as a preferential conduit for petroleum hydrocarbon migration.

Between 1991 and 1994, the onsite buildings were demolished and the current buildings were constructed. This new building configuration limited access to well MW-2 (see Figure 2). In addition, several utility lines were installed beneath the sidewalk limiting access to the former gasoline tank location.

In April 1994, Burlington began quarterly groundwater monitoring activities at the site in response to a November 9, 1993 ACEHS request. The monitoring program was subsequently modified to include (1) analysis of groundwater sample from well MW-2 for halogenated hydrocarbons in response to matrix interference observed during the third and fourth quarter 1994 monitoring events, per a November 2, 1994 ACEHS request, and (2) modification of the groundwater monitoring schedule to semi-annual events while maintaining quarterly groundwater level surveys, per a February 27, 1996 ACEHS correspondence.

Previous groundwater monitoring data indicate that (1) groundwater flow direction fluctuates from typically east/southeast during the first and second quarters of the year to typically west during the third and fourth quarters of the year, (2) TPHg, benzene, toluene, ethylbenzene, and total xylenes (BTEX) are detected in samples collected from well MW-1, (3) TPHg and BTEX concentrations are not typically detected in samples from wells MW-2 and MW-3, (4) low concentrations of several halogenated hydrocarbons are detected in samples from well MW-2, and (4) dissolved concentrations of selected metals are below drinking water standards.

SEMI-ANNUAL GROUNDWATER MONITORING

Monitoring Activities

The second semi-annual monitoring event for 1996 was conducted by BSK & Associates on September 25, 1996. In each well, the depth to groundwater was measured, the presence or absence of phase-separated hydrocarbons (PSHs) was determined, and groundwater samples were collected.

Prior to sampling, at least three casing volumes were purged from each well using a submersible pump. Groundwater samples were collected using a submersible pump and Teflon bailer. Equipment entering each well was decontaminated prior to and following use. Purge water and decontamination water were temporarily stored onsite in Department of Transportation (DOT) approved containers pending disposal/recycling.

Groundwater samples were analyzed for TPHg using U.S. Environmental Protection Agency (EPA) Method modified 8015, and BTEX using EPA Method 602. The groundwater sample from well MW-2 was also analyzed for halogenated hydrocarbons using EPA Method 601. In addition, groundwater samples were field filtered using a 0.45 μm filter prior to the analysis for lead (EPA Method 200.8) in wells MW-1 and MW-2, and cadmium (EPA Method 200.8),

chromium (EPA Method 200.8), lead (EPA Method 200.8), nickel (EPA Method 200.7), and zinc (EPA Method 200.7) in well MW-3. BSK & Associates Analytical Laboratory, a California-certified hazardous materials testing laboratory located in Fresno, California, performed the analysis.

The monitoring and sampling procedures are presented in Appendix A. Field data sheets are presented in Appendix B. Certified analytical results and chain of custody forms are presented in Appendix C.

Monitoring Results

On September 25, 1996, the depth to water in the monitoring wells at the site ranged from 8.34 to 11.02 feet BGS, which corresponds to groundwater elevations ranging from 31.10 to 32.40 feet above mean sea level (see Table 1 and Appendix B). The approximate groundwater flow direction based on the September 1996 data is to the west with an approximate hydraulic gradient of 0.007 (see Figure 2). PSHs were not detected in the groundwater monitoring wells. Groundwater samples collected from each well (1) did not contain detectable concentrations of TPHg, (2) did not contain detectable concentrations of BTEX constituents, except for 8.4 μg/L of benzene, 2.9 μg/L of ethylbenzene, and 6.9 μg/L of total xylenes in the sample collected from well MW-1. The groundwater sample from well MW-2 contained 1.0 μg/L of carbon tetrachloride, 0.80 μg/L of trichloroethylene, 0.80 μg/L of cis-1,2-dichloroethylene, and 57 μg/L of perchloroethylene (see Table 2). The field filtered samples from each well did not contain detectable concentrations of dissolved selected metals (see Table 3).

Summary

The monitoring results for September 1996 are consistent with previous results, except that the concentrations of petroleum hydrocarbons detected in well MW-1 samples are lower than previous quarters. The concentrations of halogenated hydrocarbons continue to consistently decrease since first quantified in January 1995. The dissolved concentrations of the five selected metals continue to be below drinking water standards.

SUPPLEMENTAL INVESTIGATION

Supplemental Investigation Activities

BSK & Associates conducted a supplemental investigation of the site in accordance with the Work Plan dated September 4, 1996, which was approved by ACEHS in correspondence dated September 4, 1996. Prior to investigation activities, (1) necessary permits were obtained from Alameda County Flood Control and Water Conservation District 7 (see Appendix D), (2) potential subsurface obstructions beneath the three boring locations were evaluated by

contacting Underground Service Alert and geophysical surveying by Subtronic Corporation of Concord, California, and (3) site activities were coordinated with Ms. Flo Ann Conners, Ms. Shin and Mr. Joe Sio.

On September 25, 1996, soil and groundwater samples were collected from three locations using a direct-push Geoprobe rig operated by Kvilhaug Well Drilling and Pump, of Concord, California. The three borings were located (1) 17 feet from the former gasoline tank excavation between well MW-1 and the showroom building [B-101], (2) 25 feet southwest of the former gasoline tank excavation between well MW-1 and the southern property boundary [B-102], and (3) 9 feet west of well MW-2 [B-103] (see Figure 1). Due to access restrictions, Geoprobe hand tools were used to sample the boring B-102 located adjacent to well MW-2.

During sampling activities, groundwater was not encountered in sufficient quantities to sample at the anticipated depth of 10 to 20 feet BGS. Ms. Connors and Ms. Shin were informed of the field conditions encountered. With Ms. Connors' concurrence, the borings were deepened and remained open until the end of the day in response to a request from Ms. Shin.

Soil Sampling

Soil samples were collected from each boring at five foot intervals until groundwater, refusal, or a total depth of 30 feet BGS (the depth of onsite wells) was encountered. Soil samples were collected by hydraulically driving a 1.5-inch diameter steel probe lined with a 1.0-inch diameter acetate sleeve (see Appendix E). An internal piston was released at the top of each sampling interval, the probe was hydraulically driven to collect up to two feet of undisturbed soil, and the sampling assemblage was removed from the boring. The selected sections of soil sample were sealed within the acetate sleeve using Teflon tape and plastic endcaps, and stored on ice pending transportation to the analytical laboratory.

Soil samples were logged using the Unified Soil Classification System by a California registered geologist, and field-screened for total volatile organic compounds using a photoionization detector (PID). Boring logs are presented in Appendix D.

Groundwater Sampling

At each groundwater sampling interval, 0.75-inch diameter polyvinyl chloride (PVC) casing with a five-foot section of 0.010-inch screen at the base was installed (see Appendix E). If the volume of water entering the screened interval was insufficient to sample, the PVC casing was removed, the boring was extended an additional 5 feet, and the PVC casing was reinstalled. This operation was repeated until groundwater, refusal, or 30 feet BGS was encountered.

Borings B-101, B-102 and B-103 were completed to depths of 25, 30, and 14 feet BGS, respectively. Groundwater entered boring B-101 at a depth of 23.5 feet after several hours. Borings B-102 and B-103 remained dry through completion of site activities.

Groundwater samples were collected using a top-filling 0.5-inch diameter steel bailer. Samples were decanted into appropriate sample vials and stored on ice pending transportation to the analytical laboratory. Following sampling activities, each boring was sealed to the surface with neat cement.

Sample Analysis

Soil samples were selected for analysis based on field observations and PID readings. Selected soil samples were analyzed for TPHg using EPA Method modified 8015, and BTEX using EPA Method 8020. In addition, selected soil samples from the boring B-103 were analyzed for halogenated hydrocarbons using EPA Method 8010. The groundwater sample from boring B-101 was analyzed for TPHg using EPA Method modified 8015 and BTEX using EPA Method 602. Samples were analyzed at BSK & Associates' California-certified hazardous materials testing laboratory in Fresno, California.

Decontamination and Soil/Water Handling

Prior to and following use, equipment entering each boring was decontaminated by steam cleaning or detergent wash/tap-water rinses (see Appendix E). Soil and water produced during site activities was temporarily stored onsite in DOT-approved containers pending disposal/recycling.

Supplemental Investigation Results

Hydrogeology

Soil encountered during sampling consisted of silty to sandy clays with isolated fine sand lenses. On September 25, 1996, groundwater monitoring activities indicated that the potentiometric surface of the confined water-bearing zone was approximately 8 to 11 feet BGS. Groundwater was first-encountered at a depth of 23.5 feet in boring B-101, located approximately 20 feet west of well MW-1. No indications of groundwater were observed to 30 feet BGS in boring B-102, except for a wet 0.5 foot thick sand lens at approximately 10 feet BGS, which did not yield sufficient quantities of water to sample. Groundwater was not encountered to depths of 14 feet BGS in boring B-103 although the depth to water was approximately 8 feet BGS in adjacent well MW-3, located 9 feet to the east. This absence of shallow groundwater in borings located 9 to 25 feet from wells containing shallow groundwater confirms the confined nature of the first-encountered water-bearing zone, and indicates the low hydraulic conductivity of the vadose zone soil.

Typically, groundwater samples are collected within 15-30 minutes of installing direct-push sampling equipment. Groundwater sampling at boring B-101 required several hours. The slow rate of water entering boring B-101 indicates the low hydraulic conductivity of the water-bearing zone.

Analytical Results

The soil sample collected at 10 feet BGS, which had the highest PID reading, and the groundwater sample collected from boring B-101 were analyzed. The soil samples collected at 10 and 20 feet BGS (due to the absence of groundwater) from boring B-102 were analyzed. Due to the shallow refusal depth, the 13 foot BGS soil sample collected from boring B-103 was analyzed.

The analyzed soil samples from the three borings did not contain detectable concentrations of TPHg or BTEX (see Table 4 and Appendix C). In addition, the analyzed soil sample from boring B-103 did not contain detectable concentrations of halogenated hydrocarbons. The groundwater sample from boring B-101 contained 2,300 μg/l of TPHg, 28 μg/l of toluene, 70 μg/l of ethylbenzene, and 480 μg/l of total xylenes, and did not contain detectable concentrations of benzene (see Table 4).

Summary

The soil types and conditions encountered during well installation in 1991 and during this supplemental investigation are consistent. The site is underlain by silty and sandy clays to clayey sands with isolated sand lenses. Groundwater is confined and first-encountered at approximately 23 feet BGS in the area of the former gasoline tank excavation.

Petroleum hydrocarbons in soil are limited to within 17 feet west, to 25 feet southwest of the former gasoline tank excavation. Petroleum hydrocarbons were encountered in shallow confined groundwater in the former gasoline tank excavation, and at the top of the first water-bearing zone, approximately 17 feet to the west of the former gasoline tank excavation. A limited volume of soil and groundwater impacted by halogenated hydrocarbons is indicated by the absence of detectable concentrations in shallow soil and the low and decreasing concentrations detected in groundwater.

HEALTH RISK ASSESSMENT

During a July 30, 1996 telephone conversation, Ms. Shin (ACEHS) indicated that site conditions warranted a Tier 2 risk evaluation. In response, BSK & Associates conducted a Tier 2 health risk assessment in accordance with the Work Plan dated September 4, 1996.

The Tier 2 evaluation included (1) reviewing background reports, supplemental investigation data, and published data to estimate site-specific parameters (e.g., concentrations of constituents of concern, porosity, hydraulic conductivity, annual rainfall, points of exposure), (2) conducting risk assessment using the available analytical data set for benzene, toluene, ethylbenzene, and total xylenes using the Tier 2 RBCA Toolkit© (RBCA Toolkit) prepared by Groundwater Services Inc., of Houston, Texas. The RBCA Toolkit is based on American Society for Testing and Materials (ASTM) guidance document E-1739-95. Health risk was evaluated for commercial/industrial exposure with an excess cancer risk target levels of 1×10^{-5} and a hazard quotient of 1.

Constituents of Concern

Benzene, toluene, ethylbenzene, and xylenes were evaluated as the constituents of concern in the Tier 2 risk assessment. As proposed in the Work Plan, halogenated hydrocarbons were not evaluated based on the decreasing concentration trend and likely presence of an offsite source, and selected metals (i.e., cadmium, chromium, lead, nickel, and zinc) were not evaluated due to their low dissolved concentrations relative to drinking water standards.

Subsurface Distribution

The extent of impacted soil is limited by the absence of petroleum hydrocarbons in soil samples from locations B-101 and B-102 located 17 to 25 feet from the former gasoline tank excavation (see Figure 2). Groundwater samples collected from well MW-1 and sample point B-101 contained detectable concentrations of petroleum hydrocarbons. Based on the investigation data, the subsurface distribution of constituents of concern appears to be limited to immediately adjacent to the former gasoline tank excavation, and within the upper portion of the first-encountered water bearing zone downgradient of the former gasoline tank excavation.

Exposure Pathways

Soil and groundwater volatilization to outdoor air, and groundwater volatilization to indoor air were the only exposure pathways determined to be complete at the site (see Figure 3). Other exposure pathways were determined to be incomplete based on the following: (1) groundwater ingestion because the water-bearing unit of concern is not a known drinking water source, and (2) surficial soil ingestion/dermal contact because of the presence of asphalt/concrete surfacing over the site.

Tier 2 Evaluation

The Tier 2 risk assessment was conducted using the RBCA Tool Kit. Inhalation transport mechanisms evaluated in the analysis included (1) volatilization and atmospheric dispersion of constituents of concern from impacted groundwater, (2) accumulation within an enclosed space of constituents of concern from impacted groundwater, and (3) volatilization and atmospheric dispersion of constituents of concern from impacted soil. Biodegradation effects were not calculated in the model.

The Tier 2 health risk assessment was based on commercial/industrial inhalation exposures with target levels of less than 1×10^{-5} for carcinogens and chronic hazard quotient of less than 1.0 for noncarcinogens. Benzene values were multiplied by 0.29 as requested in supplemental information of the Regional Water Quality Control Board - San Francisco Bay Region, dated January 5, 1996.

Site-Specific Parameters

Site-specific data were used to modify the Tier 1 risk assessment default parameters (see Appendix F). The input data was used to calculate site specific target levels (SSTLs) for constituents of concern in soil and groundwater. Default values used in the Tier 2 risk assessment were modified, as follows:

- Infiltration rate of 1.0 inch per year (2.54 cm/year) based on assumed infiltration of 5% (Groundwater Services, Inc., 1995) of the 20 inch annual average rainfall.
- Soil porosity in the vadose zone is 0.455 which is an average value for silty clays and sandy clays (Chow, Maidment, and Mays, 1988).
- Groundwater Transport Velocity of 0.3 feet per year (9.1 cm/year) based on a hydraulic conductivity of 1.5×10^{-5} cm/sec and effective porosity of 0.372 which are average values for silty clay and sandy clay (Chow, Maidment, and Mays, 1988), and a groundwater gradient of 0.007.
- Building volume to area ratio of 16.4 feet (500 cm) based on the estimated height of the ceilings of the showroom and service area.
- Impacted soil volume was modeled for the former gasoline tank area and the downgradient extent of petroleum hydrocarbons. In the former gasoline tank area, petroleum hydrocarbon impact was assumed to be within a 10 foot by 10 foot area between the depths of 9 feet BGS (depth to water) and 24 feet BGS (upper portion of the water-bearing zone. In the downgradient area, petroleum hydrocarbon impact was assumed to be within a 30 foot by 30 foot area between the depths of 20 feet BGS (inferred top of capillary fringe) and 24 feet BGS (upper portion of water-bearing zone).

Tier 2 Evaluation Results

Groundwater

Maximum and 95% upper confidence limit (UCL) concentration values for the constituents of concern in groundwater are presented on Table 5. 95% UCL values were calculated based on concentrations for groundwater samples collected from well MW-1 (see Table 2) and boring B-102 (see Table 4) using a statistical routine incorporated into the RBCA Toolkit.

The solubility concentrations of each constituent of concern in water are greater than 150,000 μg/L (ASTM, 1995). Exposure to the constituents of concern in groundwater via inhalation of outdoor air results in SSTLs of more than the solubility concentration of each constituent in water (see Table 5). In addition, exposure to toluene, ethylbenzene, and xylenes via inhalation of indoor air results in SSTLs of more than 150,000 μg/L (see Table 5). For the scenarios and exposure pathways evaluated, the maximum and 95% UCL concentrations of toluene, ethylbenzene and xylenes are several orders of magnitude below respective solubility concentrations, and therefore the SSTLs.

Maximum and 95% upper confidence limit concentrations for benzene in groundwater are 880 μg/L and 130 μg/L, respectively. The SSTLs calculated in the Tier 2 evaluation for indoor air are 3,190 μg/L for the downgradient scenario, and 1,218 μg/L for the former gasoline tank area scenario. Exposure to benzene via outdoor air inhalation results in SSTLs of more than the solubility concentration of benzene in water. For the scenarios and exposure pathways evaluated, the SSTLs are well above the maximum and 95% UCL concentrations for benzene encountered at the site.

Soil

Soil volatilization from the former gasoline tank area to outdoor air results in SSTLs of 180 mg/kg of benzene, and residual concentrations (i.e., soil saturation concentrations) of the other constituents of concern. Although a TPHg concentration of 1,300 mg/kg is reported (Philip, 1996), soil analytical results for constituents of concern in the former gasoline tank area were not available for review. Ethylbenzene, toluene, and xylene concentrations in the former gasoline tank area do not exceed SSTLs because the 1,300 mg/kg of TPHg detected, which represents the contribution of gasoline components including the constituents of concern, is significantly below respective residual concentrations.

Benzene concentrations in soil are not likely to exceed SSTLs because of (1) the relatively small contribution of benzene to gasoline (i.e., assuming 2% by weight of benzene in gasoline [Metcalf & Eddy, Inc., 1993], the 1,300 mg/kg of TPHg results an estimated 26 mg/kg of benzene), and (2) attenuation due to biodegradation and volatilization, and dissolution into groundwater adjacent to well MW-1.

Summary

Tier 2 evaluation was conducted using site specific parameters. Based on the calculations, the constituent of concern concentrations detected in groundwater at the site do not represent health risk exceeding 1.0×10^{-5} excess cancer risk and 1.0 chronic hazard quotient. In addition, constituents of concern in soil are not likely to exceed SSTLs calculated outdoor air inhalation.

CONCLUSIONS

Based on the analytical results and site data, petroleum hydrocarbons have been detected in soil and groundwater near the former gasoline tank area, and halogenated hydrocarbons have been detected in groundwater beneath the north-central portion of the site. The subsurface distribution of petroleum hydrocarbons appears to be limited to immediately adjacent to the former gasoline tank excavation, and within the upper portion of the first-encountered water-bearing zone 17 feet west of the former gasoline tank excavation. Risk assessment results indicate that (1) the concentrations of constituent of concerns in groundwater detected at the site do not represent health risk exceeding 1.0×10^{-5} excess cancer risk and 1.0 chronic hazard quotient, (2) ethylbenzene, toluene, and xylene concentrations in soil do not represent health risk exceeding 1.0 chronic hazard quotient, and (3) benzene concentrations in soil are not likely to represent health risk exceeding 1.0×10^{-5} excess cancer risk.

Halogenated hydrocarbons are not considered to be a concern at the site based on the limited impact indicated by the absence of detectable concentrations in shallow soil and the low and decreasing concentrations detected in groundwater. Selected metals detected in groundwater are not considered to be a concern due to their low dissolved concentrations relative to drinking water standards.

PLANNED ACTIVITIES

The next quarterly groundwater level survey is scheduled for January 1997 and the next semi-annual groundwater monitoring event is scheduled for April 1997. No further investigation or remediation activities are planned. Case closure review should be initiated by ACEHS.

LIMITATIONS

This risk assessment has been prepared for the exclusive use of the Executors of the Estate of Josephine A. Dibble. The information and recommendations presented herein are based on BSK & Associates' evaluation of subsurface conditions interpreted from data obtained from previous investigations, and application of the site data to the ASTM guidance. Data compiled from

previous investigations were based on analytical results of discrete soil and groundwater samples collected from a limited number of subsurface sampling locations at the site and may not be entirely representative of conditions existing at other locations on the site.

This report has been prepared in accordance with generally accepted methodologies and standards of practice for the area. No other warranty, either expressed or implied, is made as to the findings or conclusions included in this report.

The findings of this report are valid as of the present. Additional data, the passage of time, natural processes or human intervention on the property or adjacent properties, and regulatory changes can cause changed conditions which can invalidate the findings and conclusions in this report.

CLOSURE

BSK & Associates appreciates the opportunity to provide you with environmental services. If you have any questions, please don't hesitate to call us at (510) 462-4000.

Sincerely,

BSK & ASSOCIATES

Khaled Rahman, R.G., C.H.G. No. 0261
Senior Hydrogeologist

Attachments:

Figure 1 - Site Location Map with Well Locations
Figure 2 - Site Plan
Figure 3 - Site Conceptual Model

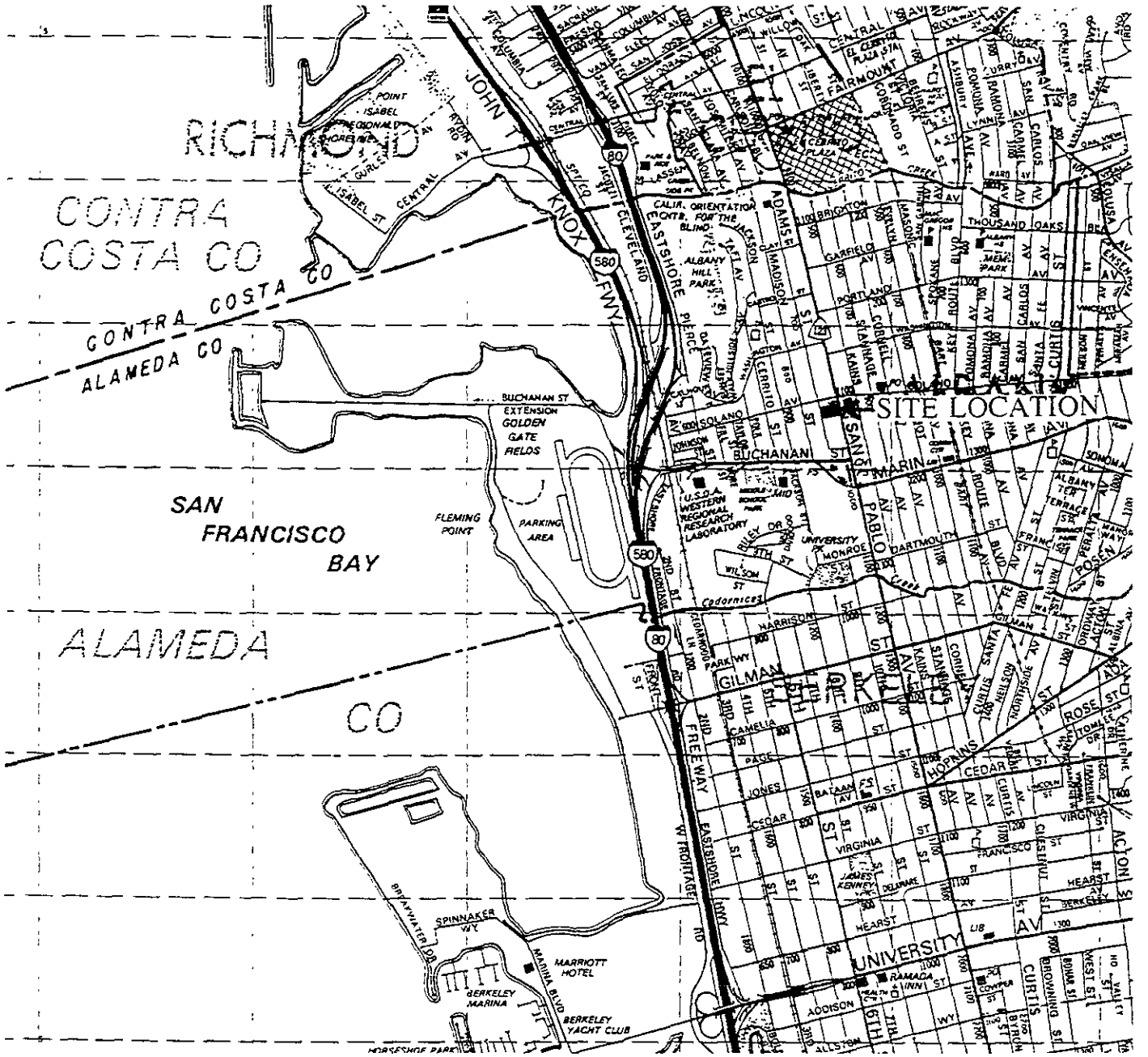
Table 1 - Groundwater Elevation Data
Table 2 - Groundwater Analytical Data - Petroleum Hydrocarbons
Table 3 - Groundwater Analytical Data - Selected Metals
Table 4 - Supplemental Investigation Data
Table 5 - Site Specific Target Level Summary

Appendix A - Groundwater Sampling Procedures
Appendix B - Field Data Sheets
Appendix C - Certified Analytical Results and Chain of Custody Forms
Appendix D - Boring Logs and Drilling Permit
Appendix E - Direct-Push Sampling Procedures
Appendix F - Risk Assessment Support Documents

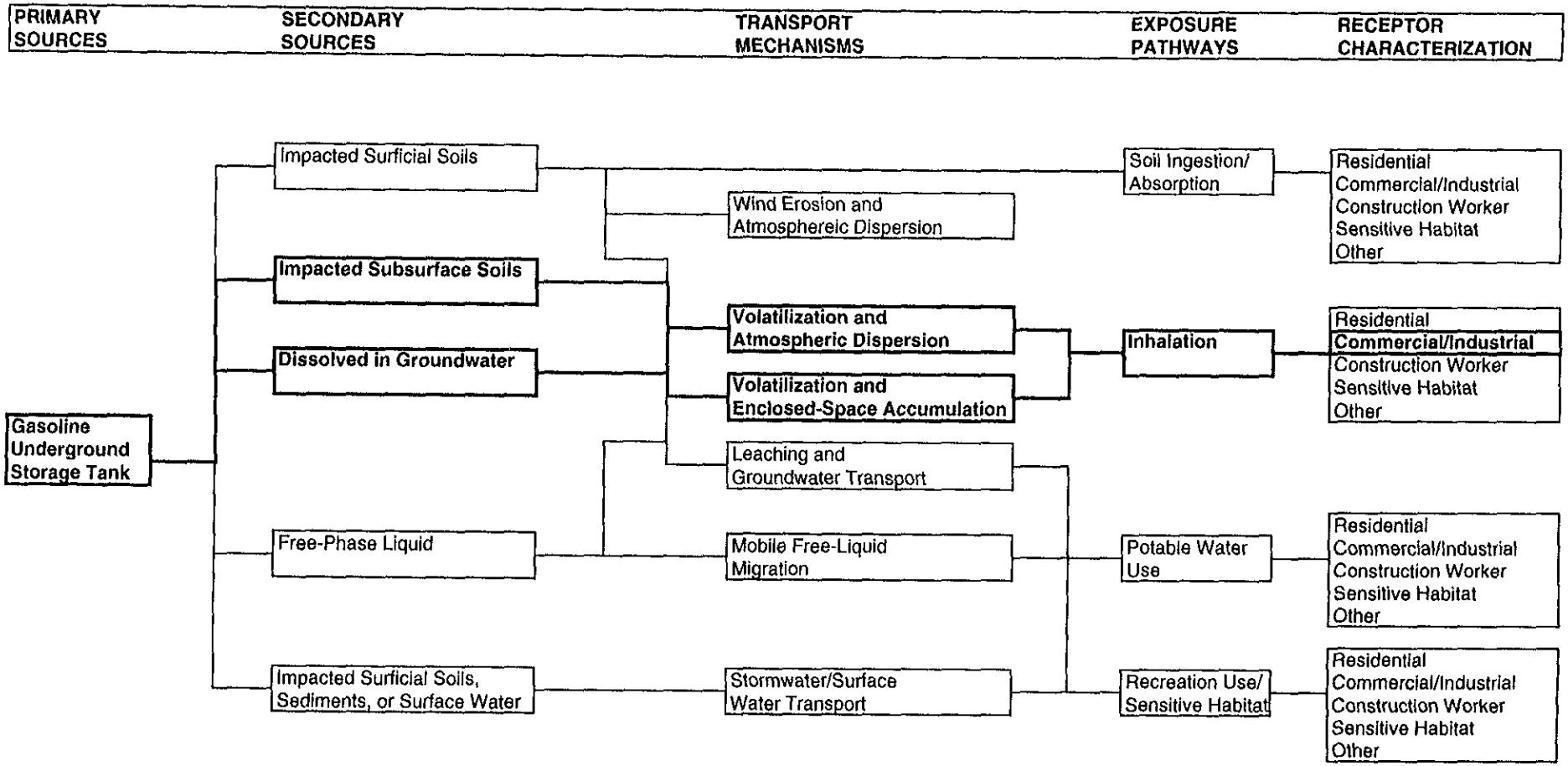
cc: Juliet Shin, Alameda County Environmental Health Services
Jay Labadie

FIGURES 1-3

BSK



Joe Sio Chevrolet 914-916 San Pablo Avenue Albany, California	FIGURE 1 **SITE LOCATION MAP** BSK Project No. 04400086	**BSK** & ASSOCIATES



Completed pathway is emboldened.

Joe Sio Chevrolet 914-916 San Pablo Avenue Albany, California	**Site Conceptual Model** Project No. 04400086 Figure 3	BSK & ASSOCIATES

TABLES 1-5

TABLE 1
GROUNDWATER ELEVATION DATA

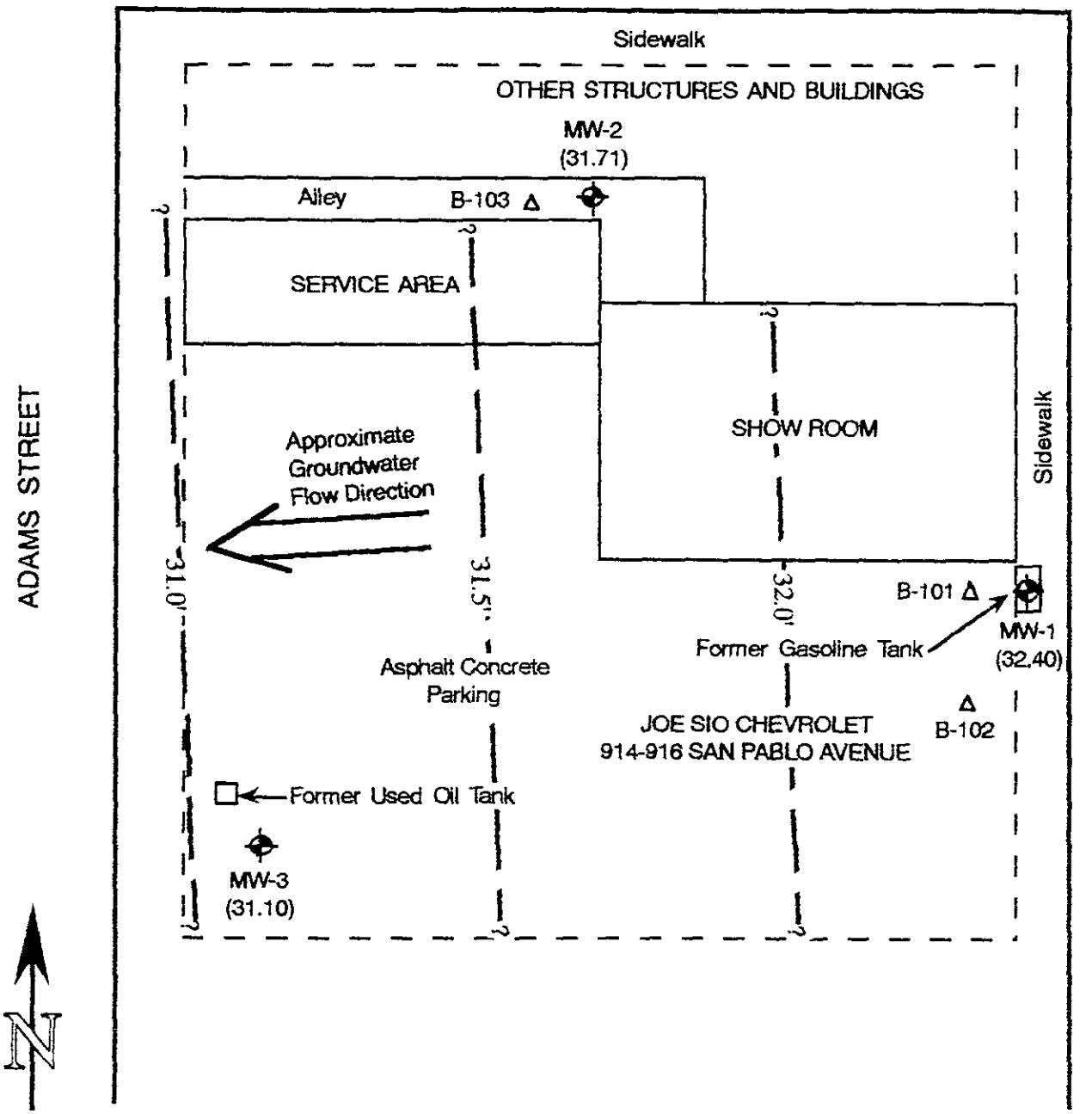
Joe Sio Chevrolet
914-916 San Pablo Avenue, Albany, California

Monitoring Well No.	Date Measured	Total Depth (ft-BTOC)	TOC Elevation (ft-MSL)	Depth to Water (ft-BTOC)	Water Elevation (ft-MSL)
MW-1	8/7/91	NM	42.61	10.49	32.12
	8/12/91	NM	42.61	10.37	32.24
	4/15/94	29.80	42.61	10.60	32.01
	7/14/94	29.70	42.61	10.55	32.06
	10/14/94	29.75	42.61	10.88	31.73
	1/17/95	29.75	42.61	9.97	32.64
	4/19/95	29.62	42.61	9.74	32.87
	7/13/95	29.79	42.61	10.31	32.30
	10/17/95	29.84	42.61	10.40	32.21
	3/28/96	29.78	42.61	10.01	32.60
	9/25/96	29.50	42.61	10.21	32.40
MW-2	8/7/91	NM	42.73	11.64	31.09
	8/12/91	NM	42.73	11.69	31.04
	4/15/94	26.88	42.73	10.16	32.57
	7/14/94	26.85	42.73	10.91	31.82
	10/14/94	26.88	42.73	12.10	30.63
	1/17/95	26.87	42.73	9.54	33.19
	4/19/95	26.71	42.73	7.99	34.74
	7/13/95	26.91	42.73	9.91	32.82
	10/17/95	26.96	42.73	11.38	31.35
	3/28/96	26.89	42.73	8.55	34.18
	9/25/96	26.60	42.73	11.02	31.71
MW-3	8/7/91	NM	39.44	8.94	30.50
	8/12/91	NM	39.44	8.94	30.50
	4/15/94	25.58	39.44	7.68	31.76
	7/14/94	25.62	39.44	8.40	31.04
	10/14/94	25.61	39.44	9.31	30.13
	1/17/95	25.79	39.44	5.44	34.00
	4/19/95	25.65	39.44	5.99	33.45
	7/13/95	25.85	39.44	7.38	32.06
	10/17/95	25.79	39.44	8.70	30.74
	3/28/96	25.86	39.44	8.11	31.33
	9/25/96	25.60	39.44	8.34	31.10

Water levels measured on 9/25/96 by BSK & Associates of Pleasanton, California. Previous water level and TOC elevation data based on Philip Environmental Services Corporation, 1996.

ft-BTOC	Feet below top of casing
ft-MSL	Feet above mean sea level
NM	Not measured
TOC	Top of casing

BSK



Explanation

Δ Direct-Push Sampling Location

Groundwater Monitoring Well Location

(31.10) Groundwater Elevation (feet above mean sea level)

—31.0'— Groundwater Elevation Contour, queried where unknown

0 40 80

Approximate Scale in Feet

Joe Sio Chevrolet 914-916 San Pablo Avenue Albany , California	**SITE PLAN** Project No. 04400086/04400092 FIGURE: 2	**BSK** & ASSOCIATES

TABLE 2
GROUNDWATER ANALYTICAL DATA
Petroleum and Halogenated Hydrocarbons

Joe Sio Chevrolet
914-916 San Pablo Avenue, Albany, California

Monitoring Well	Date Sampled	Sample No.	TPH Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Total Oil and Grease (ug/L)	Chloro-methane (ug/L)	Carbon Tetrachloride (ug/L)	TCE (ug/L)	cis-1,2-DCE (ug/L)	PCE (ug/L)
	EPA Analytical Method:		8015m	602	602	602	602	9070	601	601	601	601	601
Groundwater Analyses:													
MW-1	8/7/91	MW-1	110	16	2.0	0.7	15	-	-	-	-	-	-
	4/15/94	MW01-041594	2,500	880	22	79	47	-	-	-	-	-	-
	7/14/94	MW01-071494	470	110	22	21	87	-	-	-	-	-	-
	10/14/94	MW01-101494	380	86	17	24	77	-	-	-	-	-	-
	1/17/95	MW01-011795	600	250	11	5.3	56	-	-	-	-	-	-
	4/19/95	MW01 041995	210	69	3.7	3.7	12	-	-	-	-	-	-
	7/13/95	MW01071395	110	30	4.7	8.2	20	-	-	-	-	-	-
	10/17/95	MW01 101795	90	29	3.7	10	23	-	-	-	-	-	-
	10/17/95 d	DW01 101795	110	32	4.3	12	26	-	-	-	-	-	-
	3/28/96	MW01032896	620	180	12	35	94	-	-	-	-	-	-
	3/28/96 d	DW01032896	720	200	14	39	120	-	-	-	-	-	-
	9/25/96	MW-1	ND(<50)	8.4	ND(<0.30)	2.9	6.9	-	-	-	-	-	
MW-2	8/7/91	MW-2	ND(<50)	ND(<0 50)	ND(<0 50)	ND(<0.50)	ND(<0.50)	-	-	-	-	-	-
	4/15/94	MW02-041494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0 50)	-	-	-	-	-	-
	7/14/94	MW02-071494	ND(<50) *	ND(<0.30) *	0.73 *	ND(<0 30) *	0.71 *	-	-	-	-	-	-
	10/14/94	MW02-101494	ND(<50) *	ND(<0.30) *	ND(<0.30) *	ND(<0.30) *	ND(<0.50) *	-	-	-	-	-	-
	1/17/95	MW02-011795	ND(<50) *	ND(<0 30) *	ND(<0.30) *	ND(<0.30) *	ND(<0.50) *	-	0.94	0.98	0.58	0.51	100
	4/19/95	MW02 041995	ND(<50) *	ND(<0.30) *	ND(<0.30) *	ND(<0.30) *	ND(<0.50) *	-	ND(<0 50)	0.83	ND(<0.50)	ND(<0.50)	76
	7/13/95	MW02071395	ND(<50)	ND(<0.30)	ND(<0 30)	ND(<0.30)	ND(<0.50)	-	ND(<0.50)	0.98	ND(<0 50)	ND(<0 50)	68
	10/17/95	MW02 101795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	ND(<1.0)	1.1	ND(<1.0)	ND(<1.0)	60
	3/28/96	MW02032896	ND(<50)	ND(<0 50)	ND(<0 50)	ND(<0.50)	ND(<0.50)	-	ND(<1 2)	ND(<1.2)	ND(<1.2)	ND(<1.2)	58
	9/25/96	MW-2	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0 50)	-	ND(<0.50)	1.0	0.80	0.80	57
MW-3	8/7/91	MW-3	-(<50)	ND(<0.50)	ND(<0 50)	ND(<0 50)	ND(<0.50)	ND(<5,000)	-	-	-	-	-
	4/15/94	MW03-041594	ND(<50)	ND(<0.30)	ND(<0 30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	12
	4/15/94 d	DW01-041494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0 50)	-	-	-	-	-	-
	7/14/94	MW03-071494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	0.50	-	-	-	-	-	17
	7/14/94 d	DW01-071494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	0.53	-	-	-	-	-	-
	10/14/94	MW03-101494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	19
	10/14/94 d	DW01-101494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0 50)	-	-	-	-	-	-
	1/17/95	MW03-011795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	ND(<4)
	1/17/95 d	DW03-011795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0 30)	ND(<0.50)	-	-	-	-	-	-
	4/19/95	MW03 041995	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0 50)	-	-	-	-	-	9.1
	4/19/95 d	DW03 041995	ND(<50)	ND(<0.30)	ND(<0 30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/13/95	MW03071395	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	ND(<4)
	7/13/95 d	DW01071395	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	10/17/95	MW03 101795	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	ND(<4)
	3/28/96	MW03032896	ND(<50)	ND(<0.50)	ND(<0.50)	ND(<0 50)	ND(<0.50)	-	-	-	-	-	ND(<4)
	9/25/96	MW-2	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0 50)	-	-	-	-	-	-

BSK & Associates

TABLE 2 (Continued)
GROUNDWATER ANALYTICAL DATA
Petroleum and Halogenated Hydrocarbons

Joe Sio Chevrolet
914-916 San Pablo Avenue, Albany, California

Monitoring Well	Date Sampled	Sample No.	TPH Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Total Oil and Grease (ug/L)	Chloro-methane (ug/L)	Carbon Tetrachloride (ug/L)	TCE (ug/L)	cis-1,2-DCE (ug/L)	PCE (ug/L)
	EPA Analytical Method:		**8015m**	**602**	**602**	**602**	**602**	**9070**	**601**	**601**	**601**	**601**	**601**
Rinsate Analyses:													
	4/15/94	RS01-041594	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/14/94	RS01-071494	ND(<50)	ND(<0.30)	**0.33**	ND(<0.30)	**0.65**	-	-	-	-	-	-
	10/14/94	RS01-101494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	1/17/95	RS01-011795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	4/19/95	RS01 041995	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/13/95	RS01071395	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	10/17/95	RS01 101795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	3/28/96	RS01032896	ND(<50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	-	-	-	-	-	-
Trip Blank Analyses:													
	4/15/94	TB01-041594	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/14/94	TB01-071494	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	10/14/94	TB01-101494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	1/17/95	TB01-011795	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/13/95	TB01071395	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	10/17/95	TB01101795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	3/28/96	TB01032896	ND(<50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	ND(<0 50)	-	-	-	-	-	-
California Primary Maximum Contaminant Levels:			-	1	150	700	1,750	-	-	0.5	5	6	5

Results above detection limit are bolded for emphasis.
Samples collected on 9/25/96 by BSK & Associates of Pleasanton, California.
Previous data based on Philip Environmental Services Corporation, 1996.
California Primary Maximum Contaminant Levels per CCR 64444.

*	An external standard quantitation was used on this sample due to matrix interference
b	Analyte found in method blank
d	Duplicate sample
-	Not analyzed
EPA	Environmental Protection Agency
ND	Concentration below detection limit presented in parentheses
ug/L	Micrograms per liter (parts per billion)

BSK & Associates

TABLE 2 (Continued)
GROUNDWATER ANALYTICAL DATA
Petroleum and Halogenated Hydrocarbons

Joe Sio Chevrolet
914-916 San Pablo Avenue, Albany, California

Monitoring Well	Date Sampled	Sample No.	TPH Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Total Oil and Grease (ug/L)	Chloro-methane (ug/L)	Carbon Tetrachloride (ug/L)	TCE (ug/L)	cis-1,2-DCE (ug/L)	PCE (ug/L)
	EPA Analytical Method:		8015m	602	602	602	602	9070	601	601	601	601	601
Rinsate Analyses:													
	4/15/94	RS01-041594	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/14/94	RS01-071494	ND(<50)	ND(<0.30)	**0.33**	ND(<0.30)	**0.65**	-	-	-	-	-	-
	10/14/94	RS01-101494	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	1/17/95	RS01-011795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	4/19/95	RS01 041995	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/13/95	RS01071395	ND(<50)	ND(<0.30)	ND(<0 30)	ND(<0.30)	ND(<0 50)	-	-	-	-	-	-
	10/17/95	RS01 101795	ND(<50)	ND(<0 30)	ND(<0 30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	3/28/96	RS01032896	ND(<50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	-	-	-	-	-	-
Trip Blank Analyses:													
	4/15/94	TB01-041594	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/14/94	TB01-071494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0 50)	-	-	-	-	-	-
	10/14/94	TB01-101494	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0 30)	ND(<0.50)	-	-	-	-	-	-
	1/17/95	TB01-011795	ND(<50)	ND(<0 30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	7/13/95	TB01071395	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	10/17/95	TB01101795	ND(<50)	ND(<0.30)	ND(<0.30)	ND(<0.30)	ND(<0.50)	-	-	-	-	-	-
	3/28/96	TB01032896	ND(<50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	ND(<0.50)	-	-	-	-	-	-
California Primary Maximum Contaminant Levels.			-	1	150	700	1,750	-	-	0.5	5	6	5

Results above detection limit are bolded for emphasis.
Samples collected on 9/25/96 by BSK & Associates of Pleasanton, California.
Previous data based on Philip Environmental Services Corporation, 1996.
California Primary Maximum Contaminant Levels per CCR 64444.

*	An external standard quantitation was used on this sample due to matrix interference
b	Analyte found in method blank
d	Duplicate sample
-	Not analyzed
EPA	Environmental Protection Agency
ND	Concentration below detection limit presented in parentheses
ug/L	Micrograms per liter (parts per billion)

BSK & Associates

TABLE 3
GROUNDWATER ANALYTICAL DATA
Selected Metals

Joe Sio Chevrolet
914-916 San Pablo Avenue, Albany, California

Monitoring Well	Date Sampled	Sample No.	Cadmium (ug/L)	Chromium (ug/L)	Lead (ug/L)	Nickel (ug/L)	Zinc (ug/L)
	EPA Analytical Method:		200.8	200.8	200.8	200.7	200.7
Groundwater Analyses:							
MW-1	4/15/94	MW01-041594	-	-	**9.3**	-	-
	7/14/94	MW01-071494	-	-	**5.9**	-	-
	10/14/94	MW01-101494	-	-	**8.0**	-	-
	1/17/95	MW01-011795	-	-	**9.6**	-	-
	4/19/95	MW01 041995	-	-	**18**	-	-
	7/13/95	MW01071395	-	-	**4.8**	-	-
	10/17/95	MW01 101795	-	-	**8.8**	-	-
	3/28/96	MW01032896	-	-	**12**	-	-
	9/25/96	MW-1	-	-	ND(<5)	-	-
MW-2	4/15/94	MW02-041494	-	-	**22**	-	-
	7/14/94	MW02-071494	-	-	**23**	-	-
	10/14/94	MW02-101494	-	-	**21**	-	-
	1/17/95	MW02-011795	-	-	**31**	-	-
	4/19/95	MW02 041995	-	-	ND(<3)	-	-
	7/13/95	MW02071395	-	-	**38**	-	-
	10/17/95	MW02 101795	-	-	**28**	-	-
	3/28/96	MW02032896	-	-	**13**	-	-
	9/25/96	MW-2	-	-	ND(<5)	-	-
MW-3	4/15/94	MW03-041594	**12**	**250**	**220**	**340**	**490**
	7/14/94	MW03-071494	**17**	**550**	**220**	**730**	**840**
	10/14/94	MW03-101494	**19**	**640**	**140**	**860**	**900** b
	1/17/95	MW03-011795	ND(<4)	**8.8**	ND(<3)	ND(<1.5)	**22**
	4/19/95	MW03 041995	**9.1**	**19**	**68**	**67**	**1,300**
	7/13/95	MW03071395	ND(<4)	**12**	ND(<3)	ND(<1.5)	**24**
	10/17/95	MW03 101795	ND(<4)	ND(<7)	ND(<3)	ND(<1.5)	ND(<10)
	3/28/96	MW03032896	ND(<4)	ND(<7)	ND(<3)	ND(<15)	**56**
	9/25/96	MW-3	ND(<1)	ND(<5)	ND(<5)	ND(<10)	ND(<50)
California Primary Maximum Contaminant Levels:			5	50	-	100	5,000

Results above detection limit are bolded for emphasis.
Samples collected on 9/25/96 by BSK & Associates of Pleasanton, California.
Analytical method indicated for 9/25/96 samples.
Previous data based on Philip Environmental Services Corporation, 1996.
California Primary Maximum Contaminant Levels per CCR 64431.

b	Analyte found in method blank
-	Not analyzed
EPA	Environmental Protection Agency
ND	Concentration below detection limit presented in parentheses
ug/L	Micrograms per liter (parts per billion)

BSK

TABLE 4
SUPPLEMENTAL INVESTIGATION ANALYTICAL RESULTS

Joe Sio Chevrolet
914-916 San Pablo Avenue, Albany, California

Sampling Location	Date Sampled	Sample No.	Media	Units	Sample Depth (ft-BGS)	TPH Gasoline	Benzene	Toluene	Ethyl-benzene	Total Xylenes	VOCs
	EPA Analytical Method:					8015m	8020/602	8020/602	8020/602	8020/602	8010/601
B-101	9/25/96	B-101-10	Soil	mg/kg	10	ND(<1.0)	ND(<0.005)	ND(<0.005)	ND(<0.005)	ND(<0.005)	-
	9/25/96	B-101-water	Groundwater	ug/l	23.5	**2,300**	ND(<0.30)	**28**	**70**	**480**	-
B-102	9/25/96	B-102-10	Soil	mg/kg	10	ND(<1.0)	ND(<0.005)	ND(<0.005)	ND(<0.005)	ND(<0.005)	-
	9/25/96	B-102-20	Soil	mg/kg	20	ND(<1.0)	ND(<0.005)	ND(<0.005)	ND(<0.005)	ND(<0.005)	-
B-103	9/25/96	B-103-10	Soil	mg/kg	10	ND(<1.0)	ND(<0.005)	ND(<0.005)	ND(<0.005)	ND(<0.005)	ND(<varies)

Results above detection limit are bolded for emphasis.
Samples collected using direct-push sampling rig.

- Not analyzed
EPA Environmental Protection Agency
ft-BGS Feet below ground surface
ND Concentration below detection limit presented in parentheses
mg/kg Milligrams per kilogram (parts per million)
ug/l Micrograms per liter (parts per billion)
VOCs Volatile organic compounds

Table 5
Site Specific Target Level Summary

914-916 San Pablo Avenue
Albany, California

Media	Exposure Pathway	Receptor Scenario	Target Level*	Benzene	Toluene	Ethyl-benzene	Total Xylenes
				(ug/L)	(ug/L)	(ug/L)	(ug/L)
CONSTITUENTS OF CONCERN CONCENTRATIONS**							
Groundwater	Maximum Concentration			880	79	28	480
Groundwater	95% Upper Confidence Limit			130	24	16	75
SITE SPECIFIC TARGET LEVELS (SSTLs)							
Groundwater	Volatilization to Outdoor Air - Capillary Fringe Impact	Commercial/Industrial	1E-05/1.0	>Solubility	>Solubility	>Solubility	>Solubility
Groundwater	Volatilization to Indoor Air - Capillary Fringe Impact	Commercial/Industrial	1E-05/1.0	3,190	>Solubility	>Solubility	>Solubility
Groundwater	Volatilization to Outdoor Air - MW-1 Impact	Commercial/Industrial	1E-05/1.0	>Solubility	>Solubility	>Solubility	>Solubility
Groundwater	Volatilization to Indoor Air - MW-1 Impact	Commercial/Industrial	1E-05/1.0	1,218	500,000	>Solubility	>Solubility

* Target level set to 1 in 100,000 excess cancer risk for carcinogens, and a hazard quotient of over 1 for noncarcinogens.

** Concentrations of constituents of concern in groundwater based on previous work presented in Philip Environmental Services Corporation, 1996, and the supplemental investigation data presented herein. 95% upper confidence limit calculated using available data for well MW-1 and B-102.

SSTLs Risk calculated based on American Society of Testing and Materials E-1739-95. SSTLs were calculated using the RBCA Toolkit prepared by Groundwater Services, Inc. based on the assumptions reviewed in the text. Benzene SSTLs were modified by multiplying by 0 29 as requested in Regional Water Quality Control Board - San Francisco Bay Region Supplemental Information dated January 5, 1996.

ug/L microgram per liter

>Solubility selected risk level is not exceeded for pure compound in water (saturation concentration)

Appendix A

GROUNDWATER SAMPLING PROCEDURES

Appendix A

GROUNDWATER SAMPLING PROCEDURES

INTRODUCTION

The sampling and analysis procedures for water-quality monitoring programs are contained in this Appendix. These procedures ensure that consistent and reproducible sampling methods are used, proper analytical methods are applied, analytical results are accurate, precise, and complete, and the overall objectives of the monitoring program are achieved.

Sample Collection

Sample collection procedures include equipment cleaning, water-level and total well-depth measurements, and well purging and sampling.

Equipment Cleaning

Sample bottles, caps, and septa were precleaned and provided by a California-certified laboratory. All sampling containers were used only once and discarded after analysis was complete. Before starting the sampling event, all equipment to be placed in the well or come in contact with groundwater was disassembled and cleaned thoroughly with detergent water, then steam cleaned with tap water, and rinsed with distilled water. Any parts that may absorb contaminants, such as plastic pump valves or bladders, were cleaned as described above or replaced.

During the sampling event all equipment used in the well was washed with detergent, steam-cleaned, and rinsed with distilled water before purging or sampling the next well. The rinsate water was contained for temporary storage in 55-gallon drums and disposal will be arranged by the client. The 55-gallon drums were stored onsite and labeled by the field technician.

Quality Assurance Samples

A trip blank was analyzed to insure contamination did not result from travel exposure. Equipment rinsate samples were collected to evaluate decontamination procedures.

Water-Level, Floating-Hydrocarbon, and Total Well-Depth Measurements

Before purging and sampling, the depth to water, floating hydrocarbon thickness, and the well total depth were measured using an oil water interface probe and an electric sounder. The electric sounder, manufactured by Slope-Indicator, Inc., is a transistorized instrument that uses a reel-mounted, two conductor, coaxial cable that connects the control panel to the sensor. Cable markings are stamped at 1-foot intervals. An engineers rule was used to measure the depths to the closest 0.01 foot. The water level was measured by lowering the sensor into the monitoring well. A low current circuit is completed when the sensor contacts the water, which serves as a conductor. The current is amplified and fed across an indicator light and audible buzzer, signaling when water has been contacted. A sensitivity control compensates for very saline or conductive water. The oil-water interface probe signals with a solid sound when it contacts phase-separated hydrocarbons. When the probe detects water, the sound changes to a beeping sound. When PSH is detected at greater than 1/32-inch in thickness, a sample is not collected.

All liquid measurements were recorded to the nearest 0.01 foot in the field logbook. The groundwater elevation at each monitoring well was calculated by subtracting the measured depth to water from the surveyed well-casing elevation. Well total depth was then measured by lowering the sensor to the bottom of the well. Well total depth, used to calculate purge volumes and to determine whether the well screen is partially obstructed by silt, was recorded to the nearest 0.01 foot in the field log book.

Well Purging

Before sampling, standing water in the casing was purged from the monitoring wells using a PVC hand bailer. Samples were collected from the monitoring wells after a minimum of four casing volumes had been evacuated or the pH, electrical conductivity, and temperature had stabilized. In the case that the monitoring well was purged until dry, the well was allowed to recover to within 80% of its static water level and sampled.

The pH, electrical conductivity, and temperature meter were calibrated each day before beginning field activities. After every well volume of groundwater removed from the monitoring well, field measurements were taken. The data is presented on the water sample field data sheets. The calibration was checked once each day to verify meter performance. All field meter calibrations were recorded in the field log book.

Groundwater generated from well-purging operations were contained for temporary storage in 55-gallon drums. All drums were labeled and stored onsite. The sampler recorded on the drum label for each drum generated:

- drum content (i.e., groundwater)
- source (i.e., well identification code)
- date generated
- client contact
- project number
- name of sampler.

The purge water will be disposed of by the client.

Well Sampling

A Teflon® bailer was used for well sampling. Glass bottles of at least 40 milliliters volume and fitted with Teflon-lined septa were used in sampling for volatile organics. These bottles were filled completely to prevent air from remaining in the bottle. A positive meniscus forms when the bottle is completely full. A convex Teflon septum is placed over the meniscus to eliminate air. After capping, the bottle was inverted and tapped to verify that it did not contain air bubbles. The sample containers for other parameters were filled, and capped.

Sample Handling and Documentation

The following section specifies the procedures and documentation used during sample handling.

Sample Handling

All sample containers were labeled immediately following sample collection. Samples were kept cool with ice cubes until received by the laboratory. At the time of sampling, each sample was logged on a chain-of-custody record which accompanied the sample to the certified hazardous materials testing laboratory.

Sample Documentation

The following procedures were used during sampling and analysis to provide chain-of-custody control during sample handling from collection through storage. Sample documentation included:

- field log books to document sampling activities in the field

- labels to identify individual samples; and
- chain-of-custody record sheets for documenting possession and transfer of samples.

Field Log Book

In the field, the sampler recorded on the Water Sample Field Data Sheet for each sample collected:

- project number
- client name
- location
- name of sampler
- date and time
- pertinent well data (e.g., casing diameter, depth to water, well depth
- calculated and actual purge volumes
- purging equipment used
- sampling equipment used
- appearance of each sample (e.g., color, turbidity, sediment)
- results of field analyses (i.e., temperature, pH, electrical conductivity)
- general comments

The field logbooks were signed by the sampler.

Labels

Sample labels contained:

- project number
- sample number (i.e., well designation)
- sampler's initials

- date and time of collection
- type of preservative used (if any)

Sampling and Analysis Chain-of-Custody Record

The Sampling and Analysis Chain-of-Custody record, initiated at the time of sampling, contains, but is not limited to, the well number, sample type, analytical request, date of sampling, and the name of the sampler. The record sheet was signed, timed, and dated by the sampler when transferring the samples. The number of custodians in the chain of possessions were kept to a minimum.

Appendix B

FIELD DATA SHEETS

BSK Job No. 04400086
September

WELL FIELD LOG

Well Observation: x **Date:** 9/25/96
Sample Collection: x **Date:** 9/25/96

Project Name: Joe Sio Chevrolet
Location: 914-916 San Pablo Avenue, Albany, CA
Personnel: CB
Weather: Overcast, Mild

WELL INFORMATION:

Well Number	MW-1	**Date Purged**	9/25/96
Depth to Water - feet(TOC)	10.21	**Purge Method**	Submersible Pump
Well Depth (feet)	29.5		
Water Volume (gallons)	3.3	**Purge Begin**	13:15
Reference Elevation - feet(TOC)	--	**Purge End**	13:22
Groundwater Elevation (feet)	--	**Purge Rate**	1.9 GPM
Measurement Technique	Solinst Electric Water Sounder		

IMMISCIBLE LAYERS:

Top: None observed, Indistinct Odor
Bottom: Trace Clay, Indistinct Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
13:17	3.5	853	6.78	75	
13:19	7.0	958	6.83	70	
13:20	10.5	954	6.80	69	
13:22	14.0	959	6.87	68	

SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Point-Source Bailer/Submersible pump for organics

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
	TPH-g, BTEX	2-40 ml glass vials with Hcl	
	Total Lead	1-8 oz. with HNO_3, Field Filtered	

Field Observations: None

BSK

BSK Job No. 04400086
September

WELL FIELD LOG

Well Observation: x **Date:** 9/25/96
Sample Collection: x **Date:** 9/25/96

Project Name: Joe Sio Chevrolet
Location: 914-916 San Pablo Avenue, Albany, CA
Personnel: CB
Weather: Overcast, Mild

WELL INFORMATION:

Well Number	MW-2	**Date Purged**	9/25/96
Depth to Water - feet(TOC)	11.02	**Purge Method**	Submersible Pump
Well Depth (feet)	26.6		
Water Volume (gallons)	2.6	**Purge Begin**	11:39
Reference Elevation - feet(TOC)	--	**Purge End**	11:43
Groundwater Elevation (feet)	--	**Purge Rate**	1.5 GPM
Measurement Technique	Solinst Electric Water Sounder		

IMMISCIBLE LAYERS:

Top: None observed, No Odor
Bottom: Trace Clay, No Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
11:40	1.5	886	7.33	64	
11:41	3.0	910	7.23	66	
11:42	4.5	934	7.09	67	
11:43	6.0	938	7.21	66	

SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Point-Source Bailer/Submersible pump for organics

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
11:58	TPH-g, BTEX	2-40 ml glass vials with Hcl	
	Total Lead	1-8 oz. with HNO_3, Field Filtered	

Field Observations: None

BSK

BSK Job No. 04400086
September

WELL FIELD LOG

Well Observation: x **Date:** 9/25/96
Sample Collection: x **Date:** 9/25/96

Project Name: Joe Sio Chevrolet
Location: 914-916 San Pablo Avenue, Albany, CA
Personnel: CB
Weather: Overcast, Mild

WELL INFORMATION:

Well Number	MW-3	**Date Purged**	9/25/96
Depth to Water - feet(TOC)	8.34	**Purge Method**	Submersible Pump
Well Depth (feet)	25.6		
Water Volume (gallons)	2.9	**Purge Begin**	10:41
Reference Elevation - feet(TOC)	--	**Purge End**	10:45
Groundwater Elevation (feet)	--	**Purge Rate**	2.4 GPM
Measurement Technique	Solinst Electric Water Sounder		

IMMISCIBLE LAYERS:

Top: None observed some floating weeds, No Odor
Bottom: Trace Clay, No Odor
Detection Method: Visual
Collection Method: Clear Point-Source Bailer

WELL DEVELOPMENT/PURGE DATA:

TIME	VOLUME REMOVED (gallons)	ELECTRICAL CONDUCTIVITY (Micromhos)	pH	TEMP. (°F)	COLOR/COMMENTS
10:42	3.0	566	7.21	71	
10:43	6.0	602	7.02	70	
10:44	9.0	594	6.95	69	
10:45	12.0	596	6.94	68	

SAMPLE COLLECTION DATA:

Sampling Equipment: Teflon Point-Source Bailer/Submersible pump for organics

TIME	ANALYSIS	AMOUNT/CONTAINER USED	SAMPLE INTERVAL
10:58	TPH-g, BTEX	2-40 ml glass vials with Hcl	
	Total Cd, Cr, Pb, Ni, Zn	1-8 oz. with HNO_3, Field Filtered	

Field Observations: None

BSK

Appendix C

CERTIFIED ANALYTICAL RESULTS
AND
CHAIN-OF-CUSTODY FORMS

BSK ANALYTICAL LABORATORIES

CERTIFICATE OF ANALYSIS
Cover Letter

October 24, 1996

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

BSK Submission Number : 9609000367
Date Received : 09/27/96

Dear Khaled Rahman,

BSK adheres to a quality assurance plan that has been approved by the State of California, Department of Health Services. Our ELAP certificate number is 1180.

This Certificate of Analysis has been prepared in response to your request for analytical services. Information was taken from your Chain-of-Custody or related correspondence. All sample handling and analytical procedures were completed within BSK Laboratories' standard acceptability criteria with any exceptions noted below.

If additional clarification of information contained within this certificate is needed, please contact our Client Service Department at 1-800-877-8310 or 209-497-2888.

Sincerely,

Jeffrey Koelewyn
Laboratory Operations Supervisor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/18/96

Submission Number : 9609000367
Lab Number : 4790
Project Number : 04400092
Project Desc. : Sio, Joe
Sample Description : MW-1

Sample Date : 09/25/96
Sample Time : 13:30
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/04/96	10/04/96	8.4	µg/L	0.3	1
EPA 8015 / EPA 8020	Ethylbenzene	10/04/96	10/04/96	2.9	µg/L	0.3	1
EPA 8015 / EPA 8020	Toluene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	p-Xylene	10/04/96	10/04/96	2.1	µg/L	0.3	1
EPA 8015 / EPA 8020	m-Xylene	10/04/96	10/04/96	3.2	µg/L	0.3	1
EPA 8015 / EPA 8020	o-Xylene	10/04/96	10/04/96	1.6	µg/L	0.3	1
EPA 8015 / EPA 8020	Gasoline	10/04/96	10/04/96	ND	µg/L	50	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Preparation Date : 10/08/96
Analysis Date : 10/09/96
Report Issue Date : 10/18/96

Sample Date : 09/25/96
Sample Time : 11:59
Sample Type : LIQUID

Submission Number : 9609000367
Lab Number : 4789
Project Number : 04400092
Project Desc. : Sio, Joe
Sample Description : MW-2

601, Volatile Halocarbons

Analyte	Result	Units	DLR	Dil
Bromodichloromethane	ND	µg/L	.5	1
Bromomethane	ND	µg/L	1.0	1
Bromoform	ND	µg/L	.5	1
Carbon tetrachloride	1.0	µg/L	.5	1
Chlorobenzene	ND	µg/L	.5	1
Chloroethane	ND	µg/L	.5	1
Chloromethane	ND	µg/L	.5	1
Chloroform	ND	µg/L	.5	1
Dibromochloromethane	ND	µg/L	.5	1
1,1-Dichloroethane	ND	µg/L	.5	1
1,1-Dichloroethene	ND	µg/L	.5	1
1,2-Dichlorobenzene	ND	µg/L	.5	1
1,2-Dichloroethane	ND	µg/L	.5	1
1,2-Dichloropropane	ND	µg/L	.5	1
1,3-Dichlorobenzene	ND	µg/L	.5	1
1,4-Dichlorobenzene	ND	µg/L	.5	1
Dichlorodifluoromethane	ND	µg/L	2.0	1
cis-1,3-Dichloropropene	ND	µg/L	.5	1
trans-1,2-Dichloroethene	ND	µg/L	.5	1
trans-1,3-Dichloropropene	ND	µg/L	.5	1
Methylene chloride	ND	µg/L	2.0	1
1,1,2,2-Tetrachloroethane	ND	µg/L	.5	1
Tetrachloroethene	57	µg/L	.5	5
1,1,1-Trichloroethane (1,1,1-TCA)	ND	µg/L	.5	1
1,1,2-Trichloroethane (1,1,2-TCA)	ND	µg/L	.5	1
Trichloroethene (TCE)	0.80	µg/L	.5	1
Trichlorofluoromethane (Freon 11)	ND	µg/L	.5	1
Vinyl chloride	ND	µg/L	1.0	1
cis-1,2-Dichloroethene	0.80	µg/L	.5	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/23/96

Submission Number : 9609000367
Lab Number : 4790
Project Number : 04400092
Project Desc. : Sio, Joe
Sample Description : MW-1

Sample Date : 09/25/96
Sample Time : 13:30
Sample Type : LIQUID

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 200.8	Lead (Pb)	10/12/96	10/12/96	ND	mg/L	0.005	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

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BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/18/96

Submission Number : 9609000367
Lab Number : 4789
Project Number : 04400092
Project Desc. : Sio, Joe
Sample Description : MW-2

Sample Date : 09/25/96
Sample Time : 11:59
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Ethylbenzene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Toluene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	p-Xylene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	m-Xylene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	o-Xylene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Gasoline	10/04/96	10/04/96	ND	µg/L	50	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

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BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/23/96

Submission Number : 9609000367
Lab Number : 4789
Project Number : 04400092
Project Desc. : Sio, Joe
Sample Description : MW-2

Sample Date : 09/25/96
Sample Time : 11:59
Sample Type : LIQUID

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 200.8	Lead (Pb)	10/12/96	10/12/96	ND	mg/L	0.005	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
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DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/18/96

Submission Number : 9609000367
Lab Number : 4788
Project Number : 04400092
Project Desc. : Sio, Joe
Sample Description : MW-3

Sample Date : 09/25/96
Sample Time : 10:48
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Ethylbenzene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Toluene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	p-Xylene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	m-Xylene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	o-Xylene	10/04/96	10/04/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Gasoline	10/04/96	10/04/96	ND	µg/L	50	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/18/96

Submission Number : 9609000367
Lab Number : 4788
Project Number : 04400092
Project Desc. : Sio, Joe
Sample Description : MW-3

Sample Date : 09/25/96
Sample Time : 10:48
Sample Type : LIQUID

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 200.8	Cadmium (Cd)	10/16/96	10/16/96	ND	mg/L	0.001	1
EPA 200.8	Chromium, Total (Cr)	10/16/96	10/16/96	ND	mg/L	0.005	1
EPA 200.8	Lead (Pb)	10/16/96	10/16/96	ND	mg/L	0.005	1
EPA 200.7	Nickel (Ni)	10/16/96	10/16/96	ND	mg/L	0.01	1
EPA 200.7	Zinc (Zn)	10/16/96	10/16/96	ND	mg/L	0.05	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
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BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/14/96

Submission Number : 9609000367
Lab Number : 4792
Project Number : 04400086
Project Desc. : Sio, Joe
Sample Description : B-101 at 10 ft.

Sample Date : 09/25/96
Sample Time : 10:05
Sample Type : SOLID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Ethylbenzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Toluene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	p-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	m-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	o-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Gasoline	10/08/96	10/08/96	ND	mg/Kg	1	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/14/96

Submission Number : 9609000367
Lab Number : 4791
Project Number : 04400086
Project Desc. : Sio, Joe
Sample Description : B-101 (water)

Sample Date : 09/25/96
Sample Time : 16:50
Sample Type : LIQUID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/06/96	10/06/96	ND	µg/L	0.3	1
EPA 8015 / EPA 8020	Ethylbenzene	10/06/96	10/06/96	70	µg/L	0.3	1
EPA 8015 / EPA 8020	Toluene	10/06/96	10/06/96	28	µg/L	0.3	1
EPA 8015 / EPA 8020	p-Xylene	10/06/96	10/06/96	140	µg/L	0.3	1
EPA 8015 / EPA 8020	m-Xylene	10/06/96	10/06/96	210	µg/L	0.3	1
EPA 8015 / EPA 8020	o-Xylene	10/06/96	10/06/96	130	µg/L	0.3	1
EPA 8015 / EPA 8020	Gasoline Lighter boiling-point hydrocarbons decreased relative to standard.	10/06/96	10/06/96	2300	µg/L	50	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/14/96

Submission Number	:	9609000367
Lab Number	:	4793
Project Number	:	04400086
Project Desc.	:	Sio, Joe
Sample Description	:	B-102 at 10 ft.

Sample Date : 09/25/96
Sample Time : 11:25
Sample Type : SOLID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Ethylbenzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Toluene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	p-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	m-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	o-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Gasoline	10/08/96	10/08/96	ND	mg/Kg	1	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/14/96

Submission Number	:	9609000367
Lab Number	:	4794
Project Number	:	04400086
Project Desc.	:	Sio, Joe
Sample Description	:	B-102 at 20 ft.

Sample Date : 09/25/96
Sample Time : 12:30
Sample Type : SOLID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Ethylbenzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Toluene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	p-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	m-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	o-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Gasoline	10/08/96	10/08/96	ND	mg/Kg	1	1

ND	:	None Detected
mg/L	:	Milligrams/Liter
µg/L	:	Micrograms/Liter
mg/kg	:	Milligrams/Kilogram
µg/kg	:	Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Report Issue Date : 10/14/96

Submission Number : 9609000367
Lab Number : 4795
Project Number : 04400086
Project Desc. : Sio, Joe
Sample Description : B-103 at 10 ft.

Sample Date : 09/25/96
Sample Time : 13:05
Sample Type : SOLID

BSK LABORATORIES LUFT ANALYSIS

Method	Analyte	Date Prep.	Date Anal.	Result	Units	DLR	Dil
EPA 8015 / EPA 8020	Benzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Ethylbenzene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Toluene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	p-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	m-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	o-Xylene	10/08/96	10/08/96	ND	mg/Kg	0.005	1
EPA 8015 / EPA 8020	Gasoline	10/08/96	10/08/96	ND	mg/Kg	1	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

BSK ANALYTICAL LABORATORIES

Certificate of Analysis

Khaled Rahman
BSK & Associates, Pleasanton
1181 Quarry Lane Suite 300
Pleasanton, CA 94566

Preparation Date : 10/08/96
Analysis Date : 10/08/96
Report Issue Date : 10/14/96

Sample Date : 09/25/96
Sample Time : 13:05
Sample Type : SOLID

Submission Number : 9609000367
Lab Number : 4795
Project Number : 04400086
Project Desc. : Sio, Joe
Sample Description : B-103 at 10 ft.

8010, Volatile Halocarbons, Solid

Analyte	Result	Units	DLR	Dil
Bromodichloromethane	ND	mg/Kg	.01	1
Bromomethane	ND	mg/Kg	.04	1
Bromoform	ND	mg/Kg	.01	1
Carbon tetrachloride	ND	mg/Kg	.01	1
Chlorobenzene	ND	mg/Kg	.01	1
Chloroethane	ND	mg/Kg	.01	1
Chloromethane	ND	mg/Kg	.01	1
Chloroform	ND	mg/Kg	.01	1
Dibromochloromethane	ND	mg/Kg	.01	1
1,1-Dichloroethane	ND	mg/Kg	.01	1
1,1-Dichloroethene	ND	mg/Kg	.01	1
1,2-Dichlorobenzene	ND	mg/Kg	.01	1
1,2-Dichloroethane	ND	mg/Kg	.01	1
1,2-Dichloropropane	ND	mg/Kg	.01	1
1,3-Dichlorobenzene	ND	mg/Kg	.01	1
1,4-Dichlorobenzene	ND	mg/Kg	.01	1
Dichlorodifluoromethane	ND	mg/Kg	.04	1
cis-1,3-Dichloropropene	ND	mg/Kg	.01	1
trans-1,2-Dichloroethene	ND	mg/Kg	.01	1
trans-1,3-Dichloropropene	ND	mg/Kg	.01	1
Methylene chloride	ND	mg/Kg	.04	1
1,1,2,2-Tetrachloroethane	ND	mg/Kg	.01	1
Tetrachloroethene	ND	mg/Kg	.01	1
1,1,1-Trichloroethane (1,1,1-TCA)	ND	mg/Kg	.01	1
1,1,2-Trichloroethane (1,1,2-TCA)	ND	mg/Kg	.01	1
Trichloroethene (TCE)	ND	mg/Kg	.01	1
Trichlorofluoromethane (Freon 11)	ND	mg/Kg	.01	1
Vinyl Chloride	ND	mg/Kg	.02	1
cis-1,2-Dichloroethene	ND	mg/Kg	.01	1

ND : None Detected
mg/L : Milligrams/Liter
µg/L : Micrograms/Liter
mg/kg : Milligrams/Kilogram
µg/kg : Micrograms/Kilogram

DLR : Detection Limit for the Purposes of Reporting
Exceptional sample matrices or interferences may result in higher detection limits

DLR = DLR x Dilution Factor

ANALYTICAL BSK LABORATORIES
Environmental Services

1414 Stanislaus Stn
Fresno, CA 93706
(209) 485-8310
(800) 877-8310
(209) 485-6935 Fa

9609000367 BSK_P

...ain of Custody

BSK Log Number: 09|367

Analytical Due Date:

Shaded areas for LAB use only

Requested Analyses

Client Name	Report Attention:	Phone #
Joe Sio	Khaled Rahman	
Address	**Project, Quote or PO #**	**FAX #**
c/o BSK-P	04400086	
City, State, Zip	**Copy to:**	**System #**

LAB use only Sample #	Type	# Cont.	Date Sampled	Time Sampled	Sampled by: Sample Description/Location	Comment or Station Code	TPH-G/BTEX	Total Lead	Luft Metals	EPA 601							
1	L	3	9/25/96	1048	MW-3		X		X								4788
2	L	5		1159	MW-2	*Please bill to Project # 04400092	X	X		X							4789
3	L	3		13:30	MW-1		X	X									4790
4	L	2		16:50	B-101 (water)		X										4791
5	S	1		10:05	B-101 at 10ft.		X										4792
6	S	1		11:25	B-102 at 10ft		X										4793
7	S	1		12:30	B-102 at 20ft		X										4794
8	S	1		13:05	B-103 at 10ft		X			X							4795

Matrix Type: L - Liquid S - Solid G - Gas
Type of Hazards Associated with Samples:

Additional Services:
Rush Priority: [ ] - 2 Day [ ] - 5 Day
[ ] - Formal Chain of Custody [ ] - QC Data package

Additional Services Authorized by:

(Signature)

Payment Received with Delivery
Date: _____ Amount: $_____
Check # _____ Initials _____
Reciept # _____

Signature	Print Name	Company	Date	Time
Requested / Relinquished by: Mart Cli	Martin Cline	BSK-P	9/26/96	10:00
Received / Relinquished by:				
Received / Relinquished by:				
Received / Relinquished by:				
Received for Laboratory by: KellySmith	KellySmith	BSK	9/27/96	14:25

Appendix D

BORING LOGS AND DRILLING PERMIT

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Joe Sio Chevrolet
914-916 San Pablo Ave.
Albany, CA

CLIENT
Name Florence Connors
Address 1658 Del Paya Dr. Voice
City Carmichael, CA Zip 95608

APPLICANT
Name BSK & Associates
Fax 462-6283
Address 1101 Quarry Ln #200 Voice 462-4000
City Pleasanton Zip

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection		General	
Water Supply		Contamination	X
Monitoring		Well Destruction	

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other Geoprobe

DRILLER'S LICENSE NO. C57 # 490942

WELL PROJECTS
Drill Hole Diameter ___ in. Maximum
Casing Diameter ___ in. Depth ___ ft.
Surface Seal Depth ___ ft. Number ___

GEOTECHNICAL PROJECTS
Number of Borings 3 Maximum
Hole Diameter 2 in. Depth 15 ft.

ESTIMATED STARTING DATE 9/3/96
ESTIMATED COMPLETION DATE 9/3/96

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 8/23/96

FOR OFFICE USE

PERMIT NUMBER 96639
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
(1.) A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
(3.) Permit is void if project not begun within 90 days of approval date.

B WATER WELLS, INCLUDING PIEZOMETERS
1 Minimum surface seal thickness is two inches of cement grout placed by tremie.
2 Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(C) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D CATHODIC. Fill hole above anode zone with concrete placed by tremie

E WELL DESTRUCTION See attached

Approved [signature] Wyman Hong Date 10 Sep 96

91992

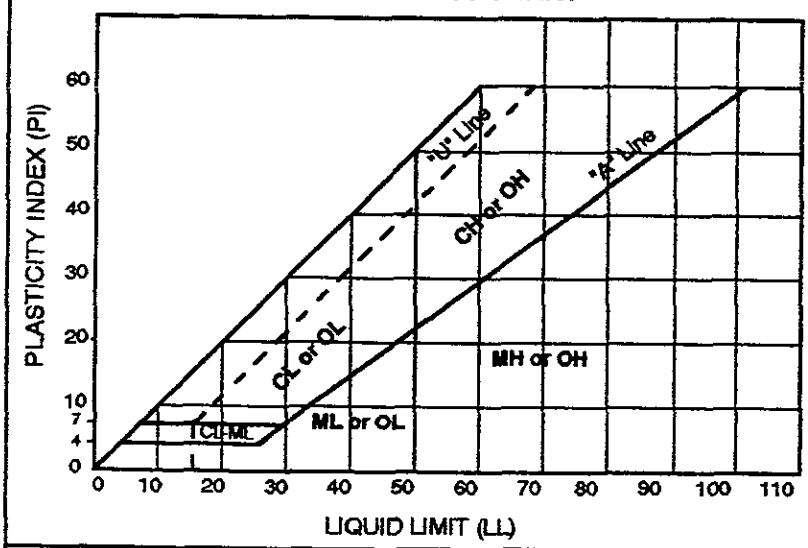
UNIFIED SOIL CLASSIFICATION CHART

SYMBOL	LETTER	DESCRIPTION	MAJOR DIVISIONS		
	GW	WELL-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	CLEAN GRAVELS (LITTLE OR NO FINES)	GRAVELS: MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	COARSE-GRAINED SOILS: MORE THAN HALF OF MATERIAL IS LARGER THAN NO.200 SIEVE SIZE
	GP	POORLY-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES			
	SW	WELL-GRADED SAND OR GRAVELLY SANDS, LITTLE OR NO FINES	CLEAN SANDS (LITTLE OR NO FINES)	SANDS: MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	
	SP	POORLY-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES			
	SM	SILTY SANDS, SAND-SILT MIXTURES	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES			
	ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	SILTS & CLAYS LIQUID LIMIT LESS THAN 50		FINE-GRAINED SOILS: MORE THAN HALF OF MATERIAL IS SMALLER THAN NO.200 SIEVE SIZE
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY			
	MH	ELASTIC SILTS, SANDY ELASTIC SILTS	SILTS & CLAYS LIQUID LIMIT GREATER THAN 50		
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS		

FOR VISUAL CLASSIFICATION, THE 1/4" SIZE MAY BE USED AS EQUIVALENT TO THE NO.4 SIEVE SIZE

THE NO.200 U.S. STANDARD SIEVE IS ABOUT THE SMALLEST PARTICLE VISIBLE TO THE NAKED EYE

SOIL PLASTICITY CHART



TYPES OF SAMPLERS

SPT--Standard Penetration 1.4" ID Split Spoon Sampler
CS--2" ID Split Spoon Sampler
MC--2.5" ID Modified California Sampler
SH--2.8" ID Thin-Wall (Shelby Tube)
CC--2.7" ID Double Tube Continuous Coring Sampler
DP--Direct Push Sampler

NOTES

Indicates Undisturbed Sample

Indicates No Recovery

Joe Sio Chevrolet
914-916 San Pablo Avenue
Albany, California

BSK Job No. 04400086

BSK & ASSOCIATES

BORING LOG B-101

DATE: 9/25/96
LOGGED BY: M. Cline
WATER LEVEL: 23.5' below ground surface
ELEVATION:
EQUIPMENT: Geoprobe rig, hydraulically pushed sampler

	OVM READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER	SYMBOLS	DESCRIPTION
0						1" Concrete slab over Aggregate baserock.
5	0			DP	CL	GRAVELLY SANDY CLAY: Brown, moist, no odor
10	110			DP		SANDY CLAY: Brown with olive gray mottling, trace black mottles, moist, very fine grained sand, very faint odor
15	9			DP	CL/ CH	SILTY CLAY: Light olive gray, very moist, no odor
20	0			DP		Pushed probe to depth of 25 ft., installed pvc slotted pipe and casing, collected groundwater sample after a period of 6 hours. Boring sealed to surface with neat cement, following groundwater sampling. Boring terminated at 25 ft.
25						

NOTES:
1. Boring completed at a depth of 25 feet on 9/25/96.
2. Boring log indicates the interpreted subsurface conditions only at the location and time the boring was advanced.
3. For an explanation of terms used see the Soil Classification Chart, Figure 3.
   OVM = Organic Vapor Meter
   PPM = Parts per million

Joe Sio Chevrolet 914-916 San Pablo Avenue Albany, California	BSK Job No. 04400086 Boring Log B-101	BSK & ASSOCIATES

BORING LOG B-102

DATE: 9/25/96
LOGGED BY: M. Cline
WATER LEVEL: None Encountered
ELEVATION:
EQUIPMENT: Geoprobe rig, hydraulically pushed sampler

	OVM READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER	SYMBOLS	DESCRIPTION
0						1" Concrete slab over Aggregate baserock.
5	0			DP	CL	SANDY CLAY: Brown to light gray, damp to moist, trace gravel, no odor
10	0			DP		SILTY CLAY: Brown with olive gray mottling, moist, 6-inch wet sandy silt layer, no odor
15	2			DP	CL/ CH	SANDY CLAY: Brown, moist, no odor installed pvc slotted pipe and casing, no groundwater after a period of 1 hour
20	0			DP		SILTY CLAY: Brown with light olive gray mottling, moist, no odor
25	1			DP		trace pebbles, no odor
30	–			DP		hole caved to 26 ft., no groundwater after a period of 6 hours, boring terminated at a depth of 30 ft. Boring sealed to surface with neat cement.

NOTES:
1. Boring completed at a depth of 30 feet on 9/25/96.
2. Boring log indicates the interpreted subsurface conditions only at the location and time the boring was advanced.
3. For an explanation of terms used see the Soil Classification Chart, Figure 3.
   OVM = Organic Vapor Meter
   PPM = Parts per million

Joe Sio Chevrolet 914-916 San Pablo Avenue Albany, California	BSK Job No. 04400086 Boring Log B-102	BSK & ASSOCIATES

BORING LOG B-103

DATE: 9/25/96
LOGGED BY: M. Cline
WATER LEVEL: None encountered
ELEVATION:
EQUIPMENT: Geoprobe pneumatically pushed sampler

	OVM READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER	SYMBOLS	DESCRIPTION
0						Landscapping at surface
5	0			DP DP	CL	SANDY CLAY: Olive gray with black mottling, moist, no odor
10	0			DP		SILTY CLAY with sand: Brown with olive gray mottling, moist, no odor SANDY CLAY: Brown, moist, trace weathered gravels, no odor
	0			DP		boring terminated at a depth of 14 ft. Boring sealed to surface with neat cement.

NOTES:

1. Boring completed at a depth of 30 feet on 9/25/96.
2. Boring log indicates the interpreted subsurface conditions only at the location and time the boring was advanced.
3. For an explanation of terms used see the Soil Classification Chart, Figure 3.
   OVM = Organic Vapor Meter
   PPM = Parts per million

Joe Sio Chevrolet 914-916 San Pablo Avenue Albany, California	BSK Job No. 04400086 Boring Log B-103	BSK & ASSOCIATES

Appendix E

DIRECT-PUSH SAMPLING PROCEDURES

BSK

Appendix E

DIRECT-PUSH SAMPLING PROCEDURES

FIELD ACTIVITY PREPARATION

Prior to initiating field activities, necessary permits are obtained from the appropriate agencies, and an underground utility-locating service is hired to survey the proposed work area for subsurface utilities. In addition, Underground Service Alert (USA) is contacted to schedule visits to the site by public and private utility companies. Each company locates it's utilities with the aid of maps, and the locating service verifies and marks these locations. All utility surveys are coordinated with the client, client representative and/or property owner before field activities begin.

SOIL SAMPLING

In general, soil samples are collected using direct-push soil sampling methods or split-spoon sampling methods to evaluate the geochemistry and stratigraphy of the soil beneath the site. Soil samples are classified and logged according to the Unified Soil Classification System. The work is supervised by a California-registered geologist to ensure that it meets regulatory standards.

Direct-Push Sampling

Cone Penetration Testing

Soil samples are collected using a cone penetration testing rig at five-foot intervals by hydraulically driving a soil core barrel equipped with 1½-inch diameter stainless steel or brass liners to each sampling interval. At the top of each sampling interval, the tip of the soil core barrel is retracted and the soil core barrel is driven 1½ feet to obtain the soil sample. The soil core barrel is removed from the probe hole and the soil samples are prepared for geochemical analysis and described on a boring log. Typically, drill cutting are not generated during direct-push sampling. Upon completion of soil sampling, the probe hole is sealed to the surface with bentonite-cement grout and, if necessary, capped with rapid set concrete.

Geoprobe Sampling

Soil samples are collected at five foot intervals using a Geoprobe rig by hydraulically driving a 1.5-inch diameter steel probe lined with a 1.0-inch diameter acetate sleeve. An internal piston is released at the top of each sampling interval, the probe is hydraulically driven to collect up to two feet of undisturbed soil, and the sampling assemblage is removed from the boring. The selected sections of soil sample are sealed within the acetate sleeve using Teflon tape and plastic endcaps, and stored on ice pending transportation to the analytical laboratory. Typically, drill cutting are not generated during direct-push sampling. Upon completion of soil sampling, the probe hole is sealed to the surface with bentonite-cement grout and, if necessary, capped with rapid set concrete.

Split-Spoon Sampling

Soils are sampled during hollow-stem auger drilling by driving an 18-inch-long split-spoon sampler fitted with 2-inch-diameter brass liners beyond the tip of the auger into undisturbed soil. The split-spoon sampler is driven into the soil with a 140-pound hammer. As the sampler is driven into the soil, blow counts are recorded on the boring logs for each six inches of penetration. Soil samples are collected every 5 feet or less, depending on the lithology encountered. The split-spoon sampler is removed from the soil boring and the soil samples are prepared for geochemical analysis and described on a boring log. Following soil sampling, the soil boring is either sealed to the surface with bentonite-cement grout or converted into a groundwater monitoring well.

In general, drill cuttings are drummed and temporarily stored onsite. Drill cuttings are disposed of using the appropriate method based on the analyses of the soil samples collected during drilling.

GROUNDWATER SAMPLING PROCEDURES

At each groundwater sampling interval, 0.75-inch diameter polyvinyl chloride (PVC) casing with a five-foot section of 0.010-inch screen at the base is installed. Groundwater samples are then collected using a precleaned stainless steel, Teflon™ or PVC bailer lowered through the casing into the screened interval. Upon retrieval of the bailer, groundwater is decanted into appropriate sample containers, which are subsequently stored on ice pending analysis. Probe holes are tremie sealed to

the surface with bentonite-cement grout and if necessary capped with rapid-set concrete following sampling.

DECONTAMINATION PROCEDURES

All equipment is properly decontaminated to prevent cross-contamination between sampling locations. The two methods of decontamination typically used are steam cleaning and detergent washing followed by tap water and deionized water rinses. During field work, all equipment that is placed in the soil borings and wells, or that comes in contact with groundwater are decontaminated as follows:

Equipment	Decontamination Procedures
Drill/CPT/Geoprobe Rig	Steam cleaned prior to arriving onsite
Rods	Steam cleaned between each soil boring
Soil Core Barrel	Steam cleaned prior to each sampling point and detergent washed, tap water and distilled water rinsed between each sampling interval
Hollow-Stem Augers	Steam cleaned prior to each sampling point and detergent washed, tap water and distilled water rinsed between each sampling interval
Split-Spoon Sampler	Steam cleaned prior to each sampling point and detergent washed, tap water and distilled water rinsed between each sampling interval
Drill Tools	Steam cleaned prior to drilling each boring

Water Level Sensor	Steam cleaned each day and detergent washed, tap water and distilled water rinsed between each use
Pumps	Steam cleaned between each use
Bailers	Steam cleaned between each use

SAMPLE HANDLING AND DOCUMENTATION

Soil Samples

Each soil sample is sealed inside stainless steel or brass liners with aluminum foil (shiny side towards the sample) or Teflon™ tape, polypropylene end caps, and wrapped with duct tape. The soil samples are labeled, and stored in an iced cooler for shipment to a California Department of Health Services (DHS)-approved laboratory.

Soil samples are selected for chemical analysis using a photoionization detector (PID). The PID determines the relative concentration of total volatile organic compounds. The soil samples are selected for analysis where (1) the PID reading first detects a reading above the background level, (2) at the point above this interval where the PID reading is negligible, (3) at the first point below the contaminated interval where the PID reading is negligible, and (4) at the water table. If volatile organics are not detected with the PID, the sample collected at the bottom of the soil boring is submitted for analysis.

Groundwater Sampling

A Teflon, stainless steel, or disposable PVC bailer is used for well sampling. Glass bottles of at least 40 milliliters volume and fitted with Teflon-lined septa are used in sampling for volatile organics. These bottles are filled completely to prevent air from remaining in the bottle. A positive meniscus forms when the bottles are completely full. A convex Teflon septum is placed over the

meniscus to eliminate air. After capping, the bottles are inverted and tapped to verify that they do not contain air bubbles. The sample containers for other parameters are filled, and capped.

Sample Handling

All sample containers are labeled immediately following sample collection. Samples are kept cool with ice until received by the laboratory. Ice is replaced to maintain refrigeration. At the time of sampling, each sample is logged on a Chain-of-Custody record which accompanies the sample to the Department of Health Services-approved laboratory.

Sample Documentation

- Field datasheets to document sampling activities in the field
- Labels to identify individual samples
- Chain-of-custody record sheets for documenting possession and transfer of samples

Field Datasheets

In the field, the sampler records the following information on the Water Sample Field Data Sheet for each sample collected:

- Project number
- Client name
- Location
- Name of sampler

- Date and time
- Pertinent sampling location data (e.g., casing diameter, depth to water, total depth)
- Calculated and actual purge volumes
- Purging equipment used, if any
- Sampling equipment used
- Appearance of each sample (e.g., color, turbidity, sediment)
- Results of field analyses (i.e., temperature, pH, specific conductance)
- General comments

Labels

Sample labels contain the following information:

- Project number
- Sample number (i.e., well designation)
- Sampler's initials
- Date and time of collection
- Type of preservative used (if any)

Sampling and Analysis Chain-of-Custody Record

The Sampling and Analysis Chain-of-Custody record, initiated at the time of sampling, contains, but is not limited to, the well designation, sample type, analytical request, date of sampling, and the name of the sampler. The record sheet is signed, and dated by the sampler when transferring the samples. The number of custodians in the chain of possession is kept to a minimum.

DRUM HANDLING

Soil cutting, groundwater, and decontamination water produced during sampling activities are temporarily stored onsite in DOT-approved 55-gallon drums. All drums are labeled and stored onsite in a location designated by the client or client representative. The sampler records the following information on the drum label for each drum generated:

- Drum content (groundwater)
- Source (well designation)
- Date generated
- Client contact
- Project number
- Name of sampler

The drums stored onsite for a maximum of 90 days. The client will be notified of the quantity of soil and water requiring removal.

Appendix F

RISK ASSESSMENT SUPPORT DOCUMENTS

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Joe Sio Chevrolet
Site Location: 914-916 San Pablo Avenue, Albate

Job Identification: 04-40-0086
Date Completed: 11/6/96
Completed By: Pleasanton

Software: GSI RBCA Spreadsheet
Version: v 1.0

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined

DEFAULT PARAMETERS

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (l/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing rate (mg*yr/kg*d)	1.1E+02			9.4E+01	
IRa in	Inhalation rate indoor (m^3/day)	15			20	
IRa out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5 8E+03		2.0E+03	5.8E+03	5 8E+03
SAadj	Adjusted dermal area (cm^2*yr/kg)	2 1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	FALSE	
GW.v	Volatilization to Outdoor Air	FALSE	TRUE	
GW b	Vapor Intrusion to Buildings	FALSE	FALSE	
Soil Pathways				
S v	Volatiles from Subsurface Soils	FALSE	TRUE	
SS.v	Volatiles and Particulate Inhalation	FALSE	FALSE	FALSE
SS d	Direct Ingestion and Dermal Contact	FALSE	FALSE	FALSE
S l	Leaching to Groundwater from alt Soils	FALSE	FALSE	
S b	Intrusion to Buildings - Subsurface Soils	FALSE	FALSE	

Matrix of Receptor Distance and Location on- or off-site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		FALSE		FALSE
S	Inhalation receptor (cm)		FALSE		TRUE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	***1.0E-05***	***1.0E-05***
TRc	Target Risk (class C carcinogens)	1 0E-05	
THQ	Target Hazard Quotient	1.0E+00	1.0E+00
Opt	Calculation Option (1, 2, or 3)	3	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Commercial/Industrial Chronic	Commercial/Industrial Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	***9 3E+04***		***3.7E+05***
W	Length of affected soil parallel to wind (cm)	***3.7E+02***		***3.7E+02***
W.gw	Length of affected soil parallel to groundwater (c	1 5E+03		
Uair	Ambient air velocity in mixing zone (cm/s)	2 3E+02		
delta	Air mixing zone height (cm)	2 0E+02		
Lss	Definition of surficial soils (cm)	1.0E+02		
Pe	Particulate areal emission rate (g/cm^2/s)	2 2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2 0E+02
I	Groundwater infiltration rate (cm/yr)	***2.5E+00***
Ugw	Groundwater Darcy velocity (cm/yr)	***3.0E+00***
Ugw tr	Groundwater Transport velocity (cm/yr)	***9.1E+00***
Ks	Saturated Hydraulic Conductivity(cm/s)	1 5E-05
grad	Groundwater Gradient (cm/cm)	7 0E-03
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
BC	Biodegradation Capacity (mg/L)	
BIO?	Is Bioattenuation Considered	FALSE
phi eff	Effective Porosity in Water-Bearing Unit	3 7E-01
foc.sat	Fraction organic carbon in water-bearing unit	1 0E-03

Soil	Definition (Units)	Value	capillary	vadose	foundation
hc	Capillary zone thickness (cm)	***4.0E+01***			
hv	Vadose zone thickness (cm)	***2.7E+02***			
rho	Soil density (g/cm^3)	1 7			
foc	Fraction of organic carbon in vadose zone	0 01			
phi	Soil porosity in vadose zone	***0.455***			
Lgw	Depth to groundwater (cm)	***3.1E+02***			
Ls	Depth to top of affected soil (cm)	***2.7E+02***			
Lsubs	Thickness of affected subsurface soils (cm)	***4 6E+02***			
pH	Soil/groundwater pH	6 5			
phi w	Volumetric water content	***0.4095***	***0.152***	***0.152***	
phi a	Volumetric air content	***0.0455***	***0.303***	***0.303***	

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2 0E+02	***5.0E+02***
ER	Building air exchange rate (s^-1)	1 4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1 5E+01	
eta	Foundation crack fraction	0 01	

Dispersive Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersion coefficient (cm)		
ay	Transverse dispersion coefficient (cm)		
az	Vertical dispersion coefficient (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

Site Name: Joe Sio Chevrolet
Site Location. 914-916 San Pablo Avenue, Albany, CA

Completed By: Pleasanton
Date Completed: 11/6/1996

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			Ingestion, Inhalation and Dermal Contact		Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1
100-41-4	Ethylbenzene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1
108-88-3	Toluene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 9.2**

Site Name: Joe Sio Chevrolet
Site Location: 914-916 San Pablo Avenue, Albany, CA

Completed By: Pleasanton
Date Completed: 11/6/1996

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	0.0E+0	NA	NA	NA	NA	NA	NA	6.2E+2	6.2E+2	☐	<1
100-41-4	Ethylbenzene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	>Res	☐	<1
108-88-3	Toluene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	>Res	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0
Serial: G-411-TRX-142

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: Joe Sio Chevrolet
Site Location: 914-916 San Pablo Avenue, Albany, CA

Completed By: Pleasanton
Date Completed: 11/6/1996

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration		Groundwater Ingestion			Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.3E-1	NA	NA	NA	NA	NA	NA	>Sol	>Sol	☐	<1
100-41-4	Ethylbenzene	2.4E-2	NA	NA	NA	NA	NA	NA	>Sol	>Sol	☐	<1
108-88-3	Toluene	1.6E-2	NA	NA	NA	NA	NA	NA	>Sol	>Sol	☐	<1
1330-20-7	Xylene (mixed isomers)	7.5E-2	NA	NA	NA	NA	NA	NA	>Sol	>Sol	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: G-411-TRX-142

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Joe Sio Chevrolet
Site Location: 914-916 San Pablo Avenue, Al

Job Identification: 04-40-0086
Date Completed: 11/6/96
Completed By: Pleasanton

Software: GSI RBCA Spreadsheet
Version: v 1 0

NOTE values which differ from Tier 1 default values are shown in bold italics and underlined

DEFAULT PARAMETERS

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (l/day)	2			1	
IRs	*Ingestion Rate of Soil (mg/day)*	*100*	*200*		*50*	*100*
IRadj	Adjusted soil ing. rate (mg*yr/kg*d)	1 1E+02			9 4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2 0E+03	5 8E+03	5 8E+03
SAadj	Adjusted dermal area (cm^2*yr/kg)	2 1E+03			1 7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Groundwater Pathways:				
GW i	Groundwater Ingestion	FALSE	FALSE	
GW v	Volatilization to Outdoor Air	FALSE	TRUE	
GW b	Vapor Intrusion to Buildings	FALSE	TRUE	
Soil Pathways				
S v	Volatiles from Subsurface Soils	FALSE	TRUE	
SS.v	Volatiles and Particulate Inhalation	FALSE	FALSE	FALSE
SS.d	Direct Ingestion and Dermal Contact	FALSE	FALSE	FALSE
S l	Leaching to Groundwater from all Soils	FALSE	FALSE	
S b	Intrusion to Buildings - Subsurface Soils	FALSE	TRUE	

Matrix of Receptor Distance and Location on- or off-site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		FALSE		FALSE
S	Inhalation receptor (cm)		FALSE		TRUE

Matrix of *Target Risks*		*Individual*	*Cumulative*
TRab	Target Risk (class A&B carcinogens)	*1.0E-05*	*1.0E-05*
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1 0E+00	1 0E+00
Opt	Calculation Option (1, 2, or 3)	3	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Commercial/Industrial Chronic	Commercial/Industrial Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	*8.4E+05*		*8.4E+05*
W	Length of affected soil parallel to wind (cm)	*1.3E+03*		*1.3E+03*
W gw	Length of affected soil parallel to groundwater (c	1 5E+03		
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02		
delta	Air mixing zone height (cm)	2 0E+02		
Lss	Definition of surficial soils (cm)	1 0E+02		
Pe	*Particulate areal emission rate (g/cm^2/s)*	*2 2E-10*		

Groundwater	Definition (Units)	Value
delta gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater Infiltration rate (cm/yr)	*2.5E+00*
Ugw	Groundwater Darcy velocity (cm/yr)	*3.0E+00*
Ugw.tr	Groundwater Transport velocity (cm/yr)	*9.1E+00*
Ks	Saturated Hydraulic Conductivity(cm/s)	1 5E-05
grad	Groundwater Gradient (cm/cm)	7.0E-03
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
BC	*Biodegradation Capacity (mg/L)*	
BIO?	Is Bioattenuation Considered	FALSE
phi eff	Effective Porosity in Water-Bearing Unit	3 7E-01
foc sat	Fraction organic carbon in water-bearing unit	1.0E-03

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	*1.1E+02*		
hv	Vadose zone thickness (cm)	*6.1E+02*		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	0 01		
phi	Soil porosity in vadose zone	*0.455*		
Lgw	Depth to groundwater (cm)	*7.2E+02*		
Ls	Depth to top of affected soil (cm)	*6.1E+02*		
Lsubs	Thickness of affected subsurface soils (cm)	*1.2E+02*		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi w	Volumetric water content	*0.4095*	*0.152*	*0.152*
phi a	Volumetric air content	*0.0455*	*0.303*	*0.303*

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2 0E+02	*5.0E+02*
ER	Building air exchange rate (s^-1)	1 4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1 5E+01	
eta	Foundation crack fraction	0 01	

Dispersive Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersion coefficient (cm)		
ay	Transverse dispersion coefficient (cm)		
az	Vertical dispersion coefficient (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.1

Site Name: Joe Sio Chevrolet

Site Location: 914-916 San Pablo Avenue, Albany, CA

Completed By: Pleasanton

Date Completed: 11/6/1996

SURFACE SOIL SSTL VALUES (< 3 FT BGS)

Target Risk (Class A & B) 1.0E-5

Target Risk (Class C) 1.0E-5

Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?

☐ PEL exposure limit?

Calculation Option: 3

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			Ingestion, Inhalation and Dermal Contact		Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1
100-41-4	Ethylbenzene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1
108-88-3	Toluene	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	☐	<1

Software: GSI RBCA Spreadsheet

Version: v 1.0

Serial: G-411-TRX-142

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: Joe Sio Chevrolet
Site Location: 914-916 San Pablo Avenue, Albany, CA

Completed By: Pleasanton
Date Completed: 11/6/1996

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration		Soil Leaching to Groundwater			X Soil Volatilization to Indoor Air		X Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)		Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"■" if yes	Only if "yes" left
71-43-2	Benzene	0.0E+0		NA	NA	NA	NA	2.2E+0	NA	6.4E+2	2.2E+0	☐	<1
100-41-4	Ethylbenzene	0.0E+0		NA	NA	NA	NA	>Res	NA	>Res	>Res	☐	<1
108-88-3	Toluene	0.0E+0		NA	NA	NA	NA	2.6E+2	NA	>Res	2.6E+2	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0		NA	NA	NA	NA	>Res	NA	>Res	>Res	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: G-411-TRX-142

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: Joe Sio Chevrolet
Site Location: 914-916 San Pablo Avenue, Albany, CA
Completed By: Pleasanton
Date Completed: 11/6/1996

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 3

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration		Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.3E-1	NA	NA	NA	NA	1.1E+1	NA	>Sol	1.1E+1	☐	<1
100-41-4	Ethylbenzene	2.4E-2	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
108-88-3	Toluene	1.6E-2	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
1330-20-7	Xylene (mixed isomers)	7.5E-2	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1