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SECRET

## ADDITIONAL SUBSURFACE ENVIRONMENTAL INVESTIGATION AND VAPOR EXTRACTION TEST

at

ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California

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Report prepared for

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For ARCO Products Company

**INTRODUCTION**

At the request of ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) performed an additional subsurface investigation and vapor extraction test at ARCO Station 2035 located at 1001 San Pablo Avenue in Albany, California. This investigation was initiated in response to the results of previous investigations conducted at the site. The purpose of this investigation was to further evaluate the lateral extent of hydrocarbon impacted soil in the downgradient (west) direction from the locations of the former underground gasoline-storage tanks; evaluate the extent of waste-oil hydrocarbons in the soil in the vicinity of the former waste-oil tank; and collect data necessary for the evaluation of the feasibility and design of a future soil remediation system. The work performed for this investigation was proposed in the Addendum Three to Work Plan (RESNA, May 1992), with exception to proposed installation of offsite monitoring wells. The offsite wells were not installed prior to the issue of this report due to permitting delays. Additional onsite monitoring wells and the offsite wells proposed in Addendum Three to Work Plan (RESNA, 1992), will be installed in a future work phase at the site.

The work performed for this investigation included drilling eight soil borings (B-12 through B-19); collecting and describing soil samples from the borings; constructing six vapor extraction wells (VW-1 through VW-6) in soil borings B-14 through B-19, respectively;

performing a vapor extraction test (VET); submitting selected soil samples for laboratory analyses; and preparing this report presenting field procedures, results and conclusions of this investigation and including the results of third quarter 1992 monitoring and sampling at the site. The work for this investigation was performed as outlined in the Work Plan (RESNA, April 29, 1991), and Addendum Three to Work Plan (RESNA, May 28, 1992) which were approved by the Alameda County Health Care Services Agency (ACHCSA) prior to commencement of the investigation.

## **SITE DESCRIPTION AND BACKGROUND**

### **General**

ARCO Station 2035 is an operating service station located southeast of the intersection of Marin and San Pablo Avenues at 1001 San Pablo Avenue, Albany, California. The location of the site is shown on Plate 1, Site Vicinity Map. The site is a relatively flat, asphalt-and concrete-covered lot.

Four underground gasoline-storage tanks (USTs) were excavated and removed from the site in July and August 1991, including one 6,000-gallon UST (T1), two 4,000-gallon USTs (T2 and T3), and one 10,000-gallon UST (T4). A 550-gallon waste-oil tank was removed from the site in 1977 during ARCO's conversion of the station to a mini-market. The removed gasoline-storage tanks were replaced with four 10,000 gallon USTs. The approximate locations of the former and existing underground storage tanks (USTs), former waste-oil tank, and other pertinent features at the site are shown on Plate 2, Generalized Site Plan.

### **Geology and Hydrogeology**

ARCO Station 2035 is located within the East Bay Plain in the north-central portion of the Berkeley Alluvial Plain (Hickenbottom and Muir, 1988). The active Hayward Fault is approximately 2 miles east of the site. Helley et al. (1979) mapped the earth materials underlying the site area as older Quaternary alluvium deposits composed of a heterogeneous mixture of poorly consolidated to unconsolidated clay, silt, sand and gravel. The site is less than 1,200 feet north of the Codornices Creek and approximately 1 mile east of Fleming

Point on the eastern shoreline of the San Francisco Bay. The direction of groundwater flow in the vicinity of the site is inferred to be to the west-southwest, based on regional and local topography and drainage patterns.

### **PREVIOUS WORK**

Previous subsurface environmental investigations which were performed at the site are summarized in Appendix A.

### **FIELD WORK**

#### **Drilling**

Field work at the site was conducted in accordance with RESNA field protocol and the Site Safety Plan (RESNA, July 31, 1992). A description of the field methods and Site Safety Plan is included in Appendix B, Field Protocol. A well construction permit was acquired from the Alameda County Flood Control and Water Conservation District (ACFCWCD) prior to drilling at the site. A copy of the permit is included in Appendix C. On August 19 through 21, 1992, eight soil borings (B-12 through B-19) were drilled at the subject site, and six 4-inch-diameter vapor extraction wells (VW-1 through VW-6) were constructed in borings B-14 through B-19, respectively. The locations of these borings/wells are shown on Plate 2.

Soil borings B-12 and B-13 were drilled next to the former waste-oil tank pit to evaluate the extent of waste-oil hydrocarbons in the soil in the immediate vicinity of the former waste-oil tank pit, and were backfilled to grade with cement grout upon completion of work. Soil borings B-14 through B-16 were drilled in the northern vicinity of the northern service islands, borings B-17 and B-18 were drilled in the southern vicinity of the northern service islands and boring B-19 was drilled between the station building and former gasoline tank T4 location to further delineate the extent of gasoline hydrocarbons in the downgradient (west) direction from the location of the former gasoline storage tank pits and near the former product lines. Vapor extraction wells VW-1 through VW-6 were constructed in borings B-14 through B-19, respectively, in order to perform a vapor extraction test and

collect data necessary for evaluation of the feasibility of vapor extraction as a soil remediation alternative.

Soil borings B-12 and B-13 were drilled to the depth of approximately 21½ feet below the ground surface, and borings B-14 through B-19 were drilled to the depths of approximately 15½ to 18½ feet below the ground surface.

### Soil Sampling and Description

A total of 37 soil samples were collected from soil borings B-12 through B-19. A summary of the Unified Soil Classification System used to identify the soil encountered during drilling is presented on Plate 3, and the description of the soil encountered in the borings is presented on the Logs of Borings, Plates 4 through 11. Soil samples from the borings were collected at intervals of 5 feet or less from the ground surface to total depth in the borings. Sampling procedures are described in Appendix B. Field monitoring of organic vapor concentrations in soil samples was performed during drilling using an organic vapor meter (OVM), which provides order of magnitude field measurements only.

Soil cuttings generated from the borings were temporarily stored onsite along the southern property line, and placed and covered with plastic sheeting pending proper disposal. After the completion of drilling on August 21, 1992, four soil samples were collected from the stockpile and submitted for compositing and laboratory analyses. The method used to obtain these samples is described in Appendix B.

### Vapor Extraction Well Construction

Six vapor extraction wells (VW-1 through VW-6) were constructed in borings B-14 through B-19, respectively. The wells were completed with 4-inch-diameter, Schedule 40, polyvinyl chloride (PVC) casing. Well casings were set in the vapor extraction wells (VW-1 through VW-6) to depths of approximately 9½ to 17 feet below ground surface. The screened casings for the vapor extraction wells consist of 4-inch-diameter, 0.100 inch-wide machine-slotted PVC set from the total depths of the wells to approximately 4½ to 5 feet below ground surface. Screened intervals for vapor extraction wells were based on the OVM

readings. Blank PVC casing was set from the top of the screened casing to within a few inches below the ground surface. Details regarding well construction are described in Appendix B.

### Groundwater Level Measuring and Sampling

Existing onsite groundwater monitoring wells (MW-1 through MW-3 and RW-1) were monitored on July 15, August 7, and September 8, 1992 by EMCON Associates of San Jose, California. Depths-to-water (DTW) were measured in groundwater monitoring wells and water samples were collected and visually inspected for floating product. Groundwater monitoring wells MW-1 through MW-3 were purged and sampled on September 8, 1992. Recovery well RW-1 was not sampled due to the presence of free product.

### Vapor Extraction Test

RESNA performed a one day onsite VET on August 25, 1992, to collect site specific data and evaluate the feasibility of using vapor-extraction as a soil remediation alternative. The VET had three main objectives: (1) to determine the vapor flow rates that can be extracted from the vapor extraction wells; (2) to determine the hydrocarbon concentration of extracted vapors; and (3) to estimate an effective radius of influence for the vapor extraction wells for future engineering design, if applicable. Notification was given to the Bay Area Air Quality Management District (BAAQMD) prior to conducting the test (RESNA, August 21, 1992).

### VET Protocol and Equipment

The vapor-extraction equipment consisted of a six-cylinder internal combustion (I.C.) engine with a motor-driven vacuum blower, and instrumentation for measuring air velocity, air pressure, temperature, and organic vapor concentrations. The vapor extraction wells were connected to the I.C. engine using polyvinyl chloride (PVC) piping, fittings, and wellhead connections.

Six vapor extraction wells, VW-1 through VW-6, were evaluated during the VET. The location of these wells, as well as other pertinent site features, are shown on Plate 2. The



I.C. engine and blower were used to apply a vacuum to the vapor extraction wells and induce air flow through the soils. Extracted hydrocarbon vapor was abated through the I.C. engine by combustion and additional treatment through a catalytic converter.

The VET was conducted in two phases. Five short-term tests (30 minutes) were first performed using vapor wells VW-2 through VW-6 separately as extraction wells to collect representative influent vapor samples. A longer-term test (120 minutes) was then performed on well VW-1 to collect radius of influence data. The tests were performed in the following order: VW-5, VW-4, VW-6, VW-3, VW-2, and VW-1.

#### **VET Well Dewatering**

Prior to the start of the VET, DTW was measured in groundwater monitoring wells MW-1 through MW-3, recovery well RW-1, and vapor wells VW-1 through VW-6. Water was encountered in all the vapor extraction wells. As a result of this water, exposed screen above the water surface in the vapor wells was limited to approximately 2 to 6 feet. In order to expose additional well screen to airflow, RESNA attempted to remove this water from the vapor extraction wells.

Prior to the short-term tests on wells VW-2 through VW-6, either a submersible pump or bailer was used to remove water from the vapor wells. A bailer was used to remove water from vapor wells VW-2 and VW-4. Only minimal amounts of water could be removed from well VW-3 using a bailer. A submersible pump was used to remove water from wells VW-5 and VW-6. However, only small amounts of water could be recovered from well VW-6, and free product was encountered while pumping from well VW-5. Pumping from well VW-5 discontinued after free product was observed in the discharge pipe, however, additional fluids could not be removed from the well. DTW was not recorded in the vapor wells immediately after the well dewatering.

Prior to the long term test, groundwater was removed from extraction well VW-1, and observation wells VW-3 and VW-4. A submersible pump was used to remove water from wells VW-1 and VW-4. A bailer was used to remove water from well VW-3. Well VW-3 required bailing prior to the long-term test as a result of water entering the well after the

short-term VET. Since depth to water and total depth was not measured immediately after dewatering, the exact length of exposed well screen throughout the VET could not be determined. However, based upon well screen intervals and depth to water measurements collected after the long-term VET, the minimum exposed screen length was estimated. This conservative amount of screen length was used in the analysis of VET data. Depth to water measurements and exposed well screen intervals, prior to pumping and after the long-term VET are presented in Table 2.

It is important to note that although these wells were dewatered, the surrounding soil formation may not have been. Water levels measured at the end of the long-term VET indicate that the potentiometric surface in wells VW-1 and VW-3 rose above their initial levels (before pumping). Extracted groundwater was stored in drums, pending removal by an ARCO contractor.

### **Short-Term VET Testing**

For the short-term tests, the IC engine was separately connected to vapor wells VW-2, VW-3, VW-4, VW-5, and VW-6. The engine was operated on each well for at least 30 minutes at the highest flow rate sustainable. Vapor samples were then collected from a sample port on the influent side of the I.C. engine using a sample pump and mylar sample bags. Air flow rates were measured from each wellhead using a pitot tube velocity-meter installed within the 2-inch PVC pipe manifold connecting the wellhead and the I.C. engine. Applied vacuum at the wellhead was measured using a magnehelic pressure gauge placed within the manifold piping. Extracted vapors were screened for percent oxygen and organic vapor concentrations using a combination oxygen meter and Lower Explosive Limit (LEL) meter calibrated to methane. Throughout the short term test, induced vacuum at nearby observation wells was monitored with a magnehelic pressure gauge as a secondary indicator of subsurface airflow. At the end of each short term test and the long-term test, the well was subjected to different applied vacuums and the resulting extracted air flow rates were measured to determine well characteristics.

### **Long-Term VET Testing**

A long-term VET was performed on well VW-1 to collect vacuum influence data used to estimate a radius of influence for the wells. Well VW-1 was selected for the long-term test since it allowed vacuum impact to be observed at distances of 15 and 24 feet away (wells VW-3 and VW-2 respectively). These distances appeared to be consistent with achievable radius of influence for the generally silty to gravelly clay type soils encountered beneath the site.

For the long-term test, the I.C. engine was operated on vapor well VW-1 for 120 minutes. Induced vacuum was measured from observation wells VW-2 through VW-5, and monitoring well MW-2 using magnehelic gauges capable of measuring differential pressures as low as 0.01 inches Water Column (WC). Wellhead air velocity, applied vacuum, percent oxygen content and organic vapor concentrations were measured every 15 to 30 minutes. Air samples were collected from well VW-1 after 30 and 120 minutes of operation. An effluent air sample was also collected from the stack of the I.C. engine to evaluate destruction efficiency of the unit.

### **Air Sampling**

Air samples were collected in opaque Mylar air sample bags using a sample pump with ¼-inch Tygon-type tubing connected to a brass wellhead fitting. Tygon-type tubing was used to minimize sample loss through adsorption and the possibility of distorted results from sample line contaminated by a previous test run. The samples were sealed in the bags and labeled with the sample number, date, time, and sampler's name. The samples were immediately stored in a cool place for transport to a State Certified analytical laboratory under Chain of Custody documentation.

During the long-term test, air samples were also collected from well VW-1 for laboratory analysis to determine lead content. Three duplicate air samples were collected by passing well-head vapors through charcoal-filled glass sample tubes. An air sampling pump, labcock valve, and in-line flow meter were used to adjust sample air flows to 2.5 cubic feet per hour. The ends of the charcoal-filled tube were clipped off, the charcoal tube placed in-line

between Tygon-type tubing, and sealed with duct tape. The charcoal filter was left in place for a sample time of 17 minutes. As requested by the laboratory, three duplicate sets of charcoal-tubes were collected for analysis. The charcoal-filled tubes were capped, labeled, and sent to a State Certified analytical laboratory under Chain of Custody documentation.

### LABORATORY METHODS

All soil, water and air samples selected for laboratory analyses were preserved as required by the applicable analytical method, and delivered with Chain of Custody Records to selected State-certified laboratories. Soil samples were delivered to Sequoia Analytical Laboratories of Redwood City, California; water samples to Columbia Analytical Services Inc. of San Jose, California; air samples to GTEL Analytical Laboratory of Concord, California; and charcoal air-sampling tubes to BC Analytical of Emeryville, California .

#### Soil Samples

Soil samples collected from borings B-12 through B-19 were analyzed in accordance with Alameda County Health Care Services Agency requirements for the gasoline constituents benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons as gasoline (TPHg) using Environmental Protection Agency (EPA) Method 5030/8015/8020. In addition, soil samples collected from soil borings B-12 and B-13, located next to the former waste-oil tank pit, were analyzed for total petroleum hydrocarbons as diesel (TPHd) using EPA Method 3550/8015, total oil and grease (TOG) using Standard Method 5520 E&F (Gravimetric), volatile organics (VOCs) using EPA Method 8240, semi-volatile organics (SVOCs) using EPA Method 8270, polychlorinated biphenyls (PCB) using EPA Method 8080, and metals cadmium (Cd), chromium (Cr), nickel (Ni), zinc (Zn) and lead (Pb) using EPA Method 6010. Soil samples were selected for laboratory analyses based on:

- o Location above first-encountered groundwater;
- o Location in a potential confining or perching layer below first-encountered groundwater; and

- o Areas where the presence of gasoline or waste oil hydrocarbons was suspected based on OVM readings;

Soil samples collected from the soil stockpile were composited in the laboratory and analyzed for TPHg and BTEX by EPA Method 5030/8015/8020.

#### Water Samples

Water samples obtained from monitoring wells MW-1 through MW-3 were analyzed in accordance with Alameda County Health Care Services Agency requirements for BTEX and TPHg by EPA Methods 5030/8020/DHS LUFT Method.

#### Air Samples

Air samples collected during the VET were analyzed within 72 hours of collection for TPHg using modified EPA method 8015, and volatile organic compounds (VOCs) including BTEX per EPA Method 8240. Charcoal air-sampling tubes were analyzed for lead using EPA Method 7420/7421.

### **FIELD WORK RESULTS**

#### Drilling Observation

The earth materials encountered at the site consisted primarily of silty to gravelly clay and silt interbedded with continuous and discontinuous layers of clayey to sandy gravel and clayey sand.

Silty to gravelly clay interbedded with discontinuous layers of clayey to sandy gravel and clayey sand was encountered immediately below the ground surface in borings B-12 through B-19 and extended to the depths of approximately 9½ to 15½ feet below the ground surface. Clayey to silty sand often with sandy silt lenses was encountered beneath the silty to gravelly clay unit and extended to the total depths of borings B-12 through B-19, with the exception of boring B-16, which was terminated at 15½ feet within silty clay. Groundwater was

encountered at the depth of 21 feet and 20 feet during drilling of borings B-12 and B-13, respectively, in the clayey sand layer. Groundwater was encountered in the silty sand layer at the depth of 10.2 feet in boring B-16, and in clayey sand layer at the depth of 13 feet in boring B-19. Groundwater stabilized at approximately 9.1 feet below the ground surface in boring B-16 and at 11.35 feet below ground surface in boring B-19. Groundwater was not observed in borings B-14, B-15, B-17, and B-18 during drilling, however the presence of groundwater was noted in wells VW-1, VW-2, VW-4 and VW-5 installed in borings B-14, B-15, B-17 and B-18, respectively, the day following well installation. Wells VW-1 and VW-2 were pumped dry on August 21, 1992, by RESNA field personnel to measure the recovery rate in order to evaluate the possibility of dewatering the vapor extraction wells for the performance of a vapor extraction test. Based on the field observations, recovery rate was determined to be relatively slow (approximately 1 inch per 5 minutes). Drilling observations are summarized in the logs of borings, Plates 4 through 11. Graphic interpretation of the soil encountered beneath the site during this investigation and previous investigations is shown on the geologic Cross Sections A-A', B-B', C-C' and D-D' (Plates 12 through 15). The locations of the cross sections are shown on Plate 2.

A product odor was noted for the soil samples collected from borings B-12 and B-13 at the depths 7½ to 9 feet, and for almost all soil samples collected from borings B-14 through B-19. OVM measurements of soil samples from borings B-12 and B-13 ranged from nondetectable up to 86 parts per million (ppm). OVM measurements of soil samples from borings B-14 through B-19 ranged from nondetectable up to 896 ppm. OVM readings are shown on the borings logs (Plates 4 through 11) in the column labeled PID (photoionization detector). OVM readings are considered to be order of magnitude field measurements only.

### Subjective Groundwater Analyses

According to EMCON's field report sheets, initial water samples collected from wells MW-1 through MW-3 showed no evidence of floating hydrocarbon product on July 15, August 7, and September 8, 1992. Recovery well RW-1 contained 0.02 feet and 0.62 feet of floating product on August 7, and September 8, 1992, respectively, and showed no evidence of floating product on July 15, 1992. DTW measurements and subjective analyses results for floating product in groundwater are included in Table 1, Cumulative Groundwater

Monitoring Data. The results of EMCON's field work on the site, including DTW measurements, well purge data sheets, and subjective analyses for the presence of floating product in the groundwater in the onsite wells are presented on EMCON's field report sheets and EMCON's Summary of Groundwater Monitoring Data. This data is included in Appendix D.

### Vapor Extraction Test Field Results

#### **VET Air Flow Rate Measurements**

Vacuum and air flow rate data collected during the VET is summarized in Table 2, Vapor Extraction Test Field Monitoring Data. Utilizing the blower and I.C. engine vacuum, air flow rates ranging from 30 to 87 standard cubic feet per minute (SCFM) could be extracted from wells VW-1 through VW-6 at applied vacuums ranging from 20 to greater than 100 inches of water column (WC). Air flow rates as high as 87 SCFM could be achieved in well VW-4 at an applied wellhead vacuum of 100 inches WC.

#### **VET Radius of Influence Measurements**

Induced vacuum data collected during the VET is summarized in Table 2. For extraction well vacuums of 30 to 100 inches WC, induced vacuum readings at the observation wells ranged from less than 0.01 inches WC to a high of 0.90 inches WC.

Five short-term tests and one long-term test were conducted during the VET. During the short-term (30 minute) testing on well VW-2, induced vacuum was monitored from six observation wells located 24 to 40 feet away. At an applied vacuum of 30 inches WC and a well-head air flow rate of 39 SCFM, induced vacuum measurements at the observation wells ranged from less than 0.01 to 0.26 inches WC. Though observation well VW-3 was located almost 40 feet away, induced vacuum at this well (0.26 inches WC) was greater than wells VW-1 and VW-5 located approximately 24 feet away. This data suggests that a preferential pathway may exist in soils between wells VW-2 and VW-3.

During the short-term (30 minute) testing on well VW-3, induced vacuum was monitored from six observation wells located 15 to 50 feet away. At an applied vacuum of 80 inches WC and a well-head air flow rate of 74 SCFM, induced vacuum measurements at the observation wells ranged from 0.14 to 0.90 inches WC. No vacuum influence was observed in groundwater monitoring well MW-1 due to a lack of exposed screen above the water surface. All observation wells showed some vacuum impact within a 50-foot radius. Though observation well VW-2 was located farther away than wells VW-1 and VW-4, the observed vacuum was over twice as large (0.90 inches WC). Again, this data suggests that a preferential pathway may exist in soils between wells VW-2 and VW-3.

During the short-term (30 minute) testing on well VW-4, induced vacuum was monitored from six observation wells located 19 to 38 feet away. At an applied vacuum of 100 inches WC and a well-head air flow rate of 83 SCFM, little or no vacuum impact was observed at the observation wells. With the exception of groundwater monitoring well MW-1 which did not contain exposed screen, the observation wells appear to contain exposed screen within the same interval as extraction well VW-4 (5 - 17 feet bgs). The proximity of extraction well VW-4 to the former tank excavation may have resulted in the short-circuiting of air through the eastern portion of the site. This behavior appears to be evidenced by the difference in reciprocal vacuum response between wells VW-2 and VW-4. When an applied vacuum of 80 inches WC was placed on well VW-2, the induced vacuum response at well VW-4 was approximately 0.48 inches WC. However, when an even greater applied vacuum (100 inches WC) was placed on well VW-4, the reciprocal vacuum response at well VW-2 was only 0.05 inches WC.

During the short-term (30 minute) test on VW-5, induced vacuum was monitored from wells MW-2, RW-1, VW-2, and VW-1. At an applied vacuum of over 100 inches WC and a well-head air flow rate of 83 SCFM, little or no vacuum impact was observed at the observation wells located from 24 to 26 feet away. An evaluation of exposed well screen intervals indicates that wells MW-2 and RW-1 did not contain exposed well screen. As a result, induced vacuum was not observed in these wells. A low vacuum impact (0.11 inches WC) was observed at well VW-2 located 24 feet away. The short-circuiting of air through man-made backfill areas (existing or former product lines and tank areas) may have affected the observed vacuum impact.



During the short-term (30 minute) testing on well VW-6, induced vacuum was monitored from five observation wells located 22 to 54 feet away. At an applied vacuum of 100 inches WC and a well-head air flow rate of 87 SCFM, little or no vacuum impact was observed at the observation wells. This behavior is likely due to the fact that observation wells MW-1 and MW-3 did not contain exposed well screen, and wells VW-3 and VW-1 were located from 44 to 50 feet away from the extraction well. Though observation well VW-4 was located 24 feet from the extraction well, no significant induced vacuum was observed in this well. The lack of vacuum response at the 24-foot distance may be due to a radius of influence less than 24 feet, or short-circuiting through the former tank excavation areas.

During the long-term (120 minute) test on VW-1, vacuum impact was measured using five observation wells located 15 to 59 feet away. At an applied vacuum of 90 inches WC and a well-head air flow rate of 78 SCFM, induced vacuum at the observation wells ranged from 0.05 to 0.88 inches WC. No induced vacuum was observed in groundwater monitoring well MW-2 due to a lack of exposed well screen. Only a small vacuum impact (0.05 inches WC) was observed at well VW-4, which appears consistent with the fact that the well is located over 54 feet away. The observation wells located within a 24-foot radius exhibited a relatively high vacuum impact (0.74 to 0.88 inches WC).

### **GROUNDWATER GRADIENT**

EMCON's DTW measurements were used to evaluate groundwater elevations. Groundwater elevations for the wells without floating product were calculated by subtracting the measured DTW from the top of casing (TOC) elevation. Groundwater elevation for the recovery well RW-1, which contained floating product, was calculated by multiplying the product thickness in feet by an average product to water conversion factor of 0.8. The result was then subtracted from the original DTW measurement. The groundwater elevation in the recovery well RW-1 was then calculated by subtracting the corrected DTW from the wellhead elevation. The DTW measurements, TOC elevations, and calculated groundwater elevations are presented in Table 1.

The groundwater gradient evaluated for the first-encountered groundwater at this site, based on groundwater elevations obtained from wells MW-1 through MW-3 and RW-1 during third

quarter 1992 is approximately 0.017 toward the southwest. This gradient is generally consistent with regional gradient direction. Plates 16 through 18, Groundwater Gradient Maps, are graphic interpretations of the groundwater elevations measured on July 15, August 7, and September 8, 1992.

## RESULTS OF LABORATORY ANALYSES

### Soil Samples

Laboratory analyses of soil samples collected from borings B-14 through B-18 reported concentrations of TPHg ranging from nondetectable (less than 1 part per million [ppm]) to 4,300 ppm, and concentrations of BTEX ranging from nondetectable (less than 0.0050 ppm) to 580 ppm. Laboratory analyses of soil samples collected from boring B-19 reported nondetectable concentrations of TPHg and nondetectable or minor (up to 0.15 ppm) concentrations of BTEX.

Laboratory analyses of soil samples collected from borings B-12 and B-13 located next to the former waste-oil tank pit reported up to 1,800 ppm of TOG; up to 250 ppm of TPHd; nondetectable VOCs (37 compounds tested) except 160 parts per billion (ppb) of ethylbenzene detected in the sample collected at the depth of 7½ feet from boring B-13; nondetectable SVOCs (67 compounds tested); and nondetectable PCB (7 compounds tested). Concentrations of Cd were nondetectable (less than 0.50 ppm) in the samples from borings B-12 and B-13, and concentrations of Cr, Pb, Zn and Ni were up to 68 ppm, 7.4 ppm, 69 ppm and 81 ppm, respectively. Metals were present in the soil at normal background concentrations. Average background metal concentrations are reported in the scientific literature as: Cr at 100 ppm; Pb at 6.8 to 16.1 ppm; Zn at 47.7 to 82.8 ppm; and Ni at 46.4 to 101 ppm (Lindsay, 1979; and Scott, 1991).

Laboratory analyses of the composite soil sample collected from the soil stockpile reported 550 ppm of TPHg and up to 47 ppm of BTEX. The soil stockpile was removed from the site and transported to another ARCO facility by ARCO's contractor, Dillard Trucking Inc. of Byron, California, on August 28, 1992, for proper aeration before disposal to the BFI Landfill in Livermore.

The results of soil samples analyses are summarized in Table 3, Cumulative Results of Laboratory Analyses of Soil Samples. Graphic interpretations of TPHg in soil at depths ranging from 4½-6, 9-11, and 13-16 feet are shown on Plates 19 through 21, respectively. The highest concentrations of TPHg in soil are present at 9 to 11 feet below ground surface. Soil concentrations of TPHg, TPHd, and TOG are also summarized in the geologic cross sections in Plates 12 through 15. Chain of Custody forms and copies of laboratory reports for soil samples are included in Appendix E of this report.

### Water Samples

Laboratory analytical results for water samples reported TPHg concentration of 820 parts per billion (ppb) in the sample collected from groundwater monitoring well MW-1 in September 1992, and nondetectable TPHg concentrations (less than 50 ppb) in the samples collected from monitoring wells MW-2 and MW-3. Benzene was detected in concentrations of 350 ppb and 5.3 ppb in samples collected from monitoring wells MW-1 and MW-3, respectively, and was nondetectable (less than 0.5 ppb) in the groundwater from well MW-2. Toluene, ethylbenzene and total xylenes concentrations were nondetectable in all three groundwater monitoring wells, however the regular laboratory method reporting limit for these compounds (0.5 ppb) was raised for the sample from MW-1 to 5 ppb due to the high analyte concentration requiring sample dilution. Benzene concentrations exceeded the State Maximum Contaminant Level (MCL) of 1 ppb in wells MW-1 and MW-3. The results of laboratory analyses are summarized in Table 4, Cumulative Results of Laboratory Analyses of Water Samples. Chain of Custody records and laboratory analyses reports for groundwater samples are included in Appendix D. Graphic interpretations of the extent of TPHg and benzene in the groundwater are shown on Plate 22, TPHg/Benzene Concentrations in Groundwater. The highest TPHg concentrations are present in MW-1 in the northeast corner of the site near the north and east property lines and northeast of the former locations of the four USTs.

### Air Samples

Air samples collected after 30 minutes of operation from wells VW-2 and VW-5 contained reported TPHg concentrations at 6,800 and 27,000 milligrams per cubic meter (mg/m<sup>3</sup>),

respectively. Air samples collected from wells VW-1, VW-3, VW-4, and VW-6 contained reported TPHg concentrations ranging from nondetectable (less than 10 mg/m<sup>3</sup>) to 57 mg/m<sup>3</sup>. Concentrations of BTEX components were less than the detection limit of 5 mg/m<sup>3</sup> in air samples analyzed from wells VW-1, VW-3, and VW-4. Air samples analyzed for BTEX components from wells VW-2, VW-5, and VW-6 ranged from nondetectable to 330 mg/m<sup>3</sup> benzene, 5.2 to 220 mg/m<sup>3</sup> toluene, nondetectable to 36 mg/m<sup>3</sup> total xylenes, and ethylbenzene was below laboratory detection limit, however this limit was raised for VW-5 due to the matrix interference. With the exception of BTEX components, no volatile organic compounds (VOCs) were reported in air samples analyzed by EPA Method 8240.

During the long-term test on well VW-1, air samples were collected after 30 and 120 minutes of operation. The air sample collected after 30 minutes contained a reported TPHg concentration of 14 mg/m<sup>3</sup>. The air sample collected after 120 minutes contained a reported TPHg concentration of 57 mg/m<sup>3</sup>.

Lead analyses performed on the charcoal air-sampling tubes reported an average of 0.080 micrograms of lead per sample tube. For an air sample volume of 0.71 cubic feet, this mass corresponds to a calculated vapor-phase lead concentration of  $4.0 \times 10^{-3}$  mg/m<sup>3</sup> lead.

Laboratory results for the air samples collected during the VET are summarized in Table 5, Laboratory Analyses of Air Samples. Individual laboratory reports and chain of custody records are contained in Appendix E.

## DISCUSSION OF RESULTS

### Hydrocarbon Impacted Soil

The presently interpreted extent of hydrocarbon impacted soil beneath the site is presented on the Geologic Cross Sections, Plates 12 through 15, and TPHg Concentrations in Soil Contours, Plates 19 through 21. The majority of gasoline hydrocarbons in the soil appear to be concentrated in the northern and eastern portions of the site (vicinity of the former gasoline-storage tank pits and fuel lines). Waste-oil related hydrocarbons were detected in soil samples in the vicinity of the former waste-oil tank pit. Metals (Cd, Cr, Pb, Zn and Ni)

Additional Subsurface Environmental Investigation and VET  
ARCO Station 2035, Albany, California

are present in the soil in borings B-12 and B-13 at typical background concentrations (Lindsay, 1979 and Scott, 1991).

### Hydrocarbon Impacted Groundwater

Groundwater in the shallow aquifer beneath the site has been impacted by gasoline-related hydrocarbons. The groundwater beneath the site does not appear to be impacted by waste-oil related hydrocarbons, based on the analytical results from monitoring well MW-3, located adjacent to the former waste oil tank pit.

### Soil Vapor Extraction Test

#### **VET Air Flow Rate Results**

Based upon VET data, relatively large air flow rates (39 to 87 SCFM) could be extracted from vapor extraction wells VW-1 through VW-6 at applied vacuums ranging from 30 to 100 inches WC. Air flow from well VW-3 was limited to approximately 39 SCFM as a result of only 30 inches WC being applied at the well-head by the IC engine and blower unit. The reason for the reduction in applied vacuum by the IC engine is not known. Higher air flows may be possible at higher applied vacuums.

#### **VET Air Sample Results**

Air samples collected during the VET from vapor wells VW-1, VW-3, VW-4, and VW-6 did not contain high concentrations of gasoline hydrocarbons, though soil boring information suggests TPHg and BTEX constituents were present (Table 3). Air samples collected from these wells contained reported TPHg concentrations ranging from non-detectable (<10 mg/m<sup>3</sup>) to 57 mg/m<sup>3</sup>. These results may reflect the fact that some TPHg-impacted soils may exist below the capillary fringe zone, and were not exposed to air flow during the VET; or that short-circuiting of air through existing/former tank and product line areas is occurring.

Air samples collected during the VET from vapor wells VW-2 and VW-5 contained moderate to high reported TPHg concentrations of 6,800 mg/m<sup>3</sup> and 27,000 mg/m<sup>3</sup>, respectively. The relatively high TPHg concentrations reported in air samples from well VW-5 may be the result of free-phase gasoline being present on the water surface within this well.

### **VET Hydrocarbon Removal Rate Estimates**

Initial hydrocarbon removal rates were estimated from well-head flow rate and vapor concentration data obtained during the VET. Based upon vapor-phase TPHg concentrations of 6,800 to 27,000 mg/m<sup>3</sup>, and corresponding well-head air flow rates of 39 and 87 scfm, initial TPHg removal rates from wells VW-2 and VW-5 were projected at 24 and 200 pounds per day (approximately 3.7 to 31 gallons per day), respectively. These initial removal rates typically decrease rapidly with time, depending on site-specific conditions.

### **VET Radius of Influence Estimates**

Utilizing induced vacuum and distance measurements obtained during the VET, an effective radius of influence was estimated for the vapor wells at the site. The effective radius of influence has been defined as the radial distance from a vapor extraction well at which recorded vacuum levels suggest that subsurface air flow occurs and is presumed to be sufficient for remediation. Most radius of influence concepts assume that subsurface air flows through homogeneous and isotropic soils and that short-circuiting effects are neglected.

Methods for estimating an effective radius of influence vary due to the complexity of modeling the vapor extraction process and limited case-study information. RESNA generally assumes that an induced vacuum of 0.25 to 0.50 inches of WC should be sufficient to induce subsurface airflow within the zone of influence, depending on soil type. Air-modeling studies conducted by others suggest that the distance from the extraction well at which 1 percent of the applied well-head vacuum occurs can be interpreted as an effective radius of influence [Chevron, 1991]. This method is based upon theoretical model predictions which project that roughly 90 percent of the total air extracted from the well flows through soils within the radius of influence when a 1% cut-off is used.

Relatively high well-head vacuums (30 to 100 inches WC) were applied to the vapor extraction wells during the VET. Using predictions from the Chevron theoretical air flow models, the radius of influence would be estimated as the distance at which induced vacuums 0.3 to 1.0 inches WC (1% of the extraction well vacuum) are measured at observation wells. For this site, radius of influence was interpreted using both methods: 1% of the applied well vacuum; and a fixed induced vacuum of 0.4 inches WC (the approximate average between 0.25 and 0.50 inches WC).

For vapor well VW-1, data interpretation using a 1% cut-off would suggest a radius of influence of approximately 15 feet since an induced vacuum of 0.88 inches WC (approximately 1% of 90 inches WC applied vacuum) was observed 15 feet away. Using a fixed cut-off of 0.4 inches WC would suggest a radius of influence of over 24 feet since 0.74 inches WC was observed at well VW-3. These radius of influence estimates were estimated from short-term well operation at an applied well-head vacuum of 90 inches WC and an air flow rate of approximately 78 SCFM.

For vapor well VW-2, data interpretation using a 1% cut-off would suggest a radius of influence of approximately 40 feet since an induced vacuum of 0.26 inches WC (approximately 1% of 30 inches WC applied vacuum) was observed 40 feet away. However, induced vacuum measured at observation wells VW-1 and VW-5, each located approximately 24 feet away, did not reach either the 1% cut-off or the fixed 0.4 inches WC vacuum. These results suggest that the effective radius of influence may be directional -- as high as 40 feet in the eastern direction (toward VW-3) and less than 24 feet in other directions. These radius of influence estimates were estimated from short-term well operation at an applied well-head vacuum of 80 inches WC and an air flow rate of approximately 74 SCFM.

For vapor well VW-3, data interpretation using a 1% cut-off would suggest a radius of influence of approximately 40 feet since an induced vacuum of 0.90 inches WC (approximately 1% of 80 inches WC applied vacuum) was observed from well VW-2. However, induced vacuum measured at observation wells VW-1 and VW-4, located approximately 15 and 19 feet away respectively, did not reach the 1% cut-off. Using a fixed cut-off of 0.4 inches WC suggest the radius of influence is over 19 feet based upon vacuum

data from well VW-4. However, less than 0.4 inches WC was observed in well VW-1 located only 15 feet away. Again, these results suggest that the radius of influence may be directional - possibly as high as 40 feet in the western direction (toward VW-2), approximately 19 feet in the southern direction (toward well VW-6), and less than 15 feet in the northwestern direction (toward well VW-1). These radius of influence estimates were estimated from short-term well operation at an applied well-head vacuum of 30 inches WC and an air flow rate of approximately 39 SCFM. A larger radius of influence may be possible at higher applied vacuums.

A preferential air pathway appears to exist in soils between wells VW-2 and VW-3. This air pathway appears to increase the observed vacuum response between wells VW-2 and VW-3, which is reflected as an estimated 40-foot radius of influence between the wells. However, the estimated radius of influence for well VW-3 in the northern direction appears to be less than 15 feet, based upon a low vacuum response at well VW-1. This behavior may indicate a heterogeneous distribution of soils beneath the site and/or the short-circuiting of air through existing or former tank and product line trenches.

For vapor well VW-4, a radius of influence could not be determined using either the 1% cut-off or the fixed 0.4 inch WC cut-off. The induced vacuum response from observation wells located 19 to 40 feet away was below 0.10 inches WC. These results suggest that the radius of influence is less than 19 feet under the vacuum and flow conditions observed during the short-term VET. This low radius of influence may be the result of air short-circuiting of air through the former tank excavation area.

For vapor well VW-5, a radius of influence could not be determined using either the 1% cut-off or the fixed 0.4 inch WC cut-off. The induced vacuum response from observation wells located 24 to 40 feet away was below 0.11 inches WC. These results suggest that the radius of influence is less than 24 feet under the vacuum and flow conditions applied during the short-term VET.

For vapor well VW-6, radius of influence could not be determined using either the 1% cut-off or the fixed 0.4 inch WC cut-off. The induced vacuum responses from observation wells located 24 to 54 feet away were generally below 0.01 inches WC. These results suggest that



the radius of influence is less than 24 feet under the vacuum and flow conditions applied during the short-term VET.

The relatively shallow screened intervals of the vapor wells combined with the presence of shallow water, and existing/former backfill areas may promote short-circuiting through the upper soil zones in wells located near the former product line and tank excavation areas (VW-1, VW-2, VW-3, VW-4, and VW-6).

### CONCLUSIONS

RESNA concludes the following, based on the results of this investigation and vapor extraction test:

- The majority of gasoline impacted soil at concentrations above 100 ppm of TPHg appears to be in the northern and eastern portions of the site (northern and southern vicinity of the northern service islands, northeastern vicinity of former gasoline tank T4, and immediate vicinity of the former waste-oil tank) at depths between 5 to 15 feet below the ground surface, within silty to gravelly clay interbedded with discontinuous layers of clayey to sandy gravel and clayey sand. The presence of water in this relatively permeable zone appears to have facilitated the movement of gasoline hydrocarbons laterally.
- The lateral extent of gasoline hydrocarbons in the soil at the subject site has been delineated below 100 ppm TPHg, with the exception of the northern and eastern vicinity of the site.
- The vertical extent of gasoline hydrocarbons in the soil at the site has been delineated based on soil samples collected from unsaturated aquitard materials beneath the site.
- The soil in the immediate vicinity of the former waste-oil tank pit appears to be impacted by waste-oil related hydrocarbons as up to 1,800 ppm of TOG and up to 250 ppm of a non-diesel mixture of hydrocarbons (C9 - C14, and >C17) calculated

as TPHd. This TPHd was detected in the soil samples collected from borings B-12 and B-13 located in the immediate vicinity of the former waste-oil tank pit. VOCs, SVOCs, PCBs were not detected in the soil samples from borings B-12 and B-13, and concentrations of metals (Cd, Cr, Pb, Zn and Ni) were within the range of natural background levels.

- Groundwater in the first encountered water bearing zone is impacted by gasoline hydrocarbons as evidenced by the presence of floating product in recovery well RW-1, and 820 ppb of TPHg detected in the water sample from groundwater monitoring well MW-1. The groundwater at the site does not appear to be impacted by waste-oil related hydrocarbons based on the nondetectable concentrations of TOG, VOCs, Cd, Cr, Pb, Ni, and minor (0.045 ppb) concentration of Zn in monitoring well MW-3 located next to the former waste-oil tank pit.
- The lateral extent of gasoline hydrocarbons in the groundwater has not been delineated at the site with the exception of the northwestern portion of the site (MW-2), and the vicinity of the former waste-oil tank pit (MW-3) where TPHg concentrations were less than 50 ppb.
- Laboratory results of air samples and field organic vapor measurements collected from vapor extraction wells VW-2 and VW-5 during the VET suggest that petroleum hydrocarbons exist in the area of the northern service islands and its immediate vicinity.
- Vapor extraction appears to be a viable soil remediation alternative for the remediation of gasoline hydrocarbons from onsite soils. An effective radius of influence for vapor wells VW-1 through VW-6 has been estimated to range from approximately 15 to 40 feet, based upon wellhead flow rates of approximately 80 SCFM and applied vacuums of approximately 90 inches WC. The projected radius of influence appears to vary with compass direction, depending on well location and proximity to backfill areas. Radius of influence appears to be limited (< 15 feet) for vapor wells installed near the former tank complex and product-line areas. This

reduced radius of influence may be the result of air short-circuiting through more permeable backfill areas.

### LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological and engineering practice in California at the time this investigation was performed. This assessment was conducted solely for the purpose of evaluating environmental conditions of the soil and groundwater with respect to gasoline and waste-oil related hydrocarbons at the site. No soil engineering or geotechnical references are implied or should be inferred. Groundwater field procedures and acquisition of groundwater field data were performed under the direction of EMCON; evaluation and warrant of their field data and field protocols is beyond RESNA's scope of work. Evaluation of the geologic conditions at the site for the purpose of this assessment is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of assessment.

### DISTRIBUTION

It is recommended that copies of this report be sent to the following regulatory agencies:

Mr. Richard Hiatt  
Regional Water Quality Control Board  
San Francisco Bay Region  
2101 Webster Street, Suite 500  
Oakland, California 94612

Mr. Barney Chan  
Alameda County Health Care Services Agency  
80 Swan Way, Room 200  
Oakland, California 94621

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Additional Subsurface Environmental Investigation and VET  
ARCO Station 2035, Albany, California

November 30, 1992  
69036.05

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(Continued)

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Base: U.S. Geological Survey  
 7.5-Minute Quadrangles  
 Richmond/Oakland West, California.  
 Photorevised 1980

**LEGEND**

● = Site Location

Approximate Scale



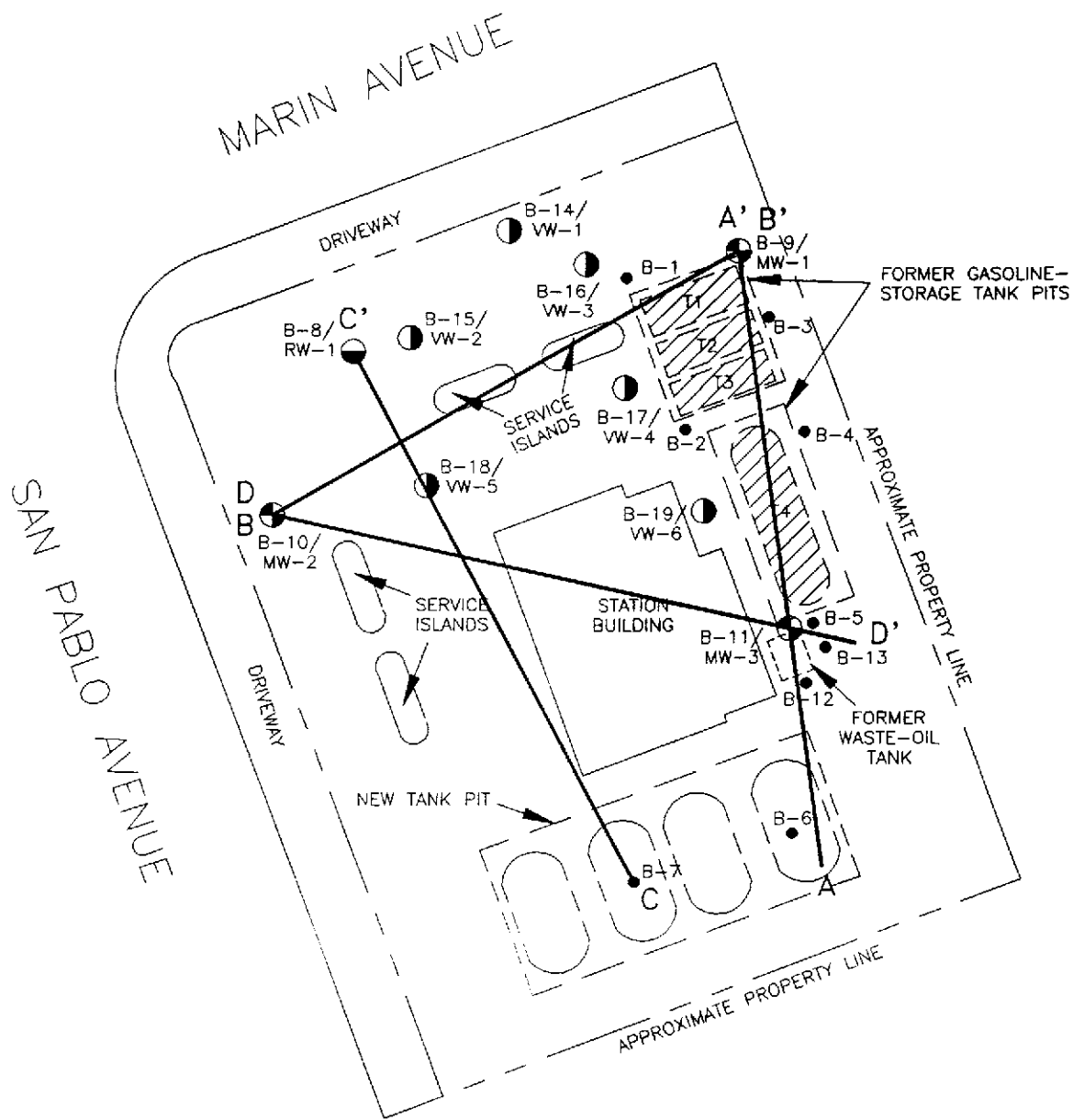
**RESNA**  
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**SITE VICINITY MAP**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

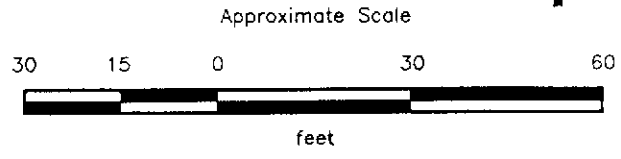
**PLATE**

**1**



**EXPLANATION**

- B-19/  
VW-6 ● = Boring/vapor extraction well  
(RESNA, August 1992)
- B-8/  
RW-1 ● = Boring/recovery well  
(Exceltech, October 1991)
- B-11/  
MW-3 ● = Boring/monitoring well  
(Exceltech, October 1991)
- B-13 ● = Soil boring  
(RESNA, August 1989 and June 1991)
- D—D' = Geologic cross section



Source: Surveyed by John E. Koch, Land Surveyor.



**GENERALIZED SITE PLAN**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

**PLATE**  
**2**

**PROJECT 69036.05**

# UNIFIED SOIL CLASSIFICATION SYSTEM

| MAJOR DIVISION              |                                    | LTR | DESCRIPTION  | MAJOR DIVISION            |                                | LTR | DESCRIPTION  |  |  |
|-----------------------------|------------------------------------|-----|--|---------------------------|--------------------------------|-----|--|--|--|
| COARSE-<br>GRAINED<br>SOILS | GRAVEL<br>AND<br>GRAVELLY<br>SOILS | GW  | Well-graded gravels or gravel-sand mixtures, little or no fines.   | FINE-<br>GRAINED<br>SOILS | SILTS<br>AND<br>CLAYS<br>LL<50 | ML  | Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity. |  |  |
|                             |                                    | GP  | Poorly-graded gravels or gravel-sand mixtures, little or no fines. |                           |                                | CL  | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.                   |  |  |
|                             |                                    | GM  | Silty gravels, grave-sand-silt mixtures.                           |                           |                                | OL  | Organic silts and organic silt-clays of low plasticity.  |  |  |
|                             |                                    | GC  | Clayey gravel, gravel-sand-clay mixtures.                          |                           |                                |     |  |  |  |
|                             | SAND<br>AND<br>SANDY<br>SOILS      | SW  | Well-graded sand or gravelly sands, little or no fines.            |                           | SILTS<br>AND<br>CLAYS<br>LL>50 | MH  | Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.                                 |  |  |
|                             |                                    | SP  | Poorly-graded sands or gravelly sands, little or no fines.         |                           |                                | CH  | Inorganic clays of high plasticity, fat clays.   |  |  |
|                             |                                    | SM  | Silty sands, sand-silt mixtures.                                   |                           |                                | OH  | Organic clays of medium to high plasticity, organic silts.   |  |  |
|                             |                                    | SC  | Clayey sands, sand-clay mixtures.                                  |                           |                                | PT  | Peat and other highly organic soils.   |  |  |
|                             |                                    |     |  |                           | HIGHLY ORGANIC SOILS           |     |  |  |  |

|   |   |   |
|---|---|---|
| Depth through which sampler is driven<br>Relatively undisturbed sample<br>No sample recovered<br>Static water level observed in well/boring<br>Initial water level observed in boring<br>S-10 Sample number | Sand pack<br>Bentonite<br>Neat cement<br>Caved native soil<br>Blank PVC<br>Machine-slotted PVC<br>P.I.D. Photoionization detector | <div style="border-bottom: 1px solid black; height: 20px; width: 100%;"></div> Stratigraphic contact<br><br><div style="border-bottom: 1px dashed black; height: 20px; width: 100%;"></div> Gradational contact<br><br><div style="border-bottom: 1px dotted black; height: 20px; width: 100%;"></div> Inferred contact |
|---|---|---|

BLOWS REPRESENT THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH EACH 6 INCHES OF AN 18-INCH PENETRATION.

GRADATIONAL AND INFERRED CONTACT LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.



**UNIFIED SOIL CLASSIFICATION SYSTEM PLATE  
AND SYMBOL KEY  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California**



Depth of boring: 21-1/2 feet Diameter of boring: 8 inches Date drilled: 08/20/92

Well depth: N/A Material type: N/A Casing diameter: N/A

Screen interval: N/A Slot size: N/A

Drilling Company: Bayland Drilling Driller: Frank and John

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional: *J.E. Toman*

Registration No.: RCE 044600 State: CA

| Depth | Sample No. | Blows          | P.I.D. | USCS Code | Description   | Well Const. |
|-------|------------|----------------|--------|-----------|---|-------------|
| 0     |            |                |        |           | Asphalt-covered surface.<br>Asphalt (4 inches).   |             |
|       |            |                |        | GP        | Sandy gravel, gray, damp, dense; baserock.  | ▽▽▽▽        |
|       |            |                |        | CL        | Sandy clay, dark brown, damp, medium plasticity, stiff.<br><br>Color change to brown.             | ▽▽▽▽        |
| 4     | S-4.5      | 5<br>10<br>15  | 7.3    |           |   | ▽▽▽▽        |
|       |            |                |        | GC        | Clayey gravel with sand, brown, damp, medium dense.   | ▽▽▽▽        |
| 6     |            |                |        | CL        | Sandy clay with fine gravel, brown, damp, medium plasticity, very stiff.                          | ▽▽▽▽        |
| 8     | S-7.5      | 11<br>12<br>13 | 44     |           |   | ▽▽▽▽        |
|       |            |                |        | GC        | Clayey gravel with sand, gray, damp, medium dense; product odor.                                  | ▽▽▽▽        |
| 10    | S-9        | 4<br>5<br>10   | 86     |           |   | ▽▽▽▽        |
| 12    |            |                |        | SC        | Clayey sand with gravel, fine-grained sand, light gray with orange mottling, moist, medium dense. | ▽▽▽▽        |
| 14    | S-14.5     | 7<br>11<br>13  | 4      |           |   | ▽▽▽▽        |
| 16    |            |                |        | ML        | Sandy silt, orange-brown, moist, low plasticity, stiff.   | ▽▽▽▽        |
| 18    | S-19       | 3<br>6<br>10   | 0      |           |   | ▽▽▽▽        |
| 20    | S-20.5     | 8<br>10<br>16  | 0      | ▽         | Increasing sand, moist.<br>Clayey sand with gravel, olive-orange, very moist, medium dense.       | ▽▽▽▽        |
|       |            |                |        | - SC      | Total depth = 21-1/2 feet.  | ▽▽▽▽        |



LOG OF BORING B-12  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California

PLATE

4

PROJECT 69036.05

Depth of boring: 21-1/2 feet Diameter of boring: 8 inches Date drilled: 08/19/92

Well depth: N/A Material type: N/A Casing diameter: N/A

Screen interval: N/A Slot size: N/A

Drilling Company: Bayland Drilling Driller: Frank and Robert

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional [Signature]

Registration No. RCE 044600 State: CA

| Depth                      | Sample No. | Blows                | P.I.D. | USCS Code | Description  | Well Const. |
|----------------------------|------------|----------------------|--------|-----------|--|-------------|
| 0                          |            |                      |        |           | Asphalt-covered surface.                                   |             |
|                            |            |                      |        | GP        | Asphalt (4 inches).  | ▽▽▽▽        |
|                            |            |                      |        | CH        | Sandy gravel, gray, damp, dense; baserock.                 | ▽▽▽▽        |
| 2                          |            |                      |        | CH        | Sandy clay, dark brown, damp, high plasticity, soft.       | ▽▽▽▽        |
|                            |            |                      |        | CL        | Silty clay, brown, damp, medium plasticity, stiff.         | ▽▽▽▽        |
| 4                          | S-4.5      | 2<br>7               | 0      |           |  | ▽▽▽▽        |
|                            |            | 17                   |        | GC        | Clayey gravel with sand, brown, damp, medium dense;        | ▽▽▽▽        |
| 6                          |            |                      |        | CL        | noticeable product odor.                                   | ▽▽▽▽        |
|                            | S-7.5      | 5<br>10              | 47     |           | Sandy clay, brown, damp, medium plasticity, stiff; notice- | ▽▽▽▽        |
| 8                          |            | 14                   |        |           | able product odor.   | ▽▽▽▽        |
|                            | S-9        | 7<br>9               | 17     | GC        | Clayey gravel with sand, brown mottled gray, damp,         | ▽▽▽▽        |
| 10                         |            | 11                   |        |           | medium dense.  | ▽▽▽▽        |
|                            |            |                      |        | SC        | Clayey sand with gravel, fine-grained sand, light gray     | ▽▽▽▽        |
| 12                         |            |                      |        |           | with orange mottling, dense.                               | ▽▽▽▽        |
| 14                         | S-14.5     | 6<br>14              | 0      |           |  | ▽▽▽▽        |
|                            |            | 18                   |        |           |  | ▽▽▽▽        |
| 18                         | S-17.5     | 11<br>20             | 0      |           | With sandy silt lenses.                                    | ▽▽▽▽        |
|                            | S-19       | 4<br>6               | 0      |           | Increasing gravel.   | ▽▽▽▽        |
| 20                         | S-20       | 10<br>14<br>17<br>19 | 0      | ▽<br>=    | Decreasing clay, wet.                                      | ▽▽▽▽        |
| Total depth = 21-1/2 feet. |            |                      |        |           |  |             |



LOG OF BORING B-13  
 ARCO Station 2035  
 1001 San Pablo Avenue  
 Albany, California

PLATE  
 5

PROJECT 69036.05

Depth of boring: 18-1/2 feet Diameter of boring: 10 inches Date drilled: 08/20/92

Well depth: 17 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 5 to 17 feet Slot size: 0.100-inch

Drilling Company: Bayland Drilling Driller: Frank and John

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional: [Signature]

Registration No.: RCE 044600 State: CA

| Depth | Sample No. | Blows         | P.I.D. | USCS Code | Description  | Well Const. |
|-------|------------|---------------|--------|-----------|--|-------------|
| 0     |            |               |        |           | Concrete.  |             |
|       |            |               |        |           | Concrete (7 inches).   |             |
|       |            |               | 146    | GP        | Sandy gravel, gray, damp, dense; baserock.   |             |
| 2     |            |               |        | CH        | Silty clay, dark brown, damp, high plasticity, soft; product odor.   |             |
| 4     |            |               |        | CL        | Sandy clay, trace fine gravel, brown, damp, medium plasticity, very stiff; product odor.                                     |             |
| 6     | S-5.5      | 5<br>8<br>9   | 709    |           |  |             |
| 8     |            |               |        |           |  |             |
| 10    | S-10.5     | 5<br>5<br>5   | 576    | SC        | Clayey sand with gravel, fine- to coarse-grained sand, dark gray, damp, loose; obvious product odor.                         |             |
| 12    |            |               |        | CL        | Gravelly clay with sand, brown mottled gray, moist, low plasticity, stiff; product odor.                                     |             |
| 14    |            |               |        |           |  |             |
| 16    | S-15.5     | 2<br>4<br>8   | 59     | SC/ML     | Clayey sand, fine-grained, with clayey silt lenses, light gray mottled orange, moist, medium dense; noticeable product odor. |             |
| 18    | S-17.5     | 7<br>24<br>26 | 12     |           | With gravel, less clay, orange-brown.  |             |
| 20    |            |               |        |           | Total Depth = 18-1/2 feet.   |             |



PROJECT 69036.05

LOG OF BORING B-14/VW-1  
 ARCO Station 2035  
 1001 San Pablo Avenue  
 Albany, California

PLATE

6

Depth of boring: 17-1/2 feet Diameter of boring: 10 inches Date drilled: 08/19/92  
 Well depth: 17 feet Material type: Sch 40 PVC Casing diameter: 4 inches  
 Screen interval: 5 to 17 feet Slot size: 0.100-inch  
 Drilling Company: Bayland Drilling Driller: Frank and Robert  
 Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional: [Signature]

Registration No.: RCE 044600 State: CA

| Depth | Sample No. | Blows                           | P.I.D.   | USCS Code | Description  | Well Const. |
|-------|------------|---------------------------------|----------|-----------|--|-------------|
| 0     |            |                                 |          |           | Asphalt-covered surface.   |             |
|       |            |                                 |          | GP        | Asphalt (4 inches).  |             |
|       |            |                                 |          | CL/CH     | Sandy gravel, brown, damp, dense; baserock.  |             |
| 2     |            |                                 |          | CL/CH     | Silty clay, black, damp, medium to high plasticity, stiff; product odor.                                     |             |
| 4     |            |                                 |          | CL        | Silty clay with sand and fine gravel, brown mottled gray, damp, medium plasticity, very stiff; product odor. |             |
| 6     | S-5.5      | 4<br>8<br>12                    | 364      |           |  |             |
| 8     | S-8.5      | 8<br>10<br>12                   | 522      | SC        | Clayey sand, fine- to coarse-grained, grayish-brown, moist, medium dense; product odor.                      |             |
| 10    | S-10       | 5<br>7<br>11                    | 726      | ML        | Gravelly silt with sand, brown, moist, low plasticity, very stiff; obvious product odor.                     |             |
| 12    | S-12       | 5<br>20<br>14                   |          |           | Color change to brown mottled orange, damp.  |             |
| 14    | S-13.5     | 7<br>11<br>20                   | 610      | SC/ML     | Clayey sand, fine-grained, with sandy silt lenses, greenish brown, moist, dense; product odor.               |             |
| 16    | S-15       | 7<br>19<br>20<br>11<br>19<br>24 | 65<br>94 |           | Increasing sand, grayish-brown.  |             |
| 18    |            |                                 |          |           | Total depth = 17-1/2 feet.   |             |
| 20    |            |                                 |          |           |  |             |

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PROJECT 69036.05

LOG OF BORING B-15/VW-2

ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California

PLATE

7


Depth of boring: 15-1/2 feet Diameter of boring: 10 inches Date drilled: 08/19/92

Well depth: 9-1/2 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 4-1/2 to 9-1/2 feet Slot size: 0.100-inch

Drilling Company: Bayland Drilling Driller: Frank and Robert

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional: 

Registration No.: RCE 044600 State: CA

| Depth | Sample No. | Blows       | P.I.D. | USCS Code | Description   | Well Const. |
|-------|------------|-------------|--------|-----------|---|-------------|
| 0     |            |             |        |           | Asphalt-covered surface.  |             |
|       |            |             |        | GP        | Asphalt (4 inches).   |             |
|       |            |             |        |           | Sandy gravel, gray, damp, dense: baserock.  |             |
| 2     |            |             |        | CL        | Sandy clay, brown, moist, medium plasticity, very soft; product odor.                 |             |
| 4     | S-4.5      | 1<br>1<br>1 | 74     |           |   |             |
| 6     |            |             |        |           |   |             |
| 8     |            |             |        |           |   |             |
| 10    | S-10       | 1<br>1<br>2 | 142    | SM        | Silty sand, fine-grained, dark gray, wet, very loose; product odor.                   |             |
| 12    |            |             |        |           | Some gravel.  |             |
| 14    | S-14.5     | 2<br>3<br>4 | 7.7    | CL        | Silty clay with sand, light gray mottled orange, damp to moist, low plasticity, firm. |             |
| 16    |            |             |        |           | Total depth = 15-1/2 feet.  |             |
| 18    |            |             |        |           |   |             |
| 20    |            |             |        |           |   |             |



LOG OF BORING B-16/VW-3  
 ARCO Station 2035  
 1001 San Pablo Avenue  
 Albany, California

PLATE  
 8

PROJECT 69036.05

Depth of boring: 18-1/2 feet Diameter of boring: 10 inches Date drilled: 08/20/92  
 Well depth: 17 feet Material type: Sch 40 PVC Casing diameter: 4 inches  
 Screen interval: 5 to 17 feet Slot size: 0.100-inch  
 Drilling Company: Bayland Drilling Driller: Frank and John  
 Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional: [Signature]  
 Registration No.: RCE 044600 State: CA

| Depth | Sample No. | Blows         | P.I.D. | USCS Code | Description  | Well Const. |
|-------|------------|---------------|--------|-----------|--|-------------|
| 0     |            |               |        |           | Concrete.  |             |
|       |            |               |        |           | Concrete (7 inches).   |             |
|       |            |               |        | GP        | Sandy gravel, brown, damp, dense; baserock.  |             |
| 2     |            |               |        | CH        | Silty clay, dark brown, damp, high plasticity, firm.   |             |
| 4     |            |               |        | CL        | Sandy clay, brown, damp, medium plasticity, very stiff; obvious product odor.  |             |
| 6     | S-5.5      | 5<br>10<br>14 | 592    |           | Increasing sand, with fine gravel, grayish-brown.  |             |
| 10    | S-10.5     | 5<br>6<br>6   | 854    | SC        | Clayey sand, fine-grained, gray, damp to moist, medium dense; product odor.  |             |
| 12    |            |               |        | CL        | Gravelly clay with sand, brown mottled gray, moist, low plasticity, stiff; product odor.                                     |             |
| 16    | S-15.5     | 6<br>8<br>10  | 80     | SC/ML     | Clayey sand, fine-grained, with clayey silt lenses, light gray mottled orange, moist, medium dense; noticeable product odor. |             |
| 18    | S-17.5     | 1<br>18<br>30 | 225    |           | Less clay, with gravel, orange-brown.  |             |
| 20    |            |               |        |           | Total depth = 18-1/2 feet.   |             |



LOG OF BORING B-17/VW-4  
 ARCO Station 2035  
 1001 San Pablo Avenue  
 Albany, California

PLATE  
 9

PROJECT 69036.05

Depth of boring: 16-1/2 feet Diameter of boring: 10 inches Date drilled: 08/21/92  
 Well depth: 14-1/2 feet Material type: Sch 40 PVC Casing diameter: 4 inches  
 Screen interval: 4-1/2 to 14-1/2 feet Slot size: 0.100-inch  
 Drilling Company: Bayland Drilling Driller: Frank and John  
 Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski  
 Signature of Registered Professional [Signature]  
 Registration No.: RCE 044600 State: CA

| Depth | Sample No. | Blows          | P.I.D. | USCS Code | Description   | Well Const. |
|-------|------------|----------------|--------|-----------|---|-------------|
| 0     |            |                |        |           | Asphalt-covered surface.  |             |
|       |            |                |        |           | Asphalt (4 inches).   |             |
|       |            |                |        | GP        | Sandy gravel, gray, damp, dense; baserock.  |             |
| 2     |            |                |        | CL/CH     | Silty clay, dark brown, damp, medium to high plasticity, firm.  |             |
| 4     |            |                |        | CL        | Sandy clay, brown, damp, medium plasticity, stiff.  |             |
| 6     | S-5.5      | 7<br>12<br>12  | 39     | GC        | Clayey gravel with sand, grayish-brown, damp, medium dense.   |             |
| 8     |            |                |        |           |   |             |
| 10    | S-10.5     | 12<br>10<br>8  | 143    |           | Increasing sand.  |             |
| 12    |            |                |        | CL        | Gravelly clay with sand, grayish-brown, damp to moist, low plasticity, very stiff; product odor.          |             |
| 14    |            |                |        |           |   |             |
| 16    | S-15.5     | 18<br>12<br>18 | 896    | SC        | Clayey sand with gravel, fine-grained sand, light gray mottled orange, moist, medium dense; product odor. |             |
|       |            |                |        |           | Total depth = 16-1/2 feet.  |             |
| 18    |            |                |        |           |   |             |
| 20    |            |                |        |           |   |             |

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PROJECT 69036.05

LOG OF BORING B-18/VW-5  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California

PLATE  
10

Depth of boring: 16-1/2 feet Diameter of boring: 10 inches Date drilled: 08/21/92

Well depth: 12-1/2 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 5 to 12-1/2 feet Slot size: 0.100-inch

Drilling Company: Bayland Drilling Driller: Frank and John

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional [Signature]

Registration No.: RCE 044600 State: CA

| Depth | Sample No. | Blows         | P.I.D. | USCS Code | Description  | Well Const. |
|-------|------------|---------------|--------|-----------|--|-------------|
| 0     |            |               |        |           | Asphalt-covered surface.   |             |
|       |            |               |        | GP        | Asphalt (4 inches).  |             |
|       |            |               |        | CL/CH     | Sandy gravel, gray, damp, dense; baserock.   |             |
| 2     |            |               |        | CL/CH     | Silty clay, black, damp, medium to high plasticity, stiff; product odor.                                 |             |
| 4     |            |               |        | CL        | Silty clay, brownish-gray, moist, medium plasticity, very stiff; noticeable product odor.                |             |
| 6     | S-5.5      | 6<br>12<br>21 | 43     | GC        | Color change to brown.<br>Clayey gravel with sand, grayish-brown, moist, dense; noticeable product odor. |             |
| 8     |            |               |        | CL        | Silty clay, trace fine gravel, brown, damp, medium plasticity, stiff.                                    |             |
| 10    | S-10.5     | 3<br>6<br>9   | 0      |           | With clayey sand lenses.   |             |
| 12    |            |               |        |           |  |             |
| 14    |            |               |        | SC/CL     | Clayey sand, fine-grained, with sandy clay lenses, brown, wet, medium dense.                             |             |
| 16    | S-15.5     | 3<br>5<br>8   | 56     |           |  |             |
|       |            |               |        |           | Total depth = 16-1/2 feet.   |             |
| 18    |            |               |        |           |  |             |
| 20    |            |               |        |           |  |             |



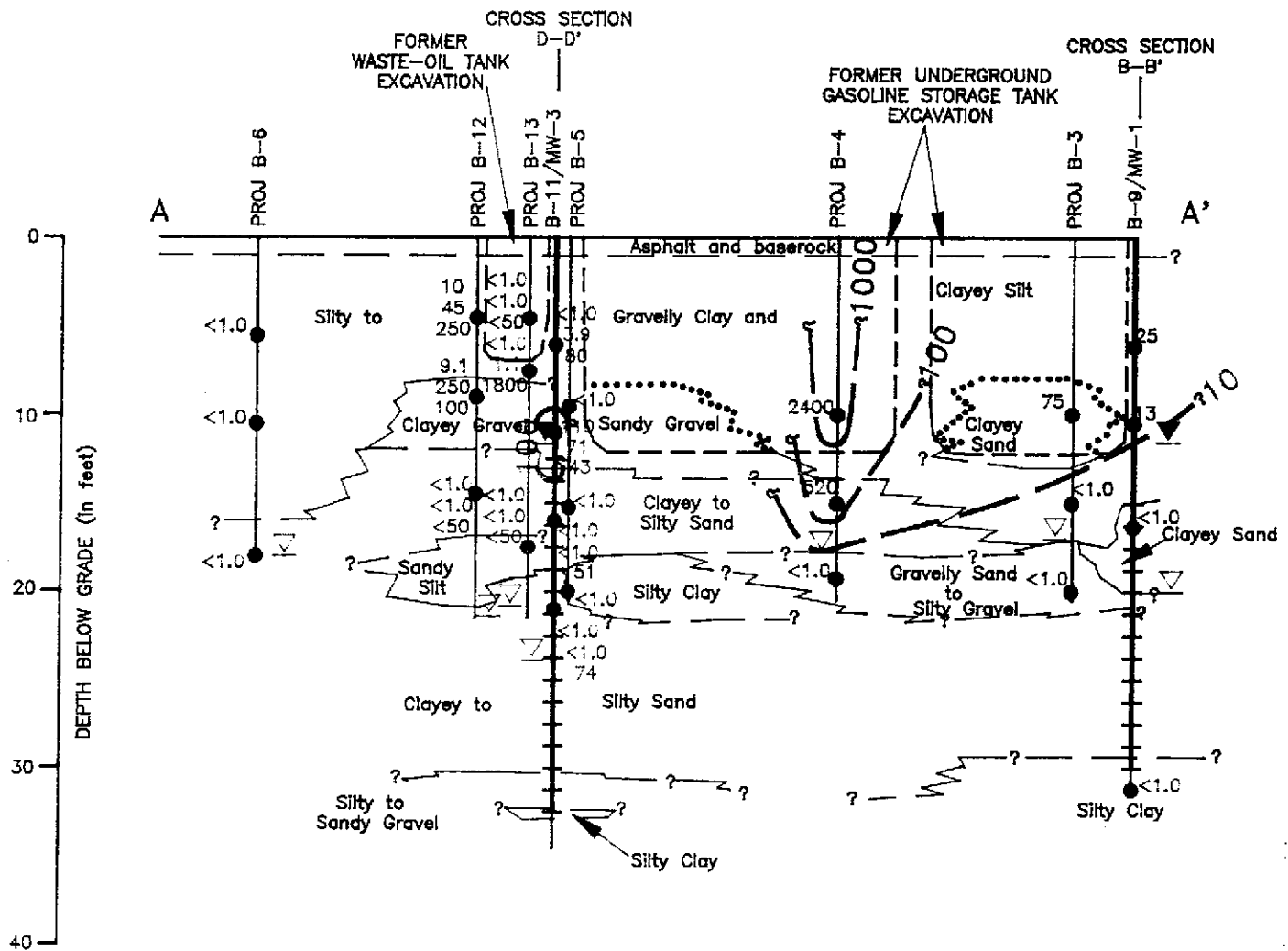
PROJECT 69036.05

LOG OF BORING B-19/VW-6  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California

PLATE

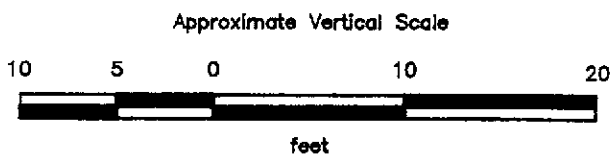
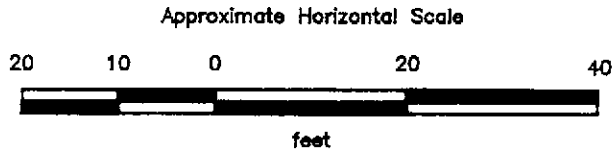
11





**EXPLANATION**

- = Line of equal concentration of TPHg in soil in parts per million (ppm)
- = Laboratory analyzed soil sample showing concentration of TPHg (red), TPHd (green), and TOG (blue) in ppm
- = Well casing
- = Well screen
- = Boring
- = Initial water level in boring
- = Static water level in well (09/08/92)

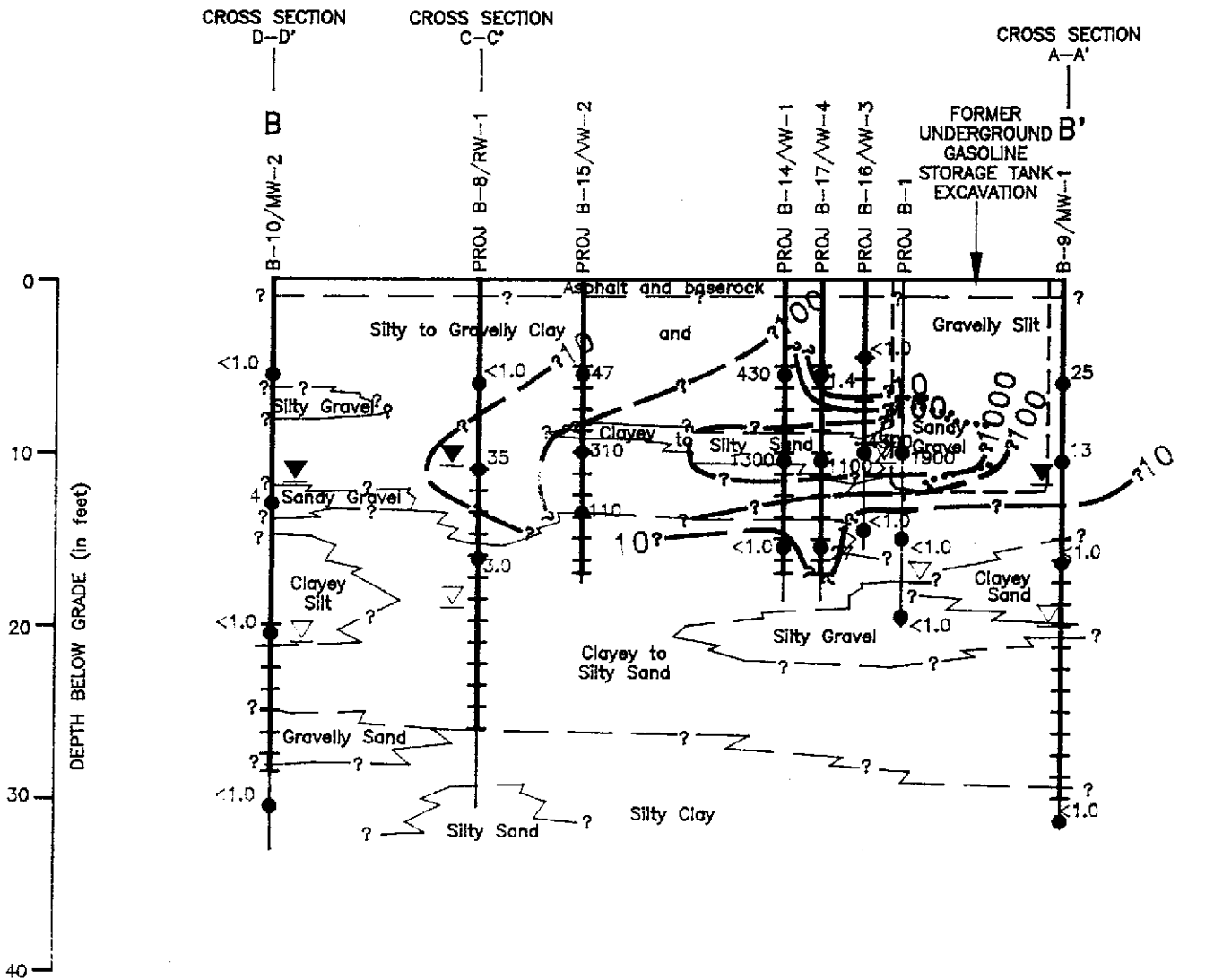


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PROJECT 69036.05

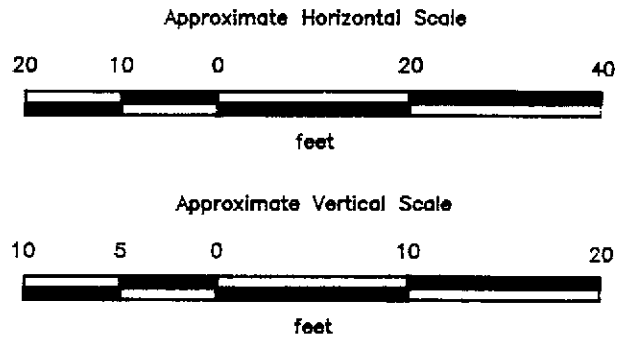
**GEOLOGIC CROSS SECTION A-A'**  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California

**PLATE**  
**12**



**EXPLANATION**

- = Line of equal concentration of TPHg in soil in parts per million (ppm)
- = Laboratory analyzed soil sample showing concentration of TPHg in ppm
- = Well casing
- = Well screen
- = Boring
- = Initial water level in boring
- = Static water level in well (09/08/92)

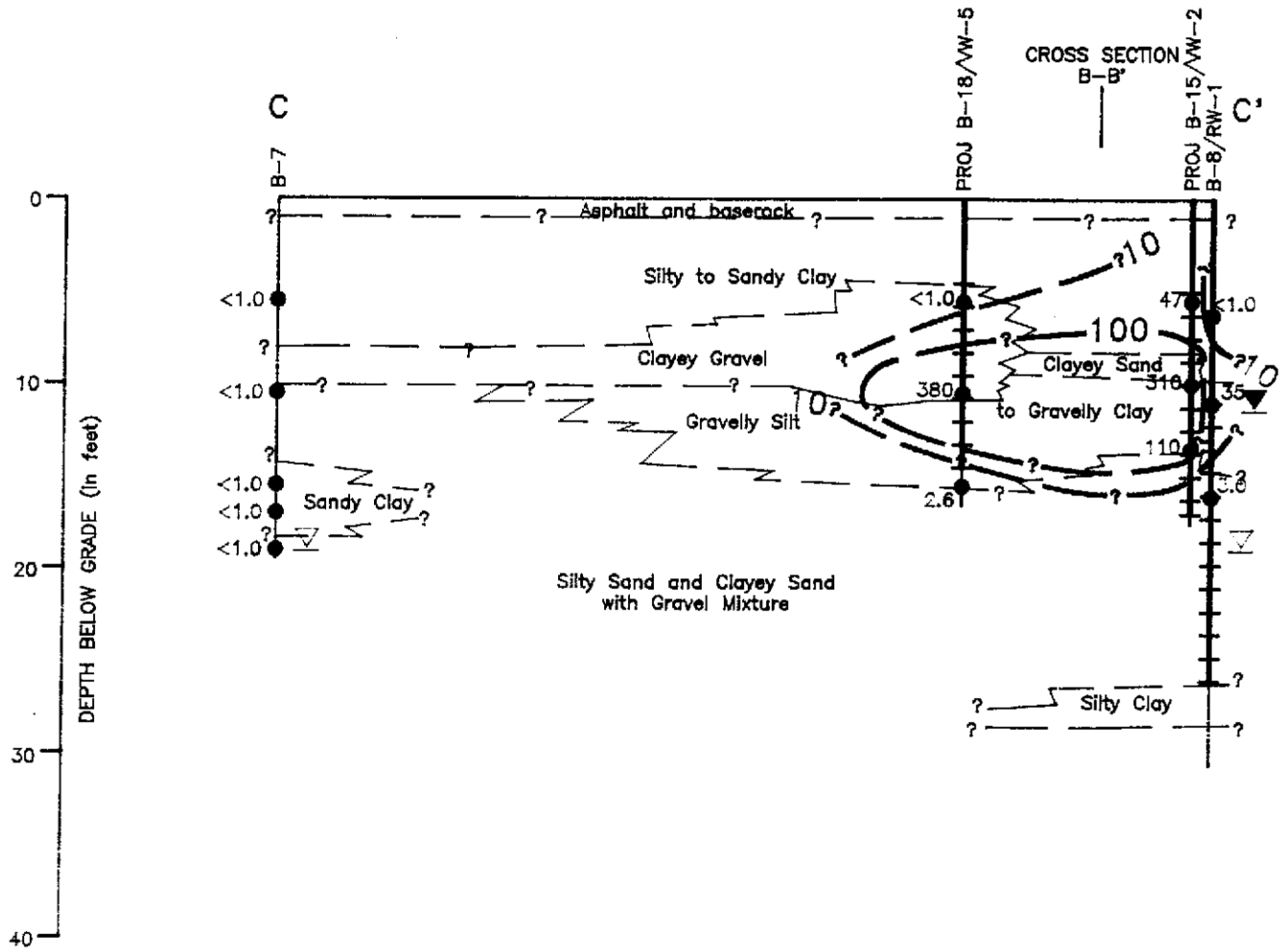


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**GEOLOGIC CROSS SECTION B-B'**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

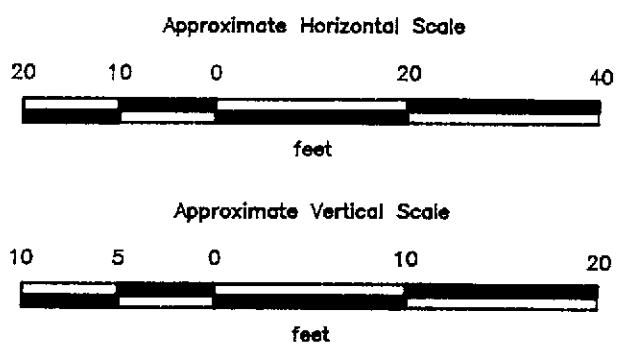
**PLATE**  
**13**

**PROJECT 69036.05**



**EXPLANATION**

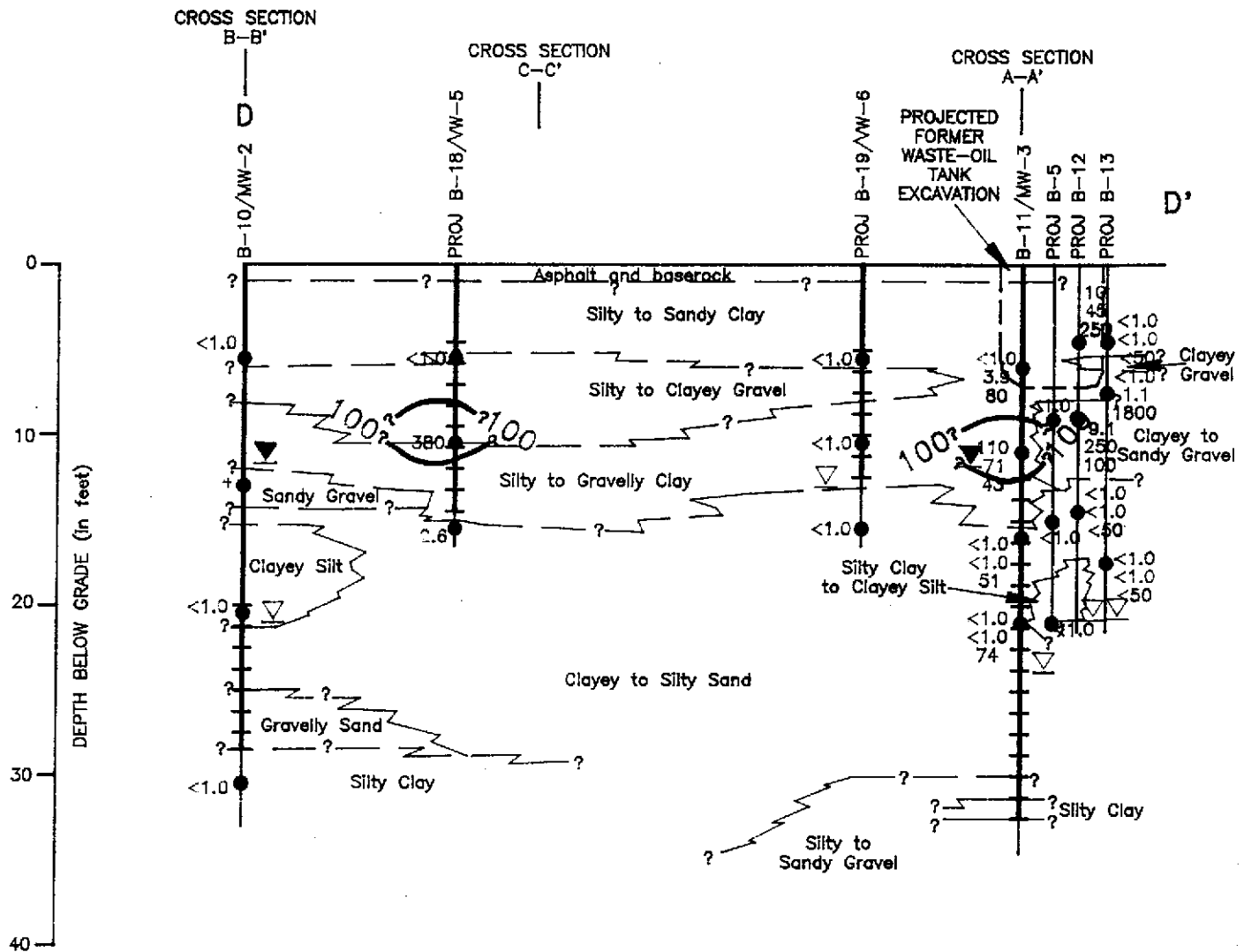
- 100 — = Line of equal concentration of TPHg in soil in parts per million (ppm)
- 380 ● = Laboratory analyzed soil sample showing concentration of TPHg in ppm
- = Well casing
- = Well screen
- = Boring
- ▽ = Initial water level in boring
- ▽ = Static water level in well (09/08/92)



**GEOLOGIC CROSS SECTION C-C'**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

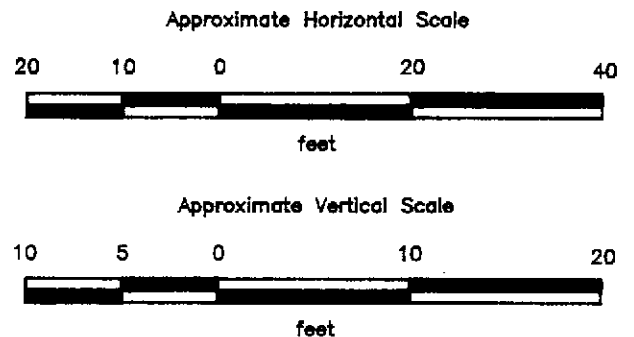
**PLATE**  
**14**

**PROJECT 69036.05**



**EXPLANATION**

- 100 — = Line of equal concentration of TPHg in soil in parts per million (ppm)
- 380  
250  
1800 — = Laboratory analyzed soil sample showing concentration of TPHg (red), TPHd (green), and TOG (blue) in ppm
- = Well casing
- = Well screen
- = Boring
- ▽ = Initial water level in boring
- ▽ = Static water level in well (09/08/92)

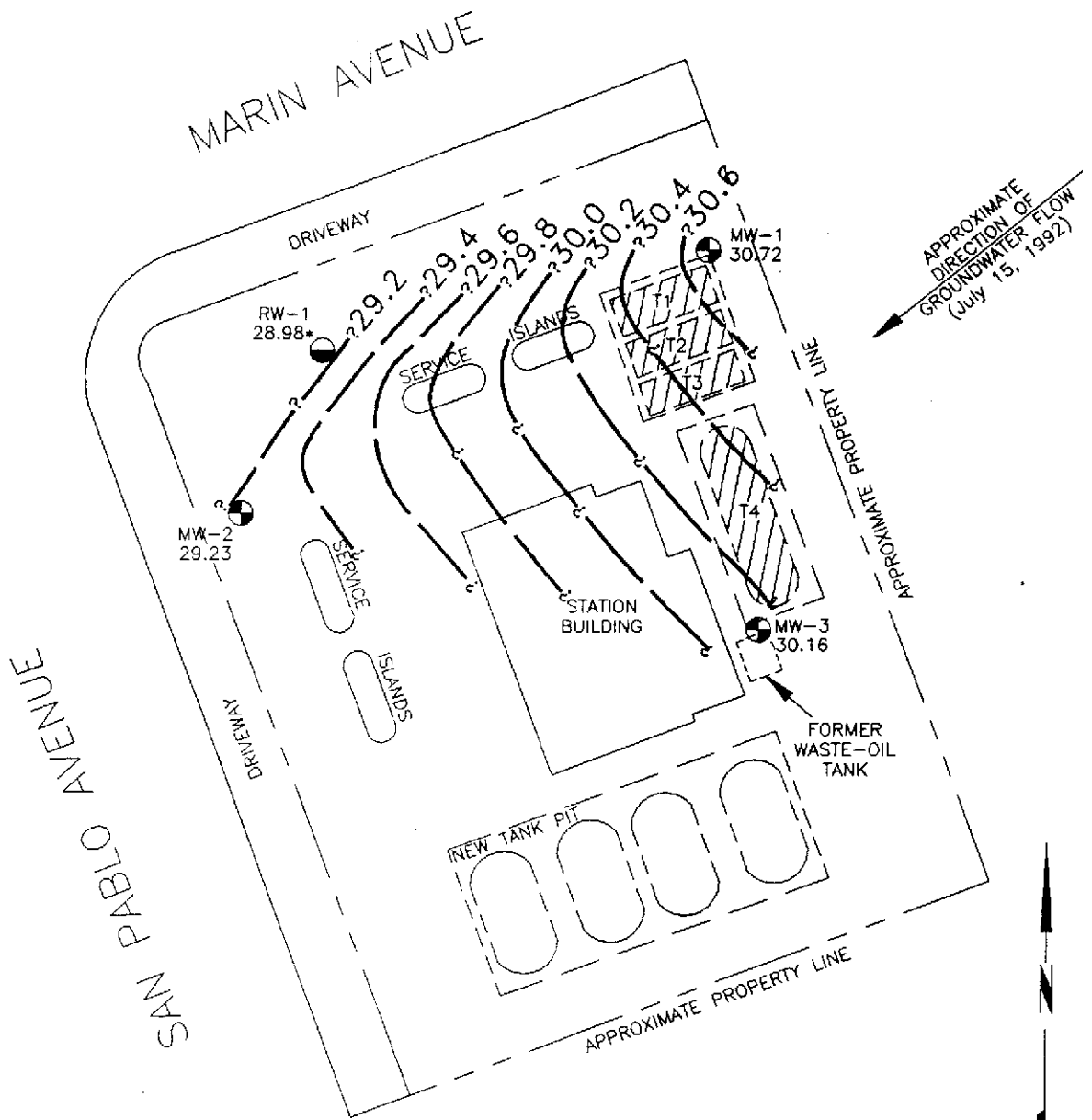


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**GEOLOGIC CROSS SECTION D-D'**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

**PLATE**  
**15**

**PROJECT 69036.05**



**EXPLANATION**

RW-1 = Recovery well  
(Exceltech, October 1991)

MW-3 = Monitoring well  
(Exceltech, October 1991)

= Former underground gasoline tank pits

30.6 = Line of equal elevation of groundwater  
in feet above mean sea level (MSL)

30.72 = Elevation of groundwater in feet above MSL,  
July 15, 1992

\* = Floating product

Approximate Scale



Source: Surveyed by John E. Koch, Land Surveyor.

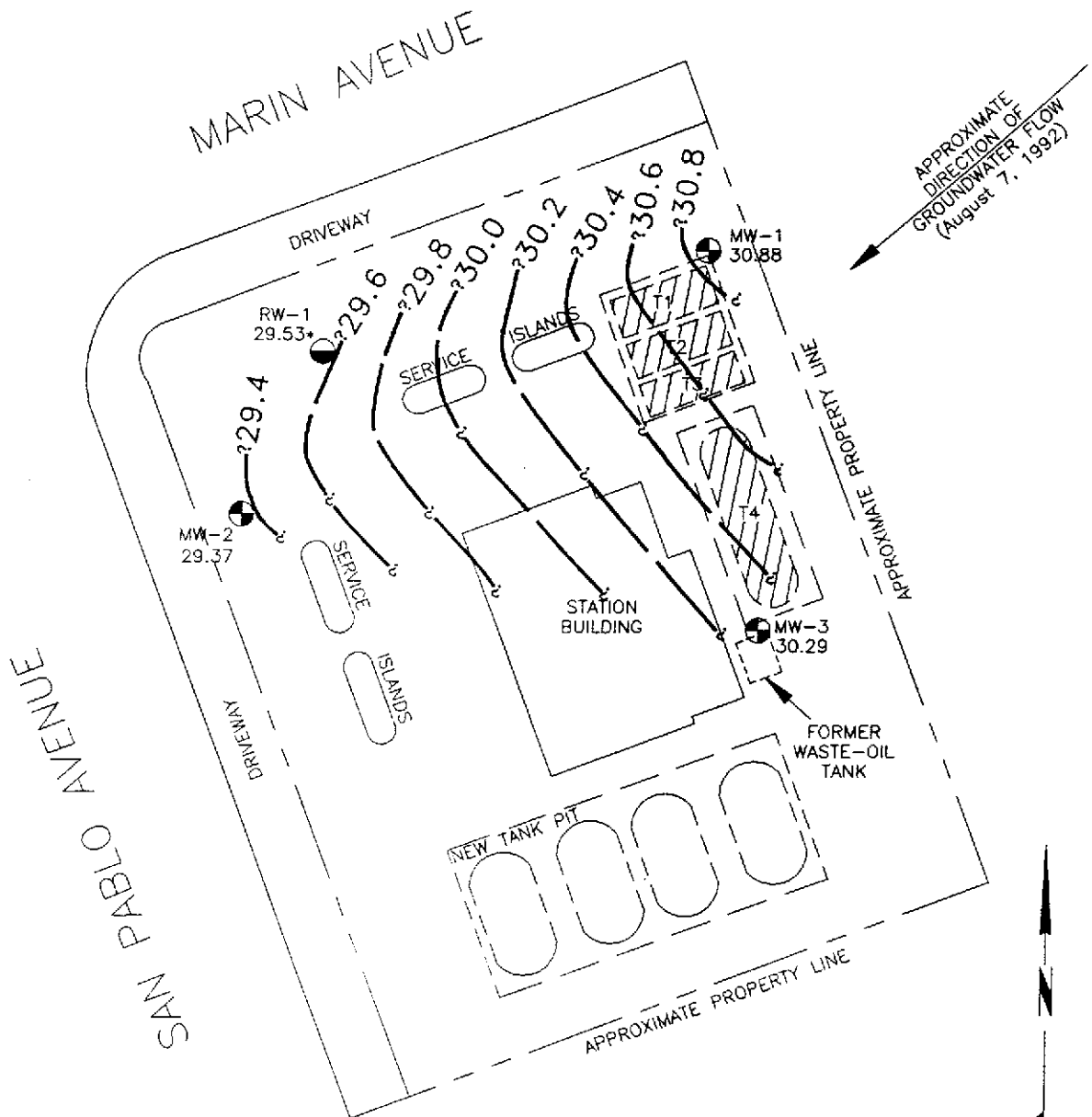
**RESNA**  
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**GROUNDWATER GRADIENT MAP**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**


**PLATE**


**16**


**PROJECT 69036.05**



**EXPLANATION**

RW-1  = Recovery well (Exceltech, October 1991)

MW-3  = Monitoring well (Exceltech, October 1991)

 = Former underground gasoline tank pits

—30.8— = Line of equal elevation of groundwater in feet above mean sea level (MSL)

30.88 = Elevation of groundwater in feet above MSL, August 7, 1992

\* = Floating product

Approximate Scale



Source: Surveyed by John E. Koch, Land Surveyor.

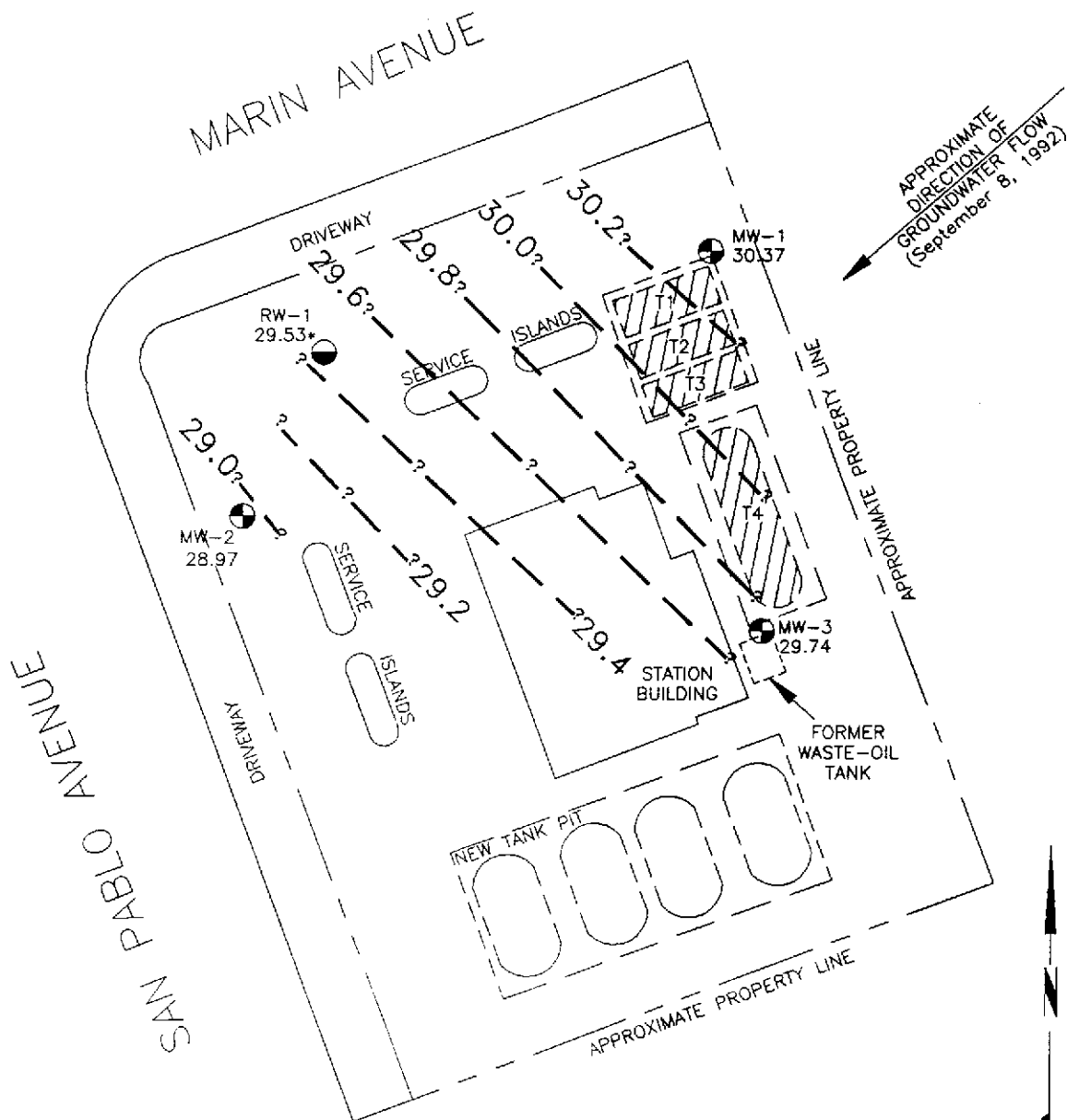
**RESNA**  
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**GROUNDWATER GRADIENT MAP**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

**PLATE**

**17**

**PROJECT 69036.05**



**EXPLANATION**

RW-1 = Recovery well  
(Exceltech, October 1991)

MW-3 = Monitoring well  
(Exceltech, October 1991)

= Former underground gasoline tank pits

-30.2 = Line of equal elevation of groundwater  
in feet above mean sea level (MSL)

30.37 = Elevation of groundwater in feet above MSL,  
September 8, 1992

\* = Floating product

Approximate Scale



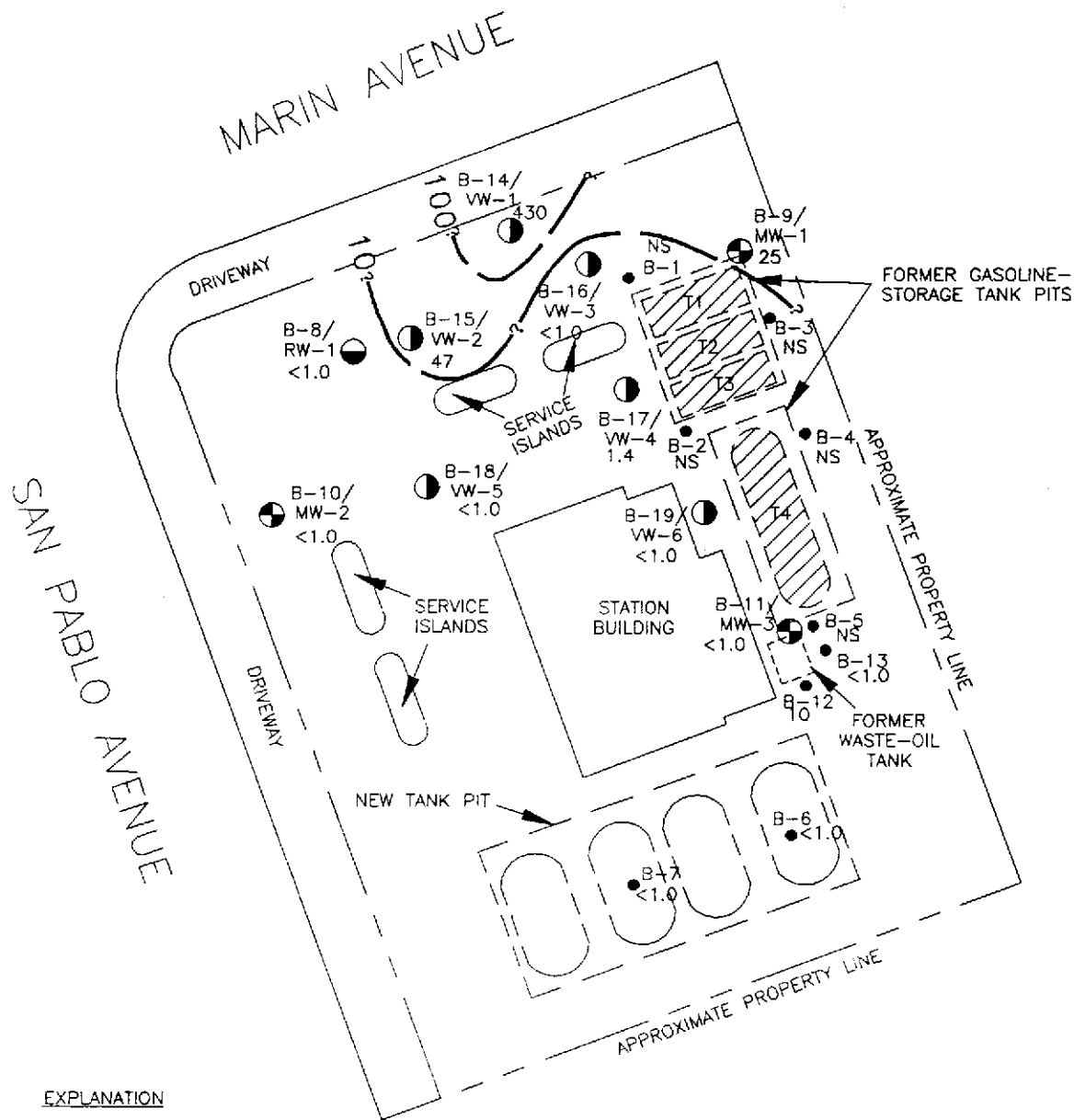
Source: Surveyed by John E. Koch, Land Surveyor.







PROJECT 69036.05

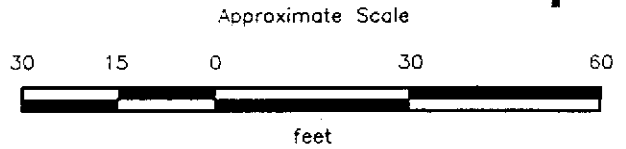
**GROUNDWATER GRADIENT MAP**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

**PLATE**  
**18**



**EXPLANATION**

- 100 = Line of equal concentration of TPHg in soil in parts per million (ppm)
- 430 = Concentration of TPHg in soil at depths between 4-1/2 and 6 feet, in ppm
- NS = Not sampled
- B-19/VW-6  = Boring/vapor extraction well (RESNA, August 1992)
- B-8/RW-1  = Boring/recovery well (Exceltech, October 1991)
- B-11/MW-3  = Boring/monitoring well (Exceltech, October 1991)
- B-13  = Soil boring (RESNA, August 1989, June 1991, and August 1992)



Source: Surveyed by John E. Koch, Land Surveyor.

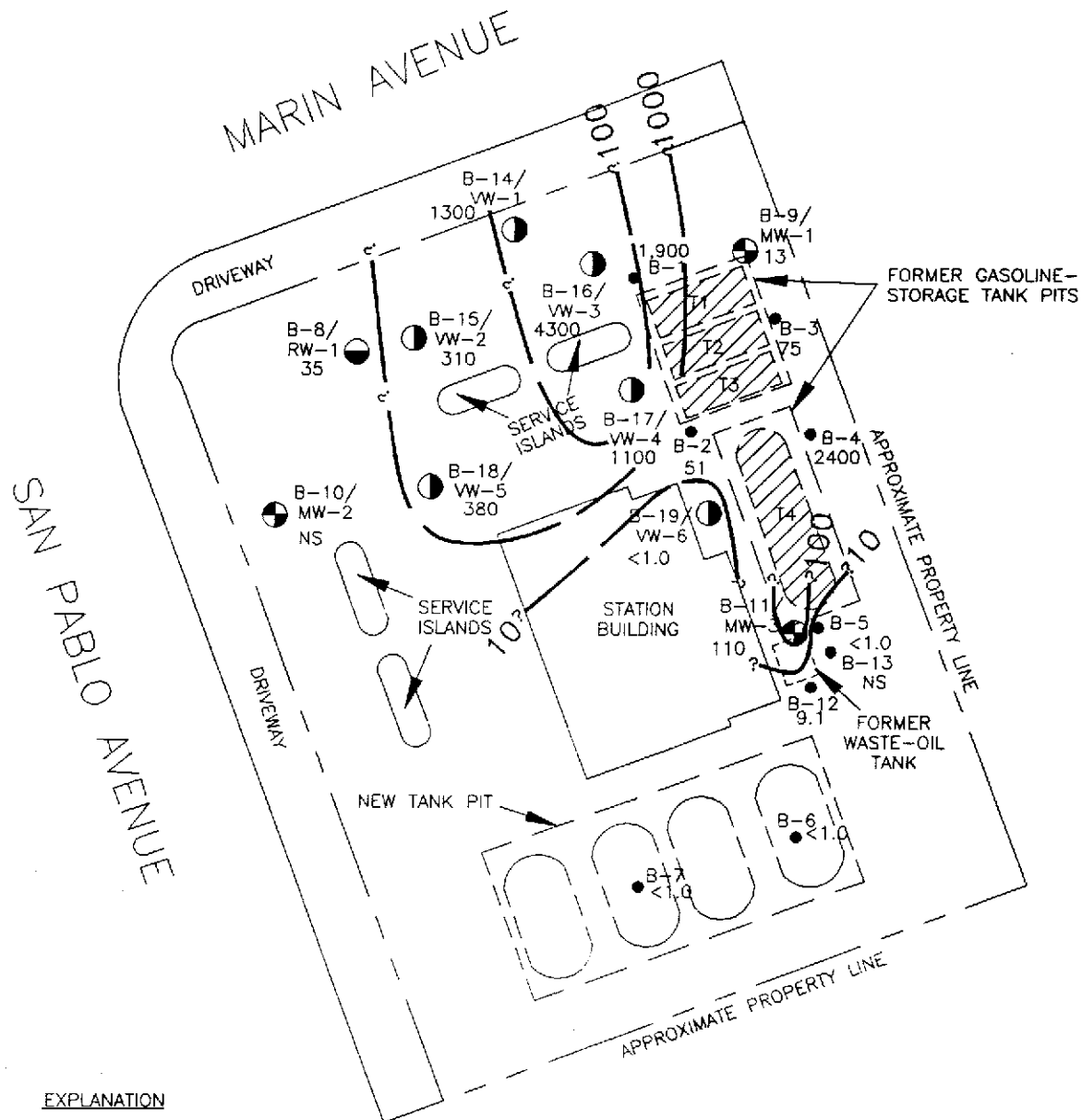


**CONCENTRATION OF TPHg IN SOIL  
AT DEPTHS OF 4-1/2 TO 6 FEET  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California**

**PLATE  
19**

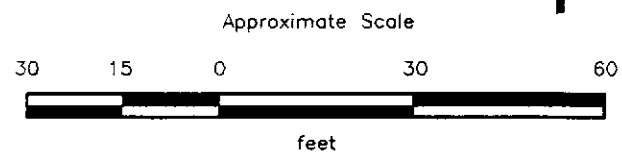
**PROJECT 69036.05**





**EXPLANATION**

- 1000 = Line of equal concentration of TPHg in soil in parts per million (ppm)
- 4300 = Concentration of TPHg in soil at depths between 9 and 11 feet, in ppm
- NS = Not sampled
- B-19/VW-6 ● = Boring/vapor extraction well (RESNA, August 1992)
- B-8/RW-1 ● = Boring/recovery well (Exceltech, October 1991)
- B-11/MW-3 ● = Boring/monitoring well (Exceltech, October 1991)
- B-13 ● = Soil boring (RESNA, August 1989, June 1991, and August 1992)



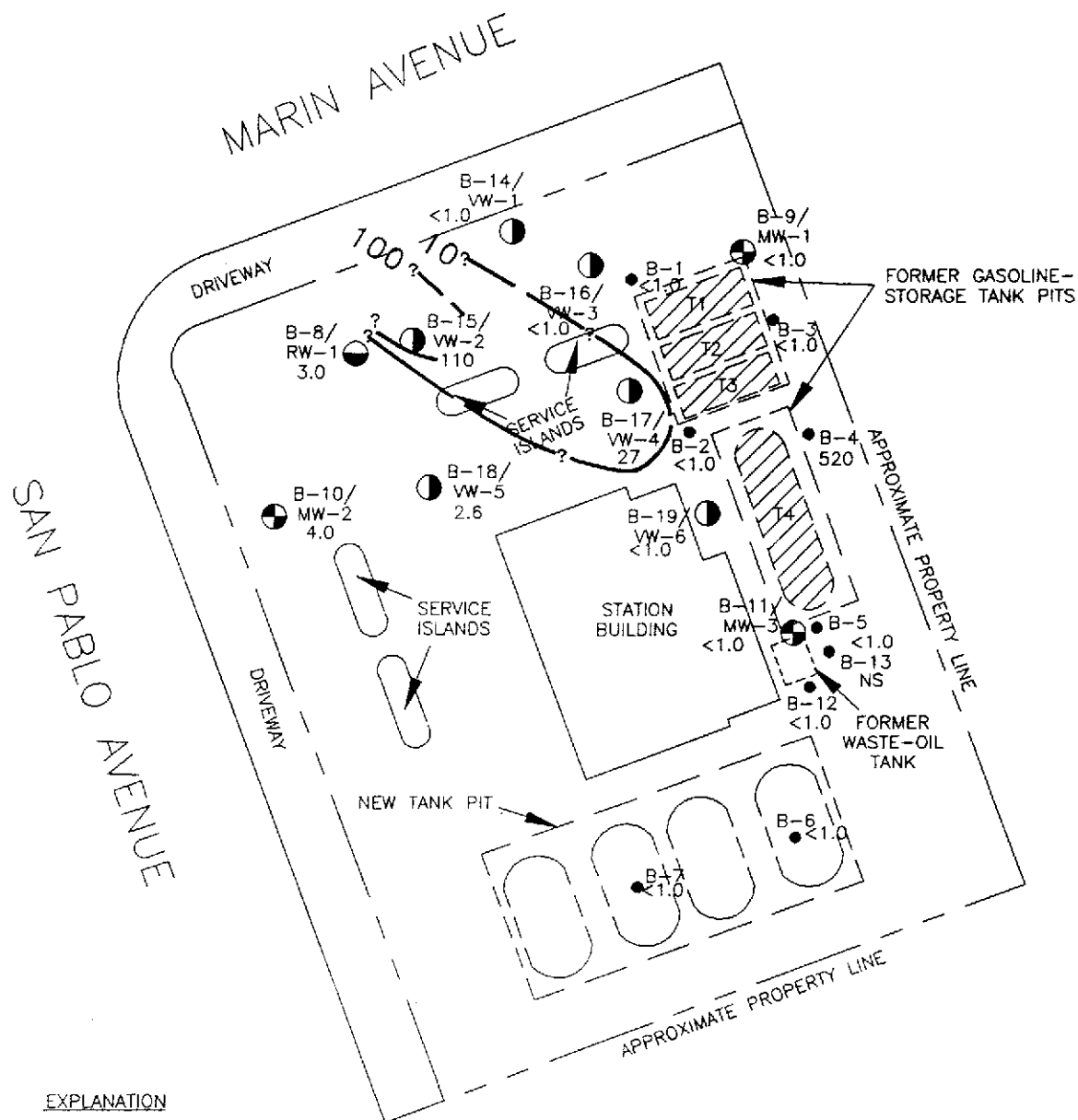
Source: Surveyed by John E. Koch, Land Surveyor.



**CONCENTRATION OF TPHg IN SOIL  
AT DEPTHS OF 9 TO 11 FEET  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California**

**PLATE  
20**

**PROJECT 69036.05**



**EXPLANATION**

-100 = Line of equal concentration of TPHg in soil in parts per million (ppm)

520 = Concentration of TPHg in soil at depths between 13 and 16 feet, in ppm

NS = Not sampled

B-19/VW-6 ● = Boring/vapor extraction well (RESNA, August 1992)

B-8/RW-1 ● = Boring/recovery well (Exceltech, October 1991)

B-11/MW-3 ● = Boring/monitoring well (Exceltech, October 1991)

B-13 ● = Soil boring (RESNA, August 1989, June 1991, and August 1992)

Approximate Scale



Source: Surveyed by John E. Koch, Land Surveyor.

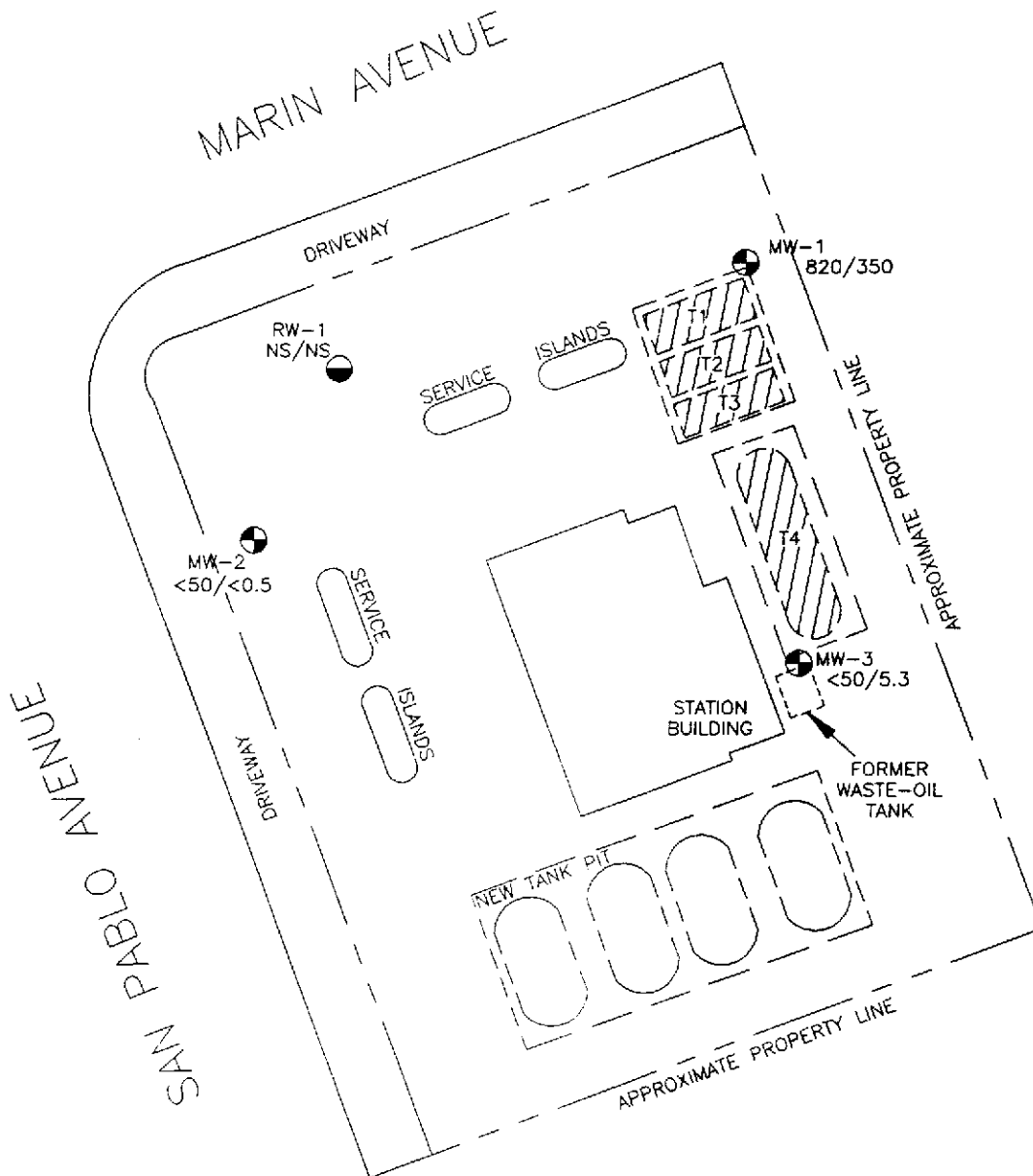


**CONCENTRATION OF TPHg IN SOIL  
AT DEPTHS OF 13 TO 16 FEET  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California**


**PLATE**


**21**


**PROJECT 69036.05**



**EXPLANATION**

RW-1  = Recovery well  
(Exceltech, October 1991)

MW-3  = Monitoring well  
(Exceltech, October 1991)

 = Former underground gasoline tank pits

820/350 = Concentration of TPHg/Benzene in groundwater,  
in ppb, September 8, 1992

NS = Not sampled due to floating product

Approximate Scale



Source: Surveyed by John E. Koch, Land Surveyor.



**TPHg/BENZENE CONCENTRATIONS  
IN GROUNDWATER  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California**

**PLATE  
22**

**PROJECT 69036.05**

TABLE 1  
CUMULATIVE GROUNDWATER MONITORING DATA  
ARCO Station 2035  
Albany, California  
Page 1 of 2

| <u>Well</u><br>Date | Elevation<br>of Wellhead | Depth<br>to Water | Elevation<br>of Groundwater | Evidence of<br>Product |
|---------------------|--------------------------|-------------------|-----------------------------|------------------------|
| <u>MW-1</u>         |                          |                   |                             |                        |
| 10/29/91            | 41.41                    | 11.86             | 29.55                       | None                   |
| 11/07/91            |                          | 10.94             | 30.47                       | None                   |
| 11/14/91            |                          | 10.97             | 30.44                       | None                   |
| 01/19/92            |                          | 10.06             | 31.35                       | None                   |
| 02/19/92            |                          | 8.65              | 32.76                       | None                   |
| 03/19/92            |                          | 8.33              | 33.08                       | None                   |
| 04/21/92            |                          | 9.32              | 32.09                       | None                   |
| 05/12/92            |                          | 9.82              | 31.59                       | None                   |
| 06/12/92            |                          | 10.50             | 30.91                       | None                   |
| 07/15/92            |                          | 10.69             | 30.72                       | None                   |
| 08/07/92            |                          | 10.53             | 30.88                       | None                   |
| 09/08/92            |                          | 11.04             | 30.37                       | None                   |
| <u>MW-2</u>         |                          |                   |                             |                        |
| 10/29/91            | 40.38                    | 11.10             | 29.28                       | None                   |
| 11/07/91            |                          | 11.20             | 29.18                       | None                   |
| 11/14/91            |                          | 11.21             | 29.17                       | None                   |
| 01/19/92            |                          | 10.44             | 29.94                       | None                   |
| 02/19/92            |                          | 8.70              | 31.68                       | None                   |
| 03/19/92            |                          | 8.84              | 31.54                       | None                   |
| 04/21/92            |                          | 9.80              | 30.58                       | None                   |
| 05/12/92            |                          | 10.29             | 30.09                       | None                   |
| 06/12/92            |                          | 10.95             | 29.43                       | None                   |
| 07/15/92            |                          | 11.15             | 29.23                       | None                   |
| 08/07/92            |                          | 11.01             | 29.37                       | None                   |
| 09/08/92            |                          | 11.41             | 28.97                       | None                   |
| <u>MW-3</u>         |                          |                   |                             |                        |
| 10/29/91            | 41.44                    | 11.62             | 29.82                       | None                   |
| 11/07/91            |                          | 11.52             | 29.92                       | None                   |
| 11/14/91            |                          | 11.50             | 29.94                       | None                   |
| 01/19/92            |                          | 10.56             | 30.88                       | None                   |
| 02/19/92            |                          | 9.52              | 31.92                       | None                   |
| 03/19/92            |                          | 9.01              | 32.43                       | None                   |
| 04/21/92            |                          | 9.70              | 31.74                       | None                   |
| 05/12/92            |                          | 10.29             | 31.15                       | None                   |
| 06/12/92            |                          | 11.26             | 30.18                       | None                   |
| 07/15/92            |                          | 11.28             | 30.16                       | None                   |
| 08/07/92            |                          | 11.15             | 30.29                       | None                   |
| 09/08/92            |                          | 11.70             | 29.74                       | None                   |

See notes on Page 2 of 2.

TABLE 1  
CUMULATIVE GROUNDWATER MONITORING DATA  
ARCO Station 2035  
Albany, California  
Page 2 of 2

| Well<br>Date | Elevation<br>of Wellhead | Depth<br>to Water | Elevation<br>of Groundwater | Evidence of<br>Product |
|--------------|--------------------------|-------------------|-----------------------------|------------------------|
| RW-1         |                          |                   |                             |                        |
| 10/29/91     | 40.33                    | 10.85             | 29.48                       | Sheen                  |
| 11/07/91     |                          | 11.97             | 28.36                       | 0.01                   |
| 11/14/91     |                          | 11.03             | 29.30                       | 0.01                   |
| 01/19/92     |                          | 10.22*            | 30.11*                      | 3.26                   |
| 02/19/92     |                          | 8.49*             | 31.84*                      | 2.14                   |
| 03/19/92     |                          | 8.50*             | 31.83*                      | 0.50                   |
| 04/21/92     |                          | 9.68*             | 30.65                       | 0.03                   |
| 05/12/92     |                          | 10.47             | 29.86                       | Product not measured   |
| 06/12/92     |                          | 11.41             | 28.92                       | Product not measured   |
| 07/15/92     |                          | 11.35             | 28.98                       | None                   |
| 08/07/92     |                          | 10.80*            | 29.53*                      | 0.02                   |
| 09/08/92     |                          | 10.80*            | 29.53*                      | 0.62                   |

Wellhead Elevation based on benchmark (B1198): A standard Bronze Disk in the sidewalk 0.8' behind the face of curb on the northerly side of Marin Avenue 6' +/- westerly of the curb return at the northeast corner of Marin Avenue and San Pablo Avenue at an elevation of 40.426 feet above mean sea level, City of Albany, California. Depth-to-water measurements in feet below the top of the well casing.

\*Adjusted water level due to product. The static water level in each well that was suspected to contain floating product was measured with an ORS® interface probe; this instrument is accurate to the nearest 0.01 foot. The probe contains two different sensor units, one for detecting the liquid/air interface, and one for distinguishing between water and hydrocarbon. The thickness of the floating product and the groundwater depths in each well were recorded. The recorded thickness of the floating product was then multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value was then subtracted from the measured depth to water to obtain a calculated depth to water. These calculated groundwater depths were subtracted from surveyed wellhead elevations to calculate the differences in groundwater elevations.

Additional Subsurface Environmental Investigation and VET  
ARCO Station 2035, Albany, California

November 30, 1992  
69036.05

TABLE 2  
VAPOR EXTRACTION TEST FIELD MONITORING DATA  
ARCO Station 2035  
Albany, California  
(Page 1 of 3)

| Influent Air Stream from VW-5 |               |                |       |                    | Observation Wells      |                        |                        |                        |
|-------------------------------|---------------|----------------|-------|--------------------|------------------------|------------------------|------------------------|------------------------|
| Flow                          | Concentration | Applied Vacuum | Temp. | Elapsed Time (min) | MW-2<br>Induced Vacuum | RW-1<br>Induced Vacuum | VW-2<br>Induced Vacuum | VW-1<br>Induced Vacuum |
| 30.0                          | 1,500         | 20             | -     | 0                  | 0.0                    | 0.0                    | 0.015                  | 0.0                    |
| 78.0                          | 0             | >100           | -     | 8                  | 0.0                    | 0.0                    | 0.06                   | 0.0                    |
| 83.0                          | NM            | >100           | -     | 15                 | 0.05                   | 0.01                   | 0.11                   | 0.0                    |
| 83.0                          | 300           | >100           | -     | 20                 | 0.0                    | 0.0                    | 0.11                   | 0.0                    |
| 68.0                          | NM            | 80             | -     | -                  | NM                     | NM                     | NM                     | NM                     |
| 57.0                          | NM            | 60             | -     | -                  | NM                     | NM                     | NM                     | NM                     |
| 44.0                          | NM            | 40             | -     | -                  | NM                     | NM                     | NM                     | NM                     |
| 0                             | NM            | 20             | -     | -                  | NM                     | NM                     | NM                     | NM                     |

|   |   |       |       |        |
|---|---|-------|-------|--------|
| DTW <sub>i</sub> : 11.7   | DTW <sub>r</sub> : 13.2 (top of casing) |       |       |        |
| Distance from extraction well VW-5 (feet):                              |   | 25.0  | 25.0  | 24.0   |
| Well Screen Interval (FT BGS): 4.5'-14.5'                               |   | 20-29 | 11-26 | 5-17   |
| Approximate exposed well screen: = 4.5'-13.2' ( $\Delta \approx 8.7'$ ) |   | none  | none  | 5-13.2 |
|   |   |       |       | 5-9.3  |

| Influent Air Stream from VW-4 |               |                |       |                    | Observation Wells      |                        |                        |                        |                        |                        |
|-------------------------------|---------------|----------------|-------|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Flow                          | Concentration | Applied Vacuum | Temp. | Elapsed Time (min) | VW-6<br>Induced Vacuum | VW-5<br>Induced Vacuum | VW-3<br>Induced Vacuum | VW-2<br>Induced Vacuum | VW-1<br>Induced Vacuum | MW-1<br>Induced Vacuum |
| 44.0                          | 300           | 41             | -     | 0                  | 0.0                    | 0.065                  | -                      | 0.01                   | 0.0                    | 0.0                    |
| 83.0                          | 400           | 100            | -     | 10                 | 0.0                    | 0.05                   | 0.05                   | 0.05                   | 0.005                  | 0.0                    |
| 83.0                          | 300           | 100            | -     | 35                 | 0.0                    | 0.05                   | 0.05                   | 0.07                   | 0.1                    | 0.05                   |

|   |  |       |          |         |
|---|--|-------|----------|---------|
| DTW <sub>i</sub> : 10.7   | DTW <sub>r</sub> : 9.5 (top of casing) |       |          |         |
| Distance from extraction well VW-4 (feet):                        |  | 24.0  | 39.0     | 19.0    |
| Well Screen Interval (FT BGS): 5-17'                              |  | 5-12  | 4.5-14.5 | 4.5-9.5 |
| Approximate exposed well screen: 5-9.3' ( $\Delta \approx 4.3'$ ) |  | 5-7.2 | 4.5-13.2 | 4.5-8.7 |
|   |  |       |          | 5-17    |
|   |  |       |          | 5-17    |
|   |  |       |          | 5-9.3   |
|   |  |       |          | 15-30   |
|   |  |       |          | none    |

TABLE 2  
VAPOR EXTRACTION TEST FIELD MONITORING DATA  
ARCO Station 2035  
Albany, California  
(Page 2 of 3)

| Influent Air Stream from VW-6 |               |                |       |                    | Observation Wells      |                        |                        |                        |                        |
|-------------------------------|---------------|----------------|-------|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Flow                          | Concentration | Applied Vacuum | Temp. | Elapsed Time (min) | VW-4<br>Induced Vacuum | VW-3<br>Induced Vacuum | VW-1<br>Induced Vacuum | MW-1<br>Induced Vacuum | MW-3<br>Induced Vacuum |
| 65.0                          | NM            | 60             | -     | 0                  | 0.03                   | 0.0                    | 0.0                    | 0.0                    | 0.11                   |
| 87.0                          | NM            | 100            | -     | 5                  | 0.005                  | 0.0                    | 0.0                    | 0.0                    | 0.10                   |
| 87.0                          | NM            | 100            | -     | 20                 | 0.0                    | 0.0                    | 0.0                    | 0.0                    | 0.06                   |
| 87.0                          | 600           | 100            | -     | 35                 | 0.0                    | 0.0                    | 0.0                    | 0.0                    | 0.0                    |

|  |      |         |       |       |       |
|--|------|---------|-------|-------|-------|
| DTW <sub>i</sub> : 11.2'    DTW <sub>t</sub> : 12.1' (Top of Casing) |      |         |       |       |       |
| Distance from extraction well VW-6 (feet):                           | 24.5 | 44.5    | 54.0  | 42.7  | 22.5  |
| Well Screen Interval (FT BGS): 5-13'<br>32.5                         | 5-17 | 4.5-9.5 | 5-17  | 15-30 | 12.5- |
| Approximate Exposed Well Screen: 5-12' (Δ≈7')                        | 5-14 | 4.5-8.7 | 5-9.3 | none  | none  |

| Influent Air Stream from VW-3 |               |                |       |                    | Observation Wells      |                        |                        |                        |                        |                        |
|-------------------------------|---------------|----------------|-------|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Flow                          | Concentration | Applied Vacuum | Temp. | Elapsed Time (min) | VW-6<br>Induced Vacuum | VW-4<br>Induced Vacuum | MW-1<br>Induced Vacuum | VW-2<br>Induced Vacuum | VW-1<br>Induced Vacuum | VW-5<br>Induced Vacuum |
| 79.0                          | 700           | 84             | -     | 5                  | 0.17                   | 0.40                   | 0.0                    | 0.76                   | 0.20                   | 0.12                   |
| 74.0                          | 700           | 80             | -     | 30                 | 0.14                   | 0.48                   | 0.0                    | 0.90                   | 0.21                   | 0.19                   |

|  |        |        |       |        |           |
|--|--------|--------|-------|--------|-----------|
| DTW <sub>i</sub> : 8.9    DTW <sub>t</sub> : 8.7 (Top of Casing) |        |        |       |        |           |
| Distance from extraction well VW-3 (feet):                       | 46.0   | 19.0   | 21.0  | 38.0   | 49.0      |
| Well Screen Interval (FT BGS): 4.5-9.5'                          | 5-12.5 | 5-17   | 15-30 | 5-17   | 5-17      |
| Approximate exposed well screen: 4.5-8.9' (Δ≈4.4')               | 5-7.1' | 5-14.3 | none  | 5-13.2 | 4.5-13.2' |

| Influent Air Stream from VW-2 |               |                |       |                    | Observation Wells      |                        |                        |                        |                        |
|-------------------------------|---------------|----------------|-------|--------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Flow                          | Concentration | Applied Vacuum | Temp. | Elapsed Time (min) | VW-1<br>Induced Vacuum | VW-3<br>Induced Vacuum | VW-4<br>Induced Vacuum | MW-2<br>Induced Vacuum | VW-5<br>Induced Vacuum |
| 35.0                          | NM            | 26             | -     | 0                  | 0.0                    | 0.5                    | 0.0                    | 0.0                    | 0.0                    |
| 39.0                          | 3,000         | 30             | -     | 15                 | 0.17                   | 0.27                   | 0.0                    | 0.05                   | 0.085                  |
| 39.0                          | 3,500         | 30             | -     | 30                 | 0.16                   | 0.26                   | 0.01                   | 0.0                    | 0.09                   |

|   |        |         |        |       |          |
|---|--------|---------|--------|-------|----------|
| DTW <sub>i</sub> : 11.1'    DTW <sub>t</sub> : 8.2' (Top of Casing) |        |         |        |       |          |
| Distance from extraction well VW-2 (feet):                          | 24.0   | 40.0    | 40.0   | 36.0  | 24.0     |
| Well Screen Interval (FT BGS): 5-17'                                | 5-17   | 4.5-9.5 | 5-17   | 20-29 | 4.5-14.5 |
| Approximate exposed well screen: 5-8.2' (Δ≈3.2')                    | 5-9.3' | 4.5-11  | 5-14.3 | none  | 4.5-13.2 |

TABLE 2  
VAPOR EXTRACTION TEST FIELD MONITORING DATA  
ARCO Station 2035  
Albany, California  
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| Flow   | Influent Air Stream from VW-1 |                |       | Elapsed Time (min) | Observation Wells   |                     |                     |                     |                     |
|--|-------------------------------|----------------|-------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | Concentration                 | Applied Vacuum | Temp. |                    | VW-4 Induced Vacuum | VW-3 Induced Vacuum | VW-2 Induced Vacuum | VW-5 Induced Vacuum | MW-2 Induced Vacuum |
| 79.0   | 100                           | 100            | -     | 15                 | 0.0                 | 0.70                | 0.64                | 0.08                | 0.0                 |
| 79.0   | 200                           | 99             | -     | 30                 | 0.0                 | 0.78                | 0.68                | 0.095               | 0.0                 |
| 79.0   | NM                            | 98             | -     | 40                 | 0.0                 | 0.80                | 0.70                | 0.09                | 0.0                 |
| 79.0   | NM                            | 98             | -     | 70                 | 0.02                | 0.90                | 0.78                | 0.105               | NM                  |
| 79.0   | NM                            | 90             | -     | 90                 | 0.05                | 0.86                | 0.72                | 0.10                | NM                  |
| 74.0   | 300                           | 90             | -     | 105                | 0.05                | 0.86                | 0.74                | 0.115               | NM                  |
| 78.0   | 200                           | 90             | -     | 120                | 0.05                | 0.88                | 0.74                | 0.105               | NM                  |
| 61.0   | NM                            | 60             | -     | -                  | NM                  | NM                  | NM                  | NM                  | NM                  |
| 39.0   | NM                            | 40             | -     | -                  | NM                  | NM                  | NM                  | NM                  | NM                  |
| 0.0  | NM                            | 20             | -     | -                  | NM                  | NM                  | NM                  | NM                  | NM                  |
| DTW <sub>i</sub> : 11.1' DTW <sub>f</sub> : 9.3' |                               |                |       |                    |                     |                     |                     |                     |                     |
| Distance from extraction well VW-1 (feet):       |                               |                |       |                    | 27.0                | 16.0                | 24.0                | 40.0                | 59.0                |
| Well Screen Interval (FT BGS): 5-17'             |                               |                |       |                    | 5-17                | 4.5-9.5             | 5-17                | 4.5-14.5            | 20-29               |
| Approximate Exposed Well Screen: 5-9.3' (Δ≈4.3') |                               |                |       |                    | 5-14.3              | 4.5-8.7             | 5-13.2              | 4.5-13.2            | none                |

Flow measured in cubic feet per minute (CFM).

Concentration measured in parts per million by volume (ppmv) on Combustible Gas Meter.

Vacuum measured in inches of water column.

Temperature measured in degrees Fahrenheit.

DTW<sub>i</sub> = Initial depth to water prior to VET and pumping or bailing operations (measured from top of well casing).

DTW<sub>f</sub> = Final depth to water after VET (measured from top of well casing).

NM = Not Measured.

FT BGS = Feet Below Grade Surface

Note: Exposed Well Screen refers to well screened intervals above the potentiometric water surface. Values are only approximate since depth to water is measured from top of casing and screened intervals are referenced from grade surface.



Additional Subsurface Environmental Investigation and VET  
ARCO Station 2035, Albany, California

November 30, 1992  
69036.05

TABLE 3  
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES  
ARCO Station 2035  
Albany, California  
Page 1 of 3

| Date                | TPHg  | B       | T       | E       | X       | TPHd | VOC,PCB,<br>and SVOC | Cd | Cr | Pb | Ni | Zn |
|---------------------|-------|---------|---------|---------|---------|------|----------------------|----|----|----|----|----|
| Sample ID           |       |         |         |         |         |      |                      |    |    |    |    |    |
| <u>August 1989</u>  |       |         |         |         |         |      |                      |    |    |    |    |    |
| S-10-B1             | 1,900 | <4      | 15      | 8       | 53      | NA   | NA                   | NA | NA | NA | NA | NA |
| S-15-B1             | <1.0  | <0.005  | 0.006   | 0.006   | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| S-19½-B1            | <1.0  | <0.005  | <0.005  | <0.005  | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| S-10-B2             | 51    | 1.9     | 0.35    | 0.81    | 4.0     | NA   | NA                   | NA | NA | NA | NA | NA |
| S-14½-B2            | <1.0  | 0.063   | <0.005  | <0.005  | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| S-20-B2             | <1.0  | 0.039   | 0.044   | 0.007   | 0.041   | NA   | NA                   | NA | NA | NA | NA | NA |
| S-10-B3             | 75    | 3.1     | 8.2     | 1.8     | 11.0    | NA   | NA                   | NA | NA | NA | NA | NA |
| S-14½-B3            | <1.0  | 0.21    | <0.025  | <0.025  | 0.039   | NA   | NA                   | NA | NA | NA | NA | NA |
| S-20-B3             | <1.0  | <0.005  | <0.005  | <0.005  | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| S-10-B4             | 2,400 | 33      | 140     | 40      | 220     | NA   | NA                   | NA | NA | NA | NA | NA |
| S-15-B4             | 520   | <1.0    | 6.9     | 6.2     | 6.3     | NA   | NA                   | NA | NA | NA | NA | NA |
| S-19-B4             | <1.0  | <0.005  | 0.007   | <0.005  | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| S-9½-B5             | <1.0  | 0.007   | 0.006   | <0.005  | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| S-15-B5             | <1.0  | <0.005  | 0.006   | <0.005  | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| S-20-B5             | <1.0  | <0.005  | <0.005  | <0.005  | <0.005  | NA   | NA                   | NA | NA | NA | NA | NA |
| <u>June 1991</u>    |       |         |         |         |         |      |                      |    |    |    |    |    |
| S-5½-B6             | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-10½-B6            | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-15½-B6            | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-17-B6             | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-5½-B7             | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-10½-B7            | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-15½-B7            | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-17-B7             | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-18½-B7            | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| <u>October 1991</u> |       |         |         |         |         |      |                      |    |    |    |    |    |
| S-6-B8              | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-11-B8             | 35    | 1.2     | 1.7     | 0.42    | 2.0     | NA   | NA                   | NA | NA | NA | NA | NA |
| S-16-B8             | 3.0   | 0.45    | 0.13    | 0.11    | 0.47    | NA   | NA                   | NA | NA | NA | NA | NA |
| *S-30-B8            | 240   | 3.6     | 5.0     | 4.1     | 16      | NA   | NA                   | NA | NA | NA | NA | NA |
| S-6-B9              | 25    | 0.60    | 0.58    | 0.44    | 1.8     | NA   | NA                   | NA | NA | NA | NA | NA |
| S-10¼-B9            | 13    | 0.74    | 0.72    | 0.18    | 0.95    | NA   | NA                   | NA | NA | NA | NA | NA |
| S-16-B9             | <1.0  | 0.015   | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |
| S-31-B9             | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA   | NA                   | NA | NA | NA | NA | NA |

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TABLE 3  
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES  
ARCO Station 2035  
Albany, California  
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| Date<br>Sample ID        | TPHg  | B       | T       | E       | X       | TPHd             | VOC,PCB,<br>TOG and SVOC |                 | Cd    | Cr | Pb   | Ni | Zn |
|--------------------------|-------|---------|---------|---------|---------|------------------|--------------------------|-----------------|-------|----|------|----|----|
| <b>October 1991cont.</b> |       |         |         |         |         |                  |                          |                 |       |    |      |    |    |
| S-5½-B10                 | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-13-B10                 | 4.0   | 0.13    | 0.15    | 0.041   | 0.16    | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-20½-B10                | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-30½-B10                | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-6-B11                  | <1.0  | 0.010   | <0.0050 | <0.0050 | <0.0050 | 3.9              | 80                       | ND <sup>b</sup> | <0.50 | 49 | 7.7  | 97 | 41 |
| S-11-B11                 | 110   | <0.0050 | <0.0050 | <0.0050 | 0.27    | 71               | 43                       | ND <sup>b</sup> | <0.50 | 80 | 5.8  | 77 | 69 |
| S-16-B11                 | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0             | 57                       | ND <sup>b</sup> | <0.50 | 33 | 7.5  | 25 | 45 |
| S-21-B11                 | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0             | 74                       | ND <sup>b</sup> | <0.50 | 39 | 7.2  | 32 | 56 |
| <b>August 1992</b>       |       |         |         |         |         |                  |                          |                 |       |    |      |    |    |
| S-4½-B12                 | 10    | <0.0050 | <0.0050 | 0.0070  | 0.050   | 45 <sup>c</sup>  | 250                      | ND              | <0.50 | 59 | <5.0 | 58 | 40 |
| S-9-B12                  | 9.1   | <0.0050 | <0.0050 | 0.0060  | 0.082   | 250 <sup>c</sup> | 100                      | ND              | <0.50 | 42 | <5.0 | 46 | 37 |
| S-14½-B12                | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0             | <50                      | ND              | <0.50 | 49 | 7.4  | 49 | 69 |
| S-4½-B13                 | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0             | <50                      | ND              | <0.50 | 68 | <5.0 | 65 | 43 |
| S-7½-B13                 | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 1.1 <sup>c</sup> | 1,800                    | ND <sup>d</sup> | <0.50 | 51 | <5.0 | 81 | 46 |
| S-17½-B13                | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0             | <50                      | ND              | <0.50 | 43 | 5.6  | 51 | 69 |
| S-5½-B14                 | 430   | 4.0     | 16      | 7.3     | 42      | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-10½-B14                | 1,300 | 20      | 82      | 31      | 170     | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-15½-B14                | <1.0  | 0.012   | 0.034   | 0.011   | 0.055   | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-5½-B15                 | 47    | 0.22    | 0.56    | 0.76    | 4.3     | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-10-B15                 | 310   | 3.8     | 15      | 7.1     | 37      | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-13½-B15                | 110   | 1.5     | 4.3     | 2.1     | 12      | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-4½-B16                 | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-10-B16                 | 4,300 | 21      | 110     | 51      | 580     | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-14½-B16                | <1.0  | 0.010   | 0.032   | 0.018   | 0.18    | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-5½-B17                 | 1.4   | 0.045   | 0.0080  | <0.0050 | 0.028   | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-10½-B17                | 1,100 | 16      | 71      | 27      | 140     | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-15½-B17                | 27    | 2.1     | 0.40    | 0.75    | 1.3     | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-5½-B18                 | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-10½-B18                | 380   | 4.8     | 21      | 8.7     | 46      | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-15½-B18                | 2.6   | 0.78    | 0.48    | 0.059   | 0.29    | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-5½-B19                 | <1.0  | 0.017   | 0.0090  | <0.0050 | <0.0050 | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-10½-B19                | <1.0  | <0.0050 | <0.0050 | <0.0050 | <0.0050 | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |
| S-15½-B19                | <1.0  | 0.15    | 0.012   | 0.029   | 0.032   | NA               | NA                       | NA              | NA    | NA | NA   | NA | NA |

See notes on Page 3 of 3

**TABLE 3**  
**CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES**  
 ARCO Station 2035  
 Albany, California  
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| Date<br>Sample ID                          | TPHg | B   | T   | E   | X  | TPHd | TOG | VOC,PCB,<br>and SVOC | Cd | Cr | Pb | Ni | Zn |
|--|------|-----|-----|-----|----|------|-----|----------------------|----|----|----|----|----|
| <u>August 1992cont.</u><br>S-0821-SPAD 550 |      | 2.6 | 9.5 | 5.4 | 47 | NA   | NA  | NA                   | NA | NA | NA | NA | NA |

Results for TPHg, BTEX, TPHd, TOG and metals in parts per million (ppm).

Results for VOC, PCB and SVOC in parts per billion (ppb).

TPHg: Total petroleum hydrocarbons as gasoline by EPA method 5030/8015/8020.

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes isomers

BTEX: Analyzed by EPA method 5030/8015/8020.

TPHd: Total Petroleum Hydrocarbons as diesel by EPA method 3550/8015.

TOG: Total oil and grease by Standard method 5520 E&F.

VOC: Volatile organic compounds by EPA method 8240.

PCB: Polychlorinated biphenyls by EPA method 8080.

SVOC: Semi-volatile organic compounds by EPA method 8270.

Cd: Cadmium by EPA method 6010.

Cr: Chromium by EPA method 6010.

Ni: Nickel by EPA method 6010.

Zn: Zinc by EPA method 6010.

Pb: Lead by EPA method 6010.

NA: Not analyzed.

<: Results reported below the laboratory detection limit.

ND: All compounds tested were nondetectable. Detection limits varied for different compounds.

1: Sample collected from the saturated zone, analyzed for site characterization purposes only.

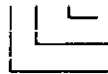
2: Only VOCs tested.

3: Identified as a non-diesel mixture. The mixture in B-12 contained C9 - C14 plus >C16 and >C17. The mixture in B-13 was >C17.

4: All compounds tested were nondetectable except ethylbenzene.

Sample Identification:

S-15¼-B19



Boring number  
 Depth in feet  
 Soil Sample

S-0821-SPAD



Composite sample  
 Soil pile  
 Date sampled  
 Soil Sample

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TABLE 4  
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES  
ARCO Station 2035  
Albany, California

| WELL DATE   | TPHg                         | B     | T     | E    | X     | TOG  | VOC  | Cd     | Cr     | Pb      | Ni     | Zn    |
|-------------|------------------------------|-------|-------|------|-------|------|------|--------|--------|---------|--------|-------|
| <u>MW-1</u> |                              |       |       |      |       |      |      |        |        |         |        |       |
| 10/29/91    | 620                          | 76    | 69    | 15   | 60    | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| 03/19/92    | 6,500                        | 2,600 | 89    | 42   | 290   | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| 06/12/92    | 2,900                        | 1,100 | 2.5   | 21   | 15    | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| 09/08/92    | 820                          | 350   | <5*   | <5*  | <5*   | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| <u>MW-2</u> |                              |       |       |      |       |      |      |        |        |         |        |       |
| 10/29/91    | <60                          | 2.4   | 4.6   | 0.48 | 2.3   | NA   | ND   | NA     | NA     | NA      | NA     | NA    |
| 03/19/92    | <50                          | 6.8   | 0.9   | <0.5 | 1.1   | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| 06/12/92    | <50                          | <0.5  | <0.5  | <0.5 | <0.5  | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| 09/08/92    | <50                          | <0.5  | <0.5  | <0.5 | <0.5  | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| <u>MW-3</u> |                              |       |       |      |       |      |      |        |        |         |        |       |
| 10/29/91    | 32                           | 2.1   | 2.8   | 0.35 | 1.8   | <5.0 | ND** | <0.010 | <0.010 | <0.0050 | <0.050 | 0.045 |
| 03/19/92    | 2,100                        | 780   | 8.8   | 16   | 58    | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| 06/12/92    | 720                          | 210   | <2.5* | 23   | 4.0   | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| 09/08/92    | <50                          | 5.3   | <0.5  | <0.5 | <0.5  | NA   | NA   | NA     | NA     | NA      | NA     | NA    |
| <u>RW-1</u> |                              |       |       |      |       |      |      |        |        |         |        |       |
| 10/29/91    | Not sampled—sheen            |       |       |      |       |      |      |        |        |         |        |       |
| 03/19/92    | Not sampled—floating product |       |       |      |       |      |      |        |        |         |        |       |
| 06/12/92    | Not sampled—floating product |       |       |      |       |      |      |        |        |         |        |       |
| 09/08/92    | Not sampled—floating product |       |       |      |       |      |      |        |        |         |        |       |
| MCL:        |                              | 1     |       | 680  | 1,750 |      |      | 10     | 50     | 50      | —      | —     |
| DWAL:       |                              |       | 100   |      |       |      |      |        |        |         |        |       |

Results in parts per billion (ppb).

TPHg: Total petroleum hydrocarbons as gasoline by EPA method 5030/8015/8020.

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes isomers

BTEX: Analyzed by EPA method 5030/8015/8020.

TOG: Total oil and grease by Standard method 5520 B&F.

VOC: Volatile organic compounds by EPA method 624.

\*: Laboratory Raised Methods Reporting Limit (MRL) due to high analyte concentration requiring sample dilution.

\*\* : All compounds were nondetectable except for toluene (3.0 ppb).

Cd: Cadmium by EPA method 200.7.

Cr: Chromium by EPA method 200.7.

Ni: Nickel by EPA method 200.7.

Zn: Zinc by EPA method 200.7.

Pb: Lead by EPA method 3010.

NA: Not analyzed.

<: Results reported below the laboratory detection limit.

ND: Not detected; detection limit varied according to analyte.

MCL: State Maximum Contaminant Level (October 1990).

DWAL: State Drinking Water Action Level (October 1990).

Sample Identification: W-11-MW-3



Monitoring well number

Depth in feet

Water Sample

TABLE 5  
LABORATORY ANALYSIS OF AIR SAMPLES  
ARCO Station 2035  
Albany, California

| Sample ID | Sample Location | Elapsed Time of Sample | TPHg   | B   | T   | E     | X   | Pb    |
|-----------|-----------------|------------------------|--------|-----|-----|-------|-----|-------|
| A-VW1-30  | VW-1            | 30                     | 57     | <5  | <5  | <5    | <5  | NA    |
| A-VW1-EFF | EFFLUENT*       | 30                     | 110    | <5  | <5  | <5    | <5  | NA    |
| A-VW1-120 | VW-1            | 120                    | 14     | <5  | <5  | <5    | <5  | 0.004 |
| A-VW2-30  | VW-2            | 30                     | 6,800  | 83  | 16  | <5    | <5  | NA    |
| A-VW3-30  | VW-3            | 30                     | <10    | <5  | <5  | <5    | <5  | NA    |
| A-VW4-30  | VW-4            | 30                     | 14     | <5  | <5  | <5    | <5  | NA    |
| A-VW5-30  | VW-5            | 30                     | 27,000 | 330 | 220 | <25** | 36  | NA    |
| A-VW6-30  | VW-6            | 30                     | 20     | <5  | 5.2 | <5    | 5.7 | NA    |

Concentrations reported in milligrams per cubic meter (mg/m<sup>3</sup>), which is equivalent to (µg/ℓ).

< : Below the minimum laboratory detection limit for air.

NA: Not analyzed.

TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Method 8015).

B: benzene, T: toluene, E: ethylbenzene, X: total xylene isomers

BTEX: Analyzed by EPA Method 8240

\*: Effluent vapors sampled after abatement by the internal combustion engine.

\*\* : Laboratory Reported that sample was diluted due to matrix interference.

**APPENDIX A**  
**PREVIOUS WORK**

## PREVIOUS WORK

### Limited Site Assessment

On August 9, 1989, Applied GeoSystems (AGS) performed a limited environmental site assessment to evaluate possible gasoline hydrocarbons in the vicinity of the four underground gasoline-storage tanks (AGS, 1990). Five soil borings (B-1 through B-5) were drilled as shown on Plate 2 in the main body of this report.

Groundwater was encountered in the borings at depths between 17 and 18 feet below ground surface, except in boring B-5 where groundwater was not encountered to a total depth of 20½ feet below ground surface. A hydrocarbon sheen was noted on the surface of water samples obtained from borings B-1 through B-4.

Laboratory analyses of selected soil samples from borings B-1 through B-5 reported concentrations of TPHg ranging from nondetectable to 2,400 ppm (see Table 3 in the main body of this report). AGS concluded that shallow soils (at 10-15 feet depths) near the four underground gasoline storage tanks (USTs) had been impacted by gasoline hydrocarbons, and shallow groundwater beneath the site appeared to have been impacted by gasoline hydrocarbons.

### Underground Storage Tank Removal

A Work Plan (RESNA/AGS, April 29, 1991) and an Addendum One to the Work Plan (RESNA/AGS, April 29, 1992) were prepared by RESNA outlining work to be performed in a limited subsurface investigation at the subject site. Before work proposed in Addendum One to the Work Plan, removal and replacement of USTs and product delivery lines commenced in July 1991 (RESNA/AGS, September 11, 1991).

On June 25, 1991, RESNA personnel supervised the drilling of two soil borings, (B-6 and B-7) to depths of 18 and 19½ feet below ground surface in the area of the proposed new tank pit location as shown on Plate 2 in the main body of this report.

Groundwater was first encountered at 17½ feet in B-6 and 19½ feet in B-7. Selected soil samples collected from borings B-6 and B-7 were submitted for laboratory analyses for TPHg and BTEX by EPA Methods 8015/8020. TPHg and BTEX concentrations were not detected from any soil sample submitted. The laboratory results of soil samples from borings are summarized in Table 3 in the main body of this report, and laboratory results

of soil samples from new tank pit excavation are summarized in Table A-1, Laboratory Analyses of New Tank Pit Soil Samples.

In July and August 1991, four gasoline USTs (T1 through T4) and associated product lines were excavated and removed. Soil samples were collected from the side walls, bottom of the excavation, and beneath the product lines. Selected soil samples were submitted for laboratory analyses for TPHg and BTEX by EPA Method 8015/8020. The analytical results are shown on Table A-2, Laboratory Analyses of Former Gasoline Tank Pit Soil Samples, and Table A-3, Laboratory Analyses of Product-Line and Product-Dispenser Soil Samples. Based on the tank removal and environmental subsurface investigation RESNA concluded that gasoline hydrocarbons over 100 ppm have not impacted the shallow soils (ground surface to 13 feet below grade) in the vicinity of the former underground steel gasoline-storage tanks; gasoline hydrocarbons over 1,000 ppm have impacted the shallow soils (one foot below grade) in the vicinity of the product dispensers adjacent to the former steel gasoline-storage tanks; and a water "grab" sample collected from the former tank pit and submitted for laboratory analyses showed a concentration of 190 ppb TPHg.

#### Subsurface Environmental Investigation and Pump Test

An Addendum Two to the Work Plan (RESNA/AGS, September 24, 1991) was prepared by RESNA outlining work to be performed in a subsurface environmental investigation at the subject site. This work included: performing a records research of Alameda County Flood Control and Water Conservation District (ACFCWCD) records for water supply and monitoring wells within a ½-mile radius of the subject site; performing a records research of the City of Albany Fire Department and ACFCWCD files for nearby and upgradient possible offsite sources of gasoline hydrocarbons; drilling four soil borings (B-8 through B-11); collecting soil samples from the borings; constructing a 6-inch-diameter groundwater recovery well RW-1 in boring B-8, and 4-inch diameter groundwater monitoring wells MW-1 through MW-3 in borings B-9 through B-11, respectively; developing and sampling the wells; submitting soil and groundwater samples for laboratory analyses; surveying wellhead elevations; and performing an aquifer pump test (RESNA, March 6, 1992).

The work described above was performed by RESNA in October and November 1991. Based on the results of this investigation RESNA concluded that the majority of gasoline hydrocarbons in the soil at the site was at the depth between approximately 10 to 15 feet below ground surface, within the layer of sandy clays and gravelly silts. The lateral extent of gasoline hydrocarbons in the soil had been delineated below 100 parts per million (ppm) only in the northwestern (B-10) and northeastern (B-9) portions of the site, and to nondetectable level (less than 1 ppm) in the southern portion of the site (B-6 and B-7). The



vertical extent of gasoline hydrocarbons in the soil at the site had been delineated to nondetectable level (less than 1.0 ppm) at a depth of approximately 16 to 20½ feet below the ground surface with the exception of boring B-8, where 240 ppm of TPHg was detected at a depth of 30 feet below ground surface within the saturated zone. The lateral extent of waste-oil related hydrocarbons in the soil in the area of the former waste-oil tank at the site had not been delineated.

The lateral and vertical extent of gasoline hydrocarbons in the groundwater had not been delineated at the site with the exception of the northwestern part of the site where TPHg concentrations were below laboratory detection limit (<60 ppb) for TPHg in MW-2. Based on nondetectable concentrations of TOG, TPHd, VOC's, and the metals cadmium, chromium, lead, and nickel in groundwater samples collected from monitoring well MW-3 RESNA concluded, that the hydrocarbons associated with the waste-oil tank have not impacted groundwater beneath the site.

Based on the results of the pump test RESNA estimated a long term pumping rate from the recovery well RW-1 to be around 1.5 to 1.7 gallons per minute (gpm), and concluded that the predicted zone of capture is sufficiently large to capture a portion of the impacted groundwater and floating product at the site. The first-encountered water bearing zone was determined to be an 8-foot thick confined zone, with relatively high transmissivity.

#### Monthly Monitoring and Quarterly Sampling

Monthly monitoring and quarterly sampling of groundwater monitoring wells at the subject site began in October 1991. The highest concentrations of hydrocarbons in groundwater beneath the site were noted in March 1992 (up to 6,500 ppb of TPHg and 2,600 ppb of benzene in MW-1). Since March 1992 hydrocarbon concentrations have decreased significantly in MW-1 (to 820 ppb of TPHg and 350 ppb of BTEX) and MW-3 (to nondetectable TPHg, toluene, ethylbenzene, total xylene, and to 5.3 ppb of benzene) and remained nondetectable (TPHg) or decreased to nondetectable levels (BTEX) in MW-2. Recovery well RW-1 continue to contain floating product. In January 1992 RESNA initiated removal of floating product from RW-1 by hand bailing. In April 1992 Horner EZY Floating Skimmer was installed in recovery well RW-1. In third quarter of 1992 RESNA changed floating product removal from monthly to bi-weekly. The results of previous groundwater monitoring and sampling are reported in Table 1 and 4 in the main body of this report and summarized in the reports listed in the References section of this report.

Additional Subsurface Environmental Investigation and VET  
 ARCO Station 2035, Albany, California

TABLE A-1  
 LABORATORY ANALYSES OF NEW TANK PIT SOIL SAMPLES  
 ARCO Station 2035  
 Albany, California

| Sample ID           | B       | T       | E       | X       | TPHg |
|---------------------|---------|---------|---------|---------|------|
| <u>July 8, 1991</u> |         |         |         |         |      |
| S-15-EWC            | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-15-SE             | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-16-SW1            | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-15-SW             | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-15-NWC            | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-15-WWC            | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-15-NWF            | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-9-NWW             | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-8-NW              | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-15-NW             | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| <u>July 9, 1991</u> |         |         |         |         |      |
| S-0709-NP1(10')     | 0.025   | 0.027   | 0.0060  | 0.024   | <1.0 |
| S-0709-NP2(14')     | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP3(10')     | <0.0050 | 0.0050  | <0.0050 | 0.018   | <1.0 |
| S-0709-NP4(15')     | 0.0050  | 0.0050  | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP5(5')      | 0.012   | 0.013   | <0.0050 | 0.0080  | <1.0 |
| S-0709-NP6(15')     | 0.017   | 0.021   | 0.014   | 0.056   | <1.0 |
| S-0709-NP7(3')      | 0.0060  | 0.0060  | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP8(14')     | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP9(9')      | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP10(10')    | 0.0090  | 0.0060  | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP11(8')     | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP12(14')    | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP13(2')     | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <1.0 |
| S-0709-NP14(6')     | <0.0050 | <0.0050 | 0.0050  | 0.0080  | <1.0 |
| S-0709-NP15(5')     | <0.0060 | <0.0050 | <0.0050 | 0.0060  | <1.0 |
| S-0709-NP16(16')    | <0.0050 | <0.0050 | 0.0050  | 0.0080  | <1.0 |
| S-0709-NP17(10')    | <0.0050 | <0.0050 | 0.0050  | 0.0080  | <1.0 |
| S-0709-NP18(11')    | <0.0050 | <0.0050 | 0.0050  | 0.0080  | <1.0 |

Results in parts per million (ppm).

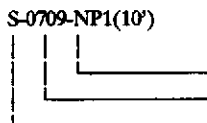
B: benzene, T: toluene, E: ethylbenzene, X: total xylenes

TPHg: Total petroleum hydrocarbons as gasoline (TPHg with BTEX distinction measured by EPA Methods 5030/8015/8020)

<: Less than the indicated laboratory detection limit.

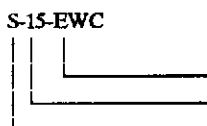
Sample Identification:

Excavation Samples:



New tank pit consecutive number (sample depth)  
 Date of sample  
 Soil sample

Sidewall and Floor Samples:



Location identifier  
 Depth of sample  
 Soil sample

Additional Subsurface Environmental Investigation and VET  
 ARCO Station 2035, Albany, California

November 30, 1992  
 69036.05

TABLE A-2  
 LABORATORY ANALYSES OF FORMER GASOLINE TANK PIT SOIL SAMPLES  
 ARCO Station 2035  
 Albany, California

| Sample ID           | B                | T       | E       | X               | TPHg | TOG | VOC | Pb    |
|---------------------|------------------|---------|---------|-----------------|------|-----|-----|-------|
| <u>July 3, 1991</u> |                  |         |         |                 |      |     |     |       |
| S-12-T1W            | <0.0050          | <0.0050 | <0.0050 | <0.0050         | <1.0 | NA  | NA  | NA    |
| S-12-T1E            | <0.0050          | <0.0050 | <0.0050 | <0.0050         | <1.0 | NA  | NA  | NA    |
| S-12-T2W            | 0.031            | <0.0050 | 0.0080  | <0.0050         | <1.0 | NA  | NA  | NA    |
| S-12-T2E            | 0.019            | <0.0050 | <0.0050 | <0.0050         | <1.0 | NA  | NA  | NA    |
| S-12-T3W            | 1.2              | 2.4     | 1.0     | 3.8             | 48   | NA  | NA  | <0.05 |
| S-12-T3E            | 0.2              | 0.51    | 0.97    | 3.9             | 65   | NA  | NA  | <0.05 |
| S-13-T4N            | 0.45             | 0.039   | 0.18    | 0.33            | 6.2  | NA  | NA  | NA    |
| S-13-T4S            | 0.061<br>(0.160) | 0.034   | 0.0080  | 0.15<br>(0.430) | <1.0 | <30 | ND  | NA    |

Results in parts per million (ppm).

NA: Not analyzed.

<: Less than the indicated laboratory detection limit

ND: Less than laboratory limit for each compound, except benzene and total xylenes

( ): Indicates results measured by EPA Method 8240

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes

TPHg: Total petroleum hydrocarbons as gasoline  
 (TPHg with BTEX distinction measured by EPA Methods 5030/8015/8020)

TOG: Total oil and grease (measured by Standard Method 5520 E and F)

VOC: Volatile organic compounds (measured by EPA Method 8240)

Pb: Organic lead (measured by California LUFT Manual Method, 12/87)

Sample Identification:

S-12-T1W



Tank number and locator

Depth of sample

Soil sample

Additional Subsurface Environmental Investigation and VET  
ARCO Station 2035, Albany, California

November 30, 1992  
69036.05

TABLE A-3  
LABORATORY ANALYSES OF PRODUCT-LINE  
AND PRODUCT-DISPENSER SOIL SAMPLES  
ARCO Station 2035  
Albany, California

| Sample ID             | B      | T      | E      | X      | TPHg  |
|-----------------------|--------|--------|--------|--------|-------|
| <u>July 19, 1991</u>  |        |        |        |        |       |
| S-2½-PL1              | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-2½-PL2              | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-1-PL3               | 0.005  | 0.02   | 0.016  | 0.12   | 1.7   |
| S-1-PL4               | 36     | 320    | 100    | 640    | 4,200 |
| S-1-PL5               | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-1-PL6               | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-1-PL7               | 0.10   | 0.37   | 0.16   | 1.2    | 11    |
| S-1-PL8               | 3.6    | 28     | 29     | 200    | 1,900 |
| S-1-PL9               | 0.2    | 0.78   | 0.36   | 3.1    | 110   |
| S-1-PL10              | 0.09   | 0.43   | 0.72   | 2.8    | 84    |
| S-2½-PD1              | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-2½-PD2              | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-1-PD3               | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-1-PD4               | <0.005 | <0.005 | <0.005 | 12     | 330   |
| S-1-PD5               | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| S-1-PD6               | 0.13   | 0.28   | 0.48   | 3.8    | 87    |
| S-1-PD7               | 0.35   | 2.1    | 1.1    | 47     | 1,000 |
| S-1-PD8               | <0.005 | <0.005 | <0.005 | <0.005 | <1.0  |
| <u>August 9, 1991</u> |        |        |        |        |       |
| S-1½-PL4              | 0.21   | 0.040  | 0.15   | 0.12   | 4.1   |

Results in parts per million (ppm).

<: Less than the laboratory detection limit.

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes

BTEX: Measured by EPA Method.

TPHg: Total petroleum hydrocarbons as gasoline (measured by EPA Method).

Sample Identification:

S-1½-PL1



Product-line number  
Depth of sample  
Soil sample

**APPENDIX B**  
**FIELD PROTOCOL**

## FIELD PROTOCOL

The following presents RESNA's protocol for a typical site investigation involving gasoline hydrocarbon-impacted soil and/or groundwater.

### Site Safety Plan

The Site Safety Plan describes the safety requirements for the evaluation of gasoline hydrocarbons in soil, groundwater, and the vadose-zone at the site. The site Safety Plan is applicable to personnel of RESNA and its subcontractors. RESNA personnel and subcontractors of RESNA scheduled to perform the work at the site are to be briefed on the contents of the Site Safety Plan before work begins. A copy of the Site Safety Plan is available for reference by appropriate parties during the work. A site Safety Officer is assigned to the project.

### Sampling of Stockpiled Soil

One composite soil sample is collected for each 50 cubic yards of stockpiled soil, and for each individual stockpile composed of less than 50 cubic yards. Composite soil samples are obtained by first evaluating relatively high, average, and low areas of hydrocarbon concentration by digging approximately one to two feet into the stockpile and placing the intake probe of a field calibrated OVM against the surface of the soil; and then collecting one sample from the "high" reading area, and three samples from the "average" areas. Samples are collected by removing the top one to two feet of soil, then driving laboratory-cleaned brass sleeves into the soil. The samples are sealed in the sleeves using aluminum foil, plastic caps, and aluminized duct tape; labeled; and promptly placed in iced storage for transport to the laboratory, where compositing will be performed.

### Soil Borings

Prior to the drilling of borings and construction of monitoring wells, permits are acquired from the appropriate regulatory agency. In addition to the above-mentioned permits, encroachment permits from the City or State are acquired if drilling of borings offsite in the City or State streets is necessary. Copies of the permits are included in the appendix of the project report. Prior to drilling, Underground Services Alert is notified of our intent to drill, and known underground utility lines and structures are approximately marked.

The borings are drilled by a truck-mounted drill rig equipped with 8- or 12-inch-diameter, hollow-stem augers. The augers are steam-cleaned prior to drilling each boring to minimize the possibility of cross-contamination. After drilling the borings, monitoring wells are constructed in the borings, or neat-cement grout with bentonite is used to backfill the borings to the ground surface.

Borings for groundwater monitoring wells are drilled to a depth of no more than 20 feet below the depth at which a saturated zone is first encountered, or a short distance into a stratum beneath the saturated zone which is of sufficient moisture and consistency to be judged as a perching layer by the field geologist, whichever is shallower. Drilling into a deeper aquifer below the shallowest aquifer can begin only after a conductor casing is properly installed and allowed to set, to seal the shallow aquifer.

#### Drill Cuttings

Drill cuttings subjectively evaluated as having hydrocarbon contamination at levels greater than 100 parts per million (ppm) are separated from those subjectively evaluated as having hydrocarbon contamination levels less than 100 ppm. Evaluation is based either on subjective evidence of soil discoloration, or on measurements made using a field calibrated OVM. Readings are taken by placing a soil sample into a ziplock type plastic bag and allowing volatilization to occur. The intake probe of the OVM is then inserted into the headspace created in the plastic bag immediately after opening it. The drill cuttings from the borings are placed in labeled 55-gallon drums approved by the Department of Transportation; or on plastic at the site, and covered with plastic. The cuttings remain the responsibility of the client.

#### Soil Sampling in Borings

Soil samples are collected at no greater than 5-foot intervals from the ground surface to the total depth of the borings. The soil samples are collected by advancing the boring to a point immediately above the sampling depth, and then driving a California-modified, split-spoon sampler containing brass sleeves through the hollow center of the auger into the soil. The sampler and brass sleeves are laboratory-cleaned, steam-cleaned, or washed thoroughly with Alconox® and water, prior to each use. The sampler is driven with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each successive six inches are counted and recorded to evaluate the relative consistency of the soil.

The samples selected for laboratory analyses are removed from the sampler and quickly sealed in their brass sleeves with aluminum foil, plastic caps, and aluminized duct tape. The samples are then be labeled, promptly placed in iced storage, and delivered to a laboratory certified by the State of California to perform the analyses requested.

One of the samples in brass sleeves not selected for laboratory analyses at each sampling interval is tested in the field using an OVM that is field calibrated at the beginning of each day it is used. This testing is performed by inserting the intake probe of the OVM into the headspace created in the plastic bag containing the soil sample as described in the Drill Cuttings section above. The OVM readings are presented in Logs of Borings included in the project report.

#### Logging of Borings

A geologist is present to log the soil cuttings and samples using the Unified Soil Classification System. Samples not selected for chemical analyses, and the soil in the sampler shoe, are extruded in the field for inspection. Logs include texture, color, moisture, plasticity, consistency, blow counts, and any other characteristics noted. Logs also include subjective evidence for the presence of hydrocarbons, such as soil staining, noticeable or obvious product odor, and OVM readings.

#### Well Construction

Monitoring wells are constructed in selected borings using clean 2- or 4-inch-diameter, thread-jointed, Schedule 40 polyvinyl chloride (PVC) casing. No chemical cements, glues, or solvents are used in well construction. Each casing bottom is sealed with a threaded end-plug, and each casing top with a locking plug. The screened portions of the wells are constructed of machine-slotted PVC casing with 0.020-inch-wide (typical) slots for initial site wells. Slot size for subsequent wells may be based on sieve analyses and/or well development data. The screened sections in groundwater monitoring wells are placed to allow monitoring during seasonal fluctuations of groundwater levels. Vapor extraction wells were constructed using the same protocol for monitoring wells, mentioned above, however the screened portion of the wells were constructed with much slotted PVC casing with 0.100-inch-wide slots. This is to allow greater air-flow communication between the stratigraphic units and the well.

The annular space of each well is backfilled with No. 2 by 12 sand, or similar sorted sand (groundwater monitoring wells), or pea gravel (vapor extraction wells) to approximately two feet above the top of the screened casing for initial site wells. The sand pack grain size for



subsequent wells may be based on sieve analyses and/or well development data. A 1- to 2-foot-thick bentonite plug is placed above the sand as a seal against cement entering the filter pack. The remaining annulus is then backfilled with a slurry of water, neat cement, and bentonite to approximately one foot below the ground surface.

An aluminum utility box with a PVC apron is placed over each wellhead and set in concrete placed flush with the surrounding ground surface. Each wellhead cover has a seal to protect the monitoring well against surface-water infiltration and requires a special wrench to open. The design discourages vandalism and reduces the possibility of accidental disturbance of the well.

#### Groundwater Monitoring Well Development

The monitoring wells are developed by bailing or over-pumping and surge-block techniques. The wells are either bailed or pumped, allowed to recharge, and bailed or pumped again until the water removed from the wells is determined to be clear. Turbidity measurements (in NTUs) are recorded during well development and are used in evaluating well development. The development method used, initial turbidity measurement, volume of water removed, final turbidity measurement, and other pertinent field data and observations are included in reports. The wells are allowed to equilibrate for at least 48 hours after development prior to sampling. Water generated by well development will be stored in 17E Department of Transportation (DOT) 55-gallon drums on site and will remain the responsibility of the client.

#### Groundwater Sampling

The static water level in each well is measured to the nearest 0.01-foot using a Solinst® electric water-level sounder or oil/water interface probe (if the wells contain floating product) cleaned with Alconox® and water before use in each well. The liquid in the onsite wells is examined for visual evidence of hydrocarbons by gently lowering approximately half the length of a Teflon® bailer (cleaned with Alconox® and water) past the air/water interface. The sample is then retrieved and inspected for floating product, sheen, emulsion, color, and clarity. The thickness of floating product detected is recorded to the nearest 1/8-inch.

Wells which do not contain floating product are purged using a submersible pump. The pump, cables, and hoses are cleaned with Alconox® and water prior to use in each well. The wells are purged until withdrawal is of sufficient duration to result in stabilized pH, temperature, and electrical conductivity of the water, as measured using portable meters

calibrated to a standard buffer and conductivity standard. If the well becomes dewatered, the water level is allowed to recover to at least 80 percent of the initial water level. Prior to the collection of each groundwater sample, the Teflon® bailer is cleaned with Alconox® and rinsed with tap water and deionized water, and the latex gloves worn by the sampler changed. Hydrochloric acid is added to the sample vials as a preservative (when applicable). A sample method blank is collected by pouring distilled water into the bailer and then into sample vials. A sample of the formation water is then collected from the surface of the water in each of the wells using the Teflon® bailer. The water samples are then gently poured into laboratory-cleaned, 40-milliliter (ml) glass vials, 500 ml plastic bottles or 1-liter glass bottles (as required for specific laboratory analysis) and sealed with Teflon®-lined caps, and inspected for air bubbles to check for headspace, which would allow volatilization to occur. The samples are then labeled and promptly placed in iced storage. A field log of well evacuation procedures and parameter monitoring is maintained. Water generated by the purging of wells is stored in 17E DOT 55-gallon drums onsite and remains the responsibility of the client.

#### Vadose-Zone Sampling

Vapor readings are made with a field calibrated OVM, which has a lower detection limit of 0.1 ppm. Prior to purging each vadose-zone monitoring well, an initial reading is taken inside the well by connecting the tubing of the OVM to a tight fitting at the top of the well. Each vadose-zone monitoring well is then purged for approximately 60 seconds using an electric vacuum pump connected to the tight fitting. Ambient readings of the air at the site are taken with the OVM after each well is purged. The OVM is then connected to the well fitting, and the reading recorded. The well is then again purged for approximately 30 seconds, and again measured using the OVM. These purging and measuring procedures are repeated until two consecutive OVM readings are within ten percent of each other.

#### Sample Labeling and Handling

Sample containers are labeled in the field with the job number, sample location and depth, and date, and promptly placed in iced storage for transport to the laboratory. A Chain of Custody Record is initiated by the field geologist and updated throughout handling of the samples, and accompanies the samples to a laboratory certified by the State of California for the analyses requested. Samples are transported to the laboratory promptly to help ensure that recommended sample holding times are not exceeded. Samples are properly disposed of after their useful life has expired.

**APPENDIX C**

**WELL CONSTRUCTION PERMIT**



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE

PLEASANTON, CALIFORNIA 94588

(510) 484-2600

11 August 1992

RECEIVED

AUG 19 1992

Rasna  
1315 Almaden Expressway, Suite 34  
San Jose, Ca. 95113

HEENA  
DANUSSE

Gentlemen:

Enclosed is drilling permit 92382 for a monitoring well construction project at 1001 San Pablo Avenue in Albany for ARCO.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or me at 484-2600.

Very truly yours,

Craig A. Mayfield  
Water Resources Engineer

WRS  
Inc.



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

6897 PARKSIDE DRIVE, ALAMEDA, CALIFORNIA 94608

415-464-2600

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT

PERMIT NUMBER 92382
LOCATION NUMBER

APPLICANT Name, Address, Phone, City, Zip

PERMIT CONDITIONS

Directed Permit Requirements Apply

APPLICANT Name, Address, Phone, City, Zip

TYPE OF PROJECT: Well Construction, Geotechnical Investigation, Cathodic Protection, General, Water Supply, Contamination, Monitoring, Well Destruction

CLOSED WATER SUPPLY WELL USE: Domestic, Industrial, Other, Municipal, Irrigation

DILLING METHOD: Rotary, Air Rotary, Auger, Other

DRIER'S LICENSE NO.

PROJECTS: Drill Hole Diameter, Casing Diameter, Surface Seal Depth, Maximum Depth, Number

TECHNICAL PROJECTS: Number of Springs, Hole Diameter, Maximum Depth

ESTIMATED STARTING DATE, ESTIMATED COMPLETION DATE

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 77-86.

APPLICANT'S SIGNATURE, Date

- 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. 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. 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. CATHODIC: Fill hole above anode zone with concrete placed by tremie. WELL DESTRUCTION: See attached.

Approved: [Signature] Date 6 Aug 92 Norman Hong

**APPENDIX D**

**EMCON's SUMMARY OF GROUNDWATER MONITORING DATA,  
CHAIN OF CUSTODY FORMS  
AND ANALYTICAL REPORTS OF GROUNDWATER SAMPLES**



**EMCON**  
ASSOCIATES

Consultants in Wastes  
Management and  
Environmental Control

112 1009

Date July 31, 1992  
Project G70-17.01

To:

Mr. Joel Coffman  
RESNA/ Applied Geosystems  
3315 Almaden Expressway, Suite 34  
San Jose, California 95118

We are enclosing:

| Copies            | Description  |
|-------------------|--|
| <u>1</u>          | <u>Depth To Water/Floating Product Survey Results</u>  |
| <u>          </u> | <u>July 1992 monthly water level survey, ARCO</u>      |
| <u>          </u> | <u>station 2035, 1001 San Pablo Avenue, Albany, CA</u> |

For your:   X   Information Sent by:   X   Mail

Comments:

Monthly water level data for the above mentioned site are attached. Please  
call if you have any questions: (408) 453-2266.

Reviewed by:



Jim Butera JB

Robert Porter, Senior Project  
Engineer.

**FIELD REPORT**  
**DEPTH TO WATER/FLOATING PRODUCT SURVEY**

PROJECT #: G70-17-01

STATION ADDRESS : 1001 San Pablo Ave. Albany, CA

DATE : 7-15-92

ALCO STATION #: 2035

FIELD TECHNICIAN: P. Schaeffer

DAY: Wed

| WELL<br>Order | WELL<br>ID | Well<br>Box<br>Seal | Well<br>Lid<br>Secure | Gasket | Lock | Locking<br>Well<br>Cap | FIRST<br>DEPTH TO<br>WATER<br>(foot) | SECOND<br>DEPTH TO<br>WATER<br>(foot) | DEPTH TO<br>FLOATING<br>PRODUCT<br>(foot) | FLOATING<br>PRODUCT<br>THICKNESS<br>(foot) | WELL<br>TOTAL<br>DEPTH<br>(foot) | COMMENTS |
|---------------|------------|---------------------|-----------------------|--------|------|------------------------|--------------------------------------|---------------------------------------|---|--|----------------------------------|----------|
| 1             | MW-2       | Yes                 | Yes                   | Yes    | 3259 | Yes                    | 11.15                                | 11.15                                 | N.P.                                      | N.P.                                       | 29.09                            | -        |
| 2             | MW-3       | Yes                 | Yes                   | Yes    | 3259 | Yes                    | 11.28                                | 11.28                                 | N.P.                                      | N.P.                                       | 32.71                            | -        |
| 3             | MW-1       | Yes                 | Yes                   | Yes    | 3259 | Yes                    | 10.69                                | 10.68                                 | N.P.                                      | N.P.                                       | 30.09                            | -        |
| 4             | MW-1       | Yes                 | Yes                   | Yes    | 3259 | Yes                    | 11.55                                | 11.35                                 | N.P.                                      | N.P.                                       | 26.23                            | -        |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|               |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |

**SURVEY POINTS ARE TOP OF WELL CASINGS**





**EMCON**  
ASSOCIATES

Consultants in Wastes  
Management and  
Environmental Control

1001  
1992  
1001

Date Sept 01 31, 1992

Project G70-17.01

To:

Mr. Joel Coffman

RESNA/ Applied Geosystems

3315 Almaden Expressway, Suite 34

San Jose, California 95118

We are enclosing:

| Copies            | Description  |
|-------------------|--|
| <u>1</u>          | <u>Depth To Water/Floating Product Survey Results</u>  |
| <u>          </u> | <u>August 1992 monthly water level survey, ARCO</u>    |
| <u>          </u> | <u>station 2035, 1001 San Pablo Avenue, Albany, CA</u> |

For your: X Information      Sent by: X Mail

Comments:

Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:

*Handwritten initials*

Jim Butera JB

*Handwritten signature of Robert Porter*

Robert Porter, Senior Project Engineer.



FIELD REPORT  
DEPTH TO WATER/FLOATING PRODUCT SURVEY

PROJECT #: G70-17.01

STATION ADDRESS : 1001 San Pablo Ave. Albany, CA

DATE : 8-7-93

ARCO STATION #: 2035

FIELD TECHNICIAN: Rich SHAEFER

DAY: FRI

| D/W<br>Order | WELL<br>ID | Well<br>Box<br>Seal | Well<br>Lid<br>Secure | Gasket | Lock | Locking<br>Well<br>Cap | FIRST<br>DEPTH TO<br>WATER<br>(feet) | SECOND<br>DEPTH TO<br>WATER<br>(feet) | DEPTH TO<br>FLOATING<br>PRODUCT<br>(feet) | FLOATING<br>PRODUCT<br>THICKNESS<br>(feet) | WELL<br>TOTAL<br>DEPTH<br>(feet) | COMMENTS |
|--------------|------------|---------------------|-----------------------|--------|------|------------------------|--------------------------------------|---------------------------------------|---|--|----------------------------------|----------|
| 1            | MW-11      | OK                  | YES                   | OK     | 3259 | YES                    | 10.53                                | 10.53                                 | N.D.                                      | N.D.                                       | 29.6                             | (MW-1)   |
| 2            | MW-3       | OK                  | YES                   | OK     | 3259 | YES                    | 11.15                                | 11.15                                 | N.D.                                      | N.D.                                       | 32.3                             | (MW-1)   |
| 3            | MW-12      | OK                  | YES                   | OK     | 3259 | YES                    | 11.01                                | 11.01                                 | N.D.                                      | N.D.                                       | 28.7                             | (MW-2)   |
| 4            | MW-1       | OK                  | YES                   | OK     | 3259 | YES                    | 10.82                                | 10.82                                 | 13.80                                     | 0.02                                       | 25.6                             | (MW-1)   |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |
|              |            |                     |                       |        |      |                        |                                      |                                       |   |  |                                  |          |

SURVEY POINTS ARE TOP OF WELL CASINGS



**EMCON**  
ASSOCIATES

Consultants in Wastes  
Management and  
Environmental Control

RECEIVED

SEP 22 1992

FEDERAL  
AGENCY

Date Sept 22, 1992  
Project G70-17.01

To:  
Mr. Joel Coffman  
RESNA/ Applied Geosystems  
3315 Almaden Expressway, Suite 34  
San Jose, California 95050

We are enclosing:

| Copies   | Description   |
|----------|---|
| <u>1</u> | <u>Depth To Water - Floating Product Survey Results</u>   |
| <u>1</u> | <u>Summary of Groundwater Monitoring Data</u>             |
| <u>4</u> | <u>Certified Analytical Reports with Chain-of-Custody</u> |
| <u>4</u> | <u>Water Sample Field Data Sheets</u>                     |

For your:  Information Sent by:  Mail

Comments:

Enclosed are the data from the third quarter 1992 monitoring event at ARCO service station 2035, 1001 San Pablo Avenue, Albany, California. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Reviewed by:



Jim Butera JB

Robert Porter  
Robert Porter, Senior Project  
Engineer.



FIELD REPORT  
DEPTH TO WATER/FLOATING PRODUCT SURVEY

PROJECT #: G70-17.01

STATION ADDRESS: 1001 San Pablo Ave. Albany, CA

DATE: 09-08-92

ARCO STATION #: 2035

FIELD TECHNICIAN: S. Williams

DAY: TUE

| WELL<br>Code | WELL<br>ID | Well<br>Box<br>Seal | Well<br>Lid<br>Seal | Gradient | Lock | Locking<br>Well<br>Cap | FIRST<br>DEPTH TO<br>WATER<br>(foot) | SECOND<br>DEPTH TO<br>WATER<br>(foot) | DEPTH TO<br>FLOATING<br>PRODUCT<br>(foot) | FLOATING<br>PRODUCT<br>THICKNESS<br>(foot) | WELL<br>TOTAL<br>DEPTH<br>(foot) | COMMENTS                                     |
|--------------|------------|---------------------|---------------------|----------|------|------------------------|--------------------------------------|---------------------------------------|---|--|----------------------------------|--|
| 1            | MW-2       | OK                  | YES                 | OK       | 3259 | OK                     | 10.91<br><del>11.29</del>            | 11.91<br><del>11.29</del>             | 11.92                                     | 8.02                                       | 28.70                            | -  |
| 2            | MW-3       | OK                  | YES                 | OK       | 3259 | OK                     | 11.00                                | 11.00                                 | 11.00                                     | 11.00                                      | 37.30                            | -  |
| 3            | MW-1       | OK                  | YES                 | OK       | 3259 | OK                     | 11.00                                | 11.00                                 | 11.00                                     | 11.00                                      | 29.60                            | -  |
| 4            | MW-1       | OK                  | YES                 | OK       | 3259 | OK                     | 11.00                                | 11.00                                 | 11.00                                     | 0.60                                       | <del>25.70</del>                 | Groundwater in well<br>Arched in well around |

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data  
 Third Quarter 1992  
 AHC/O Service Station 2035  
 1001 San Pablo Avenue, Albany, California  
 micrograms per liter (µg/l) or parts per billion (ppb)

| Well ID<br>and<br>Sample<br>Depth | Sampling<br>Date | Depth<br>To<br>Water<br>(feet) | Floating<br>Product<br>Thickness<br>(feet) | TPH <sup>1</sup><br>as<br>Gasoline<br>(ppb) | Benzene<br>(ppb) | Toluene<br>(ppb) | Ethyl<br>benzene<br>(ppb) | Total<br>Xylenes<br>(ppb) |
|-----------------------------------|------------------|--------------------------------|--|---|------------------|------------------|---------------------------|---------------------------|
| MW 1(29)                          | 09/08/92         | 11.04                          | ND <sup>2</sup>                            | 820   | 350.             | <5               | <5.                       | <5                        |
| MW 2(27)                          | 09/08/92         | 11.41                          | ND.  | <50   | <0.5             | <0.5             | <0.5                      | <0.5                      |
| MW 3(32)                          | 09/08/92         | 11.70                          | ND   | <50   | 5.3              | <0.5             | <0.5                      | <0.5                      |
| FB <sup>4</sup>                   | 09/08/92         | 11.30                          | NS <sup>3</sup>                            | NS  | NS               | NS.              | NS.                       | NS                        |
| FB <sup>4</sup>                   | 09/08/92         | NA <sup>5</sup>                | NA   | <50   | <0.5             | <0.5             | <0.5                      | <0.5                      |

1 TPH - Total petroleum hydrocarbons

2 ND - Not detected

3 NS - Not sampled, well was not sampled due to detection of floating product

4 FB - Field blank

5 NA - Not applicable



September 15, 1992

Jim Butera  
EMCCN Associates  
1921 Ringwood Avenue  
San Jose, CA 95131

Re: EMCCN Project No. G70-17.01  
Arco Facility No. 2035

Dear Mr. Butera:

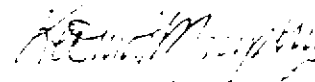
Enclosed are the results of the water samples submitted to our lab on September 9, 1992. For your reference, our service request number for this work is SJ92-1127.

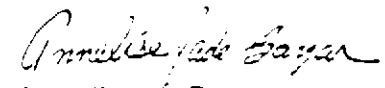
All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

  
Keoni A. Murphy  
Laboratory Manager

  
Annelise J. Bazar  
Regional QA Coordinator

le/KAM

Analytical Report

Client: EMCON Associates  
 Project: EMCON Project No. G70-17.01  
 Arco Facility No. 2035

Date Received: 09/09/92  
 Work Order #: SJ92-1127  
 Sample Matrix: Water

BTEX and TPH as Gasoline  
 EPA Methods 5030/8020/DHS LUFT Method  
 µg/L (ppb)

|                |                  |                  |                  |
|----------------|------------------|------------------|------------------|
| Sample Name:   | <u>MW-1 (29)</u> | <u>MW-2 (27)</u> | <u>MW-3 (32)</u> |
| Date Analyzed: | 09/11/92         | 09/10/92         | 09/11/92         |

| <u>Analyte</u>  | <u>MRL</u> |       |    |     |
|-----------------|------------|-------|----|-----|
| Benzene         | 0.5        | 350.  | ND | 5.3 |
| Toluene         | 0.5        | < 5.* | ND | ND  |
| Ethylbenzene    | 0.5        | < 5.* | ND | ND  |
| Total Xylenes   | 0.5        | < 5.* | ND | ND  |
| TPH as Gasoline | 50         | 320.  | ND | ND  |

TPH Total Petroleum Hydrocarbons  
 MRL Method Reporting Limit  
 ND None Detected at or above the method reporting limit  
 \* Raised MRL due to high analyte concentration requiring sample dilution.

Approved by [Signature] Date September 15, 1992

Analytical Report

Client: EMCON Associates  
Project: EMCON Project No. G70-17.01  
Arco Facility No. 2035

Date Received: 09/09/92  
Work Order #: SJ92-1127  
Sample Matrix: Water

BTEX and TPH as Gasoline  
EPA Methods 5030/8020/DHS LUFT Method  
µg/L (ppb)

Sample Name: EB-1      Method Blank      Method Blank  
Date Analyzed: 09/10/92      09/10/92      09/11/92

| <u>Analyte</u>  | <u>MRL</u> |    |    |    |
|-----------------|------------|----|----|----|
| Benzene         | 0.5        | ND | ND | ND |
| Toluene         | 0.5        | ND | ND | ND |
| Ethylbenzene    | 0.5        | ND | ND | ND |
| Total Xylenes   | 0.5        | ND | ND | ND |
| TPH as Gasoline | 50         | ND | ND | ND |

TPH Total Petroleum Hydrocarbons  
MRL Method Reporting Limit  
ND None Detected at or above the method reporting limit

Approved by [Signature] Date September 15, 1992



APPENDIX A  
LABORATORY QC RESULTS

Client: EMCON Associates  
 Project: EMCON Project No. G70-17.01  
 Arco Facility No. 2035

Date Received: 09/09/92  
 Work Order #: SJ92-1127

QA/QC Report  
 Initial Calibration Verification  
 BTEX and TPH as Gasoline  
 EPA Methods 5030/8020/DHS LUFT Method  
 Nanograms

Date Analyzed: 09/10/92

| <u>Analyte</u>  | <u>True Value</u> | <u>Result</u> | <u>Percent Recovery</u> | <u>CAS Percent Recovery Acceptance Criteria</u> |
|-----------------|-------------------|---------------|-------------------------|---|
| Benzene         | 250.              | 243.          | 97.                     | 85-115  |
| Toluene         | 250.              | 254.          | 102.                    | 85-115  |
| Ethylbenzene    | 250.              | 241.          | 96.                     | 85-115  |
| Total Xylenes   | 750.              | 693.          | 92.                     | 85-115  |
| TPH as Gasoline | 2,500.            | 2,516.        | 101.                    | 90-110  |

Date Analyzed: 09.11.92

| <u>Analyte</u>  | <u>True Value</u> | <u>Result</u> | <u>Percent Recovery</u> | <u>CAS Percent Recovery Acceptance Criteria</u> |
|-----------------|-------------------|---------------|-------------------------|---|
| Benzene         | 250.              | 257.          | 103.                    | 85-115  |
| Toluene         | 250.              | 250.          | 104.                    | 85-115  |
| Ethylbenzene    | 250.              | 255.          | 102.                    | 85-115  |
| Total Xylenes   | 750.              | 723.          | 97.                     | 85-115  |
| TPH as Gasoline | 2,500.            | 2,420.        | 97.                     | 90-110  |

TPH Total Petroleum Hydrocarbons

Approved by Karen M. Smith Date September 10 1992

Client: EMCON Associates  
Project: EMCON Project No. G70-17.01  
Arco Facility No. 2035

Date Received: 09/09/92  
Work Order #: SJ92-1127  
Sample Matrix: Water

QA/QC Report  
Surrogate Recovery Summary  
BTEX and TPH as Gasoline  
EPA Methods 5030/8020/DHS LUFT Method

| <u>Sample Name</u> | <u>Date Analyzed</u> | <u>Percent Recovery</u><br><i>a,a,a</i> -Trifluorotoluene |
|--------------------|----------------------|---|
| MW-1 (29)          | 09/11/92             | 97.   |
| MW-2 (27)          | 09/10/92             | 90.   |
| MW-3 (32)          | 09/11/92             | 98.   |
| FB-1               | 09/10/92             | 93.   |
| MS                 | 09/10/92             | 90.   |
| DMS                | 09/10/92             | 77.   |
| Method Blank       | 09/10/92             | 100.  |
| Method Blank       | 09/11/92             | 103.  |

CAS Acceptance Criteria 70-130

TPH Total Petroleum Hydrocarbons

Approved by  Date September 15, 1992

Client: EMCON Associates  
Project: EMCON Project No. G70-17.01  
Arco Facility No. 2035

Date Received: 09/09/92  
Work Order #: SJ92-1127  
Sample Matrix: Water

QA/QC Report  
Matrix Spike/Duplicate Matrix Spike Summary  
STE  
EPA Methods 6030/8020  
µg/L (ppb)

Date Analyzed: 09/10/92

Percent Recovery

| Analytes     | Spike Level | Sample Result | Spike Result |      | Percent Recovery |      | Acceptance Criteria |
|--------------|-------------|---------------|--------------|------|------------------|------|---------------------|
|              |             |               | MS           | DMS  | MS               | DMS  |                     |
| Benzene      | 25.         | ND            | 28.2         | 33.8 | 113.             | 135. | 39-150              |
| Toluene      | 25.         | ND            | 28.7         | 34.5 | 115.             | 138. | 46-148              |
| Ethylbenzene | 25.         | ND            | 28.6         | 33.7 | 114.             | 135. | 32-160              |

ND None Detected at or above the method reporting limit

Approved by

*[Handwritten signatures]*



APCC Facility No

2035

City (Facility)

Albany

Task Order No.

EMCCOC-97-1

Chain of Custody

APCC description

Kyle Christie

Telephone no

(ARCO) 521 2434

Project manager

JIM BUTERA

(Consultant)

Telephone no

(Consultant) 408 453-0714

Fax no

(Consultant) 408 453-0452

Consultant name

EMCON ASSOCIATES

Address

(Consultant)

1738

JUNCTION AVENUE SAUSALITO

Laboratory name

CAS

Contract number

5707

Method of shipment

Sampler will deliver

Special detection limit/reporting

None possible

Special QA/QC

As normal

Remarks

2-40ml H<sub>2</sub>O's

Lab number

5592-112

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

| Sample ID | Lab no | Container no | Matrix |       |       | Preservation |      | Sampling date | Sampling time | BTEX EPA 802 | BTEX/TPH EPA 802/803/804 | TPH Modified BTEX Gas - Diss. | Oil and Grease 413.1 - 413.2 | TPH EPA 418.1/MSMS03E | EPA 601/601C | EPA 624/624C | EPA 623/627D | TCLP Metals <input type="checkbox"/> VOC <input type="checkbox"/> VOA <input type="checkbox"/> | CAN Metals EPA 601/700C <input type="checkbox"/> TLG <input type="checkbox"/> STLC <input type="checkbox"/> | Lead Org./DHS <input type="checkbox"/> Lead EPA <input type="checkbox"/> 7420/7421 <input type="checkbox"/> |  |
|-----------|--------|--------------|--------|-------|-------|--------------|------|---------------|---------------|--------------|--------------------------|-------------------------------|------------------------------|-----------------------|--------------|--------------|--------------|--|---|---|--|
|           |        |              | Soil   | Water | Other | Ice          | Acid |               |               |              |                          |                               |                              |                       |              |              |              |  |   |   |  |
| 140-1/27  | 111    | 2            |        | X     |       | X            | HCL  | 9-8-92        | 1515          |              | X                        |                               |                              |                       |              |              |              |  |   |   |  |
| 140-1/27  | 111    | 2            |        | X     |       | X            | HCL  | 9-8-92        | 1302          |              | X                        |                               |                              |                       |              |              |              |  |   |   |  |
| 140-1/33  | 156    | 2            |        | X     |       | X            | HCL  | 9-8-92        | 1410          |              | X                        |                               |                              |                       |              |              |              |  |   |   |  |
| 200-1     | 1      | 2            |        | X     |       | X            | HCL  |               | NO Sample     |              | X                        |                               |                              |                       |              |              |              |  |   |   |  |
| FB-1      | 103    | 2            |        | X     |       | X            | HCL  | 9-8-92        | 1520          |              | X                        |                               |                              |                       |              |              |              |  |   |   |  |

Condition of sample:

ok

Temperature received:

cool

Relinquished by sampler

Joe Williams

Date

9-9-92

Time

9:20

Received by

Relinquished by

Date

Time

Received by

Relinquished by

Date

Time

Received by Laboratory

Signature

Date

9-4-92

Time

4:20 pm



# WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: G7D-1701

SAMPLE ID: MW-1

PURGED BY: S. Williams

CLIENT NAME: ARCO 2035

SAMPLED BY: S. Williams

LOCATION: 1001 Sunnyside Ave Albany, Ohio

TYPE: Ground Water  Surface Water  Treatment Effluent  Other

CASING DIAMETER (inches): 2  3  4  4.5  6  Other

|   |  |
|---|--|
| CASING ELEVATION (feet/MSL): <u>112</u> | VOLUME IN CASING (gal.): <u>12.17</u>  |
| DEPTH TO WATER (feet): <u>11.04</u>     | CALCULATED PURGE (gal.): <u>108.87</u> |
| DEPTH OF WELL (feet): <u>29.65</u>      | ACTUAL PURGE VOL (gal.): <u>51.0</u>   |

|                               |                             |                           |
|-------------------------------|-----------------------------|---------------------------|
| DATE PURGED: <u>05-08-97</u>  | Start (2400 Hr) <u>1440</u> | End (2400 Hr) <u>1505</u> |
| DATE SAMPLED: <u>05-08-97</u> | Start (2400 Hr) <u>---</u>  | End (2400 Hr) <u>1515</u> |

| TIME (2400 Hr) | VOLUME (gal.)     | pH (Units)  | EC. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|----------------|-------------------|-------------|------------------------|------------------|----------------|--------------------|
| <u>1440</u>    | <u>12.5</u>       | <u>0478</u> | <u>604</u>             | <u>69.4</u>      | <u>BROWN</u>   | <u>HEAVY</u>       |
| <u>1450</u>    | <u>25</u>         | <u>480</u>  | <u>653</u>             | <u>67.7</u>      | <u>L</u>       | <u>L</u>           |
| <u>1451</u>    | <u>37</u>         | <u>481</u>  | <u>725</u>             | <u>65.8</u>      | <u>L</u>       | <u>L</u>           |
| <u>1502</u>    | <u>40</u>         | <u>476</u>  | <u>730</u>             | <u>69.7</u>      | <u>L</u>       | <u>L</u>           |
| <u>1510</u>    | <u>End Change</u> | <u>476</u>  | <u>717</u>             | <u>64.4</u>      | <u>L</u>       | <u>L</u>           |

D. O. (ppm): NR CODR: None (COBALT 0 - 100) (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, KDUP-1): NR-1

### PURGING EQUIPMENT

### SAMPLING EQUIPMENT

- |  |   |  |  |
|--|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump             | <input type="checkbox"/> Bailer (Teflon®)         | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC)             | <input type="checkbox"/> DDL Sampler     | <input type="checkbox"/> Bailer (Stainless Steel)    |
| <input type="checkbox"/> Submersible Pump            | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper          | <input type="checkbox"/> Submersible Pump            |
| <input type="checkbox"/> Well Wizard™                | <input type="checkbox"/> Dedicated                | <input type="checkbox"/> Well Wizard™    | <input type="checkbox"/> Dedicated                   |
- Other: \_\_\_\_\_ Other: \_\_\_\_\_

WELL INTEGRITY: OK LOCK #: 2250

REMARKS: Well Dried After 51 Gallon, Time 1505

Meter Calibration: Date: 9-8-93 Time: 12:05 Meter Serial #: \_\_\_\_\_ Temperature °F: \_\_\_\_\_

(EC 1000 \_\_\_\_\_) (Cl \_\_\_\_\_) (pH 7 \_\_\_\_\_) (pH 10 \_\_\_\_\_) (pH 4 \_\_\_\_\_)

Location of previous calibration: 1701-2

Signature: [Signature] Reviewed By: [Signature] Page 1 of 4



# WATER SAMPLE FIELD DATA SHEET

(27)

EMCON ASSOCIATES

PROJECT NO: G70-17.01

SAMPLE ID: MW-2

PURGED BY: J.W. Williams

CLIENT NAME: ARCO 2035

SAMPLED BY: J.W. Williams

LOCATION: 1001 SAN PABLO AVE

ALBANY, CA

TYPE: Ground Water  Surface Water  Treatment Effluent  Other

CASING DIAMETER (inches): 2  3  4  4.5  6  Other

|   |                                       |
|---|---------------------------------------|
| CASING ELEVATION (feet/MSL): <u>N/A</u> | VOLUME IN CASING (gal.): <u>11.34</u> |
| DEPTH TO WATER (feet): <u>11.41</u>     | CALCULATED PURGE (gal.): <u>56.71</u> |
| DEPTH OF WELL (feet): <u>28.70</u>      | ACTUAL PURGE VOL (gal.): <u>57</u>    |

|                               |                              |                            |
|-------------------------------|------------------------------|----------------------------|
| DATE PURGED: <u>09-08-92</u>  | Start (2400 Hr) <u>12:35</u> | End (2400 Hr) <u>12:52</u> |
| DATE SAMPLED: <u>09-08-92</u> | Start (2400 Hr) <u>13:00</u> | End (2400 Hr) <u>13:02</u> |

| TIME (2400 Hr) | VOLUME (gal.) | pH (units)  | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|----------------|---------------|-------------|-------------------------|------------------|----------------|--------------------|
| <u>1239</u>    | <u>11.5</u>   | <u>6.39</u> | <u>671</u>              | <u>69.1</u>      | <u>BROWN</u>   | <u>HEAVY</u>       |
| <u>1242</u>    | <u>23</u>     | <u>6.50</u> | <u>688</u>              | <u>67.9</u>      | <u>GREY</u>    | <u>MOD</u>         |
| <u>1245</u>    | <u>34.5</u>   | <u>6.51</u> | <u>682</u>              | <u>66.4</u>      | <u>↓</u>       | <u>↓</u>           |
| <u>1247</u>    | <u>46</u>     | <u>6.50</u> | <u>681</u>              | <u>66.1</u>      | <u>↓</u>       | <u>↓</u>           |
| <u>1252</u>    | <u>57</u>     | <u>6.49</u> | <u>679</u>              | <u>65.7</u>      | <u>CLEAR</u>   | <u>MOD</u>         |

D. O. (ppm): N/A      ODCR: NONE      COBALT 0-100: N/A      NTU 0-200: N/A

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): N/A

### PURGING EQUIPMENT

### SAMPLING EQUIPMENT

- |  |   |  |  |
|--|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump             | <input type="checkbox"/> Bailer (Teflon®)         | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC)             | <input type="checkbox"/> DDL Sampler     | <input type="checkbox"/> Bailer (Stainless Steel)    |
| <input type="checkbox"/> Submersible Pump            | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper          | <input type="checkbox"/> Submersible Pump            |
| <input type="checkbox"/> Well Wizard™                | <input type="checkbox"/> Dedicated                | <input type="checkbox"/> Well Wizard™    | <input type="checkbox"/> Dedicated                   |
- Other: \_\_\_\_\_

WELL INTEGRITY: OK      LOCK #: 3259

REMARKS: \_\_\_\_\_

Meter Calibration: Date: 9-2-99 Time: 12:00 Meter Serial #: \_\_\_\_\_ Temperature °F: 77.1

(EC 1000 1335/1000) (Cl \_\_\_\_\_) (pH 7 7.02/7.00) (pH 10 10.00/10.00) (pH 4 3.95/)

Location of previous calibration: \_\_\_\_\_

Signature: [Signature]      Reviewed By: [Signature]      Page 2 of 4





EMCON ASSOCIATES

# WATER SAMPLE FIELD DATA SHEET

(32)

PROJECT NO: 670-17.01

SAMPLE ID: mw-3

PURGED BY: J Williams

CLIENT NAME: ARCO 2035

SAMPLED BY: J Williams

LOCATION: 1001 SAN PABLO AVE  
ALBANY, CA

TYPE: Ground Water  Surface Water  Treatment Effluent  Other

CASING DIAMETER (inches): 2  3  4  4.5  6  Other

|   |                                      |
|---|--------------------------------------|
| CASING ELEVATION (feet/MSL): <u>101</u> | VOLUME IN CASING (gal.): <u>1351</u> |
| DEPTH TO WATER (feet): <u>1170</u>      | CALCULATED PURGE (gal.): <u>6756</u> |
| DEPTH OF WELL (feet): <u>3230</u>       | ACTUAL PURGE VOL (gal.): <u>45.5</u> |

|                               |                             |                           |
|-------------------------------|-----------------------------|---------------------------|
| DATE PURGED: <u>09-08-92</u>  | Start (2400 Hr) <u>1335</u> | End (2400 Hr) <u>1358</u> |
| DATE SAMPLED: <u>09-08-92</u> | Start (2400 Hr) <u>---</u>  | End (2400 Hr) <u>1410</u> |

| TIME (2400 Hr)        | VOLUME (gal.)      | pH (units)   | E.C. (umhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual) | TURBIDITY (visual) |
|-----------------------|--------------------|--------------|-------------------------|------------------|----------------|--------------------|
| <u>1342</u>           | <u>135</u>         | <u>6.01</u>  | <u>701</u>              | <u>68.1</u>      | <u>BROWN</u>   | <u>HEAVY</u>       |
| <u>1346</u>           | <u>27</u>          | <u>5.44</u>  | <u>742</u>              | <u>64.6</u>      | <u>L</u>       | <u>L</u>           |
| <u>1352</u>           | <u>45.5</u>        | <u>5.2°</u>  | <u>707</u>              | <u>67.1</u>      | <u>L</u>       | <u>L</u>           |
|                       | <u>DRIED AFTER</u> | <u>AFTER</u> | <u>45.5 GALLON</u>      |                  |                |                    |
| <u>1417</u>           | <u>Dechlor</u>     | <u>5.18</u>  | <u>1.04</u>             | <u>66.8</u>      | <u>BROWN</u>   | <u>HEAVY</u>       |
| D.O. (ppm): <u>NR</u> | ODOR: <u>SMELL</u> |              |                         |                  | <u>NR</u>      | <u>NR</u>          |

(COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

### PURGING EQUIPMENT

### SAMPLING EQUIPMENT

- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> 2" Bladder Pump             | <input type="checkbox"/> Bailer (Teflon®)         | <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailer (Teflon®)         |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC)             | <input type="checkbox"/> DDL Sampler     | <input type="checkbox"/> Bailer (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump            | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper          | <input type="checkbox"/> Submersible Pump         |
| <input type="checkbox"/> Well Wizard™                | <input type="checkbox"/> Dedicated                | <input type="checkbox"/> Well Wizard™    | <input type="checkbox"/> Dedicated                |
| Other: _____   |   | Other: _____                             |   |

WELL INTEGRITY: OK LOCK #: 3255

REMARKS: WELL DRIED AFTER 45.5 GALLONS TIME 1358

Meter Calibration: Date: \_\_\_\_\_ Time: 12:05 Meter Serial #: \_\_\_\_\_ Temperature °F: \_\_\_\_\_

ED 1000 \_\_\_\_\_ (OI \_\_\_\_\_) (pH 7 \_\_\_\_\_) (pH 10 \_\_\_\_\_) (pH 4 \_\_\_\_\_)

Location of previous calibration: 216-7

Signature: J Williams Reviewed By: JTB Page 5 of 0



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: G70-17-01  
PURGED BY: Williams  
SAMPLED BY: Williams

SAMPLE ID: RW-1  
CLIENT NAME: ARCO 2035  
LOCATION: ALBANY

TYPE: Ground Water  Surface Water  Treatment Effluent  Other   
CASING DIAMETER (inches): 2  3  4  4.5  6  Other

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): NA  
DEPTH TO WATER (feet): 11.30 CALCULATED PURGE (gal.): /  
DEPTH OF WELL (feet): 25.1 ACTUAL PURGE VOL (gal.): /

DATE PURGED: 9/19/92 Start (2400 Hr) \_\_\_\_\_ End (2400 Hr) \_\_\_\_\_  
DATE SAMPLED: \_\_\_\_\_ Start (2400 Hr) \_\_\_\_\_ End (2400 Hr) \_\_\_\_\_

| TIME (2400 Hr)         | VOLUME (gal.) | pH (units)      | E.C. (µmhos/cm @ 25° C) | TEMPERATURE (°F) | COLOR (visual)   | TURBIDITY (visual) |
|------------------------|---------------|-----------------|-------------------------|------------------|------------------|--------------------|
| <u>PRODUCT 67</u>      |               |                 |                         |                  |                  |                    |
| _____                  | _____         | _____           | _____                   | _____            | _____            | _____              |
| _____                  | _____         | _____           | _____                   | _____            | _____            | _____              |
| _____                  | _____         | _____           | _____                   | _____            | _____            | _____              |
| _____                  | _____         | _____           | _____                   | _____            | _____            | _____              |
| D. O. (ppm): <u>NA</u> |               | COND: <u>NA</u> |                         |                  | <u>NA</u>        | <u>NA</u>          |
|                        |               |                 |                         |                  | (COBALT 0 - 100) | (NTU 0 - 200)      |

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NA

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- |   |   |   |  |
|---|---|---|--|
| <input type="checkbox"/> 2' Bladder Pump        | <input type="checkbox"/> Bailor (Teflon®)         | <input type="checkbox"/> 2' Bladder Pump        | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump       | <input type="checkbox"/> Bailor (PVC)             | <input type="checkbox"/> DDL Sampler            | <input type="checkbox"/> Bailor (Stainless Steel)    |
| <input type="checkbox"/> Submersible Pump       | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper                 | <input type="checkbox"/> Submersible Pump            |
| <input type="checkbox"/> Well Wizard™ <u>NA</u> | <input type="checkbox"/> Dedicated                | <input type="checkbox"/> Well Wizard™ <u>NA</u> | <input type="checkbox"/> Dedicated                   |
| Other: _____                                    |   | Other: _____                                    |  |

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: PRODUCT 67 NO SAMPLES TAKEN

Meter Calibration: Date: \_\_\_\_\_ Time: \_\_\_\_\_ Meter Serial #: \_\_\_\_\_ Temperature °F: \_\_\_\_\_  
( EC 1000 \_\_\_\_\_ ) ( DI \_\_\_\_\_ ) ( pH 7 \_\_\_\_\_ ) ( pH 10 \_\_\_\_\_ ) ( pH 4 \_\_\_\_\_ )  
Location of previous calibration: \_\_\_\_\_

Signature: [Signature] Reviewed By: TB Page 2 of 4

**APPENDIX E**

**LABORATORY ANALYSES REPORTS  
AND CHAIN OF CUSTODY RECORDS FOR SOIL AND AIR SAMPLES**



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RECEIVED

1992

RESNA  
AN 1002

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Project: ARCO 2035, Albany

Enclosed are the results from 24 soil samples received at Sequoia Analytical on August 21, 1992. The requested analyses are listed below:

| SAMPLE # | SAMPLE DESCRIPTION | DATE OF COLLECTION | TEST METHOD   |
|----------|--------------------|--------------------|---|
| 2084233  | Soil, S-4.5-B13    | 3/19/92            | Cadmium<br>Chromium<br>Lead<br>Zinc<br>Nickel<br>EPA 3550/8015<br>EPA 5030/8015/8020<br>EPA 8080<br>EPA 8240<br>EPA 8270<br>SM 5520 E&F (Gravimetric) |
| 2084234  | Soil, S-7.5-B13    | 3/19/92            | Cadmium<br>Chromium<br>Lead<br>Zinc<br>Nickel<br>EPA 3550/8015<br>EPA 5030/8015/8020<br>EPA 8080<br>EPA 8240<br>EPA 8270<br>SM 5520 E&F (Gravimetric) |
| 2084235  | Soil, S-17.5-B13   | 3/19/92            | Cadmium<br>Chromium<br>Lead<br>Zinc<br>Nickel<br>EPA 3550/8015<br>EPA 5030/8015/8020<br>EPA 8080<br>EPA 8240<br>EPA 8270<br>SM 5520 E&F (Gravimetric) |
| 2084236  | Soil, S-5.5-B15    | 3/19/92            | EPA 5030/8015/8020  |
| 2084237  | Soil, S-10-B15     | 3/19/92            | EPA 5030/8015/8020  |
| 2084238  | Soil, S-13.5-B15   | 3/19/92            | EPA 5030/8015/8020  |



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| SAMPLE # | SAMPLE DESCRIPTION | DATE OF COLLECTION | TEST METHOD   |
|----------|--------------------|--------------------|---|
| 2084239  | Soil, S-4.5-B16    | 8/19-20/92         | EPA 5030/8015/8020  |
| 2084240  | Soil, S-10-B16     | 8/19-20/92         | EPA 5030/8015/8020  |
| 2084241  | Soil, S-14.5-B16   | 8/19-20/92         | EPA 5030/8015/8020  |
| 2084242  | Soil, S-4.5-B12    | 8/20/92            | Cadmium<br>Chromium<br>Lead<br>Zinc<br>Nickel<br>EPA 3550/8015<br>EPA 5030/8015/8020<br>EPA 8080<br>EPA 8240<br>EPA 8270<br>SM 5520 E&F (Gravimetric) |
| 2084243  | Soil, S-9-B12      | 8/20/92            | Cadmium<br>Chromium<br>Lead<br>Zinc<br>Nickel<br>EPA 3550/8015<br>EPA 5030/8015/8020<br>EPA 8080<br>EPA 8240<br>EPA 8270<br>SM 5520 E&F (Gravimetric) |
| 2084244  | Soil, S-14.5-B12   | 8/20/92            | Cadmium<br>Chromium<br>Lead<br>Zinc<br>Nickel<br>EPA 3550/8015<br>EPA 5030/8015/8020<br>EPA 8080<br>EPA 8240<br>EPA 8270<br>SM 5520 E&F (Gravimetric) |
| 2084245  | Soil, S-5.5-B14    | 8/20/92            | EPA 5030/8015/8020  |
| 2084246  | Soil, S-10.5-B14   | 8/20/92            | EPA 5030/8015/8020  |
| 2084247  | Soil, S-15.5-B14   | 8/20/92            | EPA 5030/8015/8020  |
| 2084248  | Soil, S-5.5-B17    | 8/20/92            | EPA 5030/8015/8020  |
| 2084249  | Soil, S-10.5-B17   | 8/20/92            | EPA 5030/8015/8020  |



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| SAMPLE # | SAMPLE DESCRIPTION | DATE OF COLLECTION | TEST METHOD        |
|----------|--------------------|--------------------|--------------------|
| 2084250  | Soil, S-15.5-B17   | 3/20/92            | EPA 5030/8015/8020 |
| 2084251  | Soil, S-5.5-B18    | 3/21/92            | EPA 5030/8015/8020 |
| 2084252  | Soil, S-10.5-B18   | 3/21/92            | EPA 5030/8015/8020 |
| 2084253  | Soil, S-15.5-B18   | 3/21/92            | EPA 5030/8015/8020 |
| 2084254  | Soil, S-5.5-B19    | 3/21/92            | EPA 5030/8015/8020 |
| 2084255  | Soil, S-10.5-B19   | 3/21/92            | EPA 5030/8015/8020 |
| 2084256  | Soil, S-15.5-B19   | 3/21/92            | EPA 5030/8015/8020 |

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Maria-Lee  
Project Manager



# SEQUOIA ANALYTICAL

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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joe Coffman

Client Project ID: ARCC 2035, Albany  
Sample Matrix: Soil  
Analysis Method: EPA 5030/8015/8020  
First Sample #: 208-4233

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Reported: Sep 3, 1992

## TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

| Analyte                | Reporting Limit<br>mg/kg | Sample I.D.<br>208-4233<br>S-4.5-B13 | Sample I.D.<br>208-4234<br>S-7.5-B13 | Sample I.D.<br>208-4235<br>S-17.5-B13 | Sample I.D.<br>208-4236<br>S-5.5-B15 | Sample I.D.<br>208-4237<br>S-10-B15 | Sample I.D.<br>208-4238<br>S-13.5-B15 |
|------------------------|--------------------------|--------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------|---------------------------------------|
| Purgeable hydrocarbons | 1.0                      | N.D.                                 | N.D.                                 | N.D.                                  | 47                                   | 310                                 | 110                                   |
| Benzene                | 0.0050                   | N.D.                                 | N.D.                                 | N.D.                                  | 0.22                                 | 3.8                                 | 1.5                                   |
| Toluene                | 0.0050                   | N.D.                                 | N.D.                                 | N.D.                                  | 0.56                                 | 15                                  | 4.3                                   |
| Ethyl Benzene          | 0.0050                   | N.D.                                 | N.D.                                 | N.D.                                  | 0.76                                 | 7.1                                 | 2.1                                   |
| Total Xylenes          | 0.0050                   | N.D.                                 | N.D.                                 | N.D.                                  | 4.3                                  | 37                                  | 12                                    |
| Chromatogram Pattern:  |                          | --                                   | --                                   | --                                    | Gas                                  | Gas                                 | Gas                                   |

### Quality Control Data

|   |         |         |         |         |         |         |
|---|---------|---------|---------|---------|---------|---------|
| Report Limit Multiplication Factor:             | 1.0     | 1.0     | 1.0     | 20      | 50      | 50      |
| Date Analyzed:                                  | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 |
| Instrument Identification:                      | GCHP-1  | GCHP-1  | GCHP-1  | GCHP-7  | GCHP-7  | GCHP-7  |
| Surrogate Recovery, %:<br>(QC Limits = 70-130%) | 97      | 97      | 99      | 106     | 116     | 106     |

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maria Lee  
Project Manager

2084233.RES <1>



# SEQUOIA ANALYTICAL

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415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Matrix: Soil  
Analysis Method: EPA 5030/8015/8020  
First Sample #: 208-4239

Sampled: 8/19-20/92  
Received: Aug 21, 1992  
Reported: Sep 3, 1992

## TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

| Analyte                | Reporting Limit<br>mg/kg | Sample I.D.<br>208-4239<br>S-4.5-B16 | Sample I.D.<br>208-4240<br>S-10-B16 | Sample I.D.<br>208-4241<br>S-14.5-B16 | Sample I.D.<br>208-4242<br>S-4.5-B12 | Sample I.D.<br>208-4243<br>S-9-B12 | Sample I.D.<br>208-4244<br>S-14.5-B12 |
|------------------------|--------------------------|--------------------------------------|-------------------------------------|---------------------------------------|--------------------------------------|------------------------------------|---------------------------------------|
| Purgeable Hydrocarbons | 1.0                      | N.D.                                 | 4.600                               | N.D.                                  | 10                                   | 9.1                                | N.D.                                  |
| Benzene                | 0.0050                   | N.D.                                 | 21                                  | 0.010                                 | N.D.                                 | N.D.                               | N.D.                                  |
| Toluene                | 0.0050                   | N.D.                                 | 110                                 | 0.032                                 | N.D.                                 | N.D.                               | N.D.                                  |
| Ethyl Benzene          | 0.0050                   | N.D.                                 | 51                                  | 0.018                                 | 0.0070                               | 0.0060                             | N.D.                                  |
| Total Xylenes          | 0.0050                   | N.D.                                 | 330                                 | 0.18                                  | 0.050                                | 0.082                              | N.D.                                  |
| Chromatogram Pattern:  |                          | --                                   | Gas                                 | Gas                                   | Non-Gas<br>C4 - C12                  | Non-Gas<br>C4 - C12                | --                                    |

### Quality Control Data

|   |         |         |         |         |         |         |
|---|---------|---------|---------|---------|---------|---------|
| Report Limit Multiplication Factor:             | 1.0     | 800     | 1.0     | 1.0     | 1.0     | 1.0     |
| Date Analyzed:                                  | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 |
| Instrument Identification:                      | GCHP-7  | GCHP-7  | GCHP-1  | GCHP-1  | GCHP-1  | GCHP-1  |
| Surrogate Recovery, %:<br>(QC Limits = 70-130%) | 99      | 109     | 77      | 85      | 89      | 82      |

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maria Lee  
Project Manager

2084233.RES <2>





# SEQUOIA ANALYTICAL

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|                               |                                      |                        |
|-------------------------------|--------------------------------------|------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992  |
| 3315 Almaden Expwy., Suite 34 | Sample Matrix: Soil                  | Received: Aug 21, 1992 |
| San Jose, CA 95118            | Analysis Method: EPA 5030/8015/8020  | Reported: Sep 3, 1992  |
| Attention: Joel Coffman       | First Sample #: 208-4245             |                        |

## TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

| Analyte                | Reporting Limit<br>mg/kg | Sample I.D.<br>208-4245<br>S-5.5-B14 | Sample I.D.<br>208-4246<br>S-10.5-B14 | Sample I.D.<br>208-4247<br>S-15.5-B14 | Sample I.D.<br>208-4248<br>S-5.5-B17 | Sample I.D.<br>208-4249<br>S-10.5-B17 | Sample I.D.<br>208-4250<br>S-15.5-B17 |
|------------------------|--------------------------|--------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| Purgeable Hydrocarbons | 1.0                      | 430                                  | 1300                                  | N.D.                                  | 1.4                                  | 1.100                                 | 27                                    |
| Benzene                | 0.0050                   | 4.0                                  | 20                                    | 0.012                                 | 0.045                                | 16                                    | 2.1                                   |
| Toluene                | 0.0050                   | 16                                   | 32                                    | 0.034                                 | 0.0080                               | 71                                    | 0.40                                  |
| Ethyl Benzene          | 0.0050                   | 7.3                                  | 31                                    | 0.011                                 | N.D.                                 | 27                                    | 0.75                                  |
| Total Xylenes          | 0.0050                   | 42                                   | 170                                   | 0.055                                 | 0.028                                | 140                                   | 1.3                                   |
| Chromatogram Pattern:  |                          | Gas                                  | Gas                                   | Gas                                   | Gas                                  | Gas                                   | Gas                                   |

### Quality Control Data

|   |         |         |         |         |         |         |
|---|---------|---------|---------|---------|---------|---------|
| Report Limit Multiplication Factor:             | 50      | 100     | 1.0     | 1.0     | 100     | 10      |
| Date Analyzed:                                  | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 | 8/26/92 |
| Instrument Identification:                      | GCHP-7  | GCHP-7  | GCHP-7  | GCHP-1  | GCHP-7  | GCHP-7  |
| Surrogate Recovery, %:<br>(QC Limits = 70-130%) | 113     | 130     | 91      | 34      | 121     | 113     |

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maria Lee  
Project Manager

2084233.RES <3>



# SEQUOIA ANALYTICAL

580 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

|                               |                                      |                        |
|-------------------------------|--------------------------------------|------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 21, 1992  |
| 3315 Almaden Expwy., Suite 34 | Sample Matrix: Soil                  | Received: Aug 21, 1992 |
| San Jose, CA 95118            | Analysis Method: EPA 5030/8015/8020  | Reported: Sep 3, 1992  |
| Attention: Joel Coffman       | First Sample #: 208-4251             |                        |

## TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

| Analyte                | Reporting Limit<br>mg/kg | Sample I.D.<br>208-4251<br>S-5.5-B18 | Sample I.D.<br>208-4252<br>S-10.5-B18 | Sample I.D.<br>208-4253<br>S-15.5-B18 | Sample I.D.<br>208-4254<br>S-5.5-B19 | Sample I.D.<br>208-4255<br>S-10.5-B19 | Sample I.D.<br>208-4256<br>S-15.5-B19 |
|------------------------|--------------------------|--------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| Purgeable Hydrocarbons | 1.0                      | N.D.                                 | 380                                   | 2.6                                   | N.D.                                 | N.D.                                  | N.D.                                  |
| Benzene                | 0.0050                   | N.D.                                 | 4.8                                   | 0.78                                  | 0.017                                | N.D.                                  | 0.15                                  |
| Toluene                | 0.0050                   | N.D.                                 | 21                                    | 0.48                                  | 0.0090                               | N.D.                                  | 0.012                                 |
| Ethyl Benzene          | 0.0050                   | N.D.                                 | 3.7                                   | 0.059                                 | N.D.                                 | N.D.                                  | 0.029                                 |
| Total Xylenes          | 0.0050                   | N.D.                                 | 46                                    | 0.29                                  | N.D.                                 | N.D.                                  | 0.032                                 |
| Chromatogram Pattern:  |                          | --                                   | Gas                                   | Gas                                   | Gas                                  | --                                    | Gas                                   |

### Quality Control Data

|   |         |         |         |         |         |         |
|---|---------|---------|---------|---------|---------|---------|
| Report Limit Multiplication Factor:             | 1.0     | 50      | 1.0     | 1.0     | 1.0     | 1.0     |
| Date Analyzed:                                  | 3/27/92 | 3/26/92 | 3/27/92 | 3/27/92 | 3/26/92 | 3/27/92 |
| Instrument Identification:                      | GCHP-1  | GCHP-7  | GCHP-1  | GCHP-1  | GCHP-7  | GCHP-1  |
| Surrogate Recovery, %:<br>(QC Limits = 70-130%) | 84      | 104     | 98      | 100     | 86      | 90      |

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Maria Lee  
Project Manager

2084233.RES <4>



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Matrix: Soil  
Analysis Method: EPA 3550/8015  
First Sample #: 208-4233

Sampled: 8/19-20/92  
Received: Aug 21, 1992  
Reported: Sep 3, 1992

## TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

| Analyte                  | Reporting Limit<br>mg/kg | Sample I.D.<br>208-4233<br>S-4.5-B13 | Sample I.D.<br>208-4234<br>S-7.5-B13 | Sample I.D.<br>208-4235<br>S-17.5-B13 | Sample I.D.<br>208-4242<br>S-4.5-B12 | Sample I.D.<br>208-4243<br>S-9-B12  | Sample I.D.<br>208-4244<br>S-14.5-B12 |
|--------------------------|--------------------------|--------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------|---------------------------------------|
| Extractable Hydrocarbons | 1.0                      | N.D.                                 | 1.1                                  | N.D.                                  | 45                                   | 250                                 | N.D.                                  |
| Chromatogram Pattern:    |                          | --                                   | Non-Diesel Mix<br>> C17              | --                                    | Non-Diesel Mix<br>C9 - C14<br>> C17  | Non-Diesel Mix<br>C9 - C14<br>> C16 | --                                    |

### Quality Control Data

|                                     |         |         |         |         |         |         |
|-------------------------------------|---------|---------|---------|---------|---------|---------|
| Report Limit Multiplication Factor: | 1.0     | 1.0     | 1.0     | 5.0     | 10      | 1.0     |
| Date Extracted:                     | 8/28/92 | 8/28/92 | 8/28/92 | 8/28/92 | 8/28/92 | 8/28/92 |
| Date Analyzed:                      | 8/31/92 | 8/31/92 | 8/31/92 | 8/31/92 | 8/31/92 | 8/31/92 |
| Instrument Identification:          | GCHP-5  | GCHP-5  | GCHP-5  | GCHP-5  | GCHP-5  | GCHP-5  |

Extractable Hydrocarbons are quantitated against a fresh diesel standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

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Maria Lee  
Project Manager

2084233.RES <5>



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Matrix Descript: Soil  
Analysis Method: SM 5520 E&F (Gravimetric)  
First Sample #: 208-4233

Sampled: 8/19-20/92  
Received: Aug 21, 1992  
Extracted: Sep 1, 1992  
Analyzed: Sep 1, 1992  
Reported: Sep 3, 1992

## TOTAL RECOVERABLE PETROLEUM OIL

| Sample Number | Sample Description | Oil & Grease mg/kg |
|---------------|--------------------|--------------------|
| 208-4233      | S-4.5-B13          | N.D.               |
| 208-4234      | S-7.5-B13          | 1.800              |
| 208-4235      | S-17.5-B13         | N.D.               |
| 208-4242      | S-4.5-B12          | 250                |
| 208-4243      | S-9-B12            | 100                |
| 208-4244      | S-14.5-B12         | N.D.               |

Detection Limits:

50

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager

2084233.RES <6>



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-4.5-B13  
Analysis Method: EPA 8080  
Lab Number: 208-4233

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Extracted: Aug 28, 1992  
Analyzed: Aug 31, 1992  
Reported: Sep 3, 1992

## POLYCHLORINATED BIPHENYLS (EPA 8080)

| Analyte       | Detection Limit<br>$\mu\text{g}/\text{kg}$ | Sample Results<br>$\mu\text{g}/\text{kg}$ |
|---------------|--|---|
| PCB 1016..... | 20   | N.D.                                      |
| PCB 1221..... | 60   | N.D.                                      |
| PCB 1232..... | 20   | N.D.                                      |
| PCB 1242..... | 20   | N.D.                                      |
| PCB 1248..... | 20   | N.D.                                      |
| PCB 1254..... | 20   | N.D.                                      |
| PCB 1260..... | 20   | N.D.                                      |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager

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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCC 2035, Albany  
Sample Descript: Soil. S-7.5-B13  
Analysis Method: EPA 8080  
Lab Number: 208-4234

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Extracted: Aug 28, 1992  
Analyzed: Sep 1, 1992  
Reported: Sep 3, 1992

## POLYCHLORINATED BIPHENYLS (EPA 8080)

| Analyte       | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------|--------------------------|-------------------------|
| PCB 1016..... | 20                       | N.D.                    |
| PCB 1221..... | 30                       | N.D.                    |
| PCB 1232..... | 20                       | N.D.                    |
| PCB 1242..... | 20                       | N.D.                    |
| PCB 1248..... | 20                       | N.D.                    |
| PCB 1254..... | 20                       | N.D.                    |
| PCB 1260..... | 20                       | N.D.                    |

Analvtes reported as N.D. were not present above the stated limit of detection.

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Project Manager



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCC 2035, Albany | Sampled: Aug 19, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-17.5-B13    | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8080            | Extracted: Aug 28, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4235                 | Analyzed: Aug 31, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## POLYCHLORINATED BIPHENYLS (EPA 8080)

| Analyte       | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------|--------------------------|-------------------------|
| PCB 1016..... | 20                       | N.D.                    |
| PCB 1221..... | 30                       | N.D.                    |
| PCB 1232..... | 20                       | N.D.                    |
| PCB 1242..... | 20                       | N.D.                    |
| PCB 1248..... | 20                       | N.D.                    |
| PCB 1254..... | 20                       | N.D.                    |
| PCB 1260..... | 20                       | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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2084233.RES <9>



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-4.5-B12  
Analysis Method: EPA 8080  
Lab Number: 208-4242

Sampled: Aug 20, 1992  
Received: Aug 21, 1992  
Extracted: Aug 28, 1992  
Analyzed: Sep 1, 1992  
Reported: Sep 3, 1992

## POLYCHLORINATED BIPHENYLS (EPA 8080)

| Analyte       | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------|--------------------------|-------------------------|
| PCB 1016..... | 20                       | N.D.                    |
| PCB 1221..... | 20                       | N.D.                    |
| PCB 1232..... | 20                       | N.D.                    |
| PCB 1242..... | 20                       | N.D.                    |
| PCB 1248..... | 20                       | N.D.                    |
| PCB 1254..... | 20                       | N.D.                    |
| PCB 1260..... | 20                       | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager

2084233.RES <10>





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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-9-B12       | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8080            | Extracted: Aug 28, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4243                 | Analyzed: Sep 1, 1992   |
|                               |                                      | Reported: Sep 3, 1992   |

## POLYCHLORINATED BIPHENYLS (EPA 8080)

| Analyte       | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------|--------------------------|-------------------------|
| PCB 1016..... | 20                       | N.D.                    |
| PCB 1221..... | 20                       | N.D.                    |
| PCB 1232..... | 20                       | N.D.                    |
| PCB 1242..... | 20                       | N.D.                    |
| PCB 1248..... | 20                       | N.D.                    |
| PCB 1254..... | 20                       | N.D.                    |
| PCB 1260..... | 20                       | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Maria Lee  
Project Manager



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-14.5-B12    | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8080            | Extracted: Aug 28, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4244                 | Analyzed: Sep 1, 1992   |
|                               |                                      | Reported: Sep 3, 1992   |

## POLYCHLORINATED BIPHENYLS (EPA 8080)

| Analyte       | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------|--------------------------|-------------------------|
| PCB 1016..... | 20                       | N.D.                    |
| PCB 1221..... | 30                       | N.D.                    |
| PCB 1232..... | 20                       | N.D.                    |
| PCB 1242..... | 20                       | N.D.                    |
| PCB 1248..... | 20                       | N.D.                    |
| PCB 1254..... | 20                       | N.D.                    |
| PCB 1260..... | 20                       | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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2084233.RES <12>



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|                               |                                      |                        |
|-------------------------------|--------------------------------------|------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 19, 1992  |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-4.5-B13     | Received: Aug 21, 1992 |
| San Jose, CA 95118            | Analysis Method: EPA 8240            | Analyzed: Sep 1, 1992  |
| Attention: Joel Coffman       | Lab Number: 208-4233                 | Reported: Sep 3, 1992  |

## VOLATILE ORGANICS by GC/MS (EPA 8240)

| Analyte                        | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|--------------------------------|--------------------------|-------------------------|
| Acetone.....                   | 500                      | N.D.                    |
| Benzene.....                   | 100                      | N.D.                    |
| Bromodichloromethane.....      | 100                      | N.D.                    |
| Bromoform.....                 | 100                      | N.D.                    |
| Bromomethane.....              | 100                      | N.D.                    |
| 2-Butanone.....                | 500                      | N.D.                    |
| Carbon disulfide.....          | 100                      | N.D.                    |
| Carbon tetrachloride.....      | 100                      | N.D.                    |
| Chlorobenzene.....             | 100                      | N.D.                    |
| Chloroethane.....              | 100                      | N.D.                    |
| 2-Chloroethyl vinyl ether..... | 500                      | N.D.                    |
| Chloroform.....                | 100                      | N.D.                    |
| Chloromethane.....             | 100                      | N.D.                    |
| Dibromochloromethane.....      | 100                      | N.D.                    |
| 1,1-Dichloroethane.....        | 100                      | N.D.                    |
| 1,2-Dichloroethane.....        | 100                      | N.D.                    |
| 1,1-Dichloroethene.....        | 100                      | N.D.                    |
| cis-1,2-Dichloroethene.....    | 100                      | N.D.                    |
| trans-1,2-Dichloroethene.....  | 100                      | N.D.                    |
| 1,2-Dichloropropane.....       | 100                      | N.D.                    |
| cis-1,3-Dichloropropene.....   | 100                      | N.D.                    |
| trans-1,3-Dichloropropene..... | 100                      | N.D.                    |
| Ethylbenzene.....              | 100                      | N.D.                    |
| 2-Hexanone.....                | 500                      | N.D.                    |
| Methylene chloride.....        | 250                      | N.D.                    |
| 4-Methyl-2-pentanone.....      | 500                      | N.D.                    |
| Styrene.....                   | 100                      | N.D.                    |
| 1,1,2,2-Tetrachloroethane..... | 100                      | N.D.                    |
| Tetrachloroethene.....         | 100                      | N.D.                    |
| Toluene.....                   | 100                      | N.D.                    |
| 1,1,1-Trichloroethane.....     | 100                      | N.D.                    |
| 1,1,2-Trichloroethane.....     | 100                      | N.D.                    |
| Trichloroethene.....           | 100                      | N.D.                    |
| Trichlorofluoromethane.....    | 100                      | N.D.                    |
| Vinyl acetate.....             | 100                      | N.D.                    |
| Vinyl chloride.....            | 100                      | N.D.                    |
| Total Xylenes.....             | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-7.5-B13  
Analysis Method: EPA 8240  
Lab Number: 208-4234

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Analyzed: Sep 1, 1992  
Reported: Sep 3, 1992

## VOLATILE ORGANICS by GC/MS (EPA 8240)

| Analyte                        | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|--------------------------------|--------------------------|-------------------------|
| Acetone.....                   | 500                      | N.D.                    |
| Benzene.....                   | 100                      | N.D.                    |
| Bromodichloromethane.....      | 100                      | N.D.                    |
| Bromoform.....                 | 100                      | N.D.                    |
| Bromomethane.....              | 100                      | N.D.                    |
| 2-Butanone.....                | 500                      | N.D.                    |
| Carbon disulfide.....          | 100                      | N.D.                    |
| Carbon tetrachloride.....      | 100                      | N.D.                    |
| Chlorobenzene.....             | 100                      | N.D.                    |
| Chloroethane.....              | 100                      | N.D.                    |
| 2-Chloroethyl vinyl ether..... | 500                      | N.D.                    |
| Chloroform.....                | 100                      | N.D.                    |
| Chloromethane.....             | 100                      | N.D.                    |
| Dibromochloromethane.....      | 100                      | N.D.                    |
| 1,1-Dichloroethane.....        | 100                      | N.D.                    |
| 1,2-Dichloroethane.....        | 100                      | N.D.                    |
| 1,1-Dichloroethene.....        | 100                      | N.D.                    |
| cis-1,2-Dichloroethene.....    | 100                      | N.D.                    |
| trans-1,2-Dichloroethene.....  | 100                      | N.D.                    |
| 1,2-Dichloropropane.....       | 100                      | N.D.                    |
| cis-1,3-Dichloropropene.....   | 100                      | N.D.                    |
| trans-1,3-Dichloropropene..... | 100                      | N.D.                    |
| <b>Ethylbenzene.....</b>       | <b>100</b>               | <b>160</b>              |
| 2-Hexanone.....                | 500                      | N.D.                    |
| Methylene chloride.....        | 250                      | N.D.                    |
| 4-Methyl-2-pentanone.....      | 500                      | N.D.                    |
| Styrene.....                   | 100                      | N.D.                    |
| 1,1,2,2-Tetrachloroethane..... | 100                      | N.D.                    |
| Tetrachloroethene.....         | 100                      | N.D.                    |
| Toluene.....                   | 100                      | N.D.                    |
| 1,1,1-Trichloroethane.....     | 100                      | N.D.                    |
| 1,1,2-Trichloroethane.....     | 100                      | N.D.                    |
| Trichloroethene.....           | 100                      | N.D.                    |
| Trichlorofluoromethane.....    | 100                      | N.D.                    |
| Vinyl acetate.....             | 100                      | N.D.                    |
| Vinyl chloride.....            | 100                      | N.D.                    |
| Total Xylenes.....             | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Maria Lee  
Project Manager



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|                               |                                      |                        |
|-------------------------------|--------------------------------------|------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 19, 1992  |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-17.5-B13    | Received: Aug 21, 1992 |
| San Jose, CA 95118            | Analysis Method: EPA 8240            | Analyzed: Sep 1, 1992  |
| Attention: Joel Coffman       | Lab Number: 208-4235                 | Reported: Sep 3, 1992  |

## VOLATILE ORGANICS by GC/MS (EPA 8240)

| Analyte                        | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|--------------------------------|--------------------------|-------------------------|
| Acetone.....                   | 500                      | N.D.                    |
| Benzene.....                   | 100                      | N.D.                    |
| Bromodichloromethane.....      | 100                      | N.D.                    |
| Bromotorm.....                 | 100                      | N.D.                    |
| Bromomethane.....              | 100                      | N.D.                    |
| 2-Butanone.....                | 500                      | N.D.                    |
| Carbon disulfide.....          | 100                      | N.D.                    |
| Carbon tetrachloride.....      | 100                      | N.D.                    |
| Chlorobenzene.....             | 100                      | N.D.                    |
| Chloroethane.....              | 100                      | N.D.                    |
| 2-Chloroethyl vinyl ether..... | 500                      | N.D.                    |
| Chloroform.....                | 100                      | N.D.                    |
| Chloromethane.....             | 100                      | N.D.                    |
| Dibromochloromethane.....      | 100                      | N.D.                    |
| 1,1-Dichloroethane.....        | 100                      | N.D.                    |
| 1,2-Dichloroethane.....        | 100                      | N.D.                    |
| 1,1-Dichloroethene.....        | 100                      | N.D.                    |
| cis-1,2-Dichloroethene.....    | 100                      | N.D.                    |
| trans-1,2-Dichloroethene.....  | 100                      | N.D.                    |
| 1,2-Dichloropropane.....       | 100                      | N.D.                    |
| cis-1,3-Dichloropropene.....   | 100                      | N.D.                    |
| trans-1,3-Dichloropropene..... | 100                      | N.D.                    |
| Ethylbenzene.....              | 100                      | N.D.                    |
| 2-Hexanone.....                | 500                      | N.D.                    |
| Methylene chloride.....        | 250                      | N.D.                    |
| 4-Methyl-2-pentanone.....      | 500                      | N.D.                    |
| Styrene.....                   | 100                      | N.D.                    |
| 1,1,2,2-Tetrachloroethane..... | 100                      | N.D.                    |
| Tetrachloroethene.....         | 100                      | N.D.                    |
| Toluene.....                   | 100                      | N.D.                    |
| 1,1,1-Trichloroethane.....     | 100                      | N.D.                    |
| 1,1,2-Trichloroethane.....     | 100                      | N.D.                    |
| Trichloroethene.....           | 100                      | N.D.                    |
| Trichlorofluoromethane.....    | 100                      | N.D.                    |
| Vinyl acetate.....             | 100                      | N.D.                    |
| Vinyl chloride.....            | 100                      | N.D.                    |
| Total Xylenes.....             | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection

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Maria Lee  
Project Manager

2084233.RES < 15 >



# SEQUOIA ANALYTICAL

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(415) 364-9600 • FAX (415) 364-9233

|                               |                                      |                        |
|-------------------------------|--------------------------------------|------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992  |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-4.5-B12     | Received: Aug 21, 1992 |
| San Jose, CA 95118            | Analysis Method: EPA 8240            | Analyzed: Sep 2, 1992  |
| Attention: Joel Coffman       | Lab Number: 208-4242                 | Reported: Sep 3, 1992  |

## VOLATILE ORGANICS by GC/MS (EPA 8240)

| Analyte                        | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|--------------------------------|--------------------------|-------------------------|
| Acetone.....                   | 500                      | N.D.                    |
| Benzene.....                   | 100                      | N.D.                    |
| Bromodichloromethane.....      | 100                      | N.D.                    |
| Bromoform.....                 | 100                      | N.D.                    |
| Bromomethane.....              | 100                      | N.D.                    |
| 2-Butanone.....                | 500                      | N.D.                    |
| Carbon disulfide.....          | 100                      | N.D.                    |
| Carbon tetrachloride.....      | 100                      | N.D.                    |
| Chlorobenzene.....             | 100                      | N.D.                    |
| Chloroethane.....              | 100                      | N.D.                    |
| 2-Chloroethyl vinyl ether..... | 500                      | N.D.                    |
| Chloroform.....                | 100                      | N.D.                    |
| Chloromethane.....             | 100                      | N.D.                    |
| Dibromochloromethane.....      | 100                      | N.D.                    |
| 1,1-Dichloroethane.....        | 100                      | N.D.                    |
| 1,2-Dichloroethane.....        | 100                      | N.D.                    |
| 1,1-Dichloroethene.....        | 100                      | N.D.                    |
| cis-1,2-Dichloroethene.....    | 100                      | N.D.                    |
| trans-1,2-Dichloroethene.....  | 100                      | N.D.                    |
| 1,2-Dichloropropane.....       | 100                      | N.D.                    |
| cis-1,3-Dichloropropene.....   | 100                      | N.D.                    |
| trans-1,3-Dichloropropene..... | 100                      | N.D.                    |
| Ethylbenzene.....              | 100                      | N.D.                    |
| 2-Hexanone.....                | 500                      | N.D.                    |
| Methylene chloride.....        | 250                      | N.D.                    |
| 4-Methyl-2-pentanone.....      | 500                      | N.D.                    |
| Styrene.....                   | 100                      | N.D.                    |
| 1,1,2,2-Tetrachloroethane..... | 100                      | N.D.                    |
| Tetrachloroethene.....         | 100                      | N.D.                    |
| Toluene.....                   | 100                      | N.D.                    |
| 1,1,1-Trichloroethane.....     | 100                      | N.D.                    |
| 1,1,2-Trichloroethane.....     | 100                      | N.D.                    |
| Trichloroethene.....           | 100                      | N.D.                    |
| Trichlorofluoromethane.....    | 100                      | N.D.                    |
| Vinyl acetate.....             | 100                      | N.D.                    |
| Vinyl chloride.....            | 100                      | N.D.                    |
| Total Xylenes.....             | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager

2084233.RES <16>



# SEQUOIA ANALYTICAL

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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-9-B12  
Analysis Method: EPA 8240  
Lab Number: 208-4243

Sampled: Aug 20, 1992  
Received: Aug 21, 1992  
Analyzed: Sep 2, 1992  
Reported: Sep 3, 1992

## VOLATILE ORGANICS by GC/MS (EPA 8240)

| Analyte                        | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|--------------------------------|--------------------------|-------------------------|
| Acetone.....                   | 500                      | N.D.                    |
| Benzene.....                   | 100                      | N.D.                    |
| Bromodichloromethane.....      | 100                      | N.D.                    |
| Bromoform.....                 | 100                      | N.D.                    |
| Bromomethane.....              | 100                      | N.D.                    |
| 2-Butanone.....                | 500                      | N.D.                    |
| Carbon disulfide.....          | 100                      | N.D.                    |
| Carbon tetrachloride.....      | 100                      | N.D.                    |
| Chlorobenzene.....             | 100                      | N.D.                    |
| Chloroethane.....              | 100                      | N.D.                    |
| 2-Chloroethyl vinyl ether..... | 500                      | N.D.                    |
| Chloroform.....                | 100                      | N.D.                    |
| Chloromethane.....             | 100                      | N.D.                    |
| Dibromochloromethane.....      | 100                      | N.D.                    |
| 1,1-Dichloroethane.....        | 100                      | N.D.                    |
| 1,2-Dichloroethane.....        | 100                      | N.D.                    |
| 1,1-Dichloroethene.....        | 100                      | N.D.                    |
| cis-1,2-Dichloroethene.....    | 100                      | N.D.                    |
| trans-1,2-Dichloroethene.....  | 100                      | N.D.                    |
| 1,2-Dichloropropane.....       | 100                      | N.D.                    |
| cis-1,3-Dichloropropene.....   | 100                      | N.D.                    |
| trans-1,3-Dichloropropene..... | 100                      | N.D.                    |
| Ethylbenzene.....              | 100                      | N.D.                    |
| 2-Hexanone.....                | 500                      | N.D.                    |
| Methylene chloride.....        | 250                      | N.D.                    |
| 4-Methyl-2-pentanone.....      | 500                      | N.D.                    |
| Styrene.....                   | 100                      | N.D.                    |
| 1,1,2,2-Tetrachloroethane..... | 100                      | N.D.                    |
| Tetrachloroethene.....         | 100                      | N.D.                    |
| Toluene.....                   | 100                      | N.D.                    |
| 1,1,1-Trichloroethane.....     | 100                      | N.D.                    |
| 1,1,2-Trichloroethane.....     | 100                      | N.D.                    |
| Trichloroethene.....           | 100                      | N.D.                    |
| Trichlorofluoromethane.....    | 100                      | N.D.                    |
| Vinyl acetate.....             | 100                      | N.D.                    |
| Vinyl chloride.....            | 100                      | N.D.                    |
| Total Xylenes.....             | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

### SEQUOIA ANALYTICAL

Maria Lee  
Project Manager



# SEQUOIA ANALYTICAL

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|                               |                                      |                        |
|-------------------------------|--------------------------------------|------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992  |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-14.5-B12    | Received: Aug 21, 1992 |
| San Jose, CA 95118            | Analysis Method: EPA 8240            | Analyzed: Sep 2, 1992  |
| Attention: Joel Coffman       | Lab Number: 208-4244                 | Reported: Sep 3, 1992  |

## VOLATILE ORGANICS by GC/MS (EPA 8240)

| Analyte                        | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|--------------------------------|--------------------------|-------------------------|
| Acetone.....                   | 500                      | N.D.                    |
| Benzene.....                   | 100                      | N.D.                    |
| Bromoacchloromethane.....      | 100                      | N.D.                    |
| Bromoform.....                 | 100                      | N.D.                    |
| Bromomethane.....              | 100                      | N.D.                    |
| 2-Butanone.....                | 500                      | N.D.                    |
| Carbon disulfide.....          | 100                      | N.D.                    |
| Carbon tetrachloride.....      | 100                      | N.D.                    |
| Chlorobenzene.....             | 100                      | N.D.                    |
| Chloroethane.....              | 100                      | N.D.                    |
| 2-Chloroethyl vinyl ether..... | 500                      | N.D.                    |
| Chloroform.....                | 100                      | N.D.                    |
| Chloromethane.....             | 100                      | N.D.                    |
| Dibromochloromethane.....      | 500                      | N.D.                    |
| 1,1-Dichloroethane.....        | 100                      | N.D.                    |
| 1,2-Dichloroethane.....        | 100                      | N.D.                    |
| 1,1-Dichloroethene.....        | 100                      | N.D.                    |
| cis-1,2-Dichloroethene.....    | 100                      | N.D.                    |
| trans-1,2-Dichloroethene.....  | 100                      | N.D.                    |
| 1,2-Dichloropropane.....       | 100                      | N.D.                    |
| cis-1,3-Dichloropropene.....   | 100                      | N.D.                    |
| trans-1,3-Dichloropropene..... | 100                      | N.D.                    |
| Ethylbenzene.....              | 100                      | N.D.                    |
| 2-Hexanone.....                | 500                      | N.D.                    |
| Methylene chloride.....        | 250                      | N.D.                    |
| 4-Methyl-2-pentanone.....      | 500                      | N.D.                    |
| Styrene.....                   | 100                      | N.D.                    |
| 1,1,2,2-Tetrachloroethane..... | 100                      | N.D.                    |
| Tetrachloroethene.....         | 100                      | N.D.                    |
| Toluene.....                   | 100                      | N.D.                    |
| 1,1,1-Trichloroethane.....     | 100                      | N.D.                    |
| 1,1,2-Trichloroethane.....     | 100                      | N.D.                    |
| Trichloroethene.....           | 100                      | N.D.                    |
| Trichlorofluoromethane.....    | 100                      | N.D.                    |
| Vinyl acetate.....             | 100                      | N.D.                    |
| Vinyl chloride.....            | 100                      | N.D.                    |
| Total Xylenes.....             | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

### SEQUOIA ANALYTICAL

Maria Lee  
Project Manager





# SEQUOIA ANALYTICAL

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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-4.5-B13  
Analysis Method: EPA 8270  
Lab Number: 208-4233

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 27, 1992  
Reported: Sep 3, 1992

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                          | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|----------------------------------|--------------------------|-------------------------|
| Acenaphthene.....                | 100                      | N.D.                    |
| Acenaphthylene.....              | 100                      | N.D.                    |
| Aniline.....                     | 100                      | N.D.                    |
| Anthracene.....                  | 100                      | N.D.                    |
| Benzidine.....                   | 2,500                    | N.D.                    |
| Benzoic Acid.....                | 500                      | N.D.                    |
| Benzo(a)anthracene.....          | 100                      | N.D.                    |
| Benzo(b)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(k)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(g,h,i)perylene.....        | 100                      | N.D.                    |
| Benzo(a)pyrene.....              | 100                      | N.D.                    |
| Benzyl alcohol.....              | 100                      | N.D.                    |
| Bis(2-chloroethoxy)methane.....  | 100                      | N.D.                    |
| Bis(2-chloroethyl)ether.....     | 100                      | N.D.                    |
| Bis(2-chloroisopropyl)ether..... | 100                      | N.D.                    |
| Bis(2-ethylhexyl)phthalate.....  | 500                      | N.D.                    |
| 4-Bromophenyl phenyl ether.....  | 100                      | N.D.                    |
| Butyl benzyl phthalate.....      | 100                      | N.D.                    |
| 1-Chloroaniline.....             | 100                      | N.D.                    |
| 2-Chloronaphthalene.....         | 100                      | N.D.                    |
| 1-Chloro-3-methylphenol.....     | 100                      | N.D.                    |
| 2-Chlorophenol.....              | 100                      | N.D.                    |
| 4-Chlorophenyl phenyl ether..... | 100                      | N.D.                    |
| Chrysene.....                    | 100                      | N.D.                    |
| Dibenz(a,h)anthracene.....       | 100                      | N.D.                    |
| Dibenzofuran.....                | 100                      | N.D.                    |
| Di-N-butyl phthalate.....        | 500                      | N.D.                    |
| 1,3-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,4-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,2-Dichlorobenzene.....         | 100                      | N.D.                    |
| 3,3-Dichlorobenzidine.....       | 500                      | N.D.                    |
| 2,4-Dichlorophenol.....          | 100                      | N.D.                    |
| Diethyl phthalate.....           | 100                      | N.D.                    |
| 2,4-Dimethylphenol.....          | 100                      | N.D.                    |
| Dimethyl phthalate.....          | 100                      | N.D.                    |
| 4,6-Dinitro-2-methylphenol.....  | 500                      | N.D.                    |
| 2,4-Dinitrophenol.....           | 500                      | N.D.                    |



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-4.5-B13  
Analysis Method: EPA 8270  
Lab Number: 208-4233

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 27, 1992  
Reported: Sep 3, 1992

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                         | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------------------------|--------------------------|-------------------------|
| 2,4-Dinitrotoluene.....         | 100                      | N.D.                    |
| 2,6-Dinitrotoluene.....         | 100                      | N.D.                    |
| Di-N-octyl phthalate.....       | 100                      | N.D.                    |
| Fluoranthene.....               | 100                      | N.D.                    |
| Fluorene.....                   | 100                      | N.D.                    |
| Hexachlorobenzene.....          | 100                      | N.D.                    |
| Hexachlorobutadiene.....        | 100                      | N.D.                    |
| Hexachlorocyclopentadiene.....  | 100                      | N.D.                    |
| Hexachloroethane.....           | 100                      | N.D.                    |
| Indeno(1,2,3-cd)pyrene.....     | 100                      | N.D.                    |
| Isophorone.....                 | 100                      | N.D.                    |
| 2-Methylnaphthalene.....        | 100                      | N.D.                    |
| 2-Methylphenol.....             | 100                      | N.D.                    |
| 4-Methylphenol.....             | 100                      | N.D.                    |
| Naphthalene.....                | 100                      | N.D.                    |
| 2-Nitroaniline.....             | 500                      | N.D.                    |
| 3-Nitroaniline.....             | 500                      | N.D.                    |
| 4-Nitroaniline.....             | 500                      | N.D.                    |
| Nitrobenzene.....               | 100                      | N.D.                    |
| 2-Nitrophenol.....              | 100                      | N.D.                    |
| 4-Nitrophenol.....              | 500                      | N.D.                    |
| N-Nitrosodiphenylamine.....     | 100                      | N.D.                    |
| N-Nitroso-di-N-propylamine..... | 100                      | N.D.                    |
| Pentachlorophenol.....          | 500                      | N.D.                    |
| Phenanthrene.....               | 100                      | N.D.                    |
| Phenol.....                     | 100                      | N.D.                    |
| Pyrene.....                     | 100                      | N.D.                    |
| 1,2,4-Trichlorobenzene.....     | 100                      | N.D.                    |
| 2,4,5-Trichlorophenol.....      | 500                      | N.D.                    |
| 2,4,6-Trichlorophenol.....      | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Maria Lee  
Project Manager



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-7.5-B13  
Analysis Method: EPA 8270  
Lab Number: 208-4234

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 27, 1992  
Reported: Sep 3, 1992

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                          | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|----------------------------------|--------------------------|-------------------------|
| Acenaphthene.....                | 100                      | N.D.                    |
| Acenaphthylene.....              | 100                      | N.D.                    |
| Aniline.....                     | 100                      | N.D.                    |
| Anthracene.....                  | 100                      | N.D.                    |
| Benzidine.....                   | 2,500                    | N.D.                    |
| Benzoic Acid.....                | 500                      | N.D.                    |
| Benzo(a)anthracene.....          | 100                      | N.D.                    |
| Benzo(b)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(k)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(g,h,i)perylene.....        | 100                      | N.D.                    |
| Benzo(a)pyrene.....              | 100                      | N.D.                    |
| Benzyl alcohol.....              | 100                      | N.D.                    |
| Bis(2-chloroethoxy)methane.....  | 100                      | N.D.                    |
| Bis(2-chloroethyl)ether.....     | 100                      | N.D.                    |
| Bis(2-chloroisopropyl)ether..... | 100                      | N.D.                    |
| Bis(2-ethylhexyl)phthalate.....  | 500                      | N.D.                    |
| 4-Bromophenyl phenyl ether.....  | 100                      | N.D.                    |
| Butyl benzyl phthalate.....      | 100                      | N.D.                    |
| 4-Chloroaniline.....             | 100                      | N.D.                    |
| 2-Chloronaphthalene.....         | 100                      | N.D.                    |
| 4-Chloro-3-methylphenol.....     | 100                      | N.D.                    |
| 2-Chlorophenol.....              | 100                      | N.D.                    |
| 4-Chlorophenyl phenyl ether..... | 100                      | N.D.                    |
| Chrysene.....                    | 100                      | N.D.                    |
| Dibenz(a,h)anthracene.....       | 100                      | N.D.                    |
| Dibenzofuran.....                | 100                      | N.D.                    |
| Di-N-butyl phthalate.....        | 500                      | N.D.                    |
| 1,3-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,4-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,2-Dichlorobenzene.....         | 100                      | N.D.                    |
| 3,3-Dichlorobenzidine.....       | 500                      | N.D.                    |
| 2,4-Dichlorophenol.....          | 100                      | N.D.                    |
| Diethyl phthalate.....           | 100                      | N.D.                    |
| 2,4-Dimethylphenol.....          | 100                      | N.D.                    |
| Dimethyl phthalate.....          | 100                      | N.D.                    |
| 4,6-Dinitro-2-methylphenol.....  | 500                      | N.D.                    |
| 2,4-Dinitrophenol.....           | 500                      | N.D.                    |



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 19, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-7.5-B13     | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8270            | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4234                 | Analyzed: Aug 27, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                         | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------------------------|--------------------------|-------------------------|
| 2,4-Dinitrotoluene.....         | 100                      | N.D.                    |
| 2,6-Dinitrotoluene.....         | 100                      | N.D.                    |
| Di-N-octyl phthalate.....       | 100                      | N.D.                    |
| Fluoranthene.....               | 100                      | N.D.                    |
| Fluorene.....                   | 100                      | N.D.                    |
| Hexachlorobenzene.....          | 100                      | N.D.                    |
| Hexachlorobutadiene.....        | 100                      | N.D.                    |
| Hexachlorocyclopentadiene.....  | 100                      | N.D.                    |
| Hexachloroethane.....           | 100                      | N.D.                    |
| Indeno(1,2,3-cd)pyrene.....     | 100                      | N.D.                    |
| Isophorone.....                 | 100                      | N.D.                    |
| 2-Methylnaphthalene.....        | 100                      | N.D.                    |
| 2-Methylphenol.....             | 100                      | N.D.                    |
| 4-Methylphenol.....             | 100                      | N.D.                    |
| Naphthalene.....                | 100                      | N.D.                    |
| 2-Nitroaniline.....             | 500                      | N.D.                    |
| 3-Nitroaniline.....             | 500                      | N.D.                    |
| 4-Nitroaniline.....             | 500                      | N.D.                    |
| Nitrobenzene.....               | 100                      | N.D.                    |
| 2-Nitrophenol.....              | 100                      | N.D.                    |
| 4-Nitrophenol.....              | 500                      | N.D.                    |
| N-Nitrosodiphenylamine.....     | 100                      | N.D.                    |
| N-Nitroso-di-N-propylamine..... | 100                      | N.D.                    |
| Pentachlorophenol.....          | 500                      | N.D.                    |
| Phenanthrene.....               | 100                      | N.D.                    |
| Phenol.....                     | 100                      | N.D.                    |
| Pyrene.....                     | 100                      | N.D.                    |
| 1,2,4-Trichlorobenzene.....     | 100                      | N.D.                    |
| 2,4,5-Trichlorophenol.....      | 500                      | N.D.                    |
| 2,4,6-Trichlorophenol.....      | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection

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Maria Lee  
Project Manager



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 19, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-17.5-B13    | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8270            | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4235                 | Analyzed: Aug 27, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                          | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|----------------------------------|--------------------------|-------------------------|
| Acenaphthene.....                | 100                      | N.D.                    |
| Acenaphthylene.....              | 100                      | N.D.                    |
| Aniline.....                     | 100                      | N.D.                    |
| Anthracene.....                  | 100                      | N.D.                    |
| Benzidine.....                   | 2,500                    | N.D.                    |
| Benzoic Acid.....                | 500                      | N.D.                    |
| Benzo(a)anthracene.....          | 100                      | N.D.                    |
| Benzo(b)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(k)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(g,h,i)perylene.....        | 100                      | N.D.                    |
| Benzo(a)pyrene.....              | 100                      | N.D.                    |
| Benzyl alcohol.....              | 100                      | N.D.                    |
| Bis(2-chloroethoxy)methane.....  | 100                      | N.D.                    |
| Bis(2-chloroethyl)ether.....     | 100                      | N.D.                    |
| Bis(2-chloroisopropyl)ether..... | 100                      | N.D.                    |
| Bis(2-ethylhexyl)phthalate.....  | 500                      | N.D.                    |
| 4-Bromophenyl phenyl ether.....  | 100                      | N.D.                    |
| Butyl benzyl phthalate.....      | 100                      | N.D.                    |
| 4-Chloroaniline.....             | 100                      | N.D.                    |
| 2-Chloronaphthalene.....         | 100                      | N.D.                    |
| 4-Chloro-3-methylphenol.....     | 100                      | N.D.                    |
| 2-Chlorophenol.....              | 100                      | N.D.                    |
| 4-Chlorophenyl phenyl ether..... | 100                      | N.D.                    |
| Chrysene.....                    | 100                      | N.D.                    |
| Dibenz(a,h)anthracene.....       | 100                      | N.D.                    |
| Dibenzofuran.....                | 100                      | N.D.                    |
| Di-N-butyl phthalate.....        | 500                      | N.D.                    |
| 1,3-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,4-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,2-Dichlorobenzene.....         | 100                      | N.D.                    |
| 3,3-Dichlorobenzidine.....       | 500                      | N.D.                    |
| 2,4-Dichlorophenol.....          | 100                      | N.D.                    |
| Diethyl phthalate.....           | 100                      | N.D.                    |
| 2,4-Dimethylphenol.....          | 100                      | N.D.                    |
| Dimethyl phthalate.....          | 100                      | N.D.                    |
| 4,6-Dinitro-2-methylphenol.....  | 500                      | N.D.                    |
| 2,4-Dinitrophenol.....           | 500                      | N.D.                    |



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-17.5-B13  
Analysis Method: EPA 8270  
Lab Number: 208-4235

Sampled: Aug 19, 1992  
Received: Aug 21, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 27, 1992  
Reported: Sep 3, 1992

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                         | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------------------------|--------------------------|-------------------------|
| 2,4-Dinitrotoluene.....         | 100                      | N.D.                    |
| 2,6-Dinitrotoluene.....         | 100                      | N.D.                    |
| Di-N-octyl phthalate.....       | 100                      | N.D.                    |
| Fluoranthene.....               | 100                      | N.D.                    |
| Fluorene.....                   | 100                      | N.D.                    |
| Hexachlorobenzene.....          | 100                      | N.D.                    |
| Hexachlorobutadiene.....        | 100                      | N.D.                    |
| Hexachlorocyclopentadiene.....  | 100                      | N.D.                    |
| Hexachloroethane.....           | 100                      | N.D.                    |
| Indeno(1,2,3-cd)pyrene.....     | 100                      | N.D.                    |
| Isophorone.....                 | 100                      | N.D.                    |
| 2-Methylnaphthalene.....        | 100                      | N.D.                    |
| 2-Methylphenol.....             | 100                      | N.D.                    |
| 4-Methylphenol.....             | 100                      | N.D.                    |
| Naphthalene.....                | 100                      | N.D.                    |
| 2-Nitroaniline.....             | 500                      | N.D.                    |
| 3-Nitroaniline.....             | 500                      | N.D.                    |
| 4-Nitroaniline.....             | 500                      | N.D.                    |
| Nitrobenzene.....               | 100                      | N.D.                    |
| 2-Nitrophenol.....              | 100                      | N.D.                    |
| 4-Nitrophenol.....              | 500                      | N.D.                    |
| N-Nitrosodiphenylamine.....     | 100                      | N.D.                    |
| N-Nitroso-di-N-propylamine..... | 100                      | N.D.                    |
| Pentachlorophenol.....          | 500                      | N.D.                    |
| Phenanthrene.....               | 100                      | N.D.                    |
| Phenol.....                     | 100                      | N.D.                    |
| Pyrene.....                     | 100                      | N.D.                    |
| 1,2,4-Trichlorobenzene.....     | 100                      | N.D.                    |
| 2,4,5-Trichlorophenol.....      | 500                      | N.D.                    |
| 2,4,6-Trichlorophenol.....      | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maria Lee  
Project Manager



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680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-4.5-B12  
Analysis Method: EPA 8270  
Lab Number: 208-4242

Sampled: Aug 20, 1992  
Received: Aug 21, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 27, 1992  
Reported: Sep 3, 1992

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                           | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|-----------------------------------|--------------------------|-------------------------|
| Acenaphthene.....                 | 100                      | N.D.                    |
| Acenaphthylene.....               | 100                      | N.D.                    |
| Aniline.....                      | 100                      | N.D.                    |
| Anthracene.....                   | 100                      | N.D.                    |
| Benzidine.....                    | 2,500                    | N.D.                    |
| Benzoic Acid.....                 | 500                      | N.D.                    |
| Benzo(a)anthracene.....           | 100                      | N.D.                    |
| Benzo(b)fluoranthene.....         | 100                      | N.D.                    |
| Benzo(k)fluoranthene.....         | 100                      | N.D.                    |
| Benzo(g,h,i)perylene.....         | 100                      | N.D.                    |
| Benzo(a)pyrene.....               | 100                      | N.D.                    |
| Benzyl alcohol.....               | 100                      | N.D.                    |
| Bis(2-chloroethoxy)methane.....   | 100                      | N.D.                    |
| Bis(2-chloroethyl) ether.....     | 100                      | N.D.                    |
| Bis(2-chloroisopropyl) ether..... | 100                      | N.D.                    |
| Bis(2-ethylhexyl) phthalate.....  | 500                      | N.D.                    |
| 4-Bromophenyl phenyl ether.....   | 100                      | N.D.                    |
| Butyl benzyl phthalate.....       | 100                      | N.D.                    |
| 4-Chloroaniline.....              | 100                      | N.D.                    |
| 2-Chloronaphthalene.....          | 100                      | N.D.                    |
| 4-Chloro-3-methylphenol.....      | 100                      | N.D.                    |
| 2-Chlorophenol.....               | 100                      | N.D.                    |
| 4-Chlorophenyl phenyl ether.....  | 100                      | N.D.                    |
| Chrysene.....                     | 100                      | N.D.                    |
| Dibenz(a,h)anthracene.....        | 100                      | N.D.                    |
| Dibenzofuran.....                 | 100                      | N.D.                    |
| Di-N-butyl phthalate.....         | 500                      | N.D.                    |
| 1,3-Dichlorobenzene.....          | 100                      | N.D.                    |
| 1,4-Dichlorobenzene.....          | 100                      | N.D.                    |
| 1,2-Dichlorobenzene.....          | 100                      | N.D.                    |
| 3,3-Dichlorobenzidine.....        | 500                      | N.D.                    |
| 2,4-Dichlorophenol.....           | 100                      | N.D.                    |
| Diethyl phthalate.....            | 100                      | N.D.                    |
| 2,4-Dimethylphenol.....           | 100                      | N.D.                    |
| Dimethyl phthalate.....           | 100                      | N.D.                    |
| 4,6-Dinitro-2-methylphenol.....   | 500                      | N.D.                    |
| 2,4-Dinitrophenol.....            | 500                      | N.D.                    |



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035. Albany | Sampled: Aug 20, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-4.5-B12     | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8270            | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4242                 | Analyzed: Aug 27, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                         | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------------------------|--------------------------|-------------------------|
| 2,4-Dinitrotoluene.....         | 100                      | N.D.                    |
| 2,6-Dinitrotoluene.....         | 100                      | N.D.                    |
| Di-N-octyl phthalate.....       | 100                      | N.D.                    |
| Fluoranthene.....               | 100                      | N.D.                    |
| Fluorene.....                   | 100                      | N.D.                    |
| Hexachlorobenzene.....          | 100                      | N.D.                    |
| Hexachlorobutadiene.....        | 100                      | N.D.                    |
| Hexachlorocyclopentadiene.....  | 100                      | N.D.                    |
| Hexachloroethane.....           | 100                      | N.D.                    |
| Indeno(1,2,3-cd)pyrene.....     | 100                      | N.D.                    |
| Isophorone.....                 | 100                      | N.D.                    |
| 2-Methylnapthalene.....         | 100                      | N.D.                    |
| 2-Methylphenol.....             | 100                      | N.D.                    |
| 4-Methylphenol.....             | 100                      | N.D.                    |
| Napthalene.....                 | 100                      | N.D.                    |
| 2-Nitroaniline.....             | 500                      | N.D.                    |
| 3-Nitroaniline.....             | 500                      | N.D.                    |
| 4-Nitroaniline.....             | 500                      | N.D.                    |
| Nitrobenzene.....               | 100                      | N.D.                    |
| 2-Nitrophenol.....              | 100                      | N.D.                    |
| 4-Nitrophenol.....              | 500                      | N.D.                    |
| N-Nitrosodiphenylamine.....     | 100                      | N.D.                    |
| N-Nitroso-di-N-propylamine..... | 100                      | N.D.                    |
| Pentachlorophenol.....          | 500                      | N.D.                    |
| Phenanthrene.....               | 100                      | N.D.                    |
| Phenol.....                     | 100                      | N.D.                    |
| Pyrene.....                     | 100                      | N.D.                    |
| 1,2,4-Trichlorobenzene.....     | 100                      | N.D.                    |
| 2,4,5-Trichlorophenol.....      | 500                      | N.D.                    |
| 2,4,6-Trichlorophenol.....      | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager





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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-9-B12       | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8270            | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4243                 | Analyzed: Aug 27, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                          | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|----------------------------------|--------------------------|-------------------------|
| Acenaphthene.....                | 100                      | N.D.                    |
| Acenaphthylene.....              | 100                      | N.D.                    |
| Aniline.....                     | 100                      | N.D.                    |
| Anthracene.....                  | 100                      | N.D.                    |
| Benzidine.....                   | 1,500                    | N.D.                    |
| Benzoic Acid.....                | 500                      | N.D.                    |
| Benzo(a)anthracene.....          | 100                      | N.D.                    |
| Benzo(b)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(k)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(g,h,i)perylene.....        | 100                      | N.D.                    |
| Benzo(a)pyrene.....              | 100                      | N.D.                    |
| Benzyl alcohol.....              | 100                      | N.D.                    |
| Bis(2-chloroethoxy)methane.....  | 100                      | N.D.                    |
| Bis(2-chloroethyl)ether.....     | 100                      | N.D.                    |
| Bis(2-chloroisopropyl)etner..... | 100                      | N.D.                    |
| Bis(2-ethylhexyl)phthalate.....  | 500                      | N.D.                    |
| 4-Bromopheny pnyl ether.....     | 100                      | N.D.                    |
| Butyl benzyl phthalate.....      | 100                      | N.D.                    |
| 4-Chloroaniline.....             | 100                      | N.D.                    |
| 2-Chloronaphthalene.....         | 100                      | N.D.                    |
| 4-Chloro-3-methylphenol.....     | 100                      | N.D.                    |
| 2-Chlorophenol.....              | 100                      | N.D.                    |
| 4-Chlorophenyl phenyl ether..... | 100                      | N.D.                    |
| Chrysene.....                    | 100                      | N.D.                    |
| Dibenz(a,h)anthracene.....       | 100                      | N.D.                    |
| Dibenzofuran.....                | 100                      | N.D.                    |
| Di-N-butyl phthalate.....        | 500                      | N.D.                    |
| 1,3-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,4-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,2-Dichlorobenzene.....         | 100                      | N.D.                    |
| 3,3-Dichlorobenzidine.....       | 500                      | N.D.                    |
| 2,4-Dichlorophenol.....          | 100                      | N.D.                    |
| Diethyl phthalate.....           | 100                      | N.D.                    |
| 2,4-Dimethylphenol.....          | 100                      | N.D.                    |
| Dimethyl phthalate.....          | 100                      | N.D.                    |
| 4,6-Dinitro-2-methylphenol.....  | 500                      | N.D.                    |
| 2,4-Dinitrophenol.....           | 500                      | N.D.                    |



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-9-B12       | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8270            | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4243                 | Analyzed: Aug 27, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                         | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------------------------|--------------------------|-------------------------|
| 2,4-Dinitrotoluene.....         | 100                      | N.D.                    |
| 2,6-Dinitrotoluene.....         | 100                      | N.D.                    |
| Di-N-octyl phthalate.....       | 100                      | N.D.                    |
| Fluoranthene.....               | 100                      | N.D.                    |
| Fluorene.....                   | 100                      | N.D.                    |
| Hexachlorobenzene.....          | 100                      | N.D.                    |
| Hexachlorobutadiene.....        | 100                      | N.D.                    |
| Hexachlorocyclopentadiene.....  | 100                      | N.D.                    |
| Hexachloroethane.....           | 100                      | N.D.                    |
| Indeno(1,2,3-cd)pyrene.....     | 100                      | N.D.                    |
| Isophorone.....                 | 100                      | N.D.                    |
| 2-Methylnaphthalene.....        | 100                      | N.D.                    |
| 2-Methylphenol.....             | 100                      | N.D.                    |
| 4-Methylphenol.....             | 100                      | N.D.                    |
| Naphthalene.....                | 100                      | N.D.                    |
| 2-Nitroaniline.....             | 500                      | N.D.                    |
| 3-Nitroaniline.....             | 500                      | N.D.                    |
| 4-Nitroaniline.....             | 500                      | N.D.                    |
| Nitrobenzene.....               | 100                      | N.D.                    |
| 2-Nitrophenol.....              | 100                      | N.D.                    |
| 4-Nitrophenol.....              | 500                      | N.D.                    |
| N-Nitrosodiphenylamine.....     | 100                      | N.D.                    |
| N-Nitroso-di-N-propylamine..... | 100                      | N.D.                    |
| Pentachlorophenol.....          | 500                      | N.D.                    |
| Phenanthrene.....               | 100                      | N.D.                    |
| Phenol.....                     | 100                      | N.D.                    |
| Pyrene.....                     | 100                      | N.D.                    |
| 1,2,4-Trichlorobenzene.....     | 100                      | N.D.                    |
| 2,4,5-Trichlorophenol.....      | 500                      | N.D.                    |
| 2,4,6-Trichlorophenol.....      | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-14 5-B12    | Received: Aug 21, 1992  |
| San Jose, CA 95118            | Analysis Method: EPA 8270            | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4244                 | Analyzed: Aug 27, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                          | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|----------------------------------|--------------------------|-------------------------|
| Acenaphthene.....                | 100                      | N.D.                    |
| Acenaphthylene.....              | 100                      | N.D.                    |
| Aniline.....                     | 100                      | N.D.                    |
| Anthracene.....                  | 100                      | N.D.                    |
| Benzidine.....                   | 2,500                    | N.D.                    |
| Benzoic Acid.....                | 500                      | N.D.                    |
| Benzo(a)anthracene.....          | 100                      | N.D.                    |
| Benzo(b)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(k)fluoranthene.....        | 100                      | N.D.                    |
| Benzo(g,h,i)perylene.....        | 100                      | N.D.                    |
| Benzo(a)pyrene.....              | 100                      | N.D.                    |
| Benzyl alcohol.....              | 100                      | N.D.                    |
| Bis(2-chloroethoxy)methane.....  | 100                      | N.D.                    |
| Bis(2-chloroethyl)ether.....     | 100                      | N.D.                    |
| Bis(2-chloroisopropyl)ether..... | 100                      | N.D.                    |
| Bis(2-ethylhexyl)phthalate.....  | 500                      | N.D.                    |
| 4-Bromophenyl phenyl ether.....  | 100                      | N.D.                    |
| Butyl benzyl phthalate.....      | 100                      | N.D.                    |
| 4-Chloroaniline.....             | 100                      | N.D.                    |
| 2-Chloronaphthalene.....         | 100                      | N.D.                    |
| 4-Chloro-3-methylphenol.....     | 100                      | N.D.                    |
| 2-Chlorophenol.....              | 100                      | N.D.                    |
| 4-Chlorophenyl phenyl ether..... | 100                      | N.D.                    |
| Chrysene.....                    | 100                      | N.D.                    |
| Dibenz(a,h)anthracene.....       | 100                      | N.D.                    |
| Dibenzofuran.....                | 100                      | N.D.                    |
| Di-N-butyl phthalate.....        | 500                      | N.D.                    |
| 1,3-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,4-Dichlorobenzene.....         | 100                      | N.D.                    |
| 1,2-Dichlorobenzene.....         | 100                      | N.D.                    |
| 3,3-Dichlorobenzidine.....       | 500                      | N.D.                    |
| 2,4-Dichlorophenol.....          | 100                      | N.D.                    |
| Diethyl phthalate.....           | 100                      | N.D.                    |
| 2,4-Dimethylphenol.....          | 100                      | N.D.                    |
| Dimethyl phthalate.....          | 100                      | N.D.                    |
| 4,6-Dinitro-2-methylphenol.....  | 500                      | N.D.                    |
| 2,4-Dinitrophenol.....           | 500                      | N.D.                    |



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035. Albany  
Sample Descript: Soil, S-14 5-B12  
Analysis Method: EPA 8270  
Lab Number: 208-4244

Sampled: Aug 20, 1992  
Received: Aug 21, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 27, 1992  
Reported: Sep 3, 1992

## SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

| Analyte                         | Detection Limit<br>µg/kg | Sample Results<br>µg/kg |
|---------------------------------|--------------------------|-------------------------|
| 2,4-Dinitrotoluene.....         | 100                      | N.D.                    |
| 2,6-Dinitrotoluene.....         | 100                      | N.D.                    |
| Di-N-octyl phthalate.....       | 100                      | N.D.                    |
| Fluoranthene.....               | 100                      | N.D.                    |
| Fluorene.....                   | 100                      | N.D.                    |
| Hexachlorobenzene.....          | 100                      | N.D.                    |
| Hexachlorobutadiene.....        | 100                      | N.D.                    |
| Hexachlorocyclopentadiene.....  | 100                      | N.D.                    |
| Hexachloroethane.....           | 100                      | N.D.                    |
| Indeno(1,2,3-cd)pyrene.....     | 100                      | N.D.                    |
| Isophorone.....                 | 100                      | N.D.                    |
| 2-Methylnapthalene.....         | 100                      | N.D.                    |
| 2-Methylphenol.....             | 100                      | N.D.                    |
| 4-Methylphenol.....             | 100                      | N.D.                    |
| Napthalene.....                 | 100                      | N.D.                    |
| 2-Nitroaniiline.....            | 500                      | N.D.                    |
| 3-Nitroaniiline.....            | 500                      | N.D.                    |
| 4-Nitroaniiline.....            | 500                      | N.D.                    |
| Nitrobenzene.....               | 100                      | N.D.                    |
| 2-Nitrophenol.....              | 100                      | N.D.                    |
| 4-Nitrophenol.....              | 500                      | N.D.                    |
| N-Nitrosodiphenylamine.....     | 100                      | N.D.                    |
| N-Nitroso-di-N-propylamine..... | 100                      | N.D.                    |
| Pentachlorophenol.....          | 500                      | N.D.                    |
| Phenanthrene.....               | 100                      | N.D.                    |
| Phenol.....                     | 100                      | N.D.                    |
| Pyrene.....                     | 100                      | N.D.                    |
| 1,2,4-Trichlorobenzene.....     | 100                      | N.D.                    |
| 2,4,5-Trichlorophenol.....      | 500                      | N.D.                    |
| 2,4,6-Trichlorophenol.....      | 100                      | N.D.                    |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCC 2035. Albany | Sampled: Aug 19, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil. S-4.5-B13     | Received: Aug 24, 1992  |
| San Jose, CA 95118            |                                      | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4233                 | Analyzed: Aug 28, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## LABORATORY ANALYSIS

| Analyte              | Detection Limit<br>mg/kg | Sample Results<br>mg/kg |
|----------------------|--------------------------|-------------------------|
| Cadmium.....         | 0.50                     | N.D.                    |
| <b>Chromium.....</b> | <b>0.50</b>              | <b>68</b>               |
| Lead.....            | 5.0                      | N.D.                    |
| <b>Zinc.....</b>     | <b>0.50</b>              | <b>43</b>               |
| <b>Nickel.....</b>   | <b>2.5</b>               | <b>65</b>               |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager

2084233.RES <31>



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 19, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-7.5-B13     | Received: Aug 24, 1992  |
| San Jose, CA 95118            |                                      | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4234                 | Analyzed: Aug 28, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## LABORATORY ANALYSIS

| Analyte              | Detection Limit<br>mg/kg | Sample Results<br>mg/kg |
|----------------------|--------------------------|-------------------------|
| Cadmium.....         | 0.50                     | N.D.                    |
| <b>Chromium.....</b> | <b>0.50</b>              | <b>51</b>               |
| Lead.....            | 5.0                      | N.D.                    |
| <b>Zinc.....</b>     | <b>0.50</b>              | <b>46</b>               |
| Nickel.....          | 2.5                      | 81                      |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager

2084233.RES <32>



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-17.5-B13  
Lab Number: 208-4235

Sampled: Aug 19, 1992  
Received: Aug 24, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 28, 1992  
Reported: Sep 3, 1992

## LABORATORY ANALYSIS

| Analyte       | Detection Limit<br>mg/kg | Sample Results<br>mg/kg |
|---------------|--------------------------|-------------------------|
| Cadmium.....  | 0.50                     | N.D.                    |
| Chromium..... | 0.50                     | 43                      |
| Lead.....     | 5.0                      | 5.6                     |
| Zinc.....     | 0.50                     | 69                      |
| Nickel.....   | 2.5                      | 51                      |

Analytes reported as N.D. were not present above the stated limit of detection.

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Maria Lee  
Project Manager



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|                               |                                      |                         |
|-------------------------------|--------------------------------------|-------------------------|
| RESNA                         | Client Project ID: ARCO 2035, Albany | Sampled: Aug 20, 1992   |
| 3315 Almaden Expwy., Suite 34 | Sample Descript: Soil, S-4.5-B12     | Received: Aug 24, 1992  |
| San Jose, CA 95118            |                                      | Extracted: Aug 27, 1992 |
| Attention: Joel Coffman       | Lab Number: 208-4242                 | Analyzed: Aug 28, 1992  |
|                               |                                      | Reported: Sep 3, 1992   |

## LABORATORY ANALYSIS

| Analyte              | Detection Limit<br>mg/kg | Sample Results<br>mg/kg |
|----------------------|--------------------------|-------------------------|
| Cadmium.....         | 0.50                     | N.D.                    |
| <b>Chromium.....</b> | <b>0.50</b>              | <b>59</b>               |
| Lead.....            | 5.0                      | N.D.                    |
| <b>Zinc.....</b>     | <b>0.50</b>              | <b>40</b>               |
| Nickel.....          | 2.5                      | 58                      |

Analytes reported as N.D. were not present above the stated limit of detection.

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Maria Lee  
Project Manager

2084233.RES <34>





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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-9-B12  
Lab Number: 208-4243

Sampled: Aug 20, 1992  
Received: Aug 24, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 28, 1992  
Reported: Sep 3, 1992

## LABORATORY ANALYSIS

| Analyte              | Detection Limit<br>mg/kg | Sample Results<br>mg/kg |
|----------------------|--------------------------|-------------------------|
| Cadmium.....         | 0.50                     | N.D.                    |
| <b>Chromium.....</b> | <b>0.50</b>              | <b>42</b>               |
| Lead.....            | 5.0                      | N.D.                    |
| <b>Zinc.....</b>     | <b>0.50</b>              | <b>37</b>               |
| <b>Nickel.....</b>   | <b>2.5</b>               | <b>46</b>               |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager



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RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Sample Descript: Soil, S-14.5-B12  
Lab Number: 208-4244

Sampled: Aug 20, 1992  
Received: Aug 24, 1992  
Extracted: Aug 27, 1992  
Analyzed: Aug 28, 1992  
Reported: Sep 3, 1992

## LABORATORY ANALYSIS

| Analyte       | Detection Limit<br>mg/kg | Sample Results<br>mg/kg |
|---------------|--------------------------|-------------------------|
| Cadmium.....  | 0.50                     | N.D.                    |
| Chromium..... | 0.50                     | 49                      |
| Lead.....     | 5.0                      | 7.4                     |
| Zinc.....     | 0.50                     | 69                      |
| Nickel.....   | 2.5                      | 49                      |

Analytes reported as N.D. were not present above the stated limit of detection.

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Project Manager



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(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 208-4233 -4256

Reported: Sep 3, 1992

## QUALITY CONTROL DATA REPORT

| ANALYTE                                  | Benzene      | Toluene      | Ethyl-<br>benzene | Xylenes      |
|--|--------------|--------------|-------------------|--------------|
| Method:                                  | EPA 8020     | EPA 8020     | EPA 8020          | EPA 8020     |
| Analyst:                                 | R. Lee       | R. Lee       | R. Lee            | R. Lee       |
| Reporting Units:                         | mg/kg        | mg/kg        | mg/kg             | mg/kg        |
| Date Analyzed:                           | Aug 27, 1992 | Aug 27, 1992 | Aug 27, 1992      | Aug 27, 1992 |
| QC Sample #:                             | GBLK082792   | GBLK082792   | GBLK082792        | GBLK082792   |
| Sample Conc.:                            | N.D.         | N.D.         | N.D.              | N.D.         |
| Spike Conc.<br>Added:                    | 0.20         | 0.20         | 0.20              | 0.60         |
| Conc. Matrix<br>Spike:                   | 0.20         | 0.20         | 0.20              | 0.60         |
| Matrix Spike<br>% Recovery:              | 100          | 100          | 100               | 100          |
| Conc. Matrix<br>Spike Dup.:              | 0.19         | 0.19         | 0.19              | 0.57         |
| Matrix Spike<br>Duplicate<br>% Recovery: | 95           | 95           | 95                | 95           |
| Relative<br>% Difference:                | 5.1          | 5.1          | 5.1               | 5.1          |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Maria Lee  
Project Manager

$$\% \text{ Recovery} = \frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference} = \frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$$



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA

Client Project ID: ARCO 2035, Albany

3315 Almaden Expwy., Suite 34  
San Jose, CA 95118

Attention: Joel Coffman

QC Sample Group: 208-4233 -4256

Reported: Sep 3, 1992

## QUALITY CONTROL DATA REPORT

| ANALYTE                                  | Benzene      | Toluene      | Ethyl-<br>benzene | Xylenes      |
|--|--------------|--------------|-------------------|--------------|
|  | Method:      | EPA 8020     | EPA 8020          | EPA 8020     |
| Analyst:                                 | R. Lee       | R. Lee       | R. Lee            | R. Lee       |
| Reporting Units:                         | mg/kg        | mg/kg        | mg/kg             | mg/kg        |
| Date Analyzed:                           | Aug 26, 1992 | Aug 26, 1992 | Aug 26, 1992      | Aug 26, 1992 |
| QC Sample #:                             | GBLK082692   | GBLK082692   | GBLK082692        | GBLK082692   |
| Sample Conc.:                            | N.D.         | N.D.         | N.D.              | N.D.         |
| Spike Conc.<br>Added:                    | 0.20         | 0.20         | 0.20              | 0.60         |
| Conc. Matrix<br>Spike:                   | 0.20         | 0.20         | 0.20              | 0.60         |
| Matrix Spike<br>% Recovery:              | 100          | 100          | 100               | 100          |
| Conc. Matrix<br>Spike Dup.:              | 0.20         | 0.20         | 0.20              | 0.60         |
| Matrix Spike<br>Duplicate<br>% Recovery: | 100          | 100          | 100               | 100          |
| Relative<br>% Difference:                | 0.0          | 0.0          | 0.0               | 0.0          |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                                  |
| Relative % Difference: | $\frac{ \text{Conc. of M.S.} - \text{Conc. of M.S.D.} }{\frac{\text{Conc. of M.S.} + \text{Conc. of M.S.D.}}{2}} \times 100$ |

Maria Lee  
Project Manager

208-4233.RES <2>



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 208-4233 -4256

Reported: Sep 3, 1992

## QUALITY CONTROL DATA REPORT

| ANALYTE                                  | Benzene      | Toluene      | Ethyl-<br>benzene | Xylenes      |
|--|--------------|--------------|-------------------|--------------|
|  | Method:      | EPA 8020     | EPA 8020          | EPA 8020     |
| Analyst:                                 | C. Donohue   | C. Donohue   | C. Donohue        | C. Donohue   |
| Reporting Units:                         | mg/kg        | mg/kg        | mg/kg             | mg/kg        |
| Date Analyzed:                           | Aug 26, 1992 | Aug 26, 1992 | Aug 26, 1992      | Aug 26, 1992 |
| QC Sample #:                             | GBLK082692   | GBLK082692   | GBLK082692        | GBLK082692   |
|  | MS/MSD       | MS/MSD       | MS/MSD            | MS/MSD       |
| Sample Conc.:                            | N.D.         | N.D.         | N.D.              | N.D.         |
| Spike Conc.<br>Added:                    | 0.20         | 0.20         | 0.20              | 0.60         |
| Conc. Matrix<br>Spike:                   | 0.19         | 0.19         | 0.19              | 0.57         |
| Matrix Spike<br>% Recovery:              | 95           | 95           | 95                | 95           |
| Conc. Matrix<br>Spike Dup.:              | 0.20         | 0.20         | 0.20              | 0.60         |
| Matrix Spike<br>Duplicate<br>% Recovery: | 100          | 100          | 100               | 100          |
| Relative<br>% Difference:                | 5.1          | 5.1          | 5.1               | 5.1          |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                                |
| Relative % Difference: | $\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{\frac{\text{Conc. of M.S.} + \text{Conc. of M.S.D.}}{2}} \times 100$ |

Maria Lee  
Project Manager



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 2084233-5, 42-4

Reported: Sep 3, 1992

## QUALITY CONTROL DATA REPORT

| ANALYTE | Total Recoverable |               |          |
|---------|-------------------|---------------|----------|
|         | Diesel            | Petroleum Oil | PCB 1260 |

|                  |              |               |               |
|------------------|--------------|---------------|---------------|
| Method:          | EPA 8015     | SM 5520 E & F | EPA 8080      |
| Analyst:         | M. Tran      | M. Shikat     | L. La-kritman |
| Reporting Units: | mg/kg        | mg/kg         | µg/kg         |
| Date Analyzed:   | Aug 26, 1992 | Sep 1, 1992   | Aug 31, 1992  |
| QC Sample #:     | DBLK082692   | BLK090192     | BLK082792     |

|                                    |      |      |      |
|------------------------------------|------|------|------|
| Sample Conc.:                      | N.D. | N.D. | N.D. |
| Spike Conc. Added:                 | 15   | 1000 | 500  |
| Conc. Matrix Spike:                | 12   | 320  | 510  |
| Matrix Spike % Recovery:           | 80   | 82   | 122  |
| Conc. Matrix Spike Dup.:           | 11   | 870  | 540  |
| Matrix Spike Duplicate % Recovery: | 73   | 87   | 110  |
| Relative % Difference:             | 8.7  | 5.9  | 12   |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                                |
| Relative % Difference: | $\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{\frac{\text{Conc. of M.S.} + \text{Conc. of M.S.D.}}{2}} \times 100$ |

Maria Lee  
Project Manager



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Method (units): EPA 8240 (µg/L purged)  
Analyst(s): M. Williams  
QC Sample #: BLK090292

Q.C. Sample Dates

Analyzed: Sep 2, 1992  
Reported: Sep 3, 1992

## QUALITY CONTROL DATA REPORT

| Analyte            | Sample Conc. | Spike Conc. Added | Conc. Matrix Spike | Matrix Spike % Recovery | Conc. Matrix Spike Duplicate | Matrix Spike % Recovery | Relative % Difference |
|--------------------|--------------|-------------------|--------------------|-------------------------|------------------------------|-------------------------|-----------------------|
| 1,1-Dichloroethene | N.D.         | 50                | 61                 | 122                     | 59                           | 118                     | 3.3                   |
| Trichloroethene    | N.D.         | 50                | 48                 | 96                      | 46                           | 92                      | 4.3                   |
| Benzene            | N.D.         | 50                | 55                 | 110                     | 51                           | 102                     | 7.5                   |
| Toluene            | N.D.         | 50                | 68                 | 116                     | 55                           | 110                     | 5.3                   |
| Chlorobenzene      | N.D.         | 50                | 64                 | 108                     | 57                           | 106                     | 1.9                   |

SEQUOIA ANALYTICAL

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                              |
| Relative % Difference: | $\frac{ \text{Conc. of M.S.} - \text{Conc. of M.S.D.} }{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$ |

Maria Lee  
Project Manager

208-4233.RES <5>



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany  
Method: EPA 8270  
Analyst(s): E. Manuel  
QC Sample #: SBLK082192

Q.C. Sample Dates  
Extracted: Aug 21, 1992  
Analyzed: Aug 21, 1992  
Reported: Sep 3, 1992

## QUALITY CONTROL DATA REPORT

| Analyte                    | Sample Conc. | Spike Conc. Added | Conc. Matrix Spike | Matrix Spike % Recovery | Conc. Matrix Spike Duplicate | Matrix Spike % Recovery | Relative % Difference |
|----------------------------|--------------|-------------------|--------------------|-------------------------|------------------------------|-------------------------|-----------------------|
| Phenol                     | N.D.         | 100               | 38                 | 38                      | 82                           | 82                      | 7.1                   |
| 2-Chlorophenol             | N.D.         | 100               | 80                 | 80                      | 86                           | 86                      | 7.2                   |
| 1,4-Dichloro-benzene       | N.D.         | 50                | 40                 | 80                      | 41                           | 82                      | 2.5                   |
| N-Nitroso-Di-N-propylamine | N.D.         | 50                | 41                 | 82                      | 44                           | 88                      | 7.1                   |
| 1,2,4-Trichloro-benzene    | N.D.         | 50                | 45                 | 90                      | 45                           | 90                      | 0.0                   |
| 4-Chloro-3-Methylphenol    | N.D.         | 100               | 33                 | 33                      | 39                           | 89                      | 7.0                   |
| Acenaphthene               | N.D.         | 50                | 40                 | 80                      | 40                           | 80                      | 0.0                   |
| 4-Nitrophenol              | N.D.         | 100               | 80                 | 80                      | 77                           | 77                      | 3.8                   |
| 2,4-Dinitro-toluene        | N.D.         | 50                | 46                 | 92                      | 45                           | 90                      | 2.2                   |
| Pentachloro-phenol         | N.D.         | 100               | 82                 | 82                      | 77                           | 77                      | 6.3                   |
| Pyrene                     | N.D.         | 50                | 45                 | 90                      | 44                           | 88                      | 2.2                   |

SEQUOIA ANALYTICAL

$$\% \text{ Recovery} = \frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference} = \frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{\frac{\text{Conc. of M.S.} + \text{Conc. of M.S.D.}}{2}} \times 100$$

Maria Lee  
Project Manager





# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: ARCO 2035, Albany

QC Sample Group: 2084233-5, 42-4

Reported: Sep 3, 1992

## QUALITY CONTROL DATA REPORT

| ANALYTE                            | Lead          | Nickel        | Zinc          | Cadmium       | Chromium      |
|------------------------------------|---------------|---------------|---------------|---------------|---------------|
| Method:                            | EPA 6010      | EPA 6010      | EPA 6010      | EPA 6010      | EPA 6010      |
| Analyst:                           | C. Medefesser | C. Medefesser | C. Medefesser | C. Medefesser | C. Medefesser |
| Reporting Units:                   | mg/kg         | mg/kg         | mg/kg         | mg/kg         | mg/kg         |
| Date Analyzed:                     | Aug 28, 1992  | Aug 28, 1992  | Aug 28, 1992  | Aug 28, 1992  | Aug 28, 1992  |
| QC Sample #:                       | 208-4233      | 208-4233      | 208-4233      | 208-4233      | 208-4233      |
| Sample Conc.:                      | N.D.          | N.D.          | N.D.          | N.D.          | N.D.          |
| Spike Conc. Added:                 | 100           | 100           | 100           | 100           | 100           |
| Conc. Matrix Spike:                | 100           | 170           | 140           | 93            | 170           |
| Matrix Spike % Recovery:           | 100           | 105           | 97            | 93            | 102           |
| Conc. Matrix Spike Dup.:           | 99            | 170           | 140           | 94            | 170           |
| Matrix Spike Duplicate % Recovery: | 99            | 105           | 97            | 94            | 102           |
| Relative % Difference:             | 1.0           | 0.0           | 0.0           | 1.1           | 0.0           |

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                            |
| Relative % Difference: | $\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$ |

Maria Lee  
Project Manager

208-4233.RES <7>

ARCO Facility no. 235

City (Facility) Albany

Project manager (Consultant) Joel Coffman

ARCO engineer Michael Libelan

Telephone no. (ARCO) (415) 571-3131

Telephone no. (Consultant) (415) 264-7723

Fax no. (Consultant) (415) 264-2435

Consultant name RESNA

Address (Consultant) 3215 Alameda Dr. Suite 34, San Jose, CA 95118

Laboratory name

Seywie

Contract number

07-073

Method of shipment

Seywie Courier

Special detection Limit/reporting

Special QA/QC

Remarks

RESNA will call regarding samples to be analyzed

Lab number

Turnaround time

Priority Rush  
1 Business Day

Rush  
2 Business Days

Expedited  
5 Business Days

Standard  
10 Business Days

| Sample I.D. | Lab no. | Container no. | Matrix |       |       | Preservation |      | Sampling date | Sampling time | BTEX<br>EPA 802 | STX/TPH<br>EPA 1602/60208C1E | TPH Modified BCL<br>Gas Diesel | Oil and Grease<br>413.1 413.2 | TPH<br>EPA 418.1/SM502E | EPA 809/8090<br>8092 | EPA 824/8240 | EPA 825/8270 | TCLP<br>Metals<br>VOA<br>VOA | SIC<br>Metals<br>VOA<br>VOA | CAM Metals<br>EPA 8210/7000<br>TLC<br>STLC | LABS Cfg./DHS<br>LABS EPA<br>7420/7421 | Seywie | DSTA |
|-------------|---------|---------------|--------|-------|-------|--------------|------|---------------|---------------|-----------------|------------------------------|--------------------------------|-------------------------------|-------------------------|----------------------|--------------|--------------|------------------------------|-----------------------------|--|--|--------|------|
|             |         |               | Soil   | Water | Other | Ice          | Acid |               |               |                 |                              |                                |                               |                         |                      |              |              |                              |                             |  |  |        |      |
| 515 B03     |         | 1             | V      |       |       | V            |      | 8/11/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B03     |         | 1             | V      |       |       | V            |      | 8/11/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B16     |         | 1             | V      |       |       | V            |      | 8/12/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B15     |         | 1             | V      |       |       | V            |      | 8/12/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B15     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B15     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B15     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B15     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B15     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B16     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B16     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B16     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |
| 515 B16     |         | 1             | V      |       |       | V            |      | 8/13/02       |               | X               | X                            | X                              |                               |                         | X                    | X            | X            |                              |                             |  | X                                      |        |      |

Condition of sample: good

Relinquished by sampler Brian A. Williams Date 08/21/02 Time 3:00 PM

Relinquished by [Signature] Date 8/21/02 Time [Signature]

Relinquished by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Temperature received: cool

Received by [Signature] Date \_\_\_\_\_ Time \_\_\_\_\_

Received by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Received by laboratory \_\_\_\_\_ Date 8/21/02 Time 1:30

**ARCO Products Company**

Division of AtlanticRichfieldCompany

Task Order No. 115(5)11-2435

**Chain of Custody**

ARCO Facility no. 3057

City (Facility) Albany

Project manager (Consultant) Joel Coffman

ARCO engineer Michael Whelan

Telephone no (ARCO) (415) 511-2435

Telephone no (Consultant) (408) 264-7723

Fax no (Consultant) (408) 264-2435

Consultant name RESNA

Address (Consultant) 3515 Alameda Exp. Suite 34, San Jose, CA 95118

Laboratory name

Sequie

Contract number

07-073

Method of shipment

Sequie Courier

Special detection Limit/reporting

Special QA/QC

Remarks

RESNA will call regarding samples to be analyzed

Lab number

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days

| Sample ID | Lab no. | Container no. | Matrix |       |       | Preservation |      | Sampling date | Sampling time | BTEX EPA 801 | BTEX/TPH EPA M602/8020/8011 | TPH Monitors 8015 Gas - Diesel | Oil and Grease 418.1 - 418.2 | TPH EPA 418.1/SM5032 | EPA 604/801 | EPA 604/802 | EPA 605/802 | TCLP Metals Self-VOA - VOA | CAM Metals EPA 601/700 TTLC - STLC | Lead Org/DHS Lead EPA 7420/7421 | STC |
|-----------|---------|---------------|--------|-------|-------|--------------|------|---------------|---------------|--------------|-----------------------------|--------------------------------|------------------------------|----------------------|-------------|-------------|-------------|----------------------------|------------------------------------|---------------------------------|-----|
|           |         |               | Soil   | Water | Other | Ice          | Acid |               |               |              |                             |                                |                              |                      |             |             |             |                            |                                    |                                 |     |
| 105-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 115-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 125-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 135-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 145-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 155-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 165-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 175-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 185-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 195-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 205-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 215-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 225-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 235-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 245-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 255-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 265-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 275-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 285-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |
| 295-B17   |         | 1             | ✓      |       |       | ✓            |      | 8/20/92       | 9:00          |              | ✓                           | ✓                              | ✓                            |                      | ✓           | ✓           | ✓           |                            |                                    |                                 | ✓   |

Condition of sample: good

Relinquished by sampler Barbara Steinwald Date 08/21/92 Time 3:15 PM

Relinquished by M. Steinwald Date 8/20/92 Time 1:26

Relinquished by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

Temperature received: cool

Received by M. Steinwald (VSC - PRIME)

Received by laboratory \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_





# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RECEIVED

SEP 13 1992

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

RESNA  
SAN JOSE

Project: Arco 2035, Albany

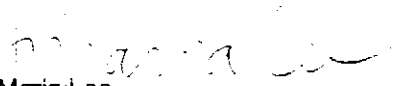
Enclosed are the results from 1 soil sample received at Sequoia Analytical on August 21, 1992. The requested analyses are listed below:

| SAMPLE # | SAMPLE DESCRIPTION | DATE OF COLLECTION | TEST METHOD        |
|----------|--------------------|--------------------|--------------------|
| 2083627  | Soil. SPA-D        | 3/21/92            | EPA 5030/8015/8020 |

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

  
Maria Lee  
Project Manager



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA  
3315 Almaden Expwy., Suite 34  
San Jose, CA 95118  
Attention: Joel Coffman

Client Project ID: Arco 2035, Albany  
Sample Matrix: Soil  
Analysis Method: EPA 5030/8015/8020  
First Sample #: 208-3627

Sampled: Aug 21, 1992  
Received: Aug 21, 1992  
Reported: Aug 25, 1992

## TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

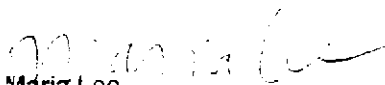
| Analyte                | Reporting Limit<br>mg/kg | Sample I.D.<br>208-3627<br>SPA-D |
|------------------------|--------------------------|----------------------------------|
| Purgeable Hydrocarbons | 1.0                      | 550                              |
| Benzene                | 0.0050                   | 2.6                              |
| Toluene                | 0.0050                   | 9.5                              |
| Ethyl Benzene          | 0.0050                   | 5.4                              |
| Total Xylenes          | 0.0050                   | 47                               |
| Chromatogram Pattern:  |                          | Gasoline                         |

### Quality Control Data

|   |         |
|---|---------|
| Report Limit Multiplication Factor:             | 100     |
| Date Analyzed:                                  | 8/25/92 |
| Instrument Identification:                      | GCHP-7  |
| Surrogate Recovery, %:<br>(QC Limits = 70-130%) | 123     |

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

  
Maria Lee  
Project Manager

2083627.RES <1>



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
(415) 364-9600 • FAX (415) 364-9233

RESNA

Client Project ID: Arco 2035, Albany

3315 Almaden Expwy., Suite 34

San Jose, CA 95118

Attention: Joel Coffman

QC Sample Group: 208-3627

Reported: Aug 25, 1992

## QUALITY CONTROL DATA REPORT

| ANALYTE | Benzene | Toluene | Ethyl-Benzene | Xylenes |
|---------|---------|---------|---------------|---------|
|---------|---------|---------|---------------|---------|

|                  |              |              |              |              |
|------------------|--------------|--------------|--------------|--------------|
| Method:          | EPA 8020     | EPA 8020     | EPA 8020     | EPA 8020     |
| Analyst:         | C. Donohue   | C. Donohue   | C. Donohue   | C. Donohue   |
| Reporting Units: | mg/kg        | mg/kg        | mg/kg        | mg/kg        |
| Date Analyzed:   | Aug 25, 1992 | Aug 25, 1992 | Aug 25, 1992 | Aug 25, 1992 |
| QC Sample #:     | GBLK082592   | GBLK082592   | GBLK082592   | GBLK082592   |

Sample Conc.: N.D. N.D. N.D. N.D.

Spike Conc. Added: 0.20 0.20 0.20 0.60

Conc. Matrix Spike: 0.19 0.19 0.19 0.56

Matrix Spike % Recovery: 95 95 95 93

Conc. Matrix Spike Dup.: 0.19 0.19 0.19 0.56

Matrix Spike Duplicate % Recovery: 95 95 95 93

Relative % Difference: 0.0 0.0 0.0 0.0

SEQUOIA ANALYTICAL

Maria Lee  
Project Manager

|                        |  |
|------------------------|--|
| % Recovery:            | $\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$                                |
| Relative % Difference: | $\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{\frac{\text{Conc. of M.S.} + \text{Conc. of M.S.D.}}{2}} \times 100$ |

2083627.RES <2>

ARCO Facility no. 2035 City (Facility) Alameda

Project manager (Consultant) Joel Coffman

ARCO engineer Michael Whelan

Telephone no. (ARCO) 415 771-2434

Telephone no. (Consultant) (408) 264-7723

Fax no. (Consultant) (408) 264-2435

Consultant name RESNA

Address (Consultant) 3315 Alameda Exp, Suite 34, San Jose, CA 95118

Laboratory name

Seqwie

Contract number

07-073

Method of shipment

Seqwie Courier

Special detection Limit/reporting

2035027

Special QA/QC

Remarks

48 hr turnaround since composite sample

Lab number

Turnaround time

Priority Rush  
1 Business Day

Rush  
2 Business Days

Expedited  
5 Business Days

Standard  
10 Business Days

| Sample I.D.    | Lab no. | Container no. | Matrix                              |       |       | Preservation                        |      | Sampling date | Sampling time | STEX<br>EPA 802                     | STEX/TPH<br>EPA M602/802/801S | TPH Modified 801S<br>Gas Diesel | Oil and Grease<br>413.1 413.2 | TPH<br>EPA 418.1/SM503E | EPA 601/8010 | EPA 624/8240 | EPA 625/8270 | TCLP<br>Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/> | Semi<br>Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/> | CMM Metals EPA 601/0700<br>TTLC <input type="checkbox"/> STLC <input type="checkbox"/> | Lead Org./DHS<br>Lead EPA<br>7420/7421 <input type="checkbox"/> |  |
|----------------|---------|---------------|-------------------------------------|-------|-------|-------------------------------------|------|---------------|---------------|-------------------------------------|-------------------------------|---------------------------------|-------------------------------|-------------------------|--------------|--------------|--------------|---|---|--|---|--|
|                |         |               | Soil                                | Water | Other | Ice                                 | Acid |               |               |                                     |                               |                                 |                               |                         |              |              |              |   |   |  |   |  |
| S-0821-92-SP A |         | P.A           | <input checked="" type="checkbox"/> |       |       | <input checked="" type="checkbox"/> |      | 08/21/92      |               | <input checked="" type="checkbox"/> |                               |                                 |                               |                         |              |              |              |   |   |  |   |  |
| S-0821-92-SP B |         | P.B           | <input checked="" type="checkbox"/> |       |       | <input checked="" type="checkbox"/> |      | 08/21/92      |               | <input checked="" type="checkbox"/> |                               |                                 |                               |                         |              |              |              |   |   |  |   |  |
| S-0821-92-SP C |         | P.C           | <input checked="" type="checkbox"/> |       |       | <input checked="" type="checkbox"/> |      | 08/21/92      |               | <input checked="" type="checkbox"/> |                               |                                 |                               |                         |              |              |              |   |   |  |   |  |
| S-0821-92-SP D |         | P.D           | <input checked="" type="checkbox"/> |       |       | <input checked="" type="checkbox"/> |      | 08/21/92      |               | <input checked="" type="checkbox"/> |                               |                                 |                               |                         |              |              |              |   |   |  |   |  |

Condition of sample:

Temperature received:

Relinquished by sampler  
Barbara Nieminski

Date 08/21/92 Time 3:15 PM

Received by  
A. Buchheiser (1956-10000)

Relinquished by  
A. Buchheiser

Date 8/21/92 Time 1726

Received by laboratory

Date \_\_\_\_\_ Time \_\_\_\_\_





ENVIRONMENTAL  
LABORATORIES, INC.

**Northwest Region**

4080-C Pike Lane  
Concord, CA 94520  
(510) 685-7852  
(800) 544-3422 from inside California  
(800) 423-7143 from outside California  
(510) 825-0720 (FAX)

Client Number: RSN04ARC01  
Facility Number: 2035  
Arco Representative: Mike Whelan  
Work Order Number: C2-08-650  
Date Reissued: 10-29-92

October 29, 1992

RECEIVED

OCT 30 1992

RESNA  
SAN JOSE

Bruce Maeda  
RESNA Industries  
3315 Almaden Expressway, #34  
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 08/26/92, under task order number 07006/2035-92-4.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria, unless otherwise stated in the footnotes.

GTEL is certified by the California State Department of Health Services to perform analyses for drinking water, wastewater, and hazardous waste materials according to EPA protocols.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

Eileen F. Bullen  
Laboratory Director

Table 1

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Method 8015a

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

| GTEL Sample Number         |                                    | 01                               | 02       | 03       | 04       |
|----------------------------|------------------------------------|----------------------------------|----------|----------|----------|
| Client Identification      |                                    | A-VW530                          | A-VW430  | A-VW630  | A-VW330  |
| Date Sampled               |                                    | 08/25/92                         | 08/25/92 | 08/25/92 | 08/25/92 |
| Date Analyzed              |                                    | 08/28/92                         | 08/28/92 | 08/27/92 | 08/28/92 |
| Analvte                    | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |          |          |          |
| Gasoline                   | 10                                 | 27000                            | 14       | 20       | <10      |
| BFB surrogate, % recovery  |                                    | 116                              | 83.3     | 93.9     | 86.1     |
| Detection Limit Multiplier |                                    | 1                                | 1        | 1        | 1        |

| GTEL Sample Number         |                                    | 05                               | 06       | 07       | 08       |
|----------------------------|------------------------------------|----------------------------------|----------|----------|----------|
| Client Identification      |                                    | A-VW230                          | A-VW130  | A-VW1EFF | A-VW1120 |
| Date Sampled               |                                    | 08/25/92                         | 08/25/92 | 08/25/92 | 08/25/92 |
| Date Analyzed              |                                    | 08/27/92                         | 08/31/92 | 08/28/92 | 08/28/92 |
| Analvte                    | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |          |          |          |
| Gasoline                   | 10                                 | 6800                             | 57       | 110      | 14       |
| BFB surrogate, % recovery  |                                    | 73.1                             | 95.0     | 101      | 92.9     |
| Detection Limit Multiplier |                                    | 1                                | 1        | 1        | 1        |

Table 1 (Continued)

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons as Gasoline in Air

Modified EPA Method 8015<sup>a</sup>

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Control Board LUFT Manual protocols, May 1988 revision.

|                            |                                    |                                  |  |  |
|----------------------------|------------------------------------|----------------------------------|--|--|
| GTEL Sample Number         |                                    | 09                               |  |  |
| Client Identification      |                                    | METHOD<br>BLANK                  |  |  |
| Date Sampled               |                                    | 08/25/92                         |  |  |
| Date Analyzed              |                                    | 08/27/92                         |  |  |
| Analyte                    | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |  |  |
| Gasoline                   | 10                                 | < 10                             |  |  |
| BFB surrogate, % recovery  |                                    | 30.4                             |  |  |
| Detection Limit Multiplier |                                    | 1                                |  |  |

**QC Matrix Spike and Duplicate Spike Results**

Matrix: Soil

| Analyte            | Sample ID  | Date of Analysis | Spike Amount | Units | Recovery, % | Duplicate Recovery, % | RPD <sup>a</sup> , % |
|--------------------|------------|------------------|--------------|-------|-------------|-----------------------|----------------------|
| <b>EPA 8240:</b>   |            |                  |              |       |             |                       |                      |
| 1,1-Dichloroethene | C208384-01 | 08/24/92         | 50           | ug/Kg | 108         | 105                   | 2.44                 |
| Trichloroethene    | C208384-01 | 08/24/92         | 50           | ug/Kg | 100         | 95.0                  | 5.33                 |
| Benzene            | C208384-01 | 08/24/92         | 50           | ug/Kg | 112         | 102                   | 8.60                 |
| Toluene            | C208384-01 | 08/24/92         | 50           | ug/Kg | 97.2        | 98.8                  | 1.63                 |
| Chlorobenzene      | C208384-01 | 08/24/92         | 50           | ug/Kg | 97.8        | 97.6                  | 0.20                 |

**Sample and Sample Duplicate Results**

Matrix: Air

| Analyte                   | Sample ID  | Date of Analysis | Sample Results | Sample Duplicate Results | Units | RPD <sup>a</sup> , % |
|---------------------------|------------|------------------|----------------|--------------------------|-------|----------------------|
| <b>Modified EPA 8020:</b> |            |                  |                |                          |       |                      |
| Benzene                   | C208713-01 | 08/28/92         | 37.5           | 37.0                     | ug/L  | 1.34                 |
| Toluene                   | C208713-01 | 08/28/92         | 20.2           | 19.3                     | ug/L  | 4.55                 |
| Ethylbenzene              | C208713-01 | 08/28/92         | 5.35           | 5.15                     | ug/L  | 3.62                 |
| Xylene, total             | C208713-01 | 08/28/92         | 19.6           | 18.9                     | ug/L  | 3.64                 |

a. See attached table for acceptability limits.

QC Acceptability Limits

| Analyte                   | QC Check Sample Recovery (%) | Duplicate Water Sample RPD (%) | Duplicate Soil Sample RPD (%) | Water Matrix Spike Recovery (%) | Soil Matrix Spike Recovery (%) | Reagent Water Spike Recovery (%) |
|---------------------------|------------------------------|--------------------------------|-------------------------------|---------------------------------|--------------------------------|----------------------------------|
| <b>Modified EPA 8020:</b> |                              |                                |                               |                                 |                                |                                  |
| Benzene                   | 80 - 120                     | 30                             | 30                            | 55 - 129                        | 24 - 127                       | 70 - 147                         |
| Toluene                   | 80 - 120                     | 30                             | 30                            | 72 - 149                        | 17 - 124                       | 67 - 150                         |
| Ethylbenzene              | 80 - 120                     | 30                             | 30                            | 75 - 138                        | 19 - 129                       | 69 - 145                         |
| Xylene                    | 80 - 120                     | 30                             | 30                            | 74 - 147                        | 23 - 124                       | 71 - 152                         |
| <b>Modified EPA 8015:</b> |                              |                                |                               |                                 |                                |                                  |
| Gasoline                  | —                            | 30                             | 30                            | —                               | —                              |                                  |
| Analyte                   | QC Check Sample Recovery (%) | Duplicate Water Sample RPD (%) | Duplicate Soil Sample RPD (%) | Water Matrix Spike Recovery (%) | Soil Matrix Spike Recovery (%) | Reagent Water Spike Recovery (%) |
| Diesel                    | —                            | 30                             | 30                            | 63 - 127                        | 58 - 144                       | 48 - 134                         |
| <b>EPA 8010/8020:</b>     |                              |                                |                               |                                 |                                |                                  |
| Chlorobenzene             | 80 - 120                     | 30                             | —                             | 34 - 134                        | 58 - 126                       | 62 - 111                         |
| Benzene                   | 80 - 120                     | 30                             | —                             | 66 - 118                        | 24 - 127                       | 58 - 127                         |
| Toluene                   | 80 - 120                     | 30                             | —                             | 53 - 115                        | 17 - 124                       | 60 - 120                         |
| Ethylbenzene              | 80 - 120                     | 30                             | —                             | 43 - 131                        | 19 - 129                       | 58 - 126                         |
| Xylene, total             | 80 - 120                     | 30                             | —                             | 55 - 115                        | 23 - 124                       | 63 - 128                         |
| 1,1-Dichloroethene        | 80 - 120                     | 30                             | —                             | 30 - 160                        | 72 - 116                       | 56 - 138                         |
| Trichloroethene           | 80 - 120                     | 30                             | —                             | 78 - 184                        | 79 - 120                       | 82 - 187                         |
| <b>EPA 8080:</b>          |                              |                                |                               |                                 |                                |                                  |
| Heptachlor                | 80 - 120                     | 30                             | —                             | —                               | 34 - 111                       | 34 - 111                         |
| Aldrin                    | 80 - 120                     | 30                             | —                             | —                               | 42 - 122                       | 42 - 122                         |
| DDE                       | 80 - 120                     | 30                             | —                             | —                               | 30 - 145                       | 30 - 145                         |
| Dieldrin                  | 80 - 120                     | 30                             | —                             | —                               | 36 - 146                       | 36 - 146                         |
| Endrin                    | 80 - 120                     | 30                             | —                             | —                               | 30 - 147                       | 30 - 147                         |
| DDD                       | 80 - 120                     | 30                             | —                             | —                               | 31 - 141                       | 31 - 114                         |
| DDT                       | 80 - 120                     | 30                             | —                             | —                               | 10 - 180                       | 10 - 180                         |
| Arochlor 1260             | 45 - 127                     | 30                             | —                             | —                               | 53 - 128                       | 53 - 128                         |

QC Acceptability Limits

| Analyte               | QC Check Sample Recovery (%) | Duplicate Water Sample RPD (%) | Duplicate Soil Sample RPD (%) | Water Matrix Spike Recovery (%) | Soil Matrix Spike Recovery (%) | Reagent Water Spike Recovery (%) |
|-----------------------|------------------------------|--------------------------------|-------------------------------|---------------------------------|--------------------------------|----------------------------------|
| <b>EPA 8310:</b>      |                              |                                |                               |                                 |                                |                                  |
| Fluorene              | 80 - 120                     | 68                             | --                            | --                              | --                             | 49 - 116                         |
| Anthracene            | 80 - 120                     | 41.7                           | --                            | --                              | --                             | 24 - 116                         |
| Chrysene              | 80 - 120                     | 65.2                           | --                            | --                              | --                             | 44 - 128                         |
| Benzo(a)pyrene        | 80 - 120                     | 52.8                           | --                            | --                              | --                             | 26 - 126                         |
| Naphthalene           | 80 - 120                     | 42.3                           | --                            | --                              | --                             | 51 - 106                         |
| <b>EPA 8240:</b>      |                              |                                |                               |                                 |                                |                                  |
| All 8240 Compounds    | 60 - 140                     | --                             | --                            | --                              | --                             | --                               |
| Trichloroethene       | --                           | 14                             | 24                            | 71 - 120                        | 62 - 137                       | 71 - 120                         |
| Toluene               | --                           | 13                             | 21                            | 76 - 125                        | 59 - 139                       | 76 - 125                         |
| Chlorobenzene         | --                           | 13                             | 21                            | 75 - 130                        | 60 - 133                       | 75 - 130                         |
| 1,1-Dichloroethene    | --                           | 14                             | 22                            | 61 - 145                        | 59 - 172                       | 61 - 145                         |
| Benzene               | --                           | 11                             | 21                            | 76 - 127                        | 66 - 142                       | 76 - 127                         |
| TPH/IR:               | 80 - 120                     | 20                             | 20                            | 70 - 130                        | 70 - 130                       | 70 - 130                         |
| <b>Metals:</b>        |                              |                                |                               |                                 |                                |                                  |
| Arsenic               | 90 - 110                     | 20                             | 20                            | 80 - 120                        | 80 - 120                       | 80 - 120                         |
| Barium                | 90 - 110                     | 20                             | 20                            | 90 - 120                        | 90 - 120                       | 80 - 120                         |
| Cadmium               | 90 - 110                     | 20                             | 20                            | 80 - 120                        | 80 - 120                       | 80 - 120                         |
| Chromium              | 90 - 110                     | 20                             | 20                            | 80 - 120                        | 80 - 120                       | 80 - 120                         |
| Lead                  | 90 - 110                     | 20                             | 20                            | 80 - 120                        | 80 - 120                       | 80 - 120                         |
| Mercury               | 90 - 110                     | 20                             | 20                            | 80 - 120                        | 80 - 120                       | 80 - 120                         |
| Selenium              | 90 - 110                     | 20                             | 20                            | 80 - 120                        | 80 - 120                       | 90 - 110                         |
| Silver                | 90 - 110                     | 20                             | 20                            | 80 - 120                        | 80 - 120                       | 90 - 110                         |
| <b>Wet Chemistry:</b> |                              |                                |                               |                                 |                                |                                  |
| TOC                   | 90 - 110                     | 20                             | NA                            | 90 - 110                        | NA                             | 90 - 110                         |

NA = Not Applicable.



ENVIRONMENTAL  
LABORATORIES, INC.

**Northwest Region**

4080-C Pike Lane  
Concord, CA 94520  
(510) 685-7852  
(800) 544-3422 from inside California  
(800) 423-7143 from outside California  
(510) 825-0720 (FAX)

Client Number: RSN04AR001  
Facility Number: 2035  
Arco Representative: Mike Whelan  
Work Order Number: C2-08-651  
Date Reissued: 10-29-92

October 29, 1992

Bruce Maeda  
RESNA Industries  
3315 Almaden Expressway, #34  
San Jose, CA 95118

Enclosed please find the analytical results for samples received by GTEL Environmental Laboratories, Inc. on 08/26/92, under task order number 07006/2035-92-4.

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Sincerely,  
GTEL Environmental Laboratories, Inc.

Eileen F. Bullen  
Laboratory Director

Table 1  
 ANALYTICAL RESULTS  
 Volatile Organics in Air  
 EPA Method 8240<sup>a</sup>

| GTEL Sample Number        |                                    | 01*                              | 02       | 03       | 04       |
|---------------------------|------------------------------------|----------------------------------|----------|----------|----------|
| Client Identification     |                                    | A-VW530                          | A-VW430  | A-VW630  | A-VW330  |
| Date Sampled              |                                    | 08/25/92                         | 08/25/92 | 08/25/92 | 08/25/92 |
| Date Analyzed             |                                    | 08/26/92                         | 08/26/92 | 08/26/92 | 08/25/92 |
| Analyte                   | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |          |          |          |
| Chloromethane             | 10                                 | <50                              | <10      | <10      | <10      |
| Bromomethane              | 10                                 | <50                              | <10      | <10      | <10      |
| Vinyl chloride            | 10                                 | <50                              | <10      | <10      | <10      |
| Chloroethane              | 10                                 | <50                              | <10      | <10      | <10      |
| Methylene chloride        | 5                                  | <25                              | <5       | <5       | <5       |
| Acetone                   | 100                                | <500                             | <100     | <100     | <100     |
| Carbon disulfide          | 5                                  | <25                              | <5       | <5       | <5       |
| 1,1-Dichloroethene        | 5                                  | <25                              | <5       | <5       | <5       |
| 1,1-Dichloroethane        | 5                                  | <25                              | <5       | <5       | <5       |
| 1,2-Dichloroethene, total | 5                                  | <25                              | <5       | <5       | <5       |
| Chloroform                | 5                                  | <25                              | <5       | <5       | <5       |
| 1,2-Dichloroethane        | 5                                  | <25                              | <5       | <5       | <5       |
| 2-Butanone                | 100                                | <500                             | <100     | <100     | <100     |
| 1,1,1-Trichloroethane     | 5                                  | <25                              | <5       | <5       | <5       |
| Carbon tetrachloride      | 5                                  | <25                              | <5       | <5       | <5       |
| Vinyl acetate             | 50                                 | <250                             | <50      | <50      | <50      |
| Bromodichloromethane      | 5                                  | <25                              | <5       | <5       | <5       |
| 1,2-Dichloropropane       | 5                                  | <25                              | <5       | <5       | <5       |
| cis-1,3-Dichloropropene   | 5                                  | <25                              | <5       | <5       | <5       |
| Trichloroethene           | 5                                  | <25                              | <5       | <5       | <5       |

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample introduction by EPA Method 5030.
- Sample diluted due to matrix interference.



Table 1 (Continued)  
 ANALYTICAL RESULTS  
 Volatile Organics in Air  
 EPA Method 8240<sup>a</sup>

| GTEL Sample Number         |                                    | 01*                              | 02       | 03       | 04       |
|----------------------------|------------------------------------|----------------------------------|----------|----------|----------|
| Client Identification      |                                    | A-VW530                          | A-VW430  | A-VW630  | A-VW330  |
| Date Sampled               |                                    | 08/25/92                         | 08/25/92 | 08/25/92 | 08/25/92 |
| Date Analyzed              |                                    | 08/26/92                         | 08/26/92 | 08/26/92 | 08/26/92 |
| Analyte                    | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |          |          |          |
| Dibromochloromethane       | 5                                  | <25                              | <5       | <5       | <5       |
| 1,1,2-Trichloroethane      | 5                                  | <25                              | <5       | <5       | <5       |
| Benzene                    | 5                                  | 330                              | <5       | <5       | <5       |
| trans-1,3-Dichloropropene  | 5                                  | <25                              | <5       | <5       | <5       |
| 2-Chloroethylvinyl ether   | 10                                 | <50                              | <10      | <10      | <10      |
| Bromoform                  | 5                                  | <25                              | <5       | <5       | <5       |
| 4-Methyl-2-pentanone       | 50                                 | <250                             | <50      | <50      | <50      |
| 2-Hexanone                 | 50                                 | <250                             | <50      | <50      | <50      |
| Tetrachloroethene          | 5                                  | <25                              | <5       | <5       | <5       |
| 1,1,2,2-Tetrachloroethane  | 5                                  | <25                              | <5       | <5       | <5       |
| Toluene                    | 5                                  | 220                              | <5       | 5.2      | <5       |
| Chlorobenzene              | 5                                  | <25                              | <5       | <5       | <5       |
| Ethylbenzene               | 5                                  | <25                              | <5       | <5       | <5       |
| Styrene                    | 5                                  | <25                              | <5       | <5       | <5       |
| 1,2-Dichlorobenzene        | 5                                  | <25                              | <5       | <5       | <5       |
| 1,3-Dichlorobenzene        | 5                                  | <25                              | <5       | <5       | <5       |
| 1,4-Dichlorobenzene        | 5                                  | <25                              | <5       | <5       | <5       |
| Xylene, total              | 5                                  | 36                               | <5       | 5.7      | <5       |
| Trichlorofluoromethane     | 5                                  | <25                              | <5       | <5       | <5       |
| Detection Limit Multiplier |                                    | 5                                | 1        | 1        | 1        |

- a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample introduction by EPA Method 5030.
- \* Sample diluted due to matrix interference.

Table 1 (Continued)  
 ANALYTICAL RESULTS  
 Volatile Organics in Air  
 EPA Method 8240<sup>a</sup>

| GTEL Sample Number        |                                    | 05                               | 06       | 07       | 08       |
|---------------------------|------------------------------------|----------------------------------|----------|----------|----------|
| Client Identification     |                                    | A-VW230                          | A-VW130  | A-VW1EFF | A-VW1120 |
| Date Sampled              |                                    | 08/25/92                         | 08/25/92 | 08/25/92 | 08/25/92 |
| Date Analyzed             |                                    | 08/26/92                         | 08/26/92 | 08/26/92 | 08/26/92 |
| Analyte                   | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |          |          |          |
| Chloromethane             | 10                                 | <10                              | <10      | <10      | <10      |
| Bromomethane              | 10                                 | <10                              | <10      | <10      | <10      |
| Vinyl chloride            | 10                                 | <10                              | <10      | <10      | <10      |
| Chloroethane              | 10                                 | <10                              | <10      | <10      | <10      |
| Methylene chloride        | 5                                  | <5                               | <5       | <5       | <5       |
| Acetone                   | 100                                | <100                             | <100     | <100     | <100     |
| Carbon disulfide          | 5                                  | <5                               | <5       | <5       | <5       |
| 1,1-Dichloroethene        | 5                                  | <5                               | <5       | <5       | <5       |
| 1,1-Dichloroethane        | 5                                  | <5                               | <5       | <5       | <5       |
| 1,2-Dichloroethene, total | 5                                  | <5                               | <5       | <5       | <5       |
| Chloroform                | 5                                  | <5                               | <5       | <5       | <5       |
| 1,2-Dichloroethane        | 5                                  | <5                               | <5       | <5       | <5       |
| 2-Butanone                | 100                                | <100                             | <100     | <100     | <100     |
| 1,1,1-Trichloroethane     | 5                                  | <5                               | <5       | <5       | <5       |
| Carbon tetrachloride      | 5                                  | <5                               | <5       | <5       | <5       |
| Vinyl acetate             | 50                                 | <50                              | <50      | <50      | <50      |
| Bromodichloromethane      | 5                                  | <5                               | <5       | <5       | <5       |
| 1,2-Dichloropropane       | 5                                  | <5                               | <5       | <5       | <5       |
| cis-1,3-Dichloropropene   | 5                                  | <5                               | <5       | <5       | <5       |
| Trichloroethene           | 5                                  | <5                               | <5       | <5       | <5       |

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample introduction by EPA Method 5030.

Table 1 (Continued)  
 ANALYTICAL RESULTS  
 Volatile Organics in Air  
 EPA Method 8240a

| GTEL Sample Number         |                                    | 05                               | 06       | 07       | 08       |
|----------------------------|------------------------------------|----------------------------------|----------|----------|----------|
| Client Identification      |                                    | A-VW230                          | A-VW130  | A-VW1EFF | A-VW1120 |
| Date Sampled               |                                    | 08/25/92                         | 08/25/92 | 08/25/92 | 08/25/92 |
| Date Analyzed              |                                    | 08/26/92                         | 08/26/92 | 08/26/92 | 08/26/92 |
| Analyte                    | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |          |          |          |
| Dibromochloromethane       | 5                                  | <5                               | <5       | <5       | <5       |
| 1,1,2-Trichloroethane      | 5                                  | <5                               | <5       | <5       | <5       |
| Benzene                    | 5                                  | 83                               | <5       | <5       | <5       |
| trans-1,3-Dichloropropene  | 5                                  | <5                               | <5       | <5       | <5       |
| 2-Chloroethylvinyl ether   | 10                                 | <10                              | <10      | <10      | <10      |
| Bromoform                  | 5                                  | <5                               | <5       | <5       | <5       |
| 4-Methyl-2-pentanone       | 50                                 | <50                              | <50      | <50      | <50      |
| 2-Hexanone                 | 50                                 | <50                              | <50      | <50      | <50      |
| Tetrachloroethene          | 5                                  | <5                               | <5       | <5       | <5       |
| 1,1,2,2-Tetrachloroethane  | 5                                  | <5                               | <5       | <5       | <5       |
| Toluene                    | 5                                  | 16                               | <5       | <5       | <5       |
| Chlorobenzene              | 5                                  | <5                               | <5       | <5       | <5       |
| Ethylbenzene               | 5                                  | <5                               | <5       | <5       | <5       |
| Styrene                    | 5                                  | <5                               | <5       | <5       | <5       |
| 1,2-Dichlorobenzene        | 5                                  | <5                               | <5       | <5       | <5       |
| 1,3-Dichlorobenzene        | 5                                  | <5                               | <5       | <5       | <5       |
| 1,4-Dichlorobenzene        | 5                                  | <5                               | <5       | <5       | <5       |
| Xylene, total              | 5                                  | <5                               | <5       | <5       | <5       |
| Trichlorofluoromethane     | 5                                  | <5                               | <5       | <5       | <5       |
| Detection Limit Multiplier |                                    | 1                                | 1        | 1        | 1        |

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample introduction by EPA Method 5030.

Table 1 (Continued)  
 ANALYTICAL RESULTS  
 Volatile Organics in Air  
 EPA Method 8240a

| GTEL Sample Number        |                                    | 09                               |  |  |
|---------------------------|------------------------------------|----------------------------------|--|--|
| Client Identification     |                                    | METHOD<br>BLK.                   |  |  |
| Date Sampled              |                                    | 08/25/92                         |  |  |
| Date Analyzed             |                                    | 08/26/92                         |  |  |
| Analyte                   | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |  |  |
| Chloromethane             | 10                                 | <10                              |  |  |
| Bromomethane              | 10                                 | <10                              |  |  |
| Vinyl chloride            | 10                                 | <10                              |  |  |
| Chloroethane              | 10                                 | <10                              |  |  |
| Methylene chloride        | 5                                  | <5                               |  |  |
| Acetone                   | 100                                | <100                             |  |  |
| Carbon disulfide          | 5                                  | <5                               |  |  |
| 1,1-Dichloroethene        | 5                                  | <5                               |  |  |
| 1,1-Dichloroethane        | 5                                  | <5                               |  |  |
| 1,2-Dichloroethene, total | 5                                  | <5                               |  |  |
| Chloroform                | 5                                  | <5                               |  |  |
| 1,2-Dichloroethane        | 5                                  | <5                               |  |  |
| 2-Butanone                | 100                                | <100                             |  |  |
| 1,1,1-Trichloroethane     | 5                                  | <5                               |  |  |
| Carbon tetrachloride      | 5                                  | <5                               |  |  |
| Vinyl acetate             | 50                                 | <50                              |  |  |
| Bromodichloromethane      | 5                                  | <5                               |  |  |
| 1,2-Dichloropropane       | 5                                  | <5                               |  |  |
| cis-1,3-Dichloropropene   | 5                                  | <5                               |  |  |
| Trichloroethene           | 5                                  | <5                               |  |  |

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1988 (method modified for additional compounds). Sample introduction by EPA Method 5030.

**Table 1 (Continued)**  
**ANALYTICAL RESULTS**  
**Volatile Organics in Air**  
**EPA Method 8240<sup>a</sup>**

| GTEL Sample Number         |                                    | 09                               |  |  |
|----------------------------|------------------------------------|----------------------------------|--|--|
| Client Identification      |                                    | METHOD<br>BLK.                   |  |  |
| Date Sampled               |                                    | 08/25/92                         |  |  |
| Date Analyzed              |                                    | 08/26/92                         |  |  |
| Analyte                    | Detection Limit, mg/m <sup>3</sup> | Concentration, mg/m <sup>3</sup> |  |  |
| Dibromochloromethane       | 5                                  | <5                               |  |  |
| 1,1,2-Trichloroethane      | 5                                  | <5                               |  |  |
| Benzene                    | 5                                  | <5                               |  |  |
| trans-1,3-Dichloropropene  | 5                                  | <5                               |  |  |
| 2-Chloroethylvinyl ether   | 10                                 | <10                              |  |  |
| Bromoform                  | 5                                  | <5                               |  |  |
| 4-Methyl-2-pentanone       | 50                                 | <50                              |  |  |
| 2-Hexanone                 | 50                                 | <50                              |  |  |
| Tetrachloroethene          | 5                                  | <5                               |  |  |
| 1,1,2,2-Tetrachloroethane  | 5                                  | <5                               |  |  |
| Toluene                    | 5                                  | <5                               |  |  |
| Chlorobenzene              | 5                                  | <5                               |  |  |
| Ethylbenzene               | 5                                  | <5                               |  |  |
| Styrene                    | 5                                  | <5                               |  |  |
| 1,2-Dichlorobenzene        | 5                                  | <5                               |  |  |
| 1,3-Dichlorobenzene        | 5                                  | <5                               |  |  |
| 1,4-Dichlorobenzene        | 5                                  | <5                               |  |  |
| Xylene, total              | 5                                  | <5                               |  |  |
| Trichlorofluoromethane     | 5                                  | <5                               |  |  |
| Detection Limit Multiplier |                                    | 1                                |  |  |

a. Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986 (method modified for additional compounds). Sample introduction by EPA Method 5030.

CO Products Company

Division of AtlanticRichfieldCompany

Task Order No.

Chain of Custody

Facility no. 2035 City (Facility) Army Project manager (Consultant) Bruce Mason  
 Engineer Mike Whelan Telephone no. (ARCO) (415) 541-2449 Telephone no. (Consultant) (408) 244-7723 Fax no. (Consultant) 264-2435  
 Client name RESNA Address (Consultant) 3315 Alameda Springsway #34 San Jose, CA 95118

| Lab no. | Container no. | Matrix |       |       | Preservation |      | Sampling date | Sampling time | BTEX<br>EPA 821/822 | SITE/TPH<br>EPA 146/213/214/215 | TPH Modified 8015<br>Gas <input type="checkbox"/> Diesel <input type="checkbox"/> | Oil and Grease<br>413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> | TPH<br>EPA 418.1/5/6/7/8/9/10/11 | EPA 821/8210 | EPA 821/8210 Vols                   | EPA 821/8210 | TCUP<br>Meth <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/> | CMI Meth<br>EPA 821/8210<br>ITLC <input type="checkbox"/> STLC <input type="checkbox"/> | Lead<br>Cadmium<br>EPA<br>723/724 <input type="checkbox"/> |  |
|---------|---------------|--------|-------|-------|--------------|------|---------------|---------------|---------------------|---------------------------------|---|---|----------------------------------|--------------|-------------------------------------|--------------|---|---|--|--|
|         |               | Soil   | Water | Other | Ice          | Acid |               |               |                     |                                 |   |   |                                  |              |                                     |              |   |   |  |  |
| 1530    | 01            |        |       | Air   |              |      | 8/25/92       | 1300          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1430    | 02            |        |       |       |              |      |               | 1340          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1630    | 03            |        |       |       |              |      |               | 1440          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1230    | 04            |        |       |       |              |      |               | 1530          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1330    | 05            |        |       |       |              |      |               | 1615          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1430    | 06            |        |       |       |              |      |               | 1715          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1430    | 07            |        |       |       |              |      |               | 1720          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1430    | 08            |        |       |       |              |      |               | 1845          |                     |                                 | <input checked="" type="checkbox"/>   |   |                                  |              | <input checked="" type="checkbox"/> |              |   |   |  |  |
| 1430    | 09            |        |       |       |              |      |               |               |                     |                                 |   |   |                                  |              |                                     |              |   |   |  |  |

Laboratory name ARCO  
 Contract number  
 Method of shipment  
 Special detection Limit/reporting **Box 7**  
 Special OAVC  
 Remarks  
REPEAT RESULTS 1-1  
M6/M3  
CNF # 2037

Location of sample  
 Collected by sampler [Signature]  
 Collected by Concord Courier  
 Collected by Concord Courier  
 Date 8/26/92 Time 9:20  
 Date 8/26/92 Time 12:50  
 Date 8/26/92 Time 12:52  
 Temperature received:  
 Received by Lusan Concord Courier 8:25  
 Received by [Signature]  
 Received by laboratory [Signature] 8/26/92 12:52  
 Lab number **C208650**  
 Turnaround time  
 Priority Rush 1 Business Day ( )  
 Rush 2 Business Days ( )  
 Expedited 5 Business Days ( )  
 Standard 10 Business Days (X)

White copy - Laboratory; Canary copy - ARCO Environmental Engineering; Pink copy - Consultant

1255 Powell Street  
Emeryville, CA 94608  
510/428-2300  
Fax: 510/547-3643

LOG NO: E92-08-559

Received: 27 AUG 92

Mailed: SEP 05 1992

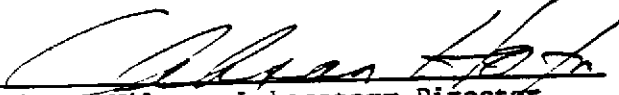
Mr. Bruce Maeda  
Resna Industries  
3315 Almaden Expressway, Suite 34  
San Jose, California 95118

Project: 69036-05

REPORT OF ANALYTICAL RESULTS

Page 1

| LOG NO                   | SAMPLE DESCRIPTION | DATE SAMPLED |
|--------------------------|--------------------|--------------|
| 08-559-1                 | A-PB.1-3           | 25 AUG 92    |
| PARAMETER                | 08-559-1           |              |
| Charcoal Digestion, Date | 08.31.92           |              |
| Lead, ug                 | 0.080              |              |

  
Edward Wilson, Laboratory Director

BCA

# CO Products Company

Division of AtlanticRichfieldCompany

Task Order No.

BCA Log # 8-559-1 Chain of Custody

Facility no. 2035 City (Facility) ARAWAY Project manager (Consultant) BRUCE V. NEPA Laboratory name  
 Engineer MIKE WHELAN Telephone no. (ARCO) 541-2448 Telephone no. (Consultant) (438) 264-7723 Fax no. (Consultant) 264-2435 Contract number  
 Consultant name \_\_\_\_\_ Address (Consultant) \_\_\_\_\_ Method of shipment \_\_\_\_\_

| Sample ID. | Lab no. | Container no. | Matrix |       |       | Preservation |      | Sampling date | Sampling time | BTEX<br>602/EPA 8020 | BTEX/TPH<br>EPA 1631/8020/8015 | TPH Method 8015<br>Gas <input type="checkbox"/> Diesel <input type="checkbox"/> | Oil and Grease<br>413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> | TPH<br>EPA 418.1/SNEDGE | EPA 801/8010 | EPA 824/8240 | EPA 825/8270 | TCAP<br>Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/> | CAMP Metals EPA 8010/7000<br>TLC <input type="checkbox"/> STLC <input type="checkbox"/> | Lead Cr/Cd/Hg<br>Lead EPA 7430/7421 <input type="checkbox"/> |  |
|------------|---------|---------------|--------|-------|-------|--------------|------|---------------|---------------|----------------------|--------------------------------|---|---|-------------------------|--------------|--------------|--------------|---|---|--|--|
|            |         |               | Soil   | Water | Other | Ice          | Acid |               |               |                      |                                |   |   |                         |              |              |              |   |   |  |  |
| PB1        |         |               |        |       | AR    |              |      | 8/27/92       | 1800          |                      |                                |   |   |                         |              |              |              |   |   |  |  |
| PB2        |         |               |        |       | I     |              |      | I             | I             |                      |                                |   |   |                         |              |              |              |   |   |  |  |
| PB3        |         |               |        |       | I     |              |      | I             | I             |                      |                                |   |   |                         |              |              |              |   |   |  |  |

Special detection Limiting \_\_\_\_\_  
 Special HAZOC \_\_\_\_\_  
 Remarks: Analysis 2.5 hr<sup>3</sup>/hr  
SAMPLE NO. 11/1/92

Condition of sample: \_\_\_\_\_  
 Inquired by sampler [Signature] Date 8/27/92 Time 9:20 Temperature received: \_\_\_\_\_  
 Inquired by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received by [Signature]  
 Inquired by \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ Received by laboratory [Signature] Date 8/27/92 Time 1745

|           |                  |    |
|-----------|------------------|----|
| Priority  | 1 Business Day   | 11 |
| Rush      | 2 Business Days  | 11 |
| Expedited | 5 Business Days  | 11 |
| Standard  | 10 Business Days | 11 |