RESULTS OF FREE PRODUCT RECOVERY, ADDITIONAL GROUND WATER ASSESSMENT, AND QUARTERLY GROUND WATER MONITORING ACTIVITIES

FORMER BILL CHUN SERVICE STATION
2301 SANTA CLARA AVENUE
ALAMEDA, CALIFORNIA

Prepared for:

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Prepared by:

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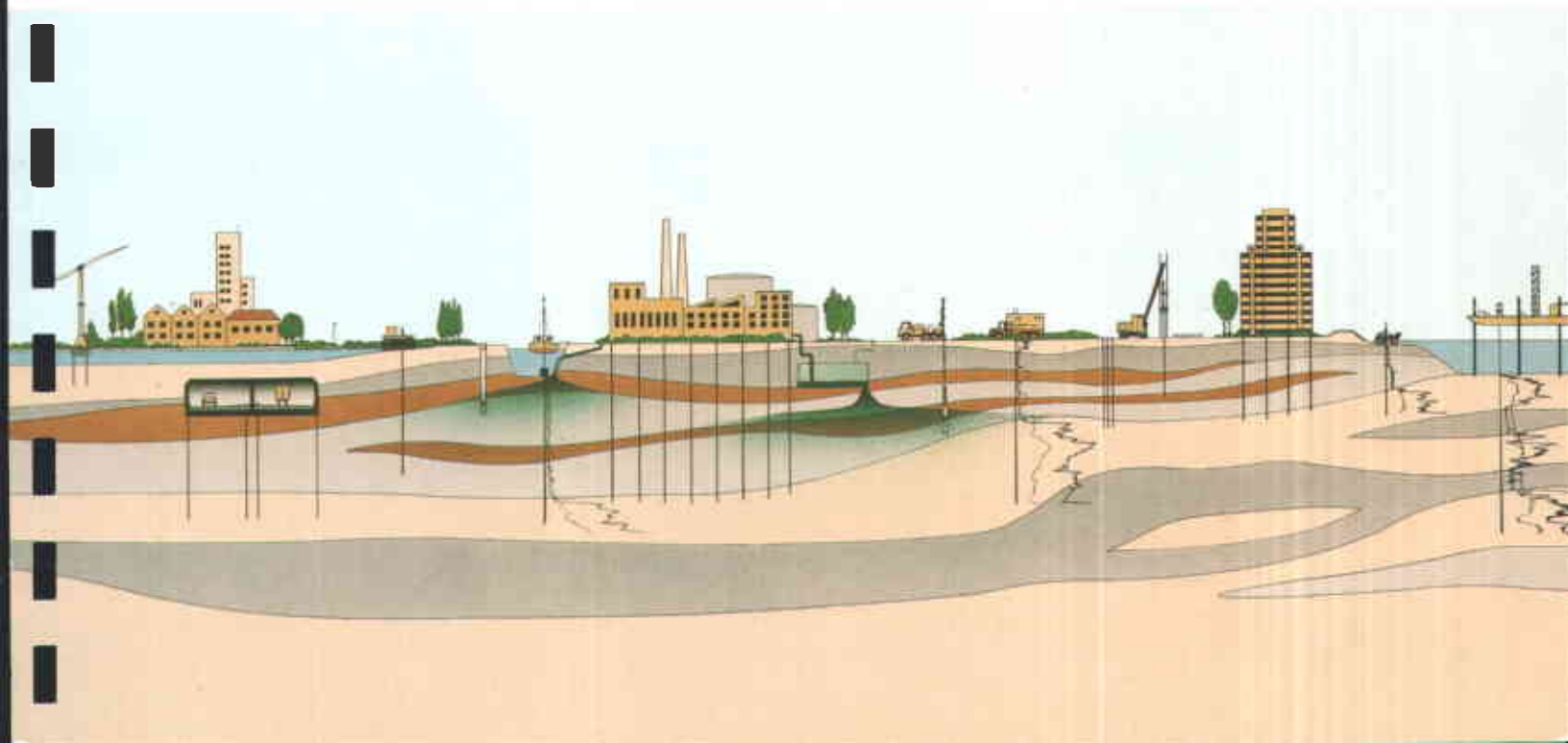
JANUARY 1996
Fugro Project No. 9537-0431A



L E T T E R O F T R A N S M I T T A L

DATE: February 5, 1996

TO: Juliet Shin, Senior Hazardous Materials Specialist
Alameda County Health Agency

FROM: Wayne Chun

RE: Report of Findings

Former Bill Chun's Service Station
2301 Santa Clara Ave, Alameda, Ca

The results of free product recovery, additional ground water assessment, and quarterly ground water monitoring activities are enclosed for your review. Please call me at 510-432-7793 if you have any questions.

Wayne A Chun 2/6/96

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January 30, 1996
Project No. 9537-0431A

Mr. Wayne Chun
265 Heron Drive
Pittsburg, California 94565

Results of Free Product Recovery,
Additional Ground Water Assessment,
and Quarterly Ground Water Monitoring Activities
Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Dear Mr. Chun:

Fugro West, Inc., (Fugro) is pleased to provide you with the results of free product recovery, additional ground water assessment, and quarterly ground water monitoring activities performed by Fugro at the former Bill Chun Service Station located at 2301 Santa Clara Avenue in Alameda, California. This work was performed in accordance with Fugro's *Revised Proposal for Free Product Recovery and Ground Water Assessment Services*, dated August 29, 1995, and *Proposal for Quarterly Ground Water Monitoring and Sampling*, dated August 15, 1995. This report is based, in part, on information provided by Mr. Chun, and is subject to modification as newly-acquired information may warrant.

Fugro appreciates this opportunity to provide environmental consulting services to you. If you have any questions regarding this report, please contact us at (415) 296-1041.

Sincerely,

FUGRO WEST, INC.

William E. Bassett, Jr.
Project Environmental Scientist

William G. Shipp
Senior Geologist
CRG No. 6115

REGISTERED GEOLOGIST
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1/31/96
Date

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1.0 INTRODUCTION

This report presents the results of free product recovery, additional ground water assessment, and quarterly ground water monitoring activities performed by Fugro West, Inc., (Fugro) at the former Bill Chun Service Station located at 2301 Santa Clara Avenue in Alameda, California (Subject Property). The work described herein was performed in accordance with Fugro's *Revised Proposal for Free Product Recovery and Ground Water Assessment Services*, dated August 29, 1995, and *Proposal for Quarterly Ground Water Monitoring and Sampling*, dated August 15, 1995.

2.0 BACKGROUND

This section includes information regarding general site history, previous site assessment activities, and previous site remedial activities at the Subject Property. The information presented in this section was included in the reports by other consultants cited below, and/or in the report by Fugro titled *Results of Additional Site Assessment and Remediation Activities*, dated February 7, 1995.

2.1 SITE HISTORY

The former Bill Chun Service Station is a former gasoline service station located on the southeast corner of the intersection of Santa Clara Avenue and Oak Street in a commercial and residential area of Alameda, California (Figure 1). A retail gasoline service station has operated at the Subject Property since at least the 1930s, and possibly since 1915. Documents in the files of the City of Alameda Fire Department indicate that a 290-gallon underground storage tank (UST) for gasoline was installed at the Subject Property in 1915. No documents were reviewed which indicated the date of installation of two other gasoline USTs at the Subject Property. According to Mr. Wayne Chun, operations at the Subject Property included retail sale of gasoline and automobile repair from approximately 1960 (when the Subject Property was purchased by Mr. Bill Chun) to 1991 (when the service station was closed). The site is currently vacant. The locations of three former USTs, a former fuel dispensing island, existing ground water monitoring wells, and other site features are shown on Figure 2.

In July 1992, Parker Environmental Services (Parker) excavated and removed three single-walled steel USTs (two 550-gallon and one 285-gallon), associated product piping, and a fuel dispenser island from the Subject Property. It appears that the removed UST reported by Parker to have a 285-gallon capacity was the 290-gallon UST reportedly installed in 1915. Parker reported that a 2-inch-diameter hole was observed in the bottom of the 285-gallon UST. Parker collected one soil sample from beneath each UST, one soil sample from beneath the former dispenser island, and two samples from the stockpiled excavated soil.

Laboratory analysis of soil samples collected from beneath the former 290-gallon UST detected concentrations of total petroleum hydrocarbons as gasoline (TPH-g) up to 16,000 parts per million (ppm) and benzene up to 280 ppm. Concentrations of TPH-g and benzene, toluene, eythylbenzene, and total xylenes (BTEX) were also detected in the soil sample collected from

beneath the two 550-gallon USTs and the dispenser island. Parker did not report the quantity or disposition of excavated soil. The above information regarding UST removal was included in a report by Parker titled *Underground Tank Removal Soil Sampling and Analysis Report*, dated August 4, 1992.

2.2 PREVIOUS SITE ASSESSMENT ACTIVITIES

This section describes previous site assessment activities including soil assessment activities, ground water assessment activities, and quarterly ground water monitoring at the Subject Property, and a limited investigation of potential off-site sources.

2.2.1 Previous Soil Assessment Activities

In January 1993, Environmental Science & Engineering, Inc. (ESE) drilled and installed 2-inch-diameter ground water monitoring wells MW-1, MW-2, and MW-3 at the Subject Property (Figure 2). TPH-g concentrations at 640, 5,800, and 2,100 ppm, respectively, and benzene concentrations at 1.5 and 110 ppm, and less than 0.5 ppm, respectively, were detected in soil samples collected at ten feet below ground surface (bgs) in borings MW-1, MW-2, and MW-3. Concentrations of 1,2-Dichloroethane (1,2-DCA) and 1,2-Dibromoethane were not detected in soil samples collected at ten feet bgs in borings MW-1, MW-2, and MW-3. Results were included in a report by ESE titled "*Preliminary Site Assessment*", dated March 31, 1993.

In September 1993, ESE drilled and installed ground water monitoring wells MW-4, MW-5, MW-6, and MW-7 on the Subject Property (Figure 2). TPH-g was not detected at or above reported laboratory detection limits in soil samples collected from MW-4 at six and nine feet bgs, or MW-5 and MW-7 at six feet bgs. Concentrations of TPH-g at 11,000, 3,400, and 13,000 ppm, respectively, were detected in soil samples collected from MW-5 at nine feet bgs, MW-6 at ten feet bgs, and MW-7 at ten feet bgs. Benzene was detected in MW-5 at nine feet bgs, MW-6 at ten feet bgs, and MW-7 at ten feet bgs at 34, 8, and 250 ppm, respectively. Results were included in a report by ESE titled "*Additional Site Assessment and Third Quarter 1993 Ground Water Monitoring Report*", dated October 1, 1993.

On August 30, 1994, Fugro drilled soil borings SV-1, HP-1, HP-2, and HP-3 at the Subject Property. Boring SV-1 was drilled to ten feet bgs, then completed as a 2-inch-diameter vapor extraction well. Borings HP-1, HP-2, and HP-3 were drilled to ten feet bgs. Soil samples were collected from each boring at five foot intervals and screened in the field for hydrocarbons using a photoionization detector (PID). A grab ground water sample was collected from each of borings HP-1, HP-2, and HP-3 using a HydroPunch® sampling device. Following collection of grab ground water samples, borings HP-1, HP-2, and HP-3 were filled to the surface with cement grout.

Laboratory analysis indicated that hydrocarbon concentrations were detected in boring soil samples HP-1/11 feet (concentrations of TPH-g and BTEX of 4,600, 4.1, 77, 24, and 88 ppm, respectively), HP-3/11 feet (0.008 ppm benzene) and SV-1/9.5 feet (concentrations of TPH-g and BTEX of 8,400, 37, 330, 170, and 830 ppm, respectively). No other analytes were detected at or above laboratory reporting limits. Table 1 presents a summary of previous and current soil analytical results.

2.2.2 Previous Ground Water Assessment Activities

Laboratory analysis of ground water samples collected from monitoring wells MW-1, MW-2, and MW-3 following their installation in January 1993 detected TPH-g concentrations of 110,000, 85,000, and 8,500 parts per billion (ppb), respectively, and benzene concentrations of 14,000, 20,000, and 170 ppb, respectively. Concentrations of 1,2-Dichloroethane (1,2-DCA) of 470 and 550 ppb, respectively, were detected in ground water samples collected from MW-1 and MW-2. Laboratory analysis of ground water samples collected from monitoring wells MW-4, MW-5, MW-6, and MW-7 following their installation in September 1993 detected TPH-g concentrations of 440, 37,000, 10,000, and 24,000 ppb, respectively, and benzene concentrations of 2.7, 2,700, 1,300, and 6,000 ppb, respectively. Table 2 presents a summary of quarterly ground water monitoring analytical results. Laboratory analysis indicated that concentrations of dissolved-phase hydrocarbons were detected in ground water samples collected in August 1994 from boring HP-1 (concentrations of TPH-g and BTEX of 7,500, 19, 98, 15, and 53 ppb, respectively), and HP-3 (concentrations of TPH-g and BTEX of 950, 410, 2.0, 5.0 and 9.0 ppb, respectively). A concentration of 54 ppb of 1,2-DCA was detected in a ground water sample collected from boring HP-3. No other analytes were detected at or above laboratory reporting limits in the water samples collected from borings HP-1 and HP-3. Table 3 presents a summary of ground water assessment analytical results.

2.2.3 Previous Quarterly Ground Water Monitoring Activities

Quarterly ground water monitoring and sampling was performed at the Subject Property by ESE from January 1993 to June 1994, and by Fugro since November 1994. Ground water gradient directions calculated using field data from these events have generally been directed towards the northwest to northeast. Free product (floating liquid hydrocarbons) has been detected in monitoring well MW-5 since November 1993 (maximum thickness 0.61 feet in December 1993) and MW-7 since February 1994 (maximum thickness 0.50 feet in March 1995). Concentrations of dissolved TPH-g, BTEX, and total petroleum hydrocarbons as diesel (TPH-d) have been detected in ground water samples collected from each of the seven monitoring wells (maximum TPH-g concentration of 330,000 ppb in MW-2 on May 24, 1995; maximum benzene concentration of 56,000 ppb in MW-2 on March 29, 1995; and maximum TPH-d concentration of 40,000 ppb in MW-6 on May 24, 1995).

This report contains the results of the most recent quarterly ground water monitoring and sampling event (conducted by Fugro on November 30, 1995) and data from previous events (see Section 4.0, Table 2, and Table 4).

2.2.4 Limited Investigation of Potential Off-Site Sources

Fugro performed a limited Phase I environmental site assessment (ESA) in February 1995 to identify and assess characteristics of properties in the vicinity of the Subject Property that may be of environmental concern, particularly with respect to Leaking Underground Storage Tank (LUST) sites. In conducting the limited ESA, Fugro researched published government databases, reviewed historical aerial photographs, reviewed regulatory agency records, and performed a field reconnaissance of adjacent properties.

2.2.5 Conclusions From Previous Assessment Activities

On the basis of previous soil and ground water assessment and sampling activities and the limited investigation of off-site sources, Fugro concluded the following:

- Concentrations of gasoline-range hydrocarbons existed in soil at depths of 9.5 to 11 feet bgs beneath much of the Subject Property, with the exception of the vicinity of MW-4. The zone between 9.5 and 11 bgs corresponds to the "smear" zone associated with fluctuating ground water levels.
- Concentrations of dissolved petroleum hydrocarbons existed in ground water beneath the Subject Property and off-site.
- The lateral extent of dissolved-phase hydrocarbons was not characterized to the north, south, and east directions from the Subject Property.
- The lateral extent of free product was not characterized to the east and north of monitoring well MW-7.
- Potential off-site sources of petroleum hydrocarbons in soil and ground water at the Subject Property include the former Shell Service Station (2300 Santa Clara Avenue), Towata's Flower Shop, (2305 Santa Clara Avenue), The Alameda City Hall, (2263 Santa Clara Avenue), and the Automotive Auto Repair site (2425 Central Avenue).

2.3 PREVIOUS SITE REMEDIAL ACTIVITIES

This section describes previous site remedial activities including over-excavation of soils adjacent to the former UST cavity, performance of a soil vapor extraction pilot test, and free product recovery activities at the Subject Property.

2.3.1 Over-excavation of the Former UST Cavity

On August 12, 1994, Fugro personnel directed the over-excavation of soils adjacent to the former UST cavity. Approximately 50 cubic yards of soil were excavated from the former UST cavity, and subsequently disposed of off-site. The cavity was backfilled with clean imported soil which was compacted in place. Soil samples SW-1 through SW-10 were collected from the sidewalls of the former UST cavity at approximately eight feet bgs. Laboratory analysis detected a concentration of total xylenes of 0.006 ppm in sidewall soil sample SW-7 due to a laboratory transcription error, this result was mistakenly attributed to sample SW-6 in Fugro's February 7,

1995, assessment report). No other analytes were detected in that or any other sidewall soil sample at or above laboratory detection limits. On the basis of this and other soil assessment results, Fugro concluded that over-excavation of the former UST cavity was effective in removing almost all hydrocarbon-affected soil from the unsaturated zone at the Subject Property.

2.3.2 Soil Vapor Extraction Pilot Test

To assess the feasibility of using soil vapor extraction to remediate hydrocarbon-affected soils in the "smear" zone at the Subject Property, Fugro conducted a soil vapor extraction (SVE) pilot test at the Subject Property on September 29, 1994. Soil vapors were alternately extracted from wells SV-1, MW-4, MW-6, and MW-7. Field measurements of flow, hydrocarbon concentrations, temperature, and vacuum were taken at regular intervals. The pressure/vacuum responses induced in the surrounding wells were measured at regular intervals with a minimum resolution of 0.005 inches of water column head.

The air flow rate from well SV-1 ranged from 8 to 13 standard cubic feet per minute (scfm). Laboratory analysis of an air sample collected from SV-1 at the end of the test detected concentrations of 9,000 parts per million by volume (ppmv) TPH-g and 390 ppmv benzene.

The air flow rates from wells MW-4, MW-6, and MW-7 were 18, 4, and 3 scfm, respectively, and the concentrations of volatile organic compounds in the three wells measured using a photoionization detector (PID) during the SVE test were 10, 50, and 10,000 ppmv, respectively. On the basis of the data collected, Fugro concluded that SVE appeared to be an effective option for remediating hydrocarbon-affected soils in the "smear" zone at the Subject Property.

2.3.3 Free Product Recovery

Between August 12, 1994, and September 16, 1994, Fugro performed weekly free product recovery from monitoring wells MW-5 and MW-7. During each recovery event, depth to ground water and depth to free product were measured in both wells. Free product and ground water were then recovered from the wells by manual bailing until the apparent free product thickness was reduced to a sheen. Recovered fluids were temporarily stored onsite in Department of Transportation-approved 55-gallon drums pending transport by a licensed hazardous waste hauler to an off-site recycler. Free product recovery was also performed on November 9, 1994, and December 20, 1994. A total of approximately 0.50 gallons of free product was removed from the two wells between August 12, 1994 and December 20, 1994. Additional free product recovery conducted by Fugro beginning in September 1995 is described below in Section 5.0 (Free Product Recovery Activities) of this report. Table 5 summarizes free product recovery data for the Subject Property.

3.0 ADDITIONAL GROUND WATER ASSESSMENT ACTIVITIES

As directed by the Environmental Protection Division of the Alameda County Department of Environmental Health (EPD), Fugro conducted additional ground water assessment activities at the Subject Property in October and November 1995 to define the lateral extents of dissolved-phase hydrocarbons in ground water in the north, south, and east directions from the Subject Property. The following sections describe assessment of hydrocarbons in ground water using the PowerPunch™ sampling device to construct temporary monitoring wells, and the subsequent installation of ground water monitoring wells MW–8, MW-9, MW-10, and MW-11.

3.1 TEMPORARY MONITORING WELLS

Fugro conducted ground water assessment at the Subject Property on October 6, 1995, using the PowerPunch™ ground water sampling device to construct temporary monitoring wells. The following sections describe the emplacement of the PowerPunch™ sampling devices, ground water sampling and analysis, and ground water analytical results.

3.1.1 PowerPunch™ Emplacement

Prior to emplacing the PowerPunch™ sampling devices, Fugro acquired Soil Boring Permit No. 95585 from the Alameda County Flood Control and Water Conservation District Zone 7 Water Agency (Zone 7), and Street Excavation Permit No. 95-0056 and Encroachment Permit No. EN95-076 from the City of Alameda Central Permit Office (CPO). Copies of the above permits are included in Appendix A. Fugro notified Underground Service Alert (USA) on October 3, 1995, and also utilized a private subsurface utility location service (CU Surveys of San Leandro, California) to assist in locating and avoiding damage to underground utilities.

Ten PowerPunch™ sampling devices were emplaced at the locations shown on Figure 2. Two of the sampling locations (P1 and P2) were located within the backfill of the sewer line along the center line of Oak Street to assist in assessing whether the backfill functions as a preferential pathway for plume migration. The remaining eight sampling locations (P3 through P10) were sited to assist in assessing the lateral extents of dissolved-phase hydrocarbons in ground water in the north, south, and east directions from the Subject Property.

The PowerPunch™ sampling devices were emplaced using direct penetration technology which does not generate soil cuttings. In each sampling location, a 1.5-inch-diameter PowerPunch™ tool was driven to the target depth, then retracted to expose a 5-foot-long section of slotted, 0.75-inch-diameter PVC pipe. Since the measured depth to water in existing site monitoring wells was approximately 9.5 to 10 feet bgs, the PowerPunch™ tools in borings P1 through P9 were driven to total depths of approximately 13 feet. In boring P10, the tool could not be advanced beyond a depth of approximately 10 feet bgs due to tight soil conditions or other obstruction. The drive casing in boring P10 was retracted to expose the slotted PVC at that depth,

but no water entered the sampling device. Following collection of ground water samples from boring P1 through P9, drilling and well construction materials (except the stainless steel drive points) were removed from the borings, and the ten borings were backfilled to the surface with cement grout.

3.1.2 Ground Water Sampling and Analysis

Grab ground water samples were collected from borings P1 through P9 using disposable bailers. A new disposable bailer was used for each boring. The samples were submitted to Excelchem Environmental Labs (Excelchem) of North Highlands, California, a California-certified laboratory, for analysis for TPH-g using EPA Method 8015M, BTEX using EPA Method 602, and total petroleum hydrocarbons as diesel (TPH-d) using EPA Method 8015M. In addition, as required by EPD, ground water samples collected from borings P1 and P2 were analyzed for halogenated volatile organic compounds (HVOCs) using EPA Method 8010. Ground water samples were collected in accordance with the Fugro SOPs included in Appendix B.

3.1.3 Ground Water Analytical Results

Laboratory analysis detected concentrations of TPHg and BTEX in ground water samples collected from borings P2, P4, P5, P6, and P7 (maximum TPH-g concentration of 22,000 parts per billion [ppb] in P6; maximum benzene concentration of 8,600 ppb also in P6). Concentrations of 1,2-DCA of 10 ppb and 2.0 ppb were detected in ground water samples collected from borings P1 and P2, respectively. A concentration of tetrachloroethene (PCE) of 1.2 ppb was detected in a ground water sample collected from boring P2. No other analytes were detected at or above laboratory detection limits. Table 2 is a summary of ground water assessment analytical results. Copies of laboratory reports and chain of custody records are included in Appendix C.

3.2 GROUND WATER MONITORING WELL INSTALLATION

Based on the PowerPunch™ assessment data, Fugro installed four ground water monitoring wells (MW-8, MW-9, MW-10, and MW-11) in various off site locations near the Subject Property on November 22, 1995, to assist in assessing the horizontal extents of hydrocarbons in ground water adjacent to the Subject Property (Figure 2). The following sections describe the soil borings, soil sampling and analysis, soil analytical results, and monitoring well installation.

3.2.1 Soil Borings

Prior to installing the four monitoring wells, Fugro acquired Monitoring Well Installation Permit No. 95585 from Zone 7, and Street Excavation Permit No. 95-0088 and Encroachment Permit No. EN95-089 from the CPO. Copies of the above permits are included in Appendix A. Fugro notified USA on Nov. 17, 1995, and also utilized a private subsurface utility location service (CU Surveys of San Leandro, California) to assist in locating and avoiding damage to underground utilities.

Four 8-inch-diameter soil borings were drilled in the locations shown on Figure 2 by V&W Drilling of Rio Vista, California, using a hollow-stem auger drill rig. The borings were drilled to depths of approximately 15 feet bgs. Soil samples were collected continuously from borings MW-8, MW-9, and MW-11 from depths of 5 feet bgs until wet soils were encountered at depths of approximately 9.5 feet bgs in each boring. No soil samples were collected from MW-10 due to the presence of overhead electric wires which prevented full extension of the drill rig mast (use of the soil sampling tools would require the mast to be locked in a fully upright position). Soil samples and cuttings were screened in the field for the presence of hydrocarbon vapors using a PID. Soils generated during the drilling process were stored on site in labeled, Department of Transportation (DOT)-approved, 55-gallon steel drums pending laboratory analysis. Soil samples were collected according to the Fugro SOPs included in Appendix B.

The soils encountered in the soil samples and drill cuttings consisted primarily of loose to medium dense sands and silty sands. Wet soils indicative of the saturated zone were encountered at depths of approximately 9.5 feet bgs in each boring. Soil descriptions, classifications, PID screening results, and other information are presented on the boring logs included as Appendix D.

3.2.2 Soil Sampling and Analysis

Three soil samples collected from MW-8, MW-9, and MW-11 (one from each boring, from depths of 8, 9.5, and 9.5 feet bgs, respectively) were analyzed by Excelchem for TPH-g, BTEX, and TPH-d. The sample from MW-9 was also analyzed for chlorinated hydrocarbons. For disposal purposes, three soil samples (one each from wells MW-8, MW-9, and MW-11) were composited by the laboratory and run as one sample for RCI (reactivity using EPA Methods 9010 and 9030, corrosivity using EPA Method 9045, and ignitability using EPA Method 1010) and STLC (Solubility Threshold Limit Concentration) lead using Title 22 WET followed by EPA Method 7420.

3.2.3 Soil Analytical Results

Laboratory analysis detected concentrations of TPH-g and TPH-d in soil samples collected from borings MW-8 and MW-11 (maximum TPH-g concentration of 3,500 ppm in MW-8 at eight feet bgs; maximum TPH-d concentration of 88 ppm in MW-11 at 9.5 feet bgs) Benzene was not detected in soil samples from either boring. None of the analytes were detected at or above laboratory detection limits in the soil sample collected from MW-9. Disposal analyses of the composited sample indicated concentrations of STLC lead, reactive sulfide, and reactive cyanide were not detected at or above laboratory detection limits. The pH of the composite sample was 8.26 and the flashpoint was >200°F. Table 1 is a summary of previous and current soil analytical results. Copies of laboratory reports and chain of custody records are included in Appendix E.

3.2.4 Monitoring Well Installation

The four borings were completed as ground water monitoring wells using 2-inch-diameter schedule 40 PVC casing. All four wells were screened from approximately five feet bgs to approximately 15 feet bgs using PVC casing with 0.020-inch slots. The wells were completed at the surface with flush-mounted, traffic-rated well boxes, expanding well caps, and padlocks.

Monitoring wells were constructed in accordance with the Fugro SOPs included in Appendix B. Monitoring well construction details are included with the boring logs in Appendix D.

3.3 QUARTERLY GROUND WATER MONITORING

This section documents the results of quarterly ground water monitoring conducted by Fugro on November 29, 1995, at the Subject Property. The monitoring included measurements of depth to ground water, depth to free product (if present), monitoring well purging, and ground water sample collection and analysis. Purge and decontamination water generated during field activities was stored onsite in labeled, Department of Transportation (DOT)-approved, 55 gallon steel drums. Field activities were conducted according to the Fugro SOPs included in Appendix B.

3.3.1 Ground Water Elevations and Gradient

Prior to purging, Fugro measured depth to ground water and depth to free product, if present, in monitoring wells MW-1 through MW-11. Ground water elevation and free product thickness data are summarized in Table 4 Free product was detected in wells MW-5 and MW-7 (free product thickness of 0.24 and 0.02 feet, respectively). Calculated ground water elevations decreased an average of 0.35 feet in monitoring wells MW-1 through MW-7 since the August 30, 1995, quarterly monitoring event. The ground water gradient at the site is generally directed toward the northeast at a magnitude of approximately 0.005 foot per foot (Figure 3). The calculated ground water gradient direction and magnitude are consistent with the previous quarterly monitoring event.

3.3.2 Ground Water Sampling and Analysis

Ground water samples were collected from monitoring wells MW1 through MW-4, MW-6, and MW-8 through MW-11. No samples were collected from monitoring wells MW-5 and MW-7 due to the presence of free product. Samples were collected according to the attached SOP and submitted under chain-of-custody documentation to American Environmental Network of Pleasant Hill, California, a California-certified analytical laboratory. Samples were analyzed for the following:

- TPH-g using EPA Method 8015M;
- TPH-d using EPA Method 8015M; and
- BTEX using EPA Method 602.

In addition, a ground water sample collected from monitoring well MW-9 was analyzed for HVOCs using EPA method 8010.

3.3.3 Ground Water Analytical Results

Laboratory analysis indicated that concentrations of dissolved-phase hydrocarbons were detected in ground water samples collected from monitoring wells MW-1 through MW-4, MW-6, MW-8, MW-9, and MW-11 (maximum TPH-g concentration of 170,000 ppb in MW-2; maximum benzene concentrations of 42,000 ppb in MW-1 and MW-2). A concentration of 46 ppb of 1,2-DCA was detected in a ground water sample collected from MW-9. Figure 4 presents a distribution map of TPH-g and benzene concentrations in ground water samples collected from borings HP-1 through HP-3 on August 30, 1994; from PowerPunch™ borings P1 through P9 on October 6, 1995; and from monitoring wells MW-1 through MW-4, MW-6, and MW-8 through MW-11 on November 29, 1995. Table 2 is a summary of quarterly ground water monitoring analytical results. Copies of laboratory reports and chain-of-custody records are included in Appendix E.

4.0 FREE PRODUCT RECOVERY ACTIVITIES

As required by EPD, Fugro resumed periodic free product recovery at the Subject Property on September 14, 1995. Free floating product was recovered from monitoring wells MW-5 and MW-7 using passive recovery bailers (PRBs) which were suspended in the wells and emptied periodically. Each PRB included a hydrophobic filter which restricted the flow of water but permitted the flow of free product into a collection chamber with a capacity of 0.1 gallon. The PRBs were periodically removed from the wells and emptied on a schedule adjusted to efficiently recover free product from the wells. After a PRB was removed from a well, liquid levels in the well were allowed to stabilize for approximately 15 minutes, then depth to free product (if present) and depth to ground water were measured. If necessary, the length of the chain used to suspend the PRBs at the appropriate depth was adjusted, then the PRBs were replaced into the wells. Recovered product was stored in a sealed gasoline storage container inside the existing site building pending disposal or recycling at a licensed off-site facility.

Free product recovery operations in MW-7 were interrupted on November 16, 1995, when a construction contractor damaged the well box and casing, causing the PRB and loose soil to drop into the well. Attempts to retrieve the PRB were unsuccessful due to the soil that settled on top of the PRB and blocked the well casing. As a result, the total depth of the well was reduced from approximately 24 feet bgs to 12.75 feet bgs. A replacement PRB was modified by Fugro to fit the partially filled-in well, and was installed in the well on December 22, 1995.

Free product recovery operations in MW-5 were interrupted on November 29, 1995, when the PRB in that well was damaged during recovery operations. A new PRB was installed in the well on December 22, 1995. A total of approximately 0.91 gallons of free product was recovered from wells MW-5 and MW-7 between August 12, 1994, and November 29, 1995, of which approximately 0.41 gallons was recovered between September 14, 1995, and November 29, 1995. Table 5 summarizes free product recovery data for the Subject Property.

5.0 FINDINGS

The results of the assessment activities described above indicate the presence of free product and dissolved-phase hydrocarbons in ground water beneath the Subject Property, and dissolved-phase hydrocarbons in ground water beneath properties adjacent to the Subject Property. This section includes a discussion of the extent of free product at the Subject Property, the ground water gradient direction, the off-site migration of dissolved-phase hydrocarbons from the Subject Property, potential off-site sources of gasoline-range dissolved-phase hydrocarbons, and the presence of HVOCs in ground water at the Subject Property and off-site.

5.1 LATERAL EXTENT OF FREE PRODUCT

Free product has been detected in monitoring well MW-5 since November 1993 and MW-7 since February 1994. On the basis of the lack of measurable free product in monitoring wells MW-1 and MW-2, it could be concluded that the occurrences of free product in MW-5 and MW-7 represent isolated pockets of free product. However, MW-1 and MW-2 are screened incorrectly to detect free product. The screened intervals of MW-1 and MW-2 extend from 10 feet bgs to 25 feet bgs. Measured depths to ground water in MW-1 and MW-2 have averaged 9.34 and 9.28 feet, respectively, since they were installed, and have never exceeded ten feet in either well. Therefore, if free product exists or did exist in the location of either well, it would not have been detected, and the lateral extent of free product at the Subject Property may include the vicinity of MW-1 and MW-2.

5.2 GROUND WATER GRADIENT DIRECTION

On the basis of ground water elevations measured in monitoring wells MW-1 through MW-11 on November 29, 1995, the ground water gradient in the Subject Property vicinity was directed towards the northeast, roughly parallel to Oak Street. Based on water level measurements collected by Fugro and previous consultants, calculated ground water gradient directions at the Subject Property since January 1993 have ranged from towards the northwest to towards the northeast. This is consistent with the topographically-inferred gradient direction of towards the northeast. In reviewing previously-reported ground water gradient data, Fugro determined that ground water surface maps prepared by Environmental Science and Engineering Inc., (ESE) from ground water elevation data collected by ESE on February 3, 1994, and June 6, 1994, were incorrect due to arithmetic errors in the correction of ground water levels for the presence of free product. The ESE maps indicated ground water level "lows" in the areas of MW-5 and MW-7, with resultant complex flow patterns. Maps prepared by Fugro using corrected data are consistent with a uniform gradient direction towards the north across the site for both dates.

Fugro researched the possible presence of water extraction wells in the Subject Property vicinity that could affect the ground water gradient at the Subject Property. Drinking water in the city of Alameda is provided by the East Bay Municipal Utility District (EBMUD). According to Ms. Mary Hicks, EBMUD's Superintendent of System Water Quality, all of EBMUD's water supply is imported surface water from the Mokelumne River in the Sierra Nevada, and EBMUD does not own or operate any drinking water wells in the city of Alameda.

According to data provided by Mr. Andreas Godfrey of the Alameda County Public Works Department (PWD), there is one known drinking water well within a one-half-mile radius of the Subject Property (the standard search distance for PWD's database of wells). The well is listed as being located at Alameda High School (AHS) at the intersection of Central Avenue and Oak Street, approximately 600 feet south of and upgradient from the Subject Property. According to Mr. James Harper, Facilities Manager at AHS since 1987, all water used at AHS facilities is supplied by EBMUD. Mr Harper did not know of the existence of any wells owned or operated by AHS, or located on AHS property. Fugro reviewed the remaining 20 extraction wells listed on the database regarding each well's distance and direction from the Subject Property, the well's yield (if known), and the status of the well (active or inactive), if known. On the basis of that review, it appears that none of the listed wells have an effect on the ground water gradient direction at the Subject Property.

On the basis of the relatively constant calculated ground water gradient directions since January 1993, the correlation of the calculated ground water gradient directions with the regional topography, and the absence of pumping wells which could affect the ground water gradient direction at the Subject Property, it is likely that the ground water gradient direction has remained relatively constant during the period the Subject Property has operated as a gasoline service station. Therefore, petroleum hydrocarbons released from the Subject Property or nearby properties would tend to migrate towards the north/northeast (given relatively homogeneous lithology).

5.3 OFF-SITE MIGRATION OF DISSOLVED-PHASE HYDROCARBONS

The ground water gradient direction in the Subject Property vicinity has generally been towards the north to northeast. Therefore, dissolved-phase hydrocarbons originating at the Subject Property would be expected to migrate in the same direction. Dissolved-phase hydrocarbons have not been detected in ground water samples collected from borings HP-2, P1, P2, and P9, and monitoring well MW-10 (located in Oak Street) and boring P3 (located east of boring P6). The relatively low concentrations of dissolved-phase hydrocarbons detected in ground water samples collected from boring HP-3 and monitoring well MW-9, and the relatively high concentrations of dissolved-phase hydrocarbons detected in ground water samples collected from boring P6, indicate that dissolved-phase hydrocarbons are likely migrating off the Subject Property towards the northeast, generally parallel to and south of Oak Street.

5.4 OFF-SITE SOURCES OF DISSOLVED-PHASE HYDROCARBONS

This section describes potential off-site sources of dissolved-phase hydrocarbons detected in ground water samples collected from wells and borings on or adjacent to the Subject Property.

5.4.1 Former Shell Service Station

Concentrations of dissolved-phase hydrocarbons were detected in ground water samples collected from borings HP-1 and P7, and monitoring well MW-8, which are located upgradient of the Subject Property. A potential off-site source of dissolved-phase hydrocarbons is the former

Shell service station which was located at 2300 Santa Clara Avenue, directly across Santa Clara Avenue and upgradient from the Subject Property.

The existence of the former Shell service station was discovered during the limited investigation of off-site sources performed by Fugro in February 1995. A UST registration permit (No. 157) in the files of the City of Alameda Fire Department (AFD) indicates that four, 290-gallon USTs were installed at the "Shell Oil Co. Service Station" at 2300 Santa Clara Avenue in August 1922. Another UST registration permit (No. 562) in AFD files indicates that the four USTs were removed in January 1939 and replaced with five other USTs (three 1,000-gallon, one 550-gallon, and one 110-gallon), and that the five USTs were subsequently removed and the "station abandoned" in November 1950.

During the course of this additional assessment, Fugro reviewed documents in the City of Alameda Central Permit Office regarding the former Shell service station. An undated compilation of portions of several Sanborn Fire Insurance Maps (most of the Sanborn map portions were dated from 1935 to 1940) showed a "Gas & Oil" and "Grease" facility in the location of the reported Shell service station. A building permit file for the 2300 Santa Clara Avenue address indicates that Shell Oil Co. (listed on the permit as "owner" and "builder") was issued a permit to construct a "gas station" on August 9, 1922. Another building permit to "wreck service station," dated October 30, 1950, lists both Shell Oil Co. and F.C. Stolte as "owner" and "builder". Copies of the above permits are presented in Appendix F.

If gasoline released from the former Shell service station is the source of the dissolved-phase hydrocarbons detected in the sampling locations described above, the hydrocarbons in the subsurface have been subject to weathering since at least 1950. It is expected that, since the compounds with lower boiling points (e.g., benzene) tend to volatize to the vapor phase at a higher rate than the compounds with higher boiling points, the resulting composition of hydrocarbons detected in ground water will tend to become increasingly biased over time towards compounds with higher boiling points.

In an attempt to determine the relative ages of the dissolved-phase hydrocarbons detected in the above assessments, Fugro reviewed the analytical results of ground water samples analyzed regarding the relative proportions of benzene to TPH-g detected (Figure 5).

The ratio of dissolved TPH-g to dissolved benzene in ground water samples collected from monitoring wells MW-1, MW-2, and MW-6, which are located relatively close to, and downgradient from, the known gasoline source areas on the Subject Property, ranged from 2.9 to 4.0. Therefore, benzene comprised a relatively large fraction of the detected hydrocarbons in these samples, which indicates that the hydrocarbons have likely been subject to evaporative weathering for a relatively short time. The ratio of TPH-g to benzene in ground water samples collected from borings HP-3 and P6, and monitoring well MW-9, which are also located downgradient from the Subject Property, ranged from 2.3 to 2.6. The similarity in ranges between the above two groups supports the conclusion that the dissolved-phase hydrocarbons detected in HP-3, P6, and MW-9 are roughly similar in age to the dissolved-phase hydrocarbons detected in MW-1, MW-2, and MW-6, and therefore, likely represent off-site migration of dissolved-phase hydrocarbons from the Subject Property.

The TPH-g/benzene ratios in ground water samples collected from borings HP-1, P5, and P7, and monitoring wells MW-3, MW-4, MW-8, and MW-11, ranged from 28.5 to 394.7. Therefore, benzene comprised a relatively small fraction of the detected hydrocarbons in these samples, which indicates that the hydrocarbons have likely been subject to likely weathering for a relatively long time. The greater degree of weathering of the dissolved-phase hydrocarbons in HP-1, P7, MW-3, MW-4, and MW-8, and the calculated ground water gradient direction (towards the northeast) indicate that the dissolved-phase hydrocarbons in those locations likely originated off-site at the former Shell service station, and have migrated onto the Subject Property.

5.4.2 Undetermined Sources Upgradient of MW-11

The apparent age of the dissolved-phase hydrocarbons in P5 and MW-11, and the cross-gradient location of those sampling points from the Subject Property, indicates that dissolved-phase hydrocarbons in those locations likely did not originate at the Subject Property. This conclusion is further supported by the absence of detectable hydrocarbons in ground water samples collected at boring P3 (downgradient from the Subject Property), and at boring P4 (between the sources on the Subject Property and MW-11). The hydrocarbons at P5 and MW-11 may have originated from the adjacent former gasoline UST at 2305 Santa Clara Avenue, or from other known or unknown former or current sources, including registered USTs reported to exist at 2314 and 2318 Santa Clara Avenue (both are located approximately 200 to 250 feet south of, or upgradient from, P5 and MW-11).

5.5 HVOCs IN GROUND WATER AT THE SUBJECT PROPERTY

Concentrations of 1,2-DCA of up to 550 ppb have been detected in ground water samples collected from monitoring wells at the Subject Property (from MW-2 in January 1993), and up to 54 ppb in sampling locations downgradient of the Subject Property (from HP-3 in August 1994). Ground water samples collected from monitoring wells at the Subject Property during quarterly monitoring events have not been analyzed for HVOCs since January 1993, with the exception of the sample from MW-9 in November 1995. The concentrations of 1,2-DCA detected in ground water samples collected at various times from HP-3, P1, P2, MW-1, MW-2, and MW-9 have exceeded the Maximum Contaminant Level (MCL) for 1,2-DCA of 0.5 ppb established by the California Department of Health Services (DHS).

A concentration of 1.2 ppb of tetrachloroethene (PCE) was detected in a ground water sample collected from boring P2. This concentration did not exceed the DHS MCL for PCE of 5 ppb.

Concentrations of 1,2-DCA and 1,2-Dibromoethane were not detected at or above laboratory detection limits in soil samples collected from borings MW-1, MW-2, and MW-3. Concentrations of HVOCs were not detected at or above laboratory detection limits in a soil sample collected from boring MW-9.

1,2-DCA has been used as a gasoline additive. The source of the 1,2-DCA detected in ground water samples collected from monitoring wells and borings on and adjacent to the Subject

Property appears to be the former gasoline USTs on the Subject Property or other sources of gasoline located hydraulically upgradient of the Subject Property. PCE is a common constituent of degreasers and cleaning solvents typically used in automotive repair facilities and dry cleaning operations. The source of the PCE detected in the ground water sample collected from boring P2 is unknown, but does not appear to be located on the Subject Property.

6.0 CONCLUSIONS

Fugro has performed free product recovery, additional ground water assessment, and quarterly ground water monitoring activities at the former Bill Chun Service Station located at 2301 Santa Clara Avenue in Alameda, California. On the basis of the results of the above activities, Fugro concludes the following:

- The ground water gradient in the Subject Property vicinity is generally directed towards the north to northeast.

- Free product exists in the vicinity of ground water monitoring wells MW-5 and MW-7. Due to incorrect well screening, it is not known whether free product exists in the vicinity of MW-1 and MW-2. At this time, the lateral extent of free product is defined to the south by MW-3 and MW-4, to the west by MW-10, to the north by MW-6, to the east by MW-11, and to the northeast (downgradient) by P3 and P6.

- The lateral extent of gasoline- and diesel-range hydrocarbons in ground water has been defined to the west by ground water samples collected from P1, P2, P9, and MW-10.

- The backfill of the sanitary sewer line in the center of Oak Street does not appear to be acting as a preferential migration pathway for hydrocarbons originating on the Subject Property.

- The lateral extent of gasoline- and diesel-range hydrocarbons in ground water off-site to the northeast (downgradient) in the vicinity of P6 and MW-9 is not defined at this time.

- The lateral extent of gasoline- and diesel-range hydrocarbons in ground water in the vicinity of onsite monitoring wells MW-3 and MW-4, and off-site to the south (upgradient) in the vicinity of monitoring well MW-8, is not defined at this time, and appears to represent the migration onto the Subject Property of dissolved-phase hydrocarbons from sources located hydraulically upgradient of the Subject Property.

- The lateral extent of gasoline-range hydrocarbons in ground water east of the site in the vicinity of P5 and MW-11 is not defined at this time, and appears to represent hydrocarbons originating from sources southeast of the Subject Property.

- The lateral extent of 1,2-DCA in ground water is not known at this time, and appears to represent a constituent of gasoline released from the former USTs on the Subject Property or upgradient properties.

7.0 PLANNED WORK

Fugro is currently performing periodic free product recovery and quarterly ground water monitoring at the Subject Property.

In addition, at the direction of EPD, Fugro is in the process of implementing ground water migration control measures at the Subject Property. The objective of the proposed ground water migration control activities is to prevent additional off-site migration of dissolved-phase hydrocarbons from the Subject Property. The proposed migration control method is to extract ground water from two existing on-site monitoring wells at a rate sufficient to establish local hydraulic control of the ground water gradient direction along the northeastern boundary of the Subject Property. Hydrocarbons in the extracted ground water will be treated by passing the extracted fluids through granular activated carbon prior to discharge to the local sanitary sewer system or storm drains.

8.0 RECOMMENDATIONS

Based on the findings and conclusions presented in this report, Fugro recommends the following:

- Continuation of free product recovery from monitoring wells MW-5 and MW-7.
- Further assessment of the lateral extent of free product in the vicinity of monitoring wells MW-1 and MW-2.
- Further assessment of the extent of gasoline- and diesel-range hydrocarbons in ground water northeast of the site, including assessment of a possible preferential migration pathway parallel to, and south of, Oak Street.
- Continuation of quarterly ground water monitoring and sampling.
- A delay in implementation of ground water migration control activities pending performance of a feasibility study of the proposed ground water migration control system to evaluate the effects of the proposed system on the movement of ground water and known subsurface petroleum hydrocarbons.
- Notification by EPD to potentially responsible parties regarding upgradient sources of gasoline-range hydrocarbons, and coordination of future assessment, remediation, and monitoring activities at the Subject Property and upgradient sites.

9.0 LIMITATIONS

This report has been prepared to aid Mr. Wayne Chun in identifying and addressing environmental site conditions at the former Bill Chun Service Station property. This report was

prepared for the sole benefit of Mr. Wayne Chun and may not be relied upon by any other person or entity without the written authorization of Fugro West, Inc.

During the performance of this scope of services, Fugro relied on interviews of the property owners, regulatory officials, and other private individuals. Fugro has assumed, where reasonable to do so, that the information provided is true and accurate. If information to the contrary is discovered, our conclusions and recommendations may not be valid. Fugro makes no warranty, express or implied, concerning any of the observations or conclusions contained in this report.

Our opinion is based on conditions existing at the time the site work was performed. Fugro is not responsible for conditions which may have gone undetected or which arise at any subsequent time. Fugro cannot guarantee the accuracy or completeness of government agency database searches and file reviews or of information provided in personal interviews. This assessment is not intended to be a complete or specific definition of all conditions above or below grade. Fugro is not responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time this study was performed.

The consultant has no present or contemplated future ownership interest or financial interest in the real estate that is the subject of the scope of services.

The consultant has no personal interest with respect to the subject matter of the scope of services or the parties involved and the consultant has no relationship with the property or the owners thereof which would prevent an independent analysis of the environmental or other conditions of the property.

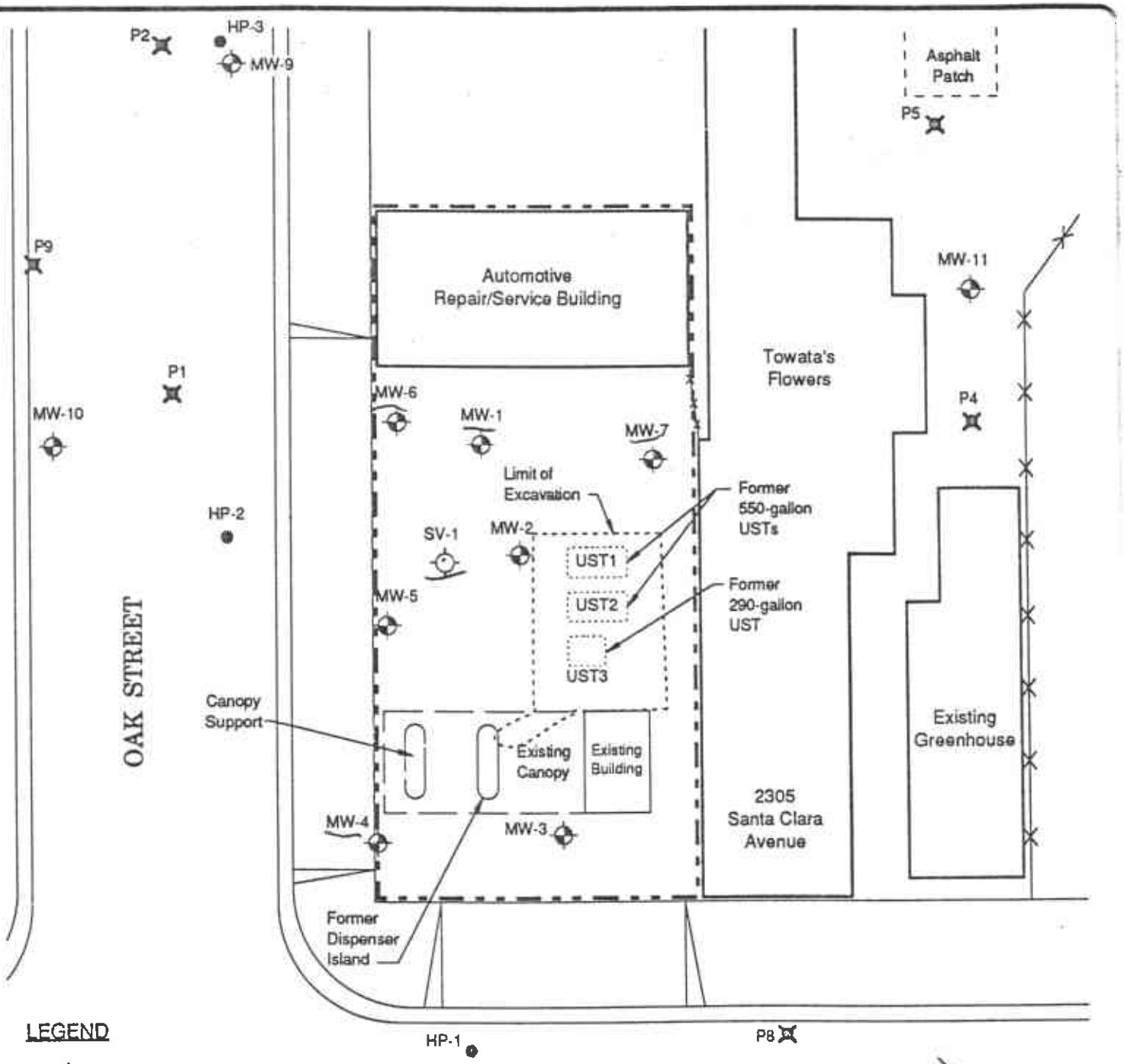
The interpretations and conclusions contained within this report represent our professional opinions. These opinions are based on currently available information and were developed in accordance with geologic, hydrogeologic, and engineering practices currently accepted at this time and for this site.

GENERAL NOTES:

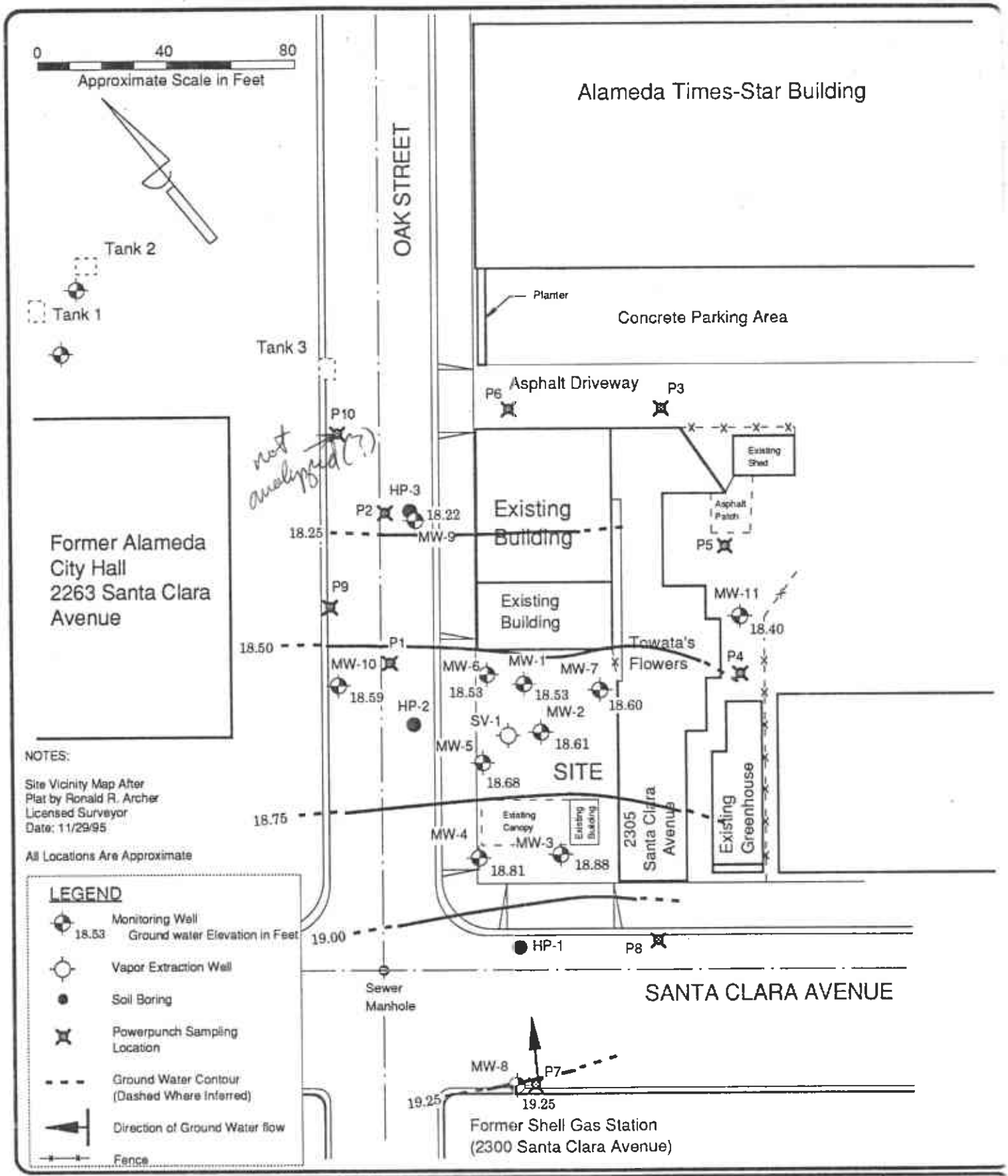
BASE MAP FROM USGS
7.5 MINUTE TOPOGRAPHIC
OAKLAND EAST & WEST, CA

0 2000 4000
Approximate Scale in Feet

FUGRO	DRAWN BY: D. Hada	SITE LOCATION MAP	FIGURE 1
	DATE: January 5, 1995	Former Bill Chun's Service Station 2301 Santa Clara Avenue Alameda, CA	PROJECT NUMBER: 95-37-0431
	REVISED BY:		
	DATE:		



FUGRO	DRAWN BY: J. Scruggs DATE: December 28, 1995 REVISED BY: J. Paradis DATE: January 25, 1996	SITE MAP Former Bill Chun Service Station 2301 Santa Clara Avenue Alameda, CA	FIGURE 2 PROJECT NUMBER: 95-37-0431



FUGRO

DRAWN BY: J. Scruggs

DATE: January 4, 1996

REVISED BY: J. Paradis

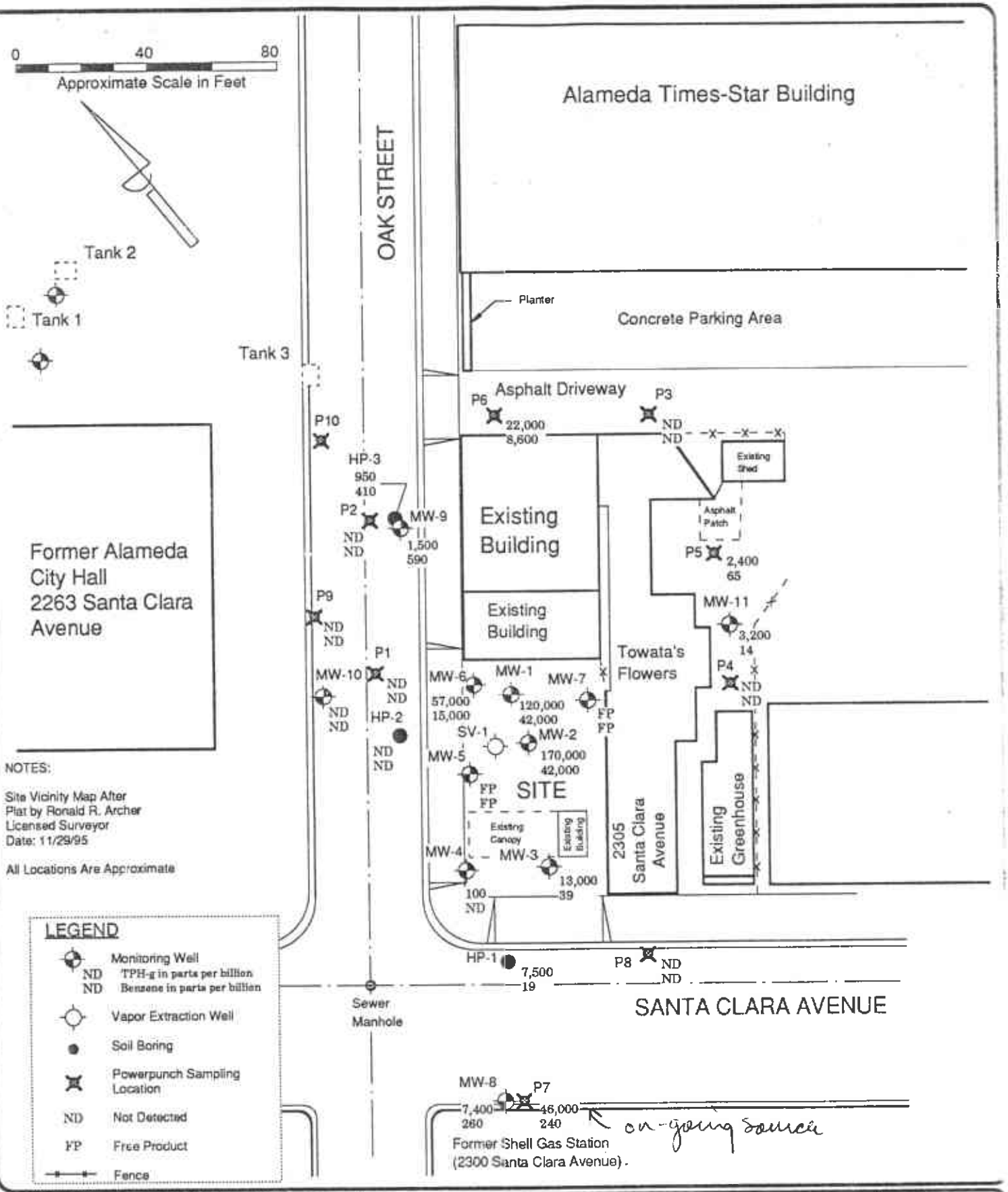
DATE: January 19, 1996

GROUND WATER POTENTIOMETRIC SURFACE MAP November 29, 1995

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, CA

FIGURE 3

PROJECT NUMBER: 95-37-0431



FUGRO

DRAWN BY: J. Scruggs

DATE: January 3, 1996

REVISED BY:

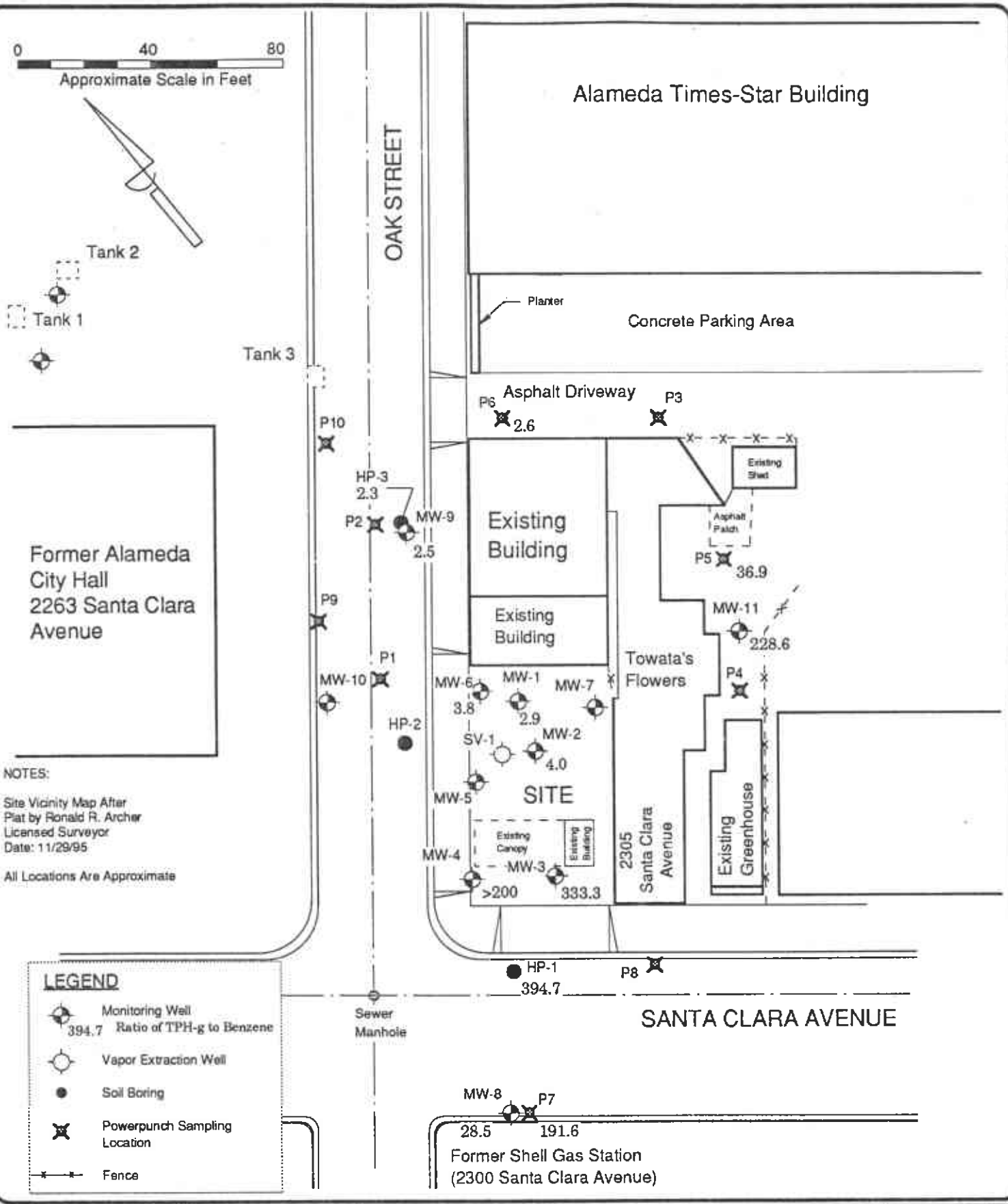
DATE:

DISTRIBUTION MAP OF TPH-g AND BENZENE IN GROUND WATER October 6, and November 29, 1995

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, CA

FIGURE 4

PROJECT NUMBER: 95-37-0431



FUGRO

DRAWN BY: J. Scruggs

DATE: January 3, 1996

REVISED BY:

DATE:

DISTRIBUTION MAP OF TPH-g / BENZENE RATIOS IN GROUND WATER

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, CA

FIGURE 5

PROJECT NUMBER: 95-37-0431

Table 1
Analytical Results: Soil

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California
(all results presented in parts per million)

	Sample ID	Date Collected	Sample Depth (feet)	TPH-g	TPH-d	Benzene	Toluene	Ethylbenzene	Total Xylenes	HVOCs
Previous Assessment Results										
	1 (UST 1)	7/31/92	9	3,100	NA	48	210	55	260	
	2 (UST 2)	7/31/92	9	11,000	NA	190	850	230	1,200	
	3 (UST 3)	7/31/92	9	16,000	NA	280	1,000	270	1,400	
	4 (SP)	7/31/92	SP	20	NA	0.072	0.3	0.08	1.2	
	5 (SP)	7/31/92	SP	270	NA	0.55	6.6	5.4	35	
	6 (DI)	7/31/92	2.5	2.1	NA	0.011	0.046	0.013	0.09	
	MW-1	1/4/93	10	640	ND (50)	1.5	17	10	54	ND *
	MW-2	1/4/93	10	5,800	ND (300)	110	850	210	1,200	ND *
	MW-3	1/4/93	10	2,100	ND (50)	ND (0.5)	2	ND (0.5)	1.4	ND *
	MW-5	9/1/93	6	ND (1)	ND (5)	ND (0.005)	0.006	ND (0.005)	0.096	NA
	MW-5	9/1/93	9	11,000	NA	34	310	180	1,000	NA
	MW-6	9/1/93	10	3,400	NA	8	65	48	290	NA
	MW-7	9/1/93	6	ND (1)	ND (5)	0.045	0.03	ND (0.005)	0.016	NA
	MW-7	9/1/93	9.5	9,000	NA	190	720	170	1,000	NA
	MW-7	9/1/93	10	13,000	NA	250	990	260	1,600	NA
	MW-7	9/1/93	20	ND (1)	ND (5)	0.038	0.1	0.02	0.14	NA
	MW-4	9/2/93	6	ND (1)	ND (5)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	NA
	MW-4	9/2/93	9	ND (1)	ND (5)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	NA
	SW-2	8/12/94	8	ND	ND	ND	ND	ND	ND	NA
	SW-4	8/12/94	8	ND	ND	ND	ND	ND	ND	NA
	SW-7	8/12/94	8	ND	ND	ND	ND	ND	0.006	NA
	SW-10	8/12/94	8	ND	ND	ND	ND	ND	ND	NA
	SP-1-SP-3	8/12/94	SP	ND	ND	ND	ND	ND	ND	NA
	SP-4-SP-6	8/12/94	SP	ND	ND	ND	ND	ND	0.006	NA
	HP-1/11	8/30/94	11	4600	ND	4.1	77	24	88	NA
	HP-2/11	8/30/94	11	ND	ND	ND	ND	ND	ND	NA
	HP-3/11	8/30/94	11	ND	ND	0.008	ND	ND	ND	NA
	SV-1/9.5	8/30/94	9.5	8400	ND	37	330	170	830	NA

Table 1
Analytical Results: Soil

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California
(all results presented in parts per million)

	Sample ID	Date Collected	Sample Depth (feet)	TPH-g	TPH-d	Benzene	Toluene	Ethylbenzene	Total Xylenes	HVOCs
Current Assessment Results	MW-8	11/22/95	8	3,500	80	ND (1.3)	ND (1.3)	16	46	NA
	MW-9	11/22/95	9.5	ND (1.0)	ND (1.0)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND
	MW-11	11/22/95	9.5	154	88	ND (0.13)	0.19	0.58	4.4	NA

Notes:

SP = Stockpile Sample
ND = Not Detected at or above laboratory detection limits (detection limits in parenthesis)
NA = Not Analyzed
HVOCs = Halogenated Volatile Organic Compounds
TPH-g = Total Petroleum Hydrocarbons as gasoline
TPH-d = Total Petroleum Hydrocarbons as diesel
UST = Underground Storage Tank
DI = Dispenser Island
* = Soil samples from MW-1, MW-2, and MW-3 were analyzed for 1,2-Dichloroethane and 1,2-Dibromoethane, but were not analyzed for any other HVOCs.

Table 2
Analytical Results: Ground Water Monitoring

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Well	Date	TPH-g (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	TPH-d (ug/L)	HVOCs (ug/L)
MW-1	01/07/93	110,000	14,000	17,000	2,500	8,800	ND (3,000)	1,2 DCA = 470
	09/07/93	28,000	11,000	2,100	380	1,200	1,000 (2)	NA
	12/07/93	17,000	10,000	3,000	610	2,000	1,800 (1)	NA
	03/04/94	6,600	4,400	870	150	590	920 (4)	NA
	06/06/94	12,000	6,300	230	ND (0.5)	ND (0.5)	710 (4)	NA
	11/09/94	28,000	9,500	3,000	810	2,300	250	NA
	12/20/94	5,600	3,000	92	86	76	ND (50)	NA
	03/29/95	24,000	5,800	3,100	390	1,300	ND (50)	NA
	05/24/95	2,500	800	280	31	130	ND (50)	NA
	08/30/95	48,000	14,000	3,500	620	1,600	800	NA
	11/29/95	120,000	42,000	22,000	2,300	9,900	ND (1000)	NA
MW-2	01/07/93	85,000	20,000	8,500	1,500	4,300	ND (3,000)	1,2 DCA = 550
	09/07/93	140,000	46,000	28,000	3,300	15,000	8,200 (2)	NA
	12/07/93	86,000	28,000	17,000	35,000	16,000	8,200 (2)	NA
	03/04/94	130,000	22,000	22,000	3,500	16,000	18,000	NA
	06/06/94	100,000	27,000	22,000	2,300	10,000	9,600 (5)	NA
	11/09/94	NSL	NSL	NSL	NSL	NSL	NSL	NA
	12/20/94	NSL	NSL	NSL	NSL	NSL	NSL	NA
	03/29/95	240,000	56,000	30,000	3,100	7,000	3,800	NA
	05/24/95	330,000	54,000	51,000	4,700	22,000	28,000	NA
	08/30/95	200,000	48,000	52,000	3,900	16,000	8,000	NA
	11/29/95	170,000	42,000	40,000	3,400	17,000	ND (1,000)	NA
MW-3	01/07/93	8,500 (3)	170	70	ND (30)	ND (30)	ND (3,000)	NA
	09/07/93	2,800	19	46	8	23	2,500 (1)	NA
	12/07/93	3,000	17	43	13	28	520 (2)	NA
	03/04/94	2,300	22	46	9	27	1,300 (5)	NA
	06/06/94	1,900	4	ND (0.5)	9	27	1,600 (5)	NA
	11/09/94	2,800	3	17	17	32	ND (50)	NA
	12/20/94	2,700	10	62	24	59	ND (50)	NA
	03/29/95	1,200	230	230	13	37	500	NA
	05/24/95	5,700	ND (5)	73	20	57	ND (50)	NA
	08/30/95	3,100	ND (10)	29	13	28	ND (50)	NA
	11/29/95	13,000	39	59	7	33	ND (80)	NA

Table 2
Analytical Results: Ground Water Monitoring

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Well	Date	TPH-g (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	TPH-d (ug/L)	HVOCs (ug/L)
MW-4	09/07/93	440	3	1	1	2	330 (2)	NA
	12/07/93	610	7	1	1	3	460 (2)	NA
	03/04/94	110	ND (0.5)	ND (0.5)	ND (0.5)	1	56 (5)	NA
	06/06/94	68	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	68 (4)	NA
	11/09/94	90	1	1	1	2	ND (50)	NA
	12/20/94	130	2	33	5	27	ND (50)	NA
	03/29/95	ND (50)	ND (0.5)	1	ND (0.5)	ND (0.5)	ND (50)	NA
	05/24/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (50)	NA
	08/30/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (50)	NA
	11/29/95	100	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	ND (50)	NA
MW-5	09/07/93	37,000	2,700	1,700	870	4,600	1,700 (2)	NA
	12/07/93	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	03/04/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	06/06/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	11/09/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	12/20/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	03/29/95	54,000	6,800	3,600	1,500	7,600	7,500	NA
	05/24/95	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	08/30/95	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	11/29/95	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
MW-6	09/07/93	10,000	1,300	540	370	1,600	1,400 (2)	NA
	12/07/93	17,000	4,300	1,200	600	2,700	2,400 (2)	NA
	03/04/94	21,000	4,600	1,000	460	1,800	1,800 (4)	NA
	06/06/94	12,000	5,400	350	ND (0.5)	1,200	1,600 (4)	NA
	11/09/94	29,000	4,600	1,600	820	3,600	7,500	NA
	12/20/94	66,000	5,800	2,200	1,100	4,600	1,100	NA
	03/29/95	25,000	8,000	780	450	1,300	1,300	NA
	05/24/95	56,000	1,600	1,300	1,200	7,200	40,000	NA
	08/30/95	68,000	16,000	3,400	1,900	6,800	4,900	NA
	11/29/95	57,000	15,000	2,900	2,500	10,000	ND (900)	NA
MW-7	09/07/93	24,000	6,000	4,800	490	2,300	1,300	NA
	12/07/93	95,000	28,000	24,000	1,600	8,700	2,200	NA
	03/04/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	06/06/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	11/09/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	12/20/94	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	03/29/95	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	05/24/95	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	08/30/95	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP
	11/29/95	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP	NSFP

Table 2
Analytical Results: Ground Water Monitoring

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Well	Date	TPH-g (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	TPH-d (ug/L)	HVOCs (ug/L)
MW-8	11/29/95	7,400	260	40	140	190	ND (80)	NA
MW-9	11/29/95	1,500	590	2	3	20	ND (50)	1,2-DCA=46
MW-10	11/29/95	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	ND (950)	NA
MW-11	11/29/95	3,200	14	31	15	570	ND (50)	NA

NOTES:

TPH-g = Total Petroleum Hydrocarbons as gasoline
TPH-d = Total Petroleum Hydrocarbons as diesel
HVOCs= Halogenated Volatile Organic Compounds
1,2-DCA = 1,2-Dichloroethane
ug/L = micrograms per liter or parts per billion (ppb)
NSFP = Not Sampled - Free Product Present
NSL = Not Sampled - Well could not be located
ND = Not Detected at or above laboratory detection limits (detection limits in parentheses)
(1) = Results typical of a non-diesel mixture (<C16)
(2) = Results typical of a diesel and non-diesel mixture (<C16)
(3) = Results typical of weathered gasonline
(4) = Results typical of diesel and unidentified hydrocarbons (<C14)
(5) = Results typical of unidentified hydrocarbons (<C14)

Table 3
Analytical Results: Ground Water Assessment

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California
(All results presented in parts per billion)

Sample ID	Date Collected	TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs
HP-1	8/30/94	7,500	ND	19	98	15	53	ND
HP-2	8/30/94	ND	ND	ND	ND	ND	0.5	ND
HP-3	8/30/94	950	ND	410	2	5	9	1,2-DCA = 54
P1	10/6/95	ND (50)	ND(100)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	1,2-DCA = 10
P2	10/6/95	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	0.5	1,2-DCA = 2.0, PCE = 1.2
P3	10/6/95	ND (50)	ND (500)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA
P4	10/6/95	ND (50)	ND (50)	ND (0.5)	ND (0.5)	ND (0.5)	0.6	NA
P5	10/6/95	2,400	ND (500)	65	82	150	400	NA
P6	10/6/95	22,000	ND (500)	8,600	320	800	1,200	NA
P7	10/6/95	46,000	ND (50)	240	68	640	870	NA
P8	10/6/95	ND (50)	ND (500)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA
P9	10/6/95	ND (50)	ND (500)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	NA

ND = Not Detected at or above laboratory detection limits (detection limits in parantheses)
PCE = Tetrachloroethene
1,2-DCA = 1,2-Dichloroethane
NA = Not Analyzed
HVOCs = Halogenated Volatile Organic Compounds
TPH-g = Total Petroleum Hydrocarbons as gasoline
TPH-d = Total Petroleum Hydrocarbons as diesel

Table 4
GROUND WATER ELEVATION DATA

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Well	Date	Top of Casing Elevation (ft. above MSL)	Depth to Water (feet)	Depth to Free Product (feet)	Free Product Thickness (feet)	Corrected Ground Water Elevation (ft. above MSL)
MW-1	01/07/93	28.53	8.87	-	0.00	19.66
	09/07/93		9.63	-	0.00	18.90
	11/16/93		9.89	-	0.00	18.64
	12/07/93		9.66	-	0.00	18.87
	01/06/94		9.67	-	0.00	18.86
	02/03/94		9.50	-	0.00	19.03
	03/04/94		9.18	-	0.00	19.35
	06/06/94		9.55	-	0.00	18.98
	11/09/94		8.83	-	0.00	19.70
	12/20/94		9.00	-	0.00	19.53
	03/29/95		8.44	-	0.00	20.09
	05/24/95		9.01	-	0.00	19.52
	08/30/95		9.52	-	0.00	19.01
	11/29/95	28.49 (2)	9.96	-	0.00	18.53
MW-2	01/07/93	28.51	8.78	-	0.00	19.73
	09/07/93		9.52	-	0.00	18.99
	11/16/93		9.73	-	0.00	18.78
	12/07/93		9.54	-	0.00	18.97
	01/06/94		9.54	-	0.00	18.97
	02/03/94		9.37	-	0.00	19.14
	03/04/94		9.02	-	0.00	19.49
	06/06/94		9.40	-	0.00	19.11
	11/09/94		NM(1)	-	NM	NM
	12/20/94		NM(1)	-	NM	NM
	03/29/95		8.26	-	0.00	20.25
	05/24/95		8.89	-	0.00	19.62
	08/30/95		9.41	-	0.00	19.10
	11/29/95	28.47(2)	9.86	-	0.00	18.61
MW-3	01/07/93	28.82	8.86	-	0.00	19.96
	09/07/93		9.62	-	0.00	19.20
	11/16/93		9.82	-	0.00	19.00
	12/07/93		9.60	-	0.00	19.22
	01/06/94		9.62	-	0.00	19.20
	02/03/94		9.45	-	0.00	19.37
	03/04/94		9.11	-	0.00	19.71
	06/06/94		9.50	-	0.00	19.32
	11/09/94		8.82	-	0.00	20.00
	12/20/94		9.00	-	0.00	19.82
	03/29/95		8.45	-	0.00	20.37
	05/24/95		8.99	-	0.00	19.83
	08/30/95		9.54	-	0.00	19.28
	11/29/95	28.78 (2)	9.90	-	0.00	18.88

Table 4
GROUND WATER ELEVATION DATA

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Well	Date	Top of Casing Elevation (ft. above MSL)	Depth to Water (feet)	Depth to Free Product (feet)	Free Product Thickness (feet)	Corrected Ground Water Elevation (ft. above MSL)
MW-4	09/07/93	28.57	9.39	-	0.00	19.18
	11/16/93		9.60	-	0.00	18.97
	12/07/93		9.42	-	0.00	19.15
	01/06/94		9.44	-	0.00	19.13
	02/03/94		9.31	-	0.00	19.26
	03/04/94		9.05	-	0.00	19.52
	06/06/94		9.31	-	0.00	19.26
	11/09/94		8.68	-	0.00	19.89
	12/20/94		8.97	-	0.00	19.60
	03/29/95		8.46	-	0.00	20.11
	05/24/95		8.86	-	0.00	19.71
	08/30/95		9.41	-	0.00	19.16
	11/29/95	28.53 (2)	9.72	-	0.00	18.81
MW-5	09/07/93	28.37	9.31	-	0.00	19.06
	11/16/93		9.99	9.45	0.54	18.81
	12/07/93		9.88	9.27	0.61	18.98
	01/06/94		9.85	9.27	0.58	18.98
	02/03/94		9.51	9.19	0.32	19.12
	03/04/94		8.99	8.96	0.03	19.40
	06/06/94		9.72	9.14	0.58	19.11
	11/09/94		8.58	8.56	0.02	19.81
	12/20/94		8.77	8.76	0.01	19.61
	03/29/95		8.31	-	0.00	20.06
	05/24/95		8.77	8.76	0.01	19.61
	08/30/95		9.50	9.19	0.31	19.12
	11/29/95	28.33 (2)	9.84	9.60	0.24	18.68
MW-6	09/07/93	28.41	9.53	-	0.00	18.88
	11/16/93		9.74	-	0.00	18.67
	12/07/93		9.58	-	0.00	18.83
	01/06/94		9.60	-	0.00	18.81
	02/03/94		9.47	-	0.00	18.94
	03/04/94		9.18	-	0.00	19.23
	06/06/94		9.46	-	0.00	18.95
	11/09/94		8.72	-	0.00	19.69
	12/20/94		9.00	-	0.00	19.41
	03/29/95		8.44	-	0.00	19.97
	05/24/95		8.94	-	0.00	19.47
	08/30/95		9.43	-	0.00	18.98
	11/29/95	28.36 (2)	9.83	-	0.00	18.53

Table 4
GROUND WATER ELEVATION DATA

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Well	Date	Top of Casing Elevation (ft. above MSL)	Depth to Water (feet)	Depth to Free Product (feet)	Free Product Thickness (feet)	Corrected Ground Water Elevation (ft. above MSL)
MW-7	09/07/93	28.56	9.61	-	0.00	18.95
	11/16/93		9.86	-	0.00	18.70
	12/07/93		9.58	-	0.00	18.98
	01/06/94		9.59	-	0.00	18.97
	02/03/94		9.56	9.39	0.17	19.14
	03/04/94		9.04	9.01	0.03	19.54
	06/06/94		9.67	9.37	0.30	19.13
	11/09/94		8.57	8.52	0.05	20.03
	12/20/94		9.08	8.67	0.41	19.81
	03/29/95		8.51	7.96	0.55	20.49
	05/24/95		8.98	8.81	0.17	19.72
	08/30/95		9.71	9.40	0.31	19.10
	11/29/95	28.44	9.86	9.84	0.02	18.60
MW-8	11/29/95	28.17	8.92	-	0.00	19.25
MW-9	11/29/95	27.45	9.23	-	0.00	18.22
MW-10	11/29/95	27.32	8.73	-	0.00	18.59
MW-11	11/29/95	28.56	10.16	-	0.00	18.40

NOTES:
(1) MW-2 could not be located; well box was temporarily buried during tank excavation activities
(2) Top of casing reference elevations of all wells were resurveyed on Nov. 29, 1995, due to installation of MW-8, MW-9, MW-10, and MW-11. Elevations relative to a found "cut-cross" in the top of the depressed curb at the mid return of the northwest corner of the intersection of Santa Clara Avenue and Oak Street. Benchmark elevation taken as 28.455 feet above MSL.

MSL = Mean Sea Level

NM = Not Measured

Ground water elevations (GWE) are corrected for free product thickness (FPT) using the following equation: Corrected GWE = Top of Casing Elevation - (Measured Depth to Water - (0.8 x FPT))

Data prior to 11/09/94 from Environmental Science and Engineering, Inc.

Table 5
Free Product Recovery Data

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, California

Monitoring Well MW-5				
Date	Depth to Water (feet)	Depth to Free Product (feet)	Free Product Thickness (feet)	Free Product Recovered (gallons)
08/12/94	9.81	9.23	0.58	0.10
08/19/94	9.60	9.27	0.33	0.05
08/26/94	9.42	9.30	0.12	0.01
09/06/94	9.49	9.33	0.16	0.01
09/16/94	9.37	9.33	0.04	0.01
11/09/94	8.58	8.56	0.02	0.10
12/20/94	8.77	8.76	0.01	0.01
09/14/95	9.37	9.17	0.20	0.02
09/21/95	9.30	9.21	0.09	0.05
09/22/95	9.34	9.27	0.07	0.03
09/29/95	9.35	9.30	0.05	0.02
10/02/95	9.37	9.33	0.04	0.02
10/06/95	9.39	9.37	0.02	0.01
10/13/95	9.40	9.39	0.01	0.01
10/27/95	9.42	9.41	0.01	0.01
10/30/95	9.47	9.45	0.02	0.01
11/22/95	9.59	9.57	0.02	0.01
11/29/95	9.84	9.60	0.24	0.00
Total free product recovered since August 1994: 0.48 gallons				

Monitoring Well MW-7				
Date	Depth to Water (feet)	Depth to Free Product (feet)	Free Product Thickness (feet)	Free Product Recovered (gallons)
08/12/94	9.84	9.71	0.13	0.05
08/19/94	9.73	9.63	0.10	0.02
08/26/94	9.64	9.63	0.01	0.01
09/06/94	9.70	-	0.00	0.00
09/16/94	9.69	9.68	0.01	0.01
11/09/94	8.57	8.52	0.05	0.10
12/20/94	9.08	8.67	0.41	0.02
09/14/95	9.68	9.47	0.21	0.02
09/21/95	9.70	9.55	0.15	0.01
09/22/95	9.68	9.63	0.05	0.03
09/29/95	9.66	9.63	0.03	0.03
10/02/95	9.67	9.66	0.01	0.05
10/06/95	9.68	9.66	0.02	0.03
10/13/95	9.70	9.68	0.02	0.02
10/27/95	9.68	9.67	0.01	0.01
10/30/95	9.64	9.62	0.02	0.02
11/22/95	9.62	9.59	0.03	0.00 (1)
11/29/95	9.86	9.84	0.02	0.00 (1)
Total free product recovered since August 1994: 0.43 gallons				
Notes: (1) Passive recovery bailer and well damaged by construction contractor				

APPENDIX A

SITE WORK, SOIL BORING, AND MONITORING WELL PERMITS

CITY OF ALAMEDA
CENTRAL PERMIT OFFICE
2263 SANTA CLARA AVE., ROOM 204
ALAMEDA, CA 94501

415-522-4100

APPLICATION FOR PERMIT TO EXCAVATE IN THE RIGHT-OF-WAY OF THE CITY OF ALAMEDA

_____ SERVICE NUMBER

DATE Sept. 6 19 95

Application is hereby made for a permit to excavate on the _____ side of
Santa Clara Avenue Ave.
and Oak street St. _____ feet _____ of
Six locations: see attached map

House No. 2301 Owner Lily Chun

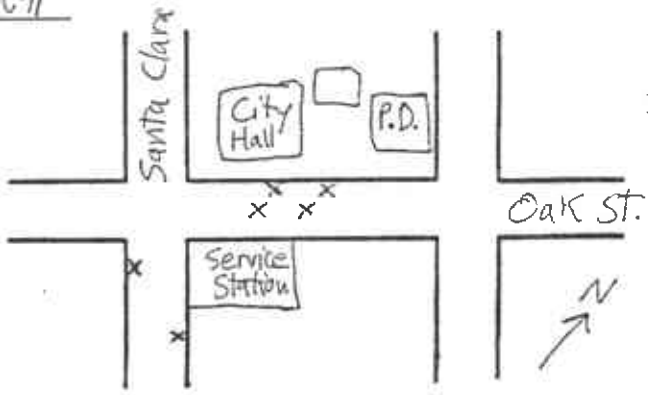
For the purpose of Ground water investigation

Name of Applicant Figi West, Inc. Address 44 Montgomery St. Suite 810 S.F. CA 94104

Phone (415) 296-1411

USA # 215999

☐ VERBAL APPROVAL
Date _____
By _____
Reasons: _____



x = drilling locations

Diagram of Proposed Work

FOR OFFICE USE ONLY

This permit to be Inspected by ☑ ENGINEERING DIVISION ☐ MAINTENANCE DIVISION

☑ ALL STRIPING, PAINTED GRAPHICS AND PAVEMENT MARKERS DAMAGED OR DESTROYED BY STREET EXCAVATION WORK ARE TO BE RESTORED BY THE PERMITEE.

☑ ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.

☑ ALL WORK INVOLVED IS TO BE DONE IN ACCORDANCE WITH STANDARD CITY OF ALAMEDA SPECIFICATIONS AND CITY OF ALAMEDA PRACTICES ALL TO THE SATISFACTION OF THE CITY ENGINEER. INSPECTION CHARGES SHALL BE PAID TO THE CITY MONTHLY. ACCEPTANCE OF THIS PERMIT CONSTITUTES ACCEPTANCE OF THE CONDITIONS INCLUDED.

X _____ 9/14/95
SIGNATURE DATE

☐ CONCRETE PERMIT REQUIRED

☐ NO OPEN TRENCH CUTTING

☐ STATE PERMIT REQUIRED

_____
CLEAR SIGNATURE DATE

☐ SPECIAL CONDITIONS _____

RECEIVED DATE 9/18/95 SIGNED Karl Moore

APPROVAL DATE 9/18/95 SIGNED _____

ISSUED DATE 9/19/95 SIGNED Karl Moore

PERMIT # 95-0056

[illegible]

415-295-1141

Repair Order # : 10 METER SPC. (10-06-95 ONLY) Signature
Project Desc. : 10 METERED SPC.10 SIGNS (10-05-95 ONLY)

Fee description	Units	Fee/Unit	Ext Fee	Date
[illegible]	45.00		45.00	
[illegible]	20.00		20.00	

*** Fees Required *** *** Fees Collected & Credits ***

Account No.	Receipt No.	Date	Payment
224-300-8000-3735	R9504647	09/14/95	45.00
001-300-4210-3341	R9504647	09/14/95	20.00

Fees:	65.00	Total Credits:	.00
Adjustments:	.00	Total Payments:	65.00
Total Fees:	65.00	Balance Due:	.00

I called

Flavio Barrantes @ 10:35 AM on 10/6
He said go ahead and grout with no inspection

FORMS MUST BE INSPECTED PRIOR TO CONCRETE POUR.
CALL 748-4610 OR 748-4610 FOR INSPECTION.
===

NOTICE: ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.
Contractor's "NAME AND DATE" to be impressed in all concrete work.

THIS IS TO CERTIFY THAT THE ABOVE WORK HAS BEEN COMPLETED TO MY SATISFACTION AND APPROVAL.

Date ____________________ ____________________
INSPECTOR

[illegible]

CITY OF ALAMEDA
CENTRAL PERMIT OFFICE
2263 SANTA CLARA AVE., ROOM 204
ALAMEDA, CA 94501

415-522-4100

APPLICATION FOR PERMIT TO EXCAVATE IN THE RIGHT-OF-WAY OF THE CITY OF ALAMEDA

_____ SERVICE NUMBER

DATE 11/14 19 95

Application is hereby made for a permit to excavate on the 4 locations: See map side of Santa Clara + Oak Ave. St. _____ feet _____ of

House No. 2301 Santa Clara Owner Lily Chun

For the purpose of Ground water investigation

Name of Applicant William Bassett/Fugro West, Inc. Address 44 Montgomery St. #1010 S.F., CA 94104

Phone (415) 296-1041

☐ VERBAL APPROVAL
Date _____
By _____
Reasons: _____

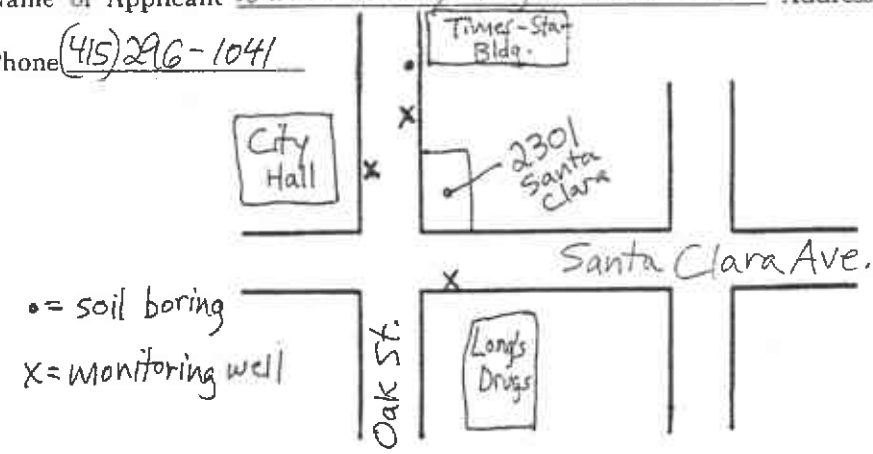


Diagram of Proposed Work

FOR OFFICE USE ONLY

This permit to be Inspected by ☑ ENGINEERING DIVISION ☐ MAINTENANCE DIVISION

☑ ALL STRIPING, PAINTED GRAPHICS AND PAVEMENT MARKERS DAMAGED OR DESTROYED BY STREET EXCAVATION WORK ARE TO BE RESTORED BY THE PERMITEE.

☑ ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.

☑ ALL WORK INVOLVED IS TO BE DONE IN ACCORDANCE WITH STANDARD CITY OF ALAMEDA SPECIFICATIONS AND CITY OF ALAMEDA PRACTICES ALL TO THE SATISFACTION OF THE CITY ENGINEER. INSPECTION CHARGES SHALL BE PAID TO THE CITY MONTHLY. ACCEPTANCE OF THIS PERMIT CONSTITUTES ACCEPTANCE OF THE CONDITIONS INCLUDED.

_____ SIGNATURE _____ DATE

☐ CONCRETE PERMIT REQUIRED

☐ NO OPEN TRENCH CUTTING

☐ STATE PERMIT REQUIRED

CLEAR _____ SIGNATURE _____ DATE

☐ SPECIAL CONDITIONS _____

RECEIVED DATE 11/14/95 SIGNED Paul Moore

APPROVAL DATE 11/15/95 SIGNED _____

ISSUED DATE 11/16/95 SIGNED Paul Moore

PERMIT # 95-0088

[illegible] ENCROACHMENT FORM Permit No: [illegible]
STATUS: APPROVED
[illegible] : [illegible]
[illegible] 748-4614 or 748-4510 [illegible] : [illegible]

JOB ADDRESS : [illegible] SANTA CLARA AVE
Parcel number : [illegible]
OWNER : [illegible]
[illegible]
[illegible]
APPLICANT : [illegible]
42 MONTGOMERY STREET #1110
SAN FRANCISCO, CA 94104
415-296-1041

HOURS OF CONSTRUCTION
MONDAY - FRIDAY 7 A.M. TO 7 P.M.
SATURDAY & SUNDAY 8 A.M. TO 6 P.M.

Signature

Repair Order # : 7 METERED SPACES (11/22/95) [illegible]
Project Desc. : 7 METERED SPACES (11/22/95) 7 SIGNS

Fee Description	Units	Fee/Unit	Ext Fee	Date
ENCROACHMENT - METERS	31.50		31.50	
"NO PARKING" SIGNS	14.00		14.00	

*** Fees Required *** *** Fees Collected & Credits ***

Account No.	Receipt No.	Date	Payment
224-300-0000-3233	R9505580	11/20/95	31.50
001-300-4210-3341	R9505580	11/20/95	14.00
TOTAL THIS DATE		*********	45.50

Fees: 45.50
Adjustments: .00
Total Fees: 45.50

Total Credits: .00
Total Payments: 45.50
Balance Due: .00

FORMS MUST BE INSPECTED PRIOR TO CONCRETE POUR.
CALL 748-4614 OR 748-4510 FOR INSPECTION.
==

NOTE: ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.
Contractor's "NAME AND DATE" to be impressed in all concrete work.

THIS IS TO CERTIFY THAT THE ABOVE WORK HAS BEEN COMPLETED TO MY SATISFACTION AND APPROVAL.

Date ________________

____
INSPECTOR

CALL 748-4614 OR 748-4510 FOR INSPECTION FOR FORMS AND AFTER COMPLETION. INSPECTION MUST BE MADE BEFORE DEPOSIT CAN BE PROCESSED FOR REFUND. REFUNDS TAKE 3 WEEKS AFTER FINAL

ZONE 7 WATER AGENCY

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

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

PERMIT NUMBER 95585
LOCATION NUMBER

LOCATION OF PROJECT 2301 Santa Clara Avenue
Alameda, California

CLIENT
Name Mr. Wayne Chun
Address 265 Heron Drive Voice (510) 432-7793
City, State Pittsburg, CA Zip 94565-1916

APPLICANT
Name Fugro West, Inc.
Address 44 Montgomery St. Fax (415) 296-0944
Suite 1010 Voice (415) 296-1041
City, State San Francisco, CA Zip 94104

TYPE OF PROJECT
Well Construction
Cathodic Protection ___
Water Supply ___
Monitoring X (4)
Geotechnical Investigation
General ___
Contamination X (10)
Well Destruction ___

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

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger (Monitoring Wells)
Cable ___ Other Borings: Direct push

DRILLER'S LICENSE NO. Wells: 710678 Borings: 624461

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 16 ft.
Surface Seal Depth 5 ft. Number 4

GEOTECHNICAL PROJECTS
Number of Borings 10 Maximum
Hole Diameter 1 in. Depth 12 ft.

ESTIMATED STARTING DATE 9/13/95 (Borings) 9/27/95 (wells)
ESTIMATED COMPLETION DATE 10 9/13/95 9/27/95

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

APPLICANT'S SIGNATURE [signature] Date 9/6/95

PERMIT CONDITIONS

Circled Permit Requirements Apply

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

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

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

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 9-13-
Wyman Hong

APPENDIX B

STANDARD OPERATING PROCEDURES

FUGRO WEST, INC.
STANDARD OPERATING PROCEDURES
RE: SOIL BORING SAMPLING
SOP-1

During drilling with a hollow-stem auger or air-rotary rig, soil samples are typically collected in thin-walled brass or stainless steel tubes 6 inches long by 2 inches outside diameter. Three of the tubes are set, typically, in an 18-inch-long split-barrel sampler. The sampler is usually lowered into the open borehole attached either to the end of drilling pipe or on a wire-line hammer device.

When possible, the split-barrel sampler is driven its entire length, either hydraulically or by repeatedly pounding a 140-pound hammer using a 30-inch drop. The number of drops (blows) used to drive the sampler is recorded on the boring log. The sampler is extracted from the borehole and the tubes containing the soil samples are removed. Upon removal from the sampler, the ends of the lowermost tube are typically covered with aluminum foil or "Teflon" sheets and plastic caps. The sample may be extruded from the tube and sealed within another appropriate cleaned sample container (e.g., glass jar). The sealed sample is labeled and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. These procedures minimize the potential for cross-contamination and volatilization of volatile organic compounds (VOC) prior to chemical analysis.

Material from one of the other tubes is analyzed in the field, when required, using either a portable photoionization detector (PID) or equivalent analytical instrument. The purpose of this field analysis is to qualitatively determine the presence or absence of hydrocarbons. The soil sample is enclosed in a container (e.g., plastic bag) to allow for some volatilization of VOC. The PID is then used to measure the concentrations of hydrocarbons within the container headspace. The data is recorded on the boring logs at the depth corresponding to the sampling point.

Any remaining soil collected from the sampler at that interval is described geologically using the USCS or other appropriate classification system) on a boring log. All drilling and sampling equipment are either steam-cleaned or washed prior to use at each site and between boreholes to minimize the potential for cross-contamination. Sampling equipment is also cleaned between samples.

FUGRO WEST, INC.
STANDARD OPERATING PROCEDURES
RE: SOIL CLASSIFICATION
SOP-3

Soil samples are classified according to the Unified Soil Classification System. Representative portions of the samples may be submitted under strict chain-of-custody to an analytical laboratory for further examination and verification of the in-field classification, and analysis of soil mechanical and/or petrophysical properties. The soil types are indicated on logs of either excavations or borings together with depths corresponding to the sampling points, and other pertinent information.

FUGRO WEST, INC.
STANDARD OPERATING PROCEDURES
SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES
SOP-4

Sample identification and chain-of-custody procedures ensure sample integrity, and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis is labeled to identify the job number, date, time of sample collection, a sample number unique to the sample, any name(s) of on-site personnel and any other pertinent field observations also recorded on the field excavation or boring log.

Chain-of-custody forms are used to record possession of the sample from time of collection to its arrival at the laboratory. During shipment, the person with custody of the samples will relinquish them to the next person by signing the chain-of-custody form(s) and noting the date and time. The sample-control officer at the laboratory will verify sample integrity, correct preservation, confirm collection in the proper container(s), and ensure adequate volume for analysis.

If these conditions are met, the samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the chain-of-custody forms and in the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

FUGRO WEST, INC.
STANDARD OPERATING PROCEDURE
RE: HOLLOW-STEM AUGER MONITORING WELL INSTALLATION AND DEVELOPMENT
SOP-6

Boreholes for monitoring wells are drilled using a truck-mounted, hollow-stem auger drill rig. The borehole diameter will be a minimum of 4 inches larger than the outside diameter of the casing when installing well screen. The hollow-stem auger provides minimal interruption of drilling while permitting soil sampling at desired intervals. Soil samples are collected by either hammering or hydraulically pushing a conventional split-barrel sampler containing pre-cleaned 2-inch-diameter brass tubes. A geologist or engineer from Fugro West, Inc., continuously logs each borehole during drilling and constantly checks drill cuttings for indications of both the first recognizable occurrence of groundwater and volatile hydrocarbons, using either a portable photoionization detector, flame ionization detector, or an explosimeter. The sampler is rinsed between samples and either steam cleaned or washed with all other drilling equipment between borings to minimize the potential for cross-contamination.

Monitoring wells are cased with threaded, factory-perforated and blank Schedule 40 PVC. The perforated interval consists of slotted casing, generally with 0.020-inch-wide by 1.5-inch-long slots, with 42 slots per foot. A PVC cap may be secured to the bottom of the casing with stainless steel screws; no solvents or cements are used. Centering devices may be fastened to the casing to ensure even distribution of filter material and grout within the borehole annulus. The well casing is thoroughly washed and/or steam cleaned, or may be purchased as pre-cleaned, prior to installation.

After setting the casing inside the hollow-stem auger, sand or gravel filter material is poured into the annular space to fill from boring bottom to generally 1 foot above the perforated interval. A 1- to 2-foot thick bentonite plug is set above this filter material to prevent grout from infiltrating into the filter pack. Either neat cement, containing about 5 percent bentonite, or sand-cement grout is then tremmied into the annular space from the top of the bentonite plug to near surface. A traffic-rated vault is installed around each wellhead for wells located in parking lots or driveways, while steel "stovepipes" are usually set over wellheads in landscaped areas.

After installation, the wells are thoroughly developed to remove residual drilling materials from the wellbore, and to improve well performance by removing fine material from the filter pack that may pass into the well. Well development techniques used may include pumping, surging, bailing, swabbing, jetting, flushing, and air-lifting. All development water is collected either in drums or tanks for temporary storage, and properly disposed of depending on laboratory analytical results. To minimize the potential for cross-contamination between wells, all development equipment is either steam cleaned or properly washed prior to use.

FUGRO WEST, INC.
STANDARD OPERATING PROCEDURES
RE: GROUNDWATER PURGING AND SAMPLING
SOP-7

Prior to water sampling, each well is purged by evacuating a minimum of three wetted well-casing volumes of groundwater. When required, purging will continue until either the discharge water temperature, conductivity, or pH stabilize to within 10% of previously measured values; and a maximum of ten wetted casing volumes of groundwater have been recovered, or the well is bailed dry. When practical, the groundwater sample should be collected when the water level in the well recovers to at least 80 percent of its static level. Field measurements, observations and procedures are noted.

The sampling equipment consists of a clean bailer, or stainless steel bladder pump with a "Teflon" bladder. If the sampling system is dedicated to the well, then the bailer is usually "Teflon," but the bladder pump may be PVC with a polypropylene bladder. Sample container type, preservation, and volume depends on the intended analyses.

The groundwater sample is decanted into each VOA vial in such a manner that there is no meniscus at the top of the vial. A cap is quickly secured to the top of the vial. The vial is then inverted and gently tapped to see if air bubbles are present. If none are present, the vial is labeled and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. Label information should include a unique sample identification number, job identification number, date, time, and the sampler's initials.

For quality control purposes, a duplicate water sample may be collected from a well. When required, a trip blank is prepared at the laboratory and placed in the transport cooler. It is labeled similar to the well samples, remains in the cooler during transport, and is analyzed by the laboratory along with the groundwater samples. In addition, a field blank may be prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been either steam cleaned or properly washed, prior to use in the next well, and is analyzed along with the other samples. The field blank analysis demonstrates the effectiveness of in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all well development and water sampling equipment not dedicated to a well is either steam cleaned or properly washed between use. As a second precautionary measure, wells are sampled in order of lowest to highest concentrations as established by available previous analytical data.

In the event the water samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored until the first opportunity for submittal either on ice in a cooler, such as when in the field, or in a refrigerator.

FUGRO WEST, INC.
STANDARD OPERATING PROCEDURES
MEASURING LIQUID LEVELS USING A WATER LEVEL INDICATOR
OR INTERFACE PROBE
SOP-12

Field equipment used for liquid-level gauging typically includes the measuring probe (water level or interface) and a clean product bailer(s). The field kit also includes cleaning supplies (buckets, TSP, spray bottles, and deionized water) to be used in cleaning the equipment between wells.

Prior to measurement, the probe tip is lowered into the well until it touches bottom. Using the previously established top-of-casing or top-of-box (i.e., wellhead vault) point, the probe cord (or halyard) is marked and a measuring tape (graduated in hundredths of a foot) is used to determine the distance between the probe end and the marking on the cord. This measurement is then recorded on the liquid-level data sheet as the "Measured Total Depth" of the well.

When necessary in using the interface probe to measure liquid levels, the probe is first electrically grounded to either the metal stove pipe or another metal object nearby. When no ground is available, reproducible measurements can be obtained by clipping the ground lead to the handle of the interface probe case.

The probe tip is then lowered into the well and submerged in the groundwater. An oscillating (beeping) tone indicates the probe is in water. The probe is slowly raised until either the oscillating tone ceases or becomes a steady tone. In either case, this is the depth-to-water (DTW) indicator and the DTW measurement is made accordingly. The steady tone indicates floating hydrocarbons. In this case, the probe is slowly raised until the steady tone ceases. This is the depth-to-product (DTP) indicator and the measurement of DTP is recorded. A corrected depth to groundwater to account for floating hydrocarbons can be calculated by using the following formula:

CDTW = DTW - (SP.G x LHT).
CDTW = Corrected depth to groundwater.
DTW = Measured depth to groundwater.
SP.G = Specific gravity: unweathered gasoline = 0.75; diesel = 0.80
LHT = Measured liquid hydrocarbon thickness.

The corresponding groundwater elevation is the difference between a previously determined well reference elevation and either the depth to groundwater or the corrected depth to groundwater.

The process of lowering and raising the probe must be repeated several times to ensure accurate measurements. The DTW and DTP measurements are recorded on the liquid-level data sheet. When floating product is indicated by the probe's response, a product bailer is lowered partially through the product-water interface to confirm the product on the water surface, and as further indication of product thickness, particularly in cases where the product layer is quite thin. Either this measurement or the difference between DTW and DTP is recorded on the data sheet as "product thickness."

In order to avoid cross-contamination of wells during the liquid-level measurement process, wells are measured in the order of "clean" to "dirty" (where such information is available). In addition, all measurement equipment is cleaned with TSP or similar solution and thoroughly rinsed with deionized water before use, between measurements in respective wells, and at the completion of the day's activities.

FUGRO WEST, INC.
STANDARD OPERATING PROCEDURE
RE: POWERPUNCH™ SAMPLING
SOP-14

Starting from the capillary fringe, the PowerPunch™ is pushed so that the tip is approximately 3 to 4 feet below the surface of the water table. The sleeve protecting the 5-foot PVC screened interval is then pulled up, exposing the screened interval to the capillary fringe and the saturated zone. The system is left undisturbed for approximately 15 minutes to allow formation water to infiltrate the screen, and fine-grained soil particles to settle out.

The sampling equipment consists of either a Teflon or stainless steel bailer.

The ground water sample is decanted into appropriately-preserved sampling containers in a manner that minimizes turbulence in the sample. A cap is quickly secured to the top of the vial. The vial is then inverted and gently tapped to see if air bubbles are present. If none are present, the vial is labeled and refrigerated for delivery to the analytical laboratory. Label information includes a unique sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name. Routine chain-of-custody documentation is used to record sample custody from time of collection to time of delivery to the analyzing laboratory.

For quality control purposes, a field blank may be prepared in the field. The field blank is prepared after a bailer has been either steam cleaned or properly washed, prior to use in the next well, and is analyzed along with the other samples. The field blank analysis can demonstrate the effectiveness of the in-field equipment cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all well development and water sampling equipment not dedicated to a well is either steam cleaned or properly washed between use.

In the event the water samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored until the first opportunity for submittal either on ice in a cooler, such as when in the field, or in a refrigerator at Fugro's office.

APPENDIX C

ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS: GROUNDWATER

Excelchem Environmental Labs
4946 Watt Avenue, #38
North Highlands, CA 95660
(916)334-8661

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

ANALYSIS REQUEST 1095046 **TAT**

Project Manager: Bill Bassett
Phone #: (415) 296-1041

Company/Address: Fugro West, S.F., CA
FAX #: (415) 296-0944

Project Number: 9537-043/A-A3
P.O.#:
Project Name: Former Bill Chun Service Station

Project Location: 2301 Santa Clara Ave.
Sampler Signature: Bill Bassett

Sample ID	Sampling DATE	Sampling TIME	Container: VOA	SLEEVE	1L GLASS	1L PLASTIC	Method Preserved: HCl	HNO_3	ICE	NONE	Matrix: WATER	SOIL
P-1	10/6/95		X		X		X			X	X	
P-2	↓		X		X		X			X	X	
P-3	↓		X		X		X			X	X	
P-4	↓		X		X		X			X	X	
P-5	↓		X		X		X			X	X	
P-6	↓		X		X		X			X	X	
P-7	↓		X		X		X			X	X	
P-8	↓		X		X		X			X	X	
P-9	↓		X		X		X			X	X	

Sample ID	BTEX (602/8020)	BTEX/TPH as Gasoline (602/8020/8015)	TPH as Diesel (8015)	TPH as Oil (8015)	Total Oil & Grease (5520 B/E,F)	Total Oil & Grease IR (5520 B/E,F,C)	96 - Hour Fish Bioassay	EPA 601/8010	EPA 602/8020	EPA 615/8150	EPA 608/8080 - Pesticides	EPA 608/8080-PCBs	EPA 624/8240	EPA 625/8270	ORGANIC LEAD	Reactivity, Corrosivity, Ignitibility	CAM - 17 Metals	EPA - Priority Pollutant Metals	LEAD(7420/7421/239.2)	Cd, Cr, Pb, Zn, Ni	RUSH SERVICE (12 hr) or (24 hr)	EXPEDITED SERVICE (48 hr) or (1 wk)	STANDARD SERVICE (2wk)
P-1		X	X					X															
P-2		X	X					X															
P-3		X	X																				
P-4		X	X																				
P-5		X	X																				
P-6		X	X																				
P-7		X	X																				
P-8		X	X																				
P-9		X	X																				

W.E.T. (✓) / TOTAL (✓)

Relinquished by	Date	Time	Received by
Bill Bassett	10/9/95	6:35PM	Express It. S. Kapone
S. Kapone	10/9/95	19/37	Ken Johnson
Ken Johnson	10/10/95	1000	Received by Laboratory: Kim R. Cook

Remarks: Compare P-7 to others in terms of ratios, components, "aged" vs. "fresh", and any other distinguishing characteristics

Bill To: FUGRO

FUGRO WEST, INC.

SAMPLE ID: MW-1
AEN LAB NO: 9511490-01
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	42,000 *	50	ug/L	12/07/95
Toluene	108-88-3	22,000 *	50	ug/L	12/07/95
Ethylbenzene	100-41-4	2,300 *	50	ug/L	12/07/95
Xylenes, Total	1330-20-7	9,900 *	200	ug/L	12/07/95
Purgeable HCs as Gasoline	5030/GCFID	120 *	5	mg/L	12/07/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	1	mg/L	12/10/95

RLs elevated for gas/BTEX due to high levels of target compounds; RL elevated for diesel due to high levels of non-target compounds - sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-2
AEN LAB NO: 9511490-02
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	42,000 *	50	ug/L	12/07/95
Toluene	108-88-3	40,000 *	50	ug/L	12/07/95
Ethylbenzene	100-41-4	3,400 *	50	ug/L	12/07/95
Xylenes, Total	1330-20-7	17,000 *	200	ug/L	12/07/95
Purgeable HCs as Gasoline	5030/GCFID	170 *	5	mg/L	12/07/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	1	mg/L	12/10/95

RLs elevated for gas/BTEX due to high levels of target compounds; RL elevated for diesel due to high levels of non-target compounds - sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-3
AEN LAB NO: 9511490-03
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	39 *	5	ug/L	12/06/95
Toluene	108-88-3	59 *	5	ug/L	12/06/95
Ethylbenzene	100-41-4	7 *	5	ug/L	12/06/95
Xylenes, Total	1330-20-7	33 *	20	ug/L	12/06/95
Purgeable HCs as Gasoline	5030/GCFID	13 *	0.5	mg/L	12/06/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	0.08	mg/L	12/10/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-4
AEN LAB NO: 9511490-04
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	**EPA 8020**				
Benzene	71-43-2	ND	0.5	ug/L	12/08/95
Toluene	108-88-3	ND	0.5	ug/L	12/08/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	12/08/95
Xylenes, Total	1330-20-7	ND	2	ug/L	12/08/95
Purgeable HCs as Gasoline	5030/GCFID	0.1 *	0.05	mg/L	12/08/95
#Extraction for TPH	**EPA 3510**	-		Extrn Date	12/09/95
TPH as Diesel	**GC-FID**	ND	0.05	mg/L	12/11/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-6
AEN LAB NO: 9511490-05
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	15,000 *	30	ug/L	12/06/95
Toluene	108-88-3	2,900 *	30	ug/L	12/06/95
Ethylbenzene	100-41-4	2,500 *	30	ug/L	12/06/95
Xylenes, Total	1330-20-7	10,000 *	100	ug/L	12/06/95
Purgeable HCs as Gasoline	5030/GCFID	57 *	3	mg/L	12/06/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	0.9	mg/L	12/11/95

RLs elevated for gas/BTEX due to high levels of target compounds; RL elevated for diesel due to high levels of non-target compounds - sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-8
AEN LAB NO: 9511490-06
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	260 *	30	ug/L	12/06/95
Toluene	108-88-3	40 *	30	ug/L	12/06/95
Ethylbenzene	100-41-4	140 *	30	ug/L	12/06/95
Xylenes, Total	1330-20-7	190 *	100	ug/L	12/06/95
Purgeable HCs as Gasoline	5030/GCFID	7.4 *	3	mg/L	12/06/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	0.08	mg/L	12/11/95

RLs elevated for gas/BTEX due to high levels of target compounds - sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett FUGRO WEST-INC. 44 Montgomery Street, Suite 1010 San Francisco, CA 94104	Date Sampled : Date Received: TPHd Analyzed:	10-06-95 10-10-95 10-17-95
Project:	9537-043/A-A3	Matrix:	Water

	TPHd PPB
Reporting Limit:	100
SAMPLE Laboratory Identification	
P-1 W1095136	ND*

PPB = Parts per billion = ug/L = micrograms per Liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.
* = Matrix Interference.

ANALYTICAL PROCEDURES

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3510 followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

10-18-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled :	10-06-95
	FUGRO WEST-INC.	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	TPHd Analyzed:	10-17-95
	San Francisco, CA 94104		
Project:	9537-043/A-A3	Matrix:	Water

	TPHd PPB
Reporting Limit:	50
SAMPLE Laboratory Identification	
P-2 W1095137	ND
P-4 W1095139	ND

PPB = Parts per billion = ug/L = micrograms per Liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3510 followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

10-18-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett FUGRO WEST-INC. 44 Montgomery Street, Suite 1010 San Francisco, CA 94104	Date Sampled : Date Received: TPHd Analyzed:	10-06-95 10-10-95 10-17-95
Project:	9537-043/A-A3	Matrix:	Water

	TPHd
	PPB
Reporting Limit:	500
SAMPLE Laboratory Identification	
P-3 W1095138	ND

PPB = Parts per billion = ug/L = micrograms per Liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3510 followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

10-18-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled :	10-06-95
	FUGRO WEST-INC.	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	TPHd Analyzed:	10-18-95
	San Francisco, CA 94104		
Project:	9537-043/A-A3	Matrix:	Water

	TPHd PPB
Reporting Limit:	500
SAMPLE Laboratory Identification	
P-5 W1095140	ND
P-6 W1095141	ND
P-8 W1095143	ND
P-9 W1095144	ND

PPB = Parts per billion = ug/L = micrograms per Liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3510 followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

10-18-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled :	10-06-95
	FUGRO WEST-INC.	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	TPHd Analyzed:	10-18-95
	San Francisco, CA 94104		
Project:	9537-043/A-A3	Matrix:	Water

	TPHd
	PPB
Reporting Limit:	50
SAMPLE Laboratory Identification	
P-7 W1095142	ND*

PPB = Parts per billion = ug/L = micrograms per Liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.
* = Matrix Interference.

ANALYTICAL PROCEDURES

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3510 followed by modified EPA Method 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

10-18-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Bill Bassett	Date Sampled:	10-06-95
	Fugro West-Inc.	Date Received:	10-10-95
	44 Montgomery Street, #1010	Date Analyzed:	10-15-95
	San Francisco, CA. 94104	Matrix:	Water
Project :	9537-0431A-A3		
Sample ID:	P-2		
Lab ID :	W1095137		

Compound	Reporting Limit(ppb)	Measured Value(ppb)
Dichlorodifluoromethane	1.0	ND
Chloromethane	1.0	ND
Vinyl Chloride	1.0	ND
Bromomethane	1.0	ND
Chloroethane	1.0	ND
Trichlorofluoromethane	1.0	ND
1,1-Dichloroethene	1.0	ND
Methylene Chloride	1.0	ND
Trans-1,2-Dichloroethene	1.0	ND
1,1-Dichloroethane	1.0	ND
Chloroform	1.0	ND
1,1,1-Trichloroethane	1.0	ND
Carbon Tetrachloride	1.0	ND
1,2-Dichloroethane	1.0	2.0
Trichloroethene	1.0	ND
1,2-Dichloropropane	1.0	ND
Bromodichloromethane	1.0	ND
Cis-1,3-Dichloropropene	1.0	ND
Trans-1,3-Dichloropropene	1.0	ND
1,1,2-Trichloroethane	1.0	ND
Tetrachloroethene	1.0	1.2
Dibromochloromethane	1.0	ND
Chlorobenzene	1.0	ND
Bromoform	1.0	ND
1,1,2,2-Tetrachloroethane	1.0	ND
1,3-Dichlorobenzene	1.0	ND
1,4-Dichlorobenzene	1.0	ND
1,2-Dichlorobenzene	1.0	ND

ppb = parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit

Surrogate Recoveries	% Recovery
Bromochloromethane	%106
4-Bromofluorobenzene	%104
2-Bromochlorobenzene	%98

ANALYTICAL PROCEDURES

HV--Halogenated Volatiles are measured using EPA Method 601 which utilizes a purge and trap interfaced to a gas chromatograph (GC) equipped with an electrolytic conductivity detector.

Laboratory Representative

10-16-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Bill Bassett	Date Sampled:	10-06-95
	Fugro West-Inc.	Date Received:	10-10-95
	44 Montgomery Street, #1010	Date Analyzed:	10-12-95
	San Francisco, CA. 94104	Matrix:	Water
Project :	9537-0431A-A3		
Sample ID:	P-1		
Lab ID :	W1095136		

Compound	Reporting Limit(ppb)	Measured Value(ppb)
Dichlorodifluoromethane	1.0	ND
Chloromethane	1.0	ND
Vinyl Chloride	1.0	ND
Bromomethane	1.0	ND
Chloroethane	1.0	ND
Trichlorofluoromethane	1.0	ND
1,1-Dichloroethene	1.0	ND
Methylene Chloride	1.0	ND
Trans-1,2-Dichloroethene	1.0	ND
1,1-Dichloroethane	1.0	ND
Chloroform	1.0	ND
1,1,1-Trichloroethane	1.0	ND
Carbon Tetrachloride	1.0	ND
1,2-Dichloroethane	1.0	10
Trichloroethene	1.0	ND
1,2-Dichloropropane	1.0	ND
Bromodichloromethane	1.0	ND
Cis-1,3-Dichloropropene	1.0	ND
Trans-1,3-Dichloropropene	1.0	ND
1,1,2-Trichloroethane	1.0	ND
Tetrachloroethene	1.0	ND
Dibromochloromethane	1.0	ND
Chlorobenzene	1.0	ND
Bromoform	1.0	ND
1,1,2,2-Tetrachloroethane	1.0	ND
1,3-Dichlorobenzene	1.0	ND
1,4-Dichlorobenzene	1.0	ND
1,2-Dichlorobenzene	1.0	ND

ppb = parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit

Surrogate Recoveries	% Recovery
Bromochloromethane	%100
4-Bromofluorobenzene	%89
2-Bromochlorobenzene	%87

ANALYTICAL PROCEDURES

HV--Halogenated Volatiles are measured using EPA Method 601 which utilizes a purge and trap interfaced to a gas chromatograph (GC) equipped with an electrolytic conductivity detector.

Laboratory Representative

10-16-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled:	10-06-95
	FUGRO-WEST	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	BTEX Analyzed:	10-14-95
	San Francisco, CA 94104	TPHg Analyzed:	10-14-95
Project:	9537-043/A-A3	Matrix:	Water

	Benzene PPB	Toluene PPB	Ethyl-benzene PPB	Total Xylenes PPB	TPHg PPB
Reporting Limit:	0.5	0.5	0.5	0.5	50
SAMPLE Laboratory Identification:					
P-1 W1095136	ND	ND	ND	ND	ND
P-2 W1095137	ND	ND	ND	0.5	ND
P-3 W1095138	ND	ND	ND	ND	ND
P-4 W1095139	ND	ND	ND	0.6	ND

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.

Laboratory Representative

10-16-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled:	10-06-95
	FUGRO-WEST	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	BTEX Analyzed:	10-14-95
	San Francisco, CA 94104	TPHg Analyzed:	10-14-95
Project:	9537-043/A-A3	Matrix:	Water

	Benzene PPB	Toluene PPB	Ethyl-benzene PPB	Total Xylenes PPB	TPHg PPB
Reporting Limit:	0.5	0.5	0.5	0.5	50
SAMPLE Laboratory Identification:					
P-5 W1095140	65	82	150	400	2,400
P-9 W1095144	ND	ND	ND	ND	ND

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.

Laboratory Representative

10-16-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled:	10-06-95
	FUGRO-WEST	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	BTEX Analyzed:	10-14-95
	San Francisco, CA 94104	TPHg Analyzed:	10-14-95
Project:	9537-043/A-A3	Matrix:	Water

	Benzene PPB	Toluene PPB	Ethyl-benzene PPB	Total Xylenes PPB	TPHg PPB
Reporting Limit:	10	10	10	10	1,000
SAMPLE Laboratory Identification:					
P-6 W1095141	8,600	320	800	1,200	22,000

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015. which utilizes a GC equipped with an FID.

Laboratory Representative

10-16-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled:	10-06-95
	FUGRO-WEST	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	BTEX Analyzed:	10-14-95
	San Francisco, CA 94104	TPHg Analyzed:	10-14-95
Project:	9537-043/A-A3	Matrix:	Water

	Benzene PPB	Toluene PPB	Ethyl-benzene PPB	Total Xylenes PPB	TPHg PPB
Reporting Limit:	20	20	20	20	2,000
SAMPLE Laboratory Identification:					
P-7 W1095142	240	68	640	870	46,000

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.

Laboratory Representative

10-16-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled:	10-06-95
	FUGRO-WEST	Date Received:	10-10-95
	44 Montgomery Street, Suite 1010	BTEX Analyzed:	10-15-95
	San Francisco, CA 94104	TPHg Analyzed:	10-15-95
Project:	9537-043/A-A3	Matrix:	Water

	Benzene PPB	Toluene PPB	Ethyl-benzene PPB	Total Xylenes PPB	TPHg PPB
Reporting Limit:	0.5	0.5	0.5	0.5	50
SAMPLE Laboratory Identification:					
P-8 W1095143	ND	ND	ND	ND	ND

ppb = Parts per billion = ug/L = micrograms per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are analyzed by using EPA Method 602 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low-to-medium boiling points) are analyzed by using modified EPA Method 8015, which utilizes a GC equipped with an FID.

Laboratory Representative

10-16-95
Date Reported

Reporting Information:

1. Client: Engro West, Inc.
Address: 44 Montgomery St. #1010
San Francisco, CA 94104
Contact: Bill Bassett
Alt. Contact: Stephen Boudreau

American Environmental Network AEN

3440 Vincent Road, Pleasant Hill, CA 94523
Phone (510) 930-9090
FAX (510) 930-0256

R-3S-2

R-1,S-C

Page 1 of 2

REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: 9511090
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required: Normal TAT
Date Report Required:
Client Phone No.:
Client FAX No.:

Address Report To:

2.

Send Invoice To:

3.

Send Report To: (1) or 2 (Circle one)

Client P.O. No.: 9537-0741 Client Project I.D. No.: 9537-0741

Sample Team Member (s) Bill Bassett

Lab Number	Client Sample Identification	Air Volume	Date/ Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS: G/BTEX	ANALYSIS: TPH-D	Comments / Hazards
01AB	MW-1		11/29/95	water	HCl	2	VOA	X		
C	MW-1					1	L		X	
02AB	MW-2					2	VOA	X		
C	MW-2					1	L		X	
03AB	MW-3					2	VOA	X		
C	MW-3				↓	1	L		X	
04AB	MW-4				HCl	2	VOA	X		
C	MW-4				NONE	1	Liter		X	
05AB	MW-6				HCl	2	VOA	X		
C	MW-6				HCl	1	L		X	
06AB	MW-8				HCl	2	VOA	X		
C	MW-8		↓	↓	NONE	1	Liter		X	

Relinquished by: (Signature) Bill Bassett	DATE 11/30/95	TIME 3:40 PM	Received by: (Signature) Jane Nelson
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature)
Method of Shipment			Lab Comments

DATE 11/30/95 TIME 1510

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
4) PVC filter, diam. ____ pore size ____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other ____ 11) Other ____

Reporting Information:

1. Client: Fugro West
Address: 44 Montgomery St. #1010
San Francisco, CA 94104
Contact: Bill Bassett
Alt. Contact: Stephen Boudreau

American Environmental Network
3440 Vincent Road, Pleasant Hill, CA 94523
Phone (510) 930-9090
FAX (510) 930-0256

AEN

REQUEST FOR ANALYSIS / CHAIN OF CUSTODY

Lab Job Number: 9511419
Lab Destination:
Date Samples Shipped:
Lab Contact:
Date Results Required: Normal TAT
Date Report Required:
Client Phone No.:
Client FAX No.:

Address Report To:

2.

Send Invoice To:

3.

Send Report To: (1) or 2 (Circle one)

Client P.O. No.: 9537-074/ Client Project I.D. No.: 9537-074/

Sample Team Member (s) Bill Bassett

Lab Number	Client Sample Identification	Air Volume	Date/ Time Collected	Sample Type*	Pres.	No. of Cont.	Type of Cont.	ANALYSIS: 8010	G/BTEX	TPH-D	Comments / Hazards
07AB	MW-9		11/29/95	water	NONE	2	VOA	X			
CD	MW-9				HCl	2	VOA		X		
E	MW-9				HCl	1	L			X	
08A	MW-10				NONE	1	L			X	
BC	MW-10				HCl	2	VOA		X		
09A	MW-11				NONE	1	L			X	
BC	MW-11				HCl	2	VOA		X		

Relinquished by: (Signature) Bill Bassett	DATE 11/30/95	TIME 3:40 PM	Received by: (Signature) Dana M Bell — DATE 11/30/95 — TIME 1540
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature) — DATE — TIME
Relinquished by: (Signature)	DATE	TIME	Received by: (Signature) — DATE — TIME
Method of Shipment			Lab Comments

*Sample type (Specify): 1) 37mm 0.8 µm MCEF 2) 25mm 0.8 µm MCEF 3) 25mm 0.4 µm polycarb. filter
4) PVC filter, diam. ____ pore size ____ 5) Charcoal tube 6) Silica gel tube 7) Water 8) Soil 9) Bulk Sample
10) Other ____ 11) Other ____

COPIES: WHITE - JOB FILE YELLOW - PROJECT FILE PINK - CLIENT

RECEIVED

FUGRO WEST, INC.
44 MONTGOMERY ST. #1010
SAN FRANCISCO, CA 94104

ATTN: BILL BASSETT
CLIENT PROJ. ID: 9537-0741

P.O. NUMBER: 9537-0741

REPORT DATE: 12/15/95

DATE(S) SAMPLED: 11/29/95

DATE RECEIVED: 11/30/95

AEN WORK ORDER: 9511490

PROJECT SUMMARY:

On November 30, 1995, this laboratory received 9 water sample(s).

Client requested sample(s) be analyzed for organic parameters. Results of analysis are summarized on the following page(s). Please see quality control report for a summary of QC data pertaining to this project.

Samples will be stored for 30 days after completion of analysis, then disposed of in accordance with State and Federal regulations. Samples may be archived by prior arrangement.

If you have any questions, please contact Client Services at (510) 930-9090.

Larry Klein
Laboratory Director

FUGRO WEST, INC.

SAMPLE ID: MW-9
AEN LAB NO: 9511490-07
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	590 *	3	ug/L	12/07/95
Toluene	108-88-3	2 *	0.5	ug/L	12/07/95
Ethylbenzene	100-41-4	3 *	0.5	ug/L	12/07/95
Xylenes, Total	1330-20-7	20 *	2	ug/L	12/07/95
Purgeable HCs as Gasoline	5030/GCFID	1.5 *	0.05	mg/L	12/07/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	0.05	mg/L	12/11/95
EPA 8010 - Water matrix	EPA 8010				
Bromodichloromethane	75-27-4	ND	0.5	ug/L	12/08/95
Bromoform	75-25-2	ND	0.5	ug/L	12/08/95
Bromomethane	74-83-9	ND	2	ug/L	12/08/95
Carbon Tetrachloride	56-23-5	ND	0.5	ug/L	12/08/95
Chlorobenzene	108-90-7	ND	0.5	ug/L	12/08/95
Chloroethane	75-00-3	ND	2	ug/L	12/08/95
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5	ug/L	12/08/95
Chloroform	67-66-3	ND	0.5	ug/L	12/08/95
Chloromethane	74-87-3	ND	2	ug/L	12/08/95
Dibromochloromethane	124-48-1	ND	0.5	ug/L	12/08/95
1,2-Dichlorobenzene	95-50-1	ND	0.5	ug/L	12/08/95
1,3-Dichlorobenzene	541-73-1	ND	0.5	ug/L	12/08/95
1,4-Dichlorobenzene	106-46-7	ND	0.5	ug/L	12/08/95
Dichlorodifluoromethane	75-71-8	ND	2	ug/L	12/08/95
1,1-Dichloroethane	75-34-3	ND	0.5	ug/L	12/08/95
1,2-Dichloroethane	107-06-2	46 *	0.5	ug/L	12/08/95
1,1-Dichloroethene	75-35-4	ND	0.5	ug/L	12/08/95
cis-1,2-Dichloroethene	156-59-2	ND	0.5	ug/L	12/08/95
trans-1,2-Dichloroethene	156-60-5	ND	0.5	ug/L	12/08/95
1,2-Dichloropropane	78-87-5	ND	0.5	ug/L	12/08/95
cis-1,3-Dichloropropene	10061-01-5	ND	0.5	ug/L	12/08/95
trans-1,3-Dichloropropene	10061-02-6	ND	0.5	ug/L	12/08/95
Methylene Chloride	75-09-2	ND	2	ug/L	12/08/95
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5	ug/L	12/08/95
Tetrachloroethene	127-18-4	ND	0.5	ug/L	12/08/95
1,1,1-Trichloroethane	71-55-6	ND	0.5	ug/L	12/08/95
1,1,2-Trichloroethane	79-00-5	ND	0.5	ug/L	12/08/95
Trichloroethene	79-01-6	ND	0.5	ug/L	12/08/95
Trichlorofluoromethane	75-69-4	ND	2	ug/L	12/08/95
1,1,2Trichlorotrifluoroethane	76-13-1	ND	0.5	ug/L	12/08/95

FUGRO WEST, INC.

SAMPLE ID: MW-9
AEN LAB NO: 9511490-07
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Vinyl Chloride	75-01-4	ND	2	ug/L	12/08/95

RLs elevated for gas/BTEX due to high levels of target compounds - sample run at dilution.

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-10
AEN LAB NO: 9511490-08
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	12/07/95
Toluene	108-88-3	ND	0.5	ug/L	12/07/95
Ethylbenzene	100-41-4	ND	0.5	ug/L	12/07/95
Xylenes, Total	1330-20-7	ND	2	ug/L	12/07/95
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	12/07/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	0.05	mg/L	12/11/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

FUGRO WEST, INC.

SAMPLE ID: MW-11
AEN LAB NO: 9511490-09
AEN WORK ORDER: 9511490
CLIENT PROJ. ID: 9537-0741

DATE SAMPLED: 11/29/95
DATE RECEIVED: 11/30/95
REPORT DATE: 12/15/95

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	14 *	0.5	ug/L	12/07/95
Toluene	108-88-3	31 *	0.5	ug/L	12/07/95
Ethylbenzene	100-41-4	15 *	0.5	ug/L	12/07/95
Xylenes, Total	1330-20-7	570 *	2	ug/L	12/07/95
Purgeable HCs as Gasoline	5030/GCFID	3.2 *	0.05	mg/L	12/07/95
#Extraction for TPH	EPA 3510	-		Extrn Date	12/09/95
TPH as Diesel	GC-FID	ND	0.05	mg/L	12/11/95

ND = Not detected at or above the reporting limit
* = Value at or above reporting limit

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9511490

CLIENT PROJECT ID: 9537-0741

Quality Control and Project Summary

All laboratory quality control parameters were found to be within established limits.

Definitions

Laboratory Control Sample (LCS)/Method Spike(s): Control samples of known composition. LCS and Method Spike data are used to validate batch analytical results.

Matrix Spike(s): Aliquot of a sample (aqueous or solid) with added quantities of specific compounds and subjected to the entire analytical procedure. Matrix spike and matrix spike duplicate QC data are advisory.

Method Blank: An analytical control consisting of all reagents, internal standards, and surrogate standards carried through the entire analytical process. Used to monitor laboratory background and reagent contamination.

Not Detected (ND): Not detected at or above the reporting limit.

Relative Percent Difference (RPD): An indication of method precision based on duplicate analysis.

Reporting Limit (RL): The lowest concentration routinely determined during laboratory operations. The RL is generally 1 to 10 times the Method Detection Limit (MDL). Reporting limits are matrix, method, and analyte dependent and take into account any dilutions performed as part of the analysis.

Surrogates: Organic compounds which are similar to analytes of interest in chemical behavior, but are not found in environmental samples. Surrogates are added to all blanks, calibration and check standards, samples, and spiked samples. Surrogate recovery is monitored as an indication of acceptable sample preparation and instrumental performance.

D: Surrogates diluted out.

#: Indicates result outside of established laboratory QC limits.

QUALITY CONTROL DATA

METHOD: EPA 3510 GCFID

AEN JOB NO: 9511490
DATE EXTRACTED: 12/09/95
INSTRUMENT: H
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery n-Pentacosane
12/10/95	MW-1	01	99
12/10/95	MW-2	02	97
12/10/95	MW-3	03	97
12/11/95	MW-4	04	93
12/11/95	MW-6	05	101
12/11/95	MW-8	06	89
12/11/95	MW-9	07	98
12/11/95	MW-10	08	96
12/11/95	MW-11	09	96
QC Limits:			59-118

DATE EXTRACTED: 12/09/95
DATE ANALYZED: 12/10/95
SAMPLE SPIKED: DI WATER
INSTRUMENT: C

Method Spike Recovery Summary

Analyte	Spike Added (mg/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Diesel	2.03	84	6	58-107	15

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9511490
INSTRUMENT: H
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
12/07/95	MW-1	01	107
12/07/95	MW-2	02	105
12/06/95	MW-3	03	99
12/08/95	MW-4	04	101
12/06/95	MW-6	05	102
12/06/95	MW-8	06	100
12/07/95	MW-9	07	106
12/07/95	MW-10	08	98
12/07/95	MW-11	09	96
QC Limits:			70-130

DATE ANALYZED: 12/06/95
SAMPLE SPIKED: 9511469-01
INSTRUMENT: H

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits Percent Recovery	QC Limits RPD
Benzene	46.4	98	5	85-109	17
Toluene	109	99	6	87-111	16
HCs as Gasoline	1000	107	5	66-117	19

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

QUALITY CONTROL DATA

METHOD: EPA 8010

AEN JOB NO: 9511490
INSTRUMENT: I
MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery: Bromochloro-methane	Percent Recovery: 1-Bromo-3-chloro-propane
12/08/95	MW-9	07	105	107
QC Limits:			70-130	70-130

DATE ANALYZED: 12/07/95
SAMPLE SPIKED: 9511464-10
INSTRUMENT: I

Matrix Spike Recovery Summary

Analyte	Spike Added (ug/L)	Average Percent Recovery	RPD	QC Limits: Percent Recovery	QC Limits: RPD
1,1-Dichloroethene	50	98	<1	37-156	20
Trichloroethene	50	120	<1	54-122	20
Chlorobenzene	50	96	<1	54-141	20

Daily method blanks for all associated analytical runs showed no contamination at or above the reporting limit.

*** END OF REPORT ***

Location 2318 Santa Clara Ave.

Name Alameda Hardware Co.

Oil Storage Permit WS No. 19

Liquid Gasoline Gallons 65

Date Issued July 16, 1914 Gauge

Installation

Inspected By

Remarks

APPENDIX F

UST REGISTRATIONS AND BUILDING PERMITS FOR POTENTIAL UPGRADIENT SOURCES

Location 2300 Santa Clara Ave.

Name Shell Oil Co.

Oil Storage Permit AR No. 157

Liquid Gasoline Gallons 1160

Date Issued Aug. 9,1922 Gauge

Installation 4-290 Underground tanks

Inspected By AR

Remarks Service Station Tanks Removed and replaced by 3-1,000--1-550, and 1-110 Jan.6,1939

No letter in file concerning installation or removal of these tanks.

No such number (now the site of parking lot for [illegible])

Location 2300 Santa Clara Ave.

Name Shell Oil Co.

Oil Storage Permit TML No. 562

Liquid Gasoline Gallons 3,550

Date Issued January 6,1939 Gauge

Installation 3-1,000; 1-550; 1-110 Gallon Tanks

Inspected By

Remarks Service Station (Tanks removed Nov.1,1950 (Station Abandoned) E.R.H. 11/1/50

No letter in file concerning installation or removal of these tanks.

SANTA CLARA, 2300

Owner- Shell Oil Co.
Bldr.- Same

DATE	JOB	COST	PERMIT NO.	REMARKS
8-9-22	gas station	5,500.00		
8-25-22	comfort sta.	500.00	6251	

OAK ST., (S.E. SANTA CLARA) 2300

Owner- F. C. Stolte- Bldr.
Bldr.- Shell Oil Co.-Owner

DATE	JOB	COST	PERMIT	PLANS	REMARKS
1-6-40	serv. stn.	2,800.00			
10-30-50	Wreck service station	1,000.	990		

From the desk of Chief Lang's Desk

Location 2314 Santa Clara Ave

Name Da Veda Bottling Co.

Oil Storage Permit Chief Lang No. [illegible]

Liquid Gasoline Gallons 550

Date Issued Nov. 29 1946 Gauge #14

Installation Below Ground

Inspected By Karl Hilton

Remarks Tank to have coverage of four feet of earth from tank of tank to grade level.

Tank removed January 15, 1951

Note: See file on Tank Installations E.P.H. letter dated Nov. 29, 1946

Location 2314 Santa Clara Ave.

Name George Otzen

Oil Storage Permit WS No. 206

Liquid Gasoline Gallons 125

Date Issued Jan. 30, 1926 Gauge

Installation Underground

Inspected By WS

Remarks For Private Use

No letter in file concerning installation or removal of this tank

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett FUGRO-WEST, INC. 44 Montgomery Suite, #1010 San Francisco, CA 94104	Date Sampled :	11-22-95
		Date Received:	11-28-95
		Date Analyzed:	12-05-95
Project :	9537-0431-A3	Matrix:	Soil

	STLC Lead PPM
Reporting Limit:	0.15

SAMPLE Laboratory Identification	
MW-8 8', MW-9 9.5', MW-11 9.5' S1195385,387,389 Composite	ND

PPM = Parts per million = mg/L = milligram per Liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

STLC LEAD-- is measured by extraction using Title 22, WET followed by EPA Method 7420.

Laboratory Representative

12-06-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled :	11-22-95
	FUGRO-WEST, INC.	Date Received:	11-28-95
	44 Montgomery Suite, #1010	Date Analyzed:	12-01-95
	San Francisco, CA 94104		
Project :	9537-0431-A3	Matrix:	Soil
Sample ID:	MW-9 9.5'		
Lab ID :	S1295387		

Compound	Reporting Limit(ppb)	Measured Value(ppb)
Dichlorodifluoromethane	5	ND
Chloromethane	5	ND
Vinyl Chloride	5	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane	5	ND
1,1-Dichloroethene	5	ND
Methylene Chloride	15	ND
Trans-1,2-Dichloroethene	5	ND
1,1-Dichloroethane	5	ND
Chloroform	5	ND
1,1,1-Trichloroethane	5	ND
Carbon Tetrachloride	5	ND
1,2-Dichloroethane	5	ND
Trichloroethene	5	ND
1,2-Dichloropropane	5	ND
Bromodichloromethane	5	ND
Cis-1,3 Dichloropropene	5	ND
Trans-1,3 Dichloropropene	5	ND
1,1,2-Trichloroethane	5	ND
Tetrachloroethene	5	ND
Dibromochloromethane	5	ND
Chlorobenzene	5	ND
Bromoform	5	ND
1,1,2,2-Tetrachlorobenzene	5	ND
1,3-Dichlorobenzene	5	ND
1,4-Dichlorobenzene	5	ND
1,2-Dichlorobenzene	5	ND

ppb = parts per billion = ug/kg = micrograms per kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

HV--Halogenated Volatiles are measured first by extraction (EPA method 5030) then by using EPA Method 8010 which utilizes a purge and trap interfaced to a gas chromatograph (GC) equipped with an electrolytic conductivity detector.

Laboratory Representative

12-06-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104

Project : 9537-0431-A3

Date Sampled : 11-22-95
Date Received: 11-28-95
BTEX Analyzed: 11-30-95
TPHg Analyzed: 11-30-95
TPHd Analyzed: 11-28-95
Matrix: Soil

	Benzene PPM	Toluene PPM	Ethyl-benzene PPM	Total Xylenes PPM	TPHg PPM	TPHd PPM
Reporting Limit:	0.005	0.005	0.005	0.005	1.0	1.0
SAMPLE Laboratory Identification:						
MW-9 9.5' S1195387	ND	ND	ND	ND	ND	ND

ppm = Parts per million = mg/Kg = milligrams per Kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low to medium boiling points) are measured by extraction using EPA Method 5030, followed by modified EPA Method 8015 which utilizes a GC equipped with a FID.
TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 followed by modified EPA 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

12-04-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104

Project : 9537-0431-A3

Date Sampled : 11-22-95
Date Received: 11-28-95
BTEX Analyzed: 12-01-95
TPHg Analyzed: 12-01-95
TPHd Analyzed: 11-28-95
Matrix: Soil

	Benzene PPM	Toluene PPM	Ethyl-benzene PPM	Total Xylenes PPM	TPHg PPM	TPHd PPM
Reporting Limit:	0.13	0.13	0.13	0.13	13	1.0
SAMPLE Laboratory Identification:						
MW-11 9.5' S1195389	ND	0.19	0.58	4.4	154	88*

ppm = Parts per million = mg/Kg = milligrams per Kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.
* = Peaks in diesel range, however, does not look like our diesel #2 standard chromatography.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low to medium boiling points) are measured by extraction using EPA Method 5030, followed by modified EPA Method 8015 which utilizes a GC equipped with a FID.
TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 followed by modified EPA 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

12-04-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104

Project : 9537-0431-A3

Date Sampled : 11-22-95
Date Received: 11-28-95
BTEX Analyzed: 12-01-95
TPHg Analyzed: 12-01-95
TPHd Analyzed: 11-29-95
Matrix: Soil

	Benzene PPM	Toluene PPM	Ethyl-benzene PPM	Total Xylenes PPM	TPHg PPM	TPHd PPM
Reporting Limit:	1.3	1.3	1.3	1.3	130	2.0
SAMPLE Laboratory Identification:						
MW-8 8' S1195385	ND	ND	16	46	3,500	80*

ppm = Parts per million = mg/Kg = milligrams per Kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.
* = Peaks in diesel range, however, does not look like our diesel #2 standard chromatography.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID).
TPHg--Total petroleum hydrocarbons as gasoline (low to medium boiling points) are measured by extraction using EPA Method 5030, followed by modified EPA Method 8015 which utilizes a GC equipped with a FID.
TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550 followed by modified EPA 8015 with direct sample injection into a GC equipped with an FID.

Laboratory Representative

12-04-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

QA/QC REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104

Project : 9537-0431-A3

Date Analyzed: 12-01-95
Matrix: Soil

	STLC Lead PPM
Reporting Limit:	0.15
QA/QC PARAMETER	
Matrix Blank	ND
PERCENT RECOVERIES	
Matrix Spike	84%
Matrix Spike Duplicate	84%

ppm = parts per million = mg/L = milligrams per liter
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

STLC LEAD-- is measured by extraction using Title 22, WET followed by EPA Method 7420.

Laboratory Representative

12-06-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

QA/QC REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104
Project : 9537-0431-A3

Date Analyzed: 12-01-95
Matrix: Soil

Compound	Matrix Spike % Recovery	Matrix Spike Duplicate % Recovery
1,1-Dichloroethene	74%	88%
Trichloroethene	66%	78%
Chlorobenzene	92%	104%

ppb = Parts per billion = ug/Kg = micrograms per kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

HV–Halogenated Volatiles are measured using EPA Method 8010 which utilizes a purge and trap interfaced to a gas chromatograph (GC) equipped with an electrolytic conductivity detector.

Laboratory Representative

12-06-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

QA/QC REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104

Date Analyzed: 11-30-95
Matrix: Soil

Project : 9537-0431-A3

	Benzene PPM	Toluene PPM	Ethyl-benzene PPM	Total Xylenes PPM
Reporting Limit:	0.005	0.005	0.005	0.005
QA/QC PARAMETER				
Matrix Blank	ND	ND	ND	ND
PERCENT RECOVERIES				
Matrix Spike	103%	100%	98%	98%
Matrix Spike Duplicate	100%	97%	95%	95%

ppm = parts per million = mg/Kg = milligram per kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

All surrogate recoveries were within 30% of target values.
Spikes & Spike Duplicates were each spiked with 250 ng BTEX standard.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) .

Laboratory Representative

12-04-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

QA/QC REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104

Date Analyzed: 12-01-95
Matrix: Soil

Project : 9537-0431-A3

	Benzene PPM	Toluene PPM	Ethyl-benzene PPM	Total Xylenes PPM
Reporting Limit:	0.005	0.005	0.005	0.005
QA/QC PARAMETER				
Matrix Blank	ND	ND	ND	ND
PERCENT RECOVERIES				
Matrix Spike	98%	94%	92%	92%
Matrix Spike Duplicate	95%	92%	90%	90%

ppm = parts per million = mg/Kg = milligram per kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

All surrogate recoveries were within 30% of target values.
Spikes & Spike Duplicates were each spiked with 250 ng BTEX standard.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) are measured by extraction using EPA Method 5030 followed by analysis using EPA Method 8020 which utilizes a gas chromatograph (GC) equipped with a photoionization detector (PID) .

Laboratory Representative

12-04-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

QA/QC REPORT

Attention: Mr. Bill Bassett
FUGRO-WEST, INC.
44 Montgomery Suite, #1010
San Francisco, CA 94104

Date Analyzed: 11-28-95
Matrix: Soil

Project : 9537-0431-A3

	TPHd PPM
Reporting Limit:	1.0
QA/QC PARAMETER	
Matrix Blank	ND
PERCENT RECOVERIES	
Matrix Spike	61%
Matrix Spike Duplicate	55%
Laboratory Control Spike	61%
Laboratory Control Spike Duplicate	69%

ppm = parts per million = mg/Kg = milligram per kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

Spikes & Spike Duplicates were each spiked with 5000 ug of diesel standard.

ANALYTICAL PROCEDURES

TPHd--Total petroleum hydrocarbons as diesel (high boiling points) are measured by extraction using EPA Method 3550, followed by modified EPA Method 8015, with direct sample injection into a GC equipped with an FID.

Laboratory Representative

12-04-95
Date Reported

APPENDIX E

ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS: SOIL

Environmental Labs

4946 Watt Avenue, #38
North Highlands, CA 95660
(916)334-8661

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Bill Bassett Phone #: (415)296-1041

Company/Address: Fugro West, S.F. FAX #: (415)296-0944

Project Number: 9537-0431-A3 P.O.#: Project Name: Bill Chun Service Sta.

Project Location: 2301 Santa Clara Ave., Alameda, CA Sampler Signature: [signature]

ANALYSIS REQUEST 1195059

Analysis columns: BTEX (602/8020); BTEX/TPH as Gasoline (602/8020/8015); TPH as Diesel (8015); TPH as Oil (8015); Total Oil & Grease (5520 B/E,F); Total Oil & Grease IR (5520 B/E,F,C); 96 - Hour Fish Bioassay; EPA 601/8010; EPA 602/8020; EPA 615/8150; EPA 608/8080 - Pesticides; EPA 608/8080-PCBs; EPA 624/8240; EPA 625/8270; ORGANIC LEAD; Reactivity, Corrosivity, Ignitibility; CAM - 17 Metals; EPA - Priority Pollutant Metals; LEAD(7420/7421/239 2) STLC?; Cd, Cr, Pb, Zn, Ni; W.E.T. (✓); TOTAL (✓); RCI?

TAT: RUSH SERVICE (12 hr) or (24 hr); EXPEDITED SERVICE (48 hr) or (1 wk); STANDARD SERVICE (2wk)

Sample ID	Sampling Date	Time	Container (VOA / SLEEVE / 1L GLASS / 1L PLASTIC)	Method Preserved (HCl / HNO3 / ICE / NONE)	Matrix (WATER / SOIL)	BTEX/TPH as Gasoline	TPH as Diesel	EPA 601/8010	Lab No.	LEAD	RCI?	Notes
MW-8 8'	11/27/95		SLEEVE X	NONE X	SOIL X	X	X		S1195385	X	X	
MW-8 8.5'	↓		SLEEVE X	NONE X	SOIL X				S1195386			HOLD
MW-9 9.5'	↓		SLEEVE X	NONE X	SOIL X	X	X	X	S1195387	X	X	
MW-11 9'	↓		SLEEVE X	NONE X	SOIL X				S1195388			HOLD
MW-11 9.5'	↓		SLEEVE X	NONE X	SOIL X	X	X		S1195389	X	X	

Relinquished by:	Date	Time	Received by:
[signature]	3:45PM	11/27/95	(934) M. Salazar
Relinquished by	Date	Time	Received by:
Relinquished by	Date	Time	Received by Laboratory:
	11-28-95	0810 AM	[signature]

Remarks: Composite ... TPH as one

Bill To:

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett FUGRO-WEST, INC. 44 Montgomery Suite, #1010 San Francisco, CA 94104	Date Sampled : Date Received: Date Analyzed:	11-22-95 11-28-95 12-01-95
Project :	9537-0431-A3	Matrix:	Soil

	pH pH units	Flashpoint degrees F
Reporting Limit:	NA	NA
SAMPLE Laboratory Identification:		
MW-8 8', MW-9 9.5', MW-11 9.5' S1195385,387,389 Composite	8.26	> 200

ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.
NA = Not applicable.

ANALYTICAL PROCEDURES

Corrosivity, and Ignitability are analyzed using EPA methods 9045 and 1010, respectively.

Laboratory Representative

12-06-95
Date Reported

ENVIRONMENTAL LABS

500 Giuseppe Court, Suite 9
Roseville, CA 95678
Phone#: (916) 773-3664 Fax#: (916) 773-4784

ANALYSIS REPORT

Attention:	Mr. Bill Bassett	Date Sampled :	11-22-95
	FUGRO-WEST, INC.	Date Received:	11-28-95
	44 Montgomery Suite, #1010	Date Analyzed:	12-05-95
	San Francisco, CA 94104		
Project :	9537-0431-A3	Matrix:	Soil

	Reactive Cyanide PPM	Reactive Sulfide PPM
Reporting Limit:	0.2	0.50
SAMPLE Laboratory Identification:		
MW-8 8', MW-9 9.5', MW-11 9.5' ND S1195385,387,389 Composite	ND	ND

ppm = Parts per million = mg/kg = milligram per Kilogram
ND = Not detected. Compound(s) may be present at concentrations below the reporting limit.

ANALYTICAL PROCEDURES

Reactivity is analyzed using EPA methods 9010 and 9030.

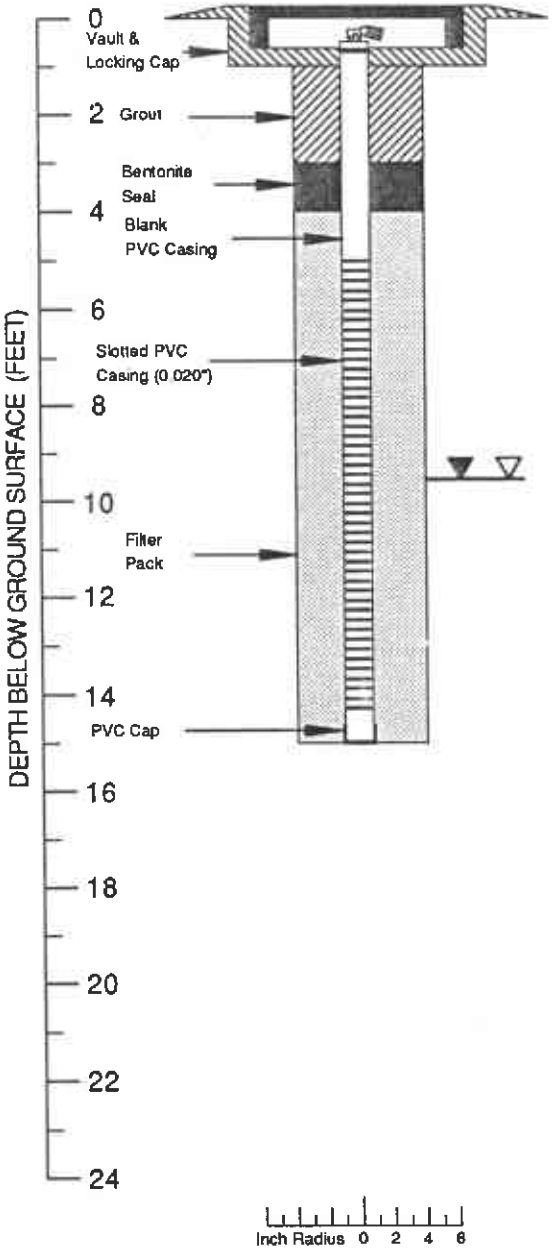
Laboratory Representative

12-06-95
Date Reported

APPENDIX D

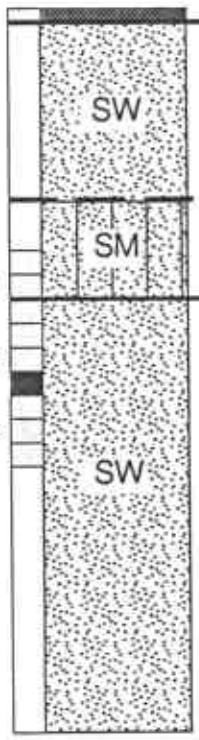
SOIL BORING LOGS AND WELL CONSTRUCTION DETAILS

WELL CONSTRUCTION DETAIL



Blow Counts	PID (ppmv)
5	
9	110
13	
15	275
21	
33	
18	390
27	
35	

GRAPHIC LOG



DESCRIPTION

Asphalt 3", Baserock (sand & gravel to 3/4") 5"

SAND: brown, fine to medium, loose, dry, minor silt

Silty SAND: brown, fine to medium, dense, moist, small pockets of grey sand, medium

SAND: grey, medium dense, moist, fine to medium, strong gasoline odor

SAND: brown, loose, moist, fine to medium

SAND: grey, medium dense, moist, fine to medium, strong gasoline odor

As above, wet

Grey **SAND** in cuttings to 15', wet

Total depth = 15 feet

Logged by:	W. Bassett	Drilling Company:	V & W Drilling	Completion Time:	
Project Mgr:	W. Bassett	Drilling Method:	Hollow Stem Auger	Type of Sampler:	Calif. Split Spoon
Date Drilled:	November 22, 1995	Driller:	Robert Vickery	TD (Total Depth):	15'

Explanation

- Water level in completed well
- First water found during drilling
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Continuous Core

Contacts:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational
- est K — Estimated permeability (hydraulic conductivity) 1K= primary, 2K= secondary
- NR — No Recovery

Monitoring Well MW-8

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, Ca

FUGRO

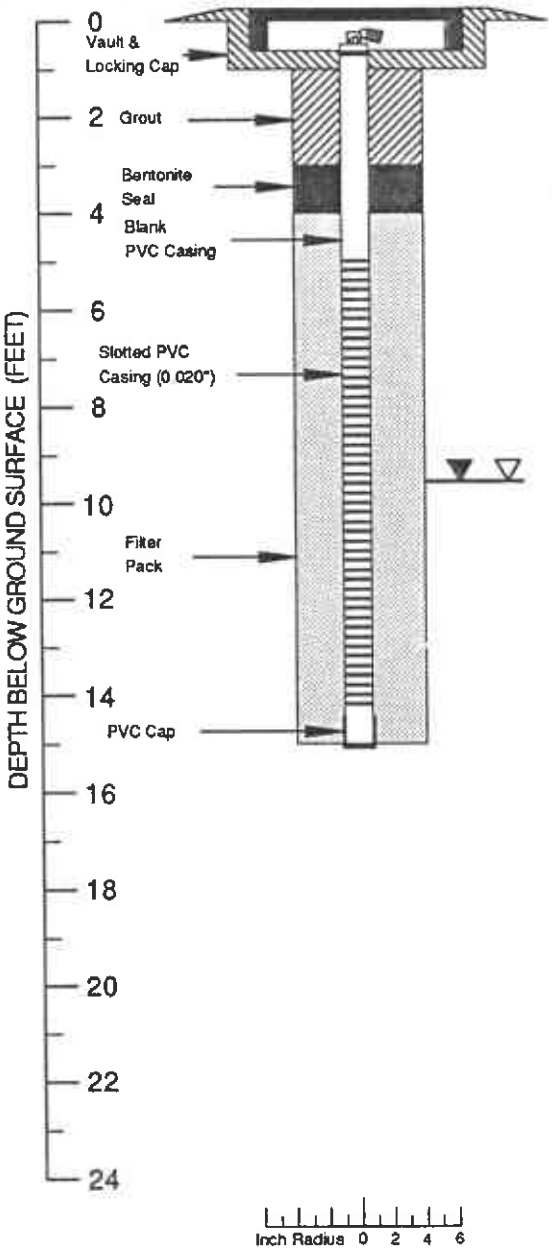
Drawn By: J. Paradis
Date: November 30, 1995
Revised By:
Date:

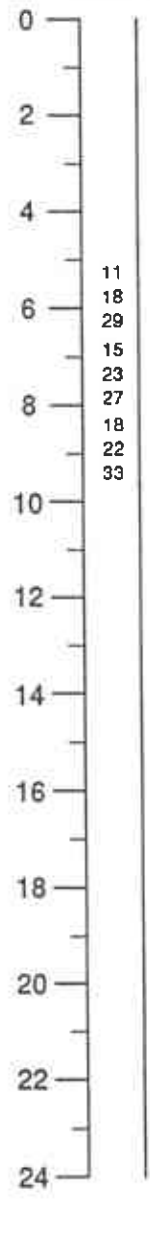
Page: 1 of 1

Well Number: MW-8

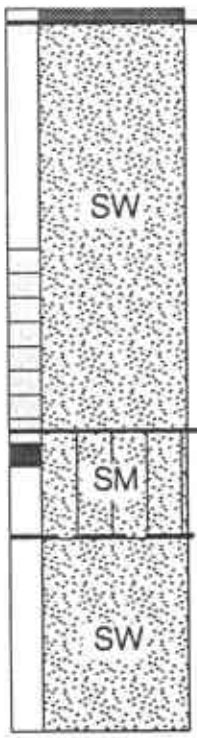
Job Number: 95-37-0431

WELL CONSTRUCTION DETAIL





GRAPHIC LOG



DESCRIPTION

Asphalt 2", Baserock (sand & gravel to 1.5") 4"

SAND: brown, loose, dry, fine to medium

SAND: brown, medium dense, moist, fine to medium, small pockets of grey sand, medium

- as above

Silty SAND: grey, medium dense, fine to medium, moist

As above, wet

Grey **SAND** and brown sand in cuttings, wet

Total depth = 15 feet

Logged by:	W. Bassett	Drilling Company:	V & W Drilling	Completion Time:	
Project Mgr:	W. Bassett	Drilling Method:	Hollow Stem Auger	Type of Sampler:	Calif. Split Spoon
Date Drilled:	November 22, 1995	Driller:	Robert Vickery	TD (Total Depth):	15'

Explanation

- Water level in completed well
- First water found during drilling
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Continuous Core

Contacts:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational
- est K — Estimated permeability (hydraulic conductivity) 1K= primary, 2K= secondary
- NR — No Recovery

Monitoring Well MW-9

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, Ca

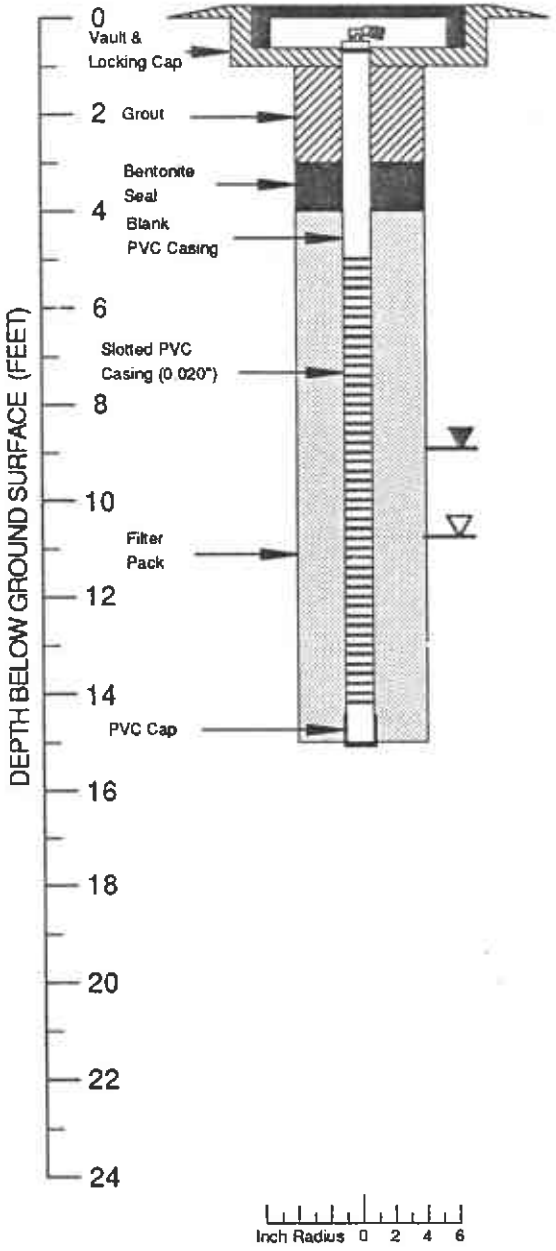
Drawn By:	J. Paradis
Date:	November 30, 1995
Revised By:	
Date:	

Page: 1 of 1

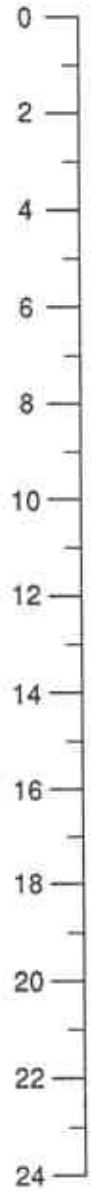
Well Number: MW-9

Job Number: 95-37-0431

WELL CONSTRUCTION DETAIL



Blow Counts

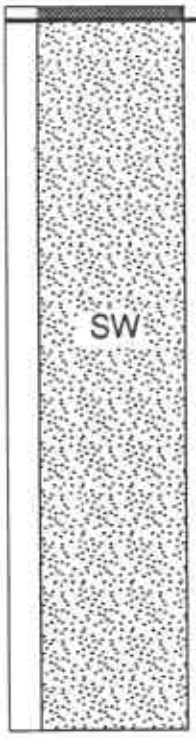


PID (ppmv)

0

0

GRAPHIC LOG



DESCRIPTION

Asphalt 2", Baserock (sand & gravel to 1") 4"

SAND: brown, loose, dry, fine to medium

Observed cuttings only from here to bottom of boring

SAND: brown, moist, fine to medium

SAND: grey, wet, fine to medium

SAND: brown, wet, fine to medium (on augers)

Total depth = 15 feet

Logged by:	W. Bassett	Drilling Company:	V & W Drilling	Completion Time:	
Project Mgr:	W. Bassett	Drilling Method:	Hollow Stem Auger	Type of Sampler:	Calif. Split Spoon
Date Drilled:	November 22, 1995	Driller:	Robert Vickery	TD (Total Depth):	15'

Explanation

- Water level in completed well
- First water found during drilling
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Continuous Core

Contacts:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational
- est K — Estimated permeability (hydraulic conductivity) 1K= primary, 2K= secondary
- NR — No Recovery

Monitoring Well MW-10

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, Ca

Page: 1 of 1

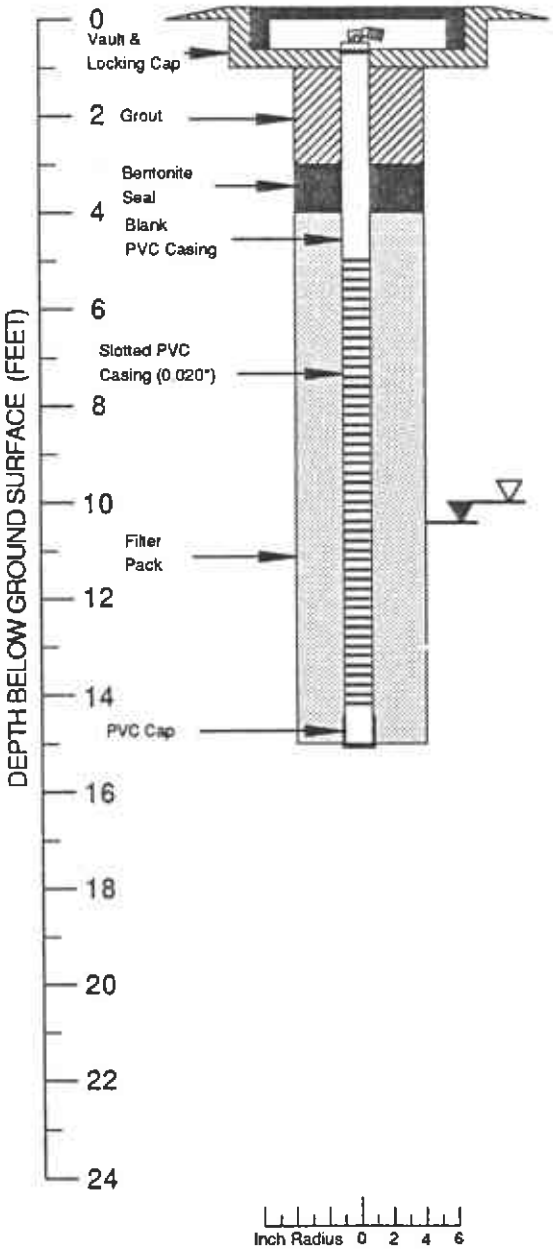
FUGRO

Drawn By: J. Paradis
Date: November 30, 1995
Revised By:
Date:

Well Number: MW-10

Job Number: 95-37-0431

WELL CONSTRUCTION DETAIL



Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
			Asphalt 2", Baserock (sand & gravel to 3/4") 2"
7			**SAND:** brown, loose, dry, fine to medium
11	10		
21		SW	
13			- as above, moist
18	70		
27			- as above, with pockets of grey sand, fine to medium
8			
13	185		- as above, wet, moderate gasoline odor
16			Cuttings: brown and minor grey sand, wet
			Total depth = 15 feet

Logged by:	W. Bassett	Drilling Company:	V & W Drilling	Completion Time:	
Project Mgr:	W. Bassett	Drilling Method:	Hollow Stem Auger	Type of Sampler:	Calif. Split Spoon
Date Drilled:	November 22, 1995	Driller:	Robert Vickery	TD (Total Depth):	15'

Explanation

- Water level in completed well
- First water found during drilling
- Location of recovered drill sample
- Location of sample sealed for chemical analysis
- Sieve sample
- Continuous Core

Contacts

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational
- est K — Estimated permeability (hydraulic conductivity) 1K= primary, 2K= secondary
- NR — No Recovery

Monitoring Well MW-11

Former Bill Chun Service Station
2301 Santa Clara Avenue
Alameda, Ca

FUGRO

Drawn By: J. Paradis
Date: November 30, 1995
Revised By:
Date:

Page: 1 of 1

Well Number: MW-11

Job Number: 95-37-0431