aqua science engineers inc.

Final Report of
Methods and Findings

for a

PRELIMINARY SITE INVESTIGATION
including
SOIL BORINGS AND SOIL SAMPLE ANALYSES,
GROUNDWATER MONITORING WELL DRILLING, INSTALLATION, SAMPLING

at
2896 Castro Valley Blvd.
Castro Valley, Ca.

submitted by

Aqua Science Engineers
San Ramon, Ca.
February 22, 1991

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INTRODUCTION

Agua Science Engineers (ASE) was contracted by the property owner to drill and sample 7 soil borings, of which three were converted into groundwater monitoring wells at the site of a dismantled gasoline filling and auto service station located at 2896 Castro Valley Blvd., Castro Valley, Ca. ("the site") (Figure 1). The scope of work performed closely follows the ASE Workplan - Proposal for Soil and Groundwater Investigation Services at 2896 Castro Valley Blvd., Castro Valley, dated April 27, 1990. Approval of the scope of the workplan was given by the Alameda County Health Care Services Agency in May 22, 1990 correspondence (Appendix A). The scope of work reflects the minimum amount of investigation required to define the vertical and lateral extent of soil and groundwater contamination.

The following report details the investigative methods used and the findings of the investigation. The investigation was mandated by earlier soil sampling and analysis related to underground fuel and waste oil storage tank removals. This sampling and analysis, conducted in June, 1987, showed that site soils had been impacted by petroleum hydrocarbon products. Two other soil sampling investigations were conducted; one in 1986, prior to the tank removals, and one in early 1988.

The gasoline filling and auto service station operated prior to June, 1987, when 1-5,000, 1-7,500, and 1-10,000 gallon gasoline storage tanks were removed, along with 1-300 gallon waste oil tank from a separate pit a very few feet away (Figure 2). Details of the soil sampling and analyses are included in Appendix A. One of six soil samples obtained from beneath the gasoline tanks yeilded 100 parts per million (ppm) of Total Petroleum Hydrocarbons (TPH) as gasoline, with toleune and total xylenes at 0.2ppm and 2.2 ppm, respectively. The soil sample from beneath the waste oil tank indicated TPH as diesel or waste oil at 5,300 ppm, total oil and grease at 16,000 ppm, and benzene, toluene, ethylbenzene, total xylenes (BTEX) concentrations which indicate the presence of gasoline in the sample as well.

A report of drilling and soil sampling dated October 28, 1986, stated that petroleum odors were noted during the drilling of each of four borings. Three borings were advanced to 10 feet depth, proximal to the gasoline tanks, with a fourth boring drilled near the waste oil tank to 6 feet depth. The samples were analyzed for total volatile hydrocarbons and total extractable hydrocarbons by methods unknown to this company. Total volatile hydrocarbons were detected at between 1.3 ppm near the waste oil tank, up to 267 ppm near the 7,500 gallon gasoline tank. Total extractable hydrocarbons were detected near the waste oil tank at 1.3 ppm.

A third soil sampling project was conducted in January, 1988. Boring logs provided to ASE from this drilling and sampling project showed that one soil sample analysis from 10 feet depth at the nothern end of the gasoline tankpit showed 140 ppm TPH.

Currently, the original building remains, along with the pump island canopy and pump island bases. The ground surface is completely covered by concrete or asphaltic pavement. Topograghic rellef at the site and in the surrounding area is low. The site rests on Quaternary alluvial deposits (Preliminary Geologic Map of the Hayward Quadrangle, Alameda and Contra Costa Counties, by Mr. Thomas Dibblee, Jr., 1980, U.S.G.S. open file report 80-540).

Since the dismantling of the gasoline filling and auto service facilities, small retail and service businesses like a flower shop and an auto detailing shop have existed at the site.

DRILLING PROCEDURES

Prior to site investigation activities, a hazardous materials site safety plan was formulated (Appendix B). The plan was reviewed with all onsite personnel immediately preceding the implimentation of investigation activity.

On September 27 and 28, 1990, a Mobile Drill B-57 hydraulic rotary drill with 8 inch hollow stem augers was used to drill 7 soil borings. Soil boring #1 (B-1) through B-5 were drilled to depths of from 13 to 15 feet depth each. [redacted] into what appeared to be native soils along the western edge of said gas tankpit. B-2 was drilled off of the southwestern corner of the pump islands and canopy, along the southern property line. B-3 was on the southeastern corner of the property, with B-4 lying between the building and the eastern property line (Figure 1).

Three more soil borings were each drilled to 20 feet depth, then converted into groundwater monitoring wells MW-1, MW-2 and MW-3. A permit from the Alameda County Flood Control and Water Conservation District, Zone 7, was obtained prior to monitoring well drilling (Appendix C). Into each boring a 2 inch I.D. schedule 40 PVC monitoring well was installed.

MW-1 was drilled and installed between the western property line and the pump islands, about 20-30 feet west and south from the tankpit. The eastern property line location of MW-2 expanded the area of investigation to include the full eastern portion of the site. Across the street to the east is another gasoline filling station. MW-3 was placed along the southern property line and less than four feet from the southern edge of the tankpit, in what was assumed to be a downgradient location.

Prior to arrival onsite, as well as between borings, the drill rig and all downhole tools were high pressure hot washed. Decon rinseates were contained in a plastic lined pit and allowed to evaporate. Drill cuttings (>1 yd.) were placed onto 10 mil plastic sheeting near the decontamination pit, and covered. The soils and plastic sheeting have been removed from the site and their disposition is unknown to this company.

SITE GEOLOGY

The site rests on Quaternary alluvial deposits. The surrounding area is comprised of northwesterly trending folded and faulted rocks of the Panoche Formation. The concealed trace of the northwest trending East Chabot Fault lies within hundreds of feet of the site. The Hayward Fault trace lies about one mile to the west of the site.

The soils and rocks encountered as drilling progressed were logged by an ASE geologist using the United Soil Classification System (USCS) (Appendix D). From grade to just a few feet depth, the soils encountered were primarily clay, black, silty, (CL), and silt, olive brown, clayey, (ML). Below just a few feet depth are silt, as above, with a 2 foot thick layer of sand, tan brown, silty, wet, (SM), which exists below 11-13 feet depth. Below the sand, to 20 feet depth, was clay, lt. gray to olive tan mottled, silty, stiff, damp, (CL).

"Moderate" to "strong" petroleum product odors like those of gasoline were detected during the drilling of B-1, B-2, MW-1, MW-2, MW-3 at between 10 and 12 feet depth. Very slight petroleum odors were noted during drilling at [illegible] depths.

WELL CONSTRUCTION PROCEDURES

All three wells were constructed to the same specifications, as follows. The well casing consists of 10 feet of 0.01" machine slotted well screen and <10 feet of blank casing. All casing joints including bottom cap are flush threaded. The well casing, washed sand pack (#2/12), and medium bentonite pellets were all installed through the augers, which were gradually retracted during materials emplacement. Sand was placed up to 9 feet depth. One and one half feet of medium bentonite pellets placed above the sand were hydrated with two to three gallons of tap water and allowed to hydrate for several hours. Cement/bentonite grout was mixed with a grout pump system and pumped via tremmie pipe from a point immediately above the hydrated bentonite up to original grade. A locking inner top plug inside of a water tight flush mounted steel well cover was used for surface completion of the wells.

SOIL SAMPLING PROCEDURES

Undisturbed soil samples were obtained at five foot intervals and at the soil/groundwater interface with a California modified split spoon sampler and a 140 lb. drop hammer. The hammer and sampler were placed through the augers and driven into the soils by succesive blows. The samples were collected into 2" X 6" precleaned brass tubes and sealed with plastic caps and tape. The samplers, sample tubes, and caps were cleaned with a TSP solution and rinsed with tap water between samplings. The samples were put into a cooler with ice and transported to a State Certified Hazardous Waste Analytical Laboratory for certified analysis following chain of custody procedures (Appendix E).

WELL SAMPLING PROCEDURES

The completed wells were developed with an airlift pump, surge blocks, and a bailer, then sampled with precleaned and rinsed Teflon bailers by Sampling Specialists on Oct. 7-9, 1990. MW-1 was additionally sampled on Oct. 30, 1990 for further analysis. The field log and sampling log detailing the procedures of the development/sampling are in Appendix E. **No odors or petroleum sheen were detected during the development/sampling.** The groundwater samples were obtained for analysis at a State Certified Hazardous Waste Analytical Lab.

SOIL AND GROUNDWATER SAMPLE ANALYSIS

Sixteen soil samples and three groundwater samples were analyzed for TPH as gasoline using EPA method 5030/8015, and benzene, toluene, ethylbenzene, and total xylenes (BTEX) distinction using EPA method 8020/602. Three soil samples from B-1 and one soil sample from MW-1 were additionally analyzed for TPH as diesel (EPA method 3550/8015) , total oil and grease (503 d&e), chlorinated hydrocarbons (8010), base/neutrals/acids (8270), and 13 metals (3050/6010/7470). Soil sample B-1,11′ was also analyzed for PCB′s by EPA method 8080. A second groundwater sample from MW-1 was additionally analyzed for TPH as diesel, total oil and grease, chlorinated hydrocarbons, polynuclear aromatics (B/N/A′s), and 4 metals, by EPA methods 3510/8015, 5520 C&F, 601, 625, and (7130/7190/7420/7950).

Four of the soil samples contained residual hydrocarbon products (Table 1). [redacted] 13 ppm TPH as gas, wih 24 ppb ethylbenzene and 21 ppb total xylenes. [redacted] 7.7 ppm TPH as gas with 37 and 76 ppb ethylbenzene and total xylenes, respectively.

Concentrations of metals in soil samples B-1, 6.5′, B-1,11′, B-1,13.5′ were as follows. Silver was found at between N.D. (B-1, 6.5′ and 11′), and 0.4 ppm (B-1,13.5′). Arsenic was detected at between 1 ppm (B-1,13.5′) and 21 ppm (B-1,6.5′). Analyses for beryllium were all <1ppm. Cadmium analyses showed N.D. (B-1,11′) to 1.5 ppm (B-1,6.5′). [redacted] 13.5′) and 50 ppm (B-1, 6.5′). Copper was detected at between 15 ppm (B-1, 11′) and 22 ppm (B-1,6.5′). Mercury was not detected in the three samples for which it was analyzed. Nickel ranged from 32 ppm to 40 ppm, lead from [redacted] ppm (B-1,11′). Antimony and thallium were found at 4 to 7 ppm. [redacted] were between 17 and 25 ppm. Zinc was detected at between 42 and 80 ppm.

Groundwater sample analyses of samples from all three wells yeilded not detectable results for the hydrocarbon constituents sought. [redacted] 0.07 and 0.02 ppm lead and zinc, respectively, at the time of sampling.

TABLE 1
[redacted] AND GROUNDWATER
SAMPLE ANALYTICAL RESULTS

SAMPLE #	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg
B-1, 6.5′	N.D.	N.D.	N.D.	N.D.	N.D.
B-1, 11′	790	300	1,900	4,000	8,800
B-1, 13.5′	N.D.	N.D.	N.D.	N.D.	N.D.
B-2, 6′	N.D.	N.D.	N.D.	N.D.	N.D.
B-2, 10.5′	[redacted]	N.D.	N.D.	[redacted]	[redacted]
B-2, 13′	N.D.	N.D.	N.D.	N.D.	N.D.
B-3, 6.5′	N.D.	N.D.	N.D.	N.D	N.D.
B-3, 11′	N.D.	N.D.	N.D.	N.D.	N.D.
B-4, 6′	N.D.	N.D.	N.D.	N.D.	N.D.
B-4, 11′	N.D.	N.D.	N.D.	N.D.	N.D.
MW-1, 5.5′	N.D.	N.D.	N.D.	N.D.	N.D.
MW-1, 11′	[redacted]	N.D.	N.D.	N.D.	N.D.
MW-2, 5′	N.D.	N.D.	N.D.	N.D.	N.D.
MW-2, 12.5′	N.D.	N.D.	N.D.	N.D.	N.D.
MW-3, 6.5′	N.D.	N.D.	N.D.	N.D.	N.D.
MW-3, 10.5′	[redacted]7	N.D.	N.D.	57	[redacted]

SOIL

SAMPLE #	[redacted]	[redacted]	[redacted]	[redacted]
	mg/kg	mg/kg	ug/kg	ug/kg
B-1, 6.5′	N.D.	N.D.	N.D.	N.D.
B-1, 11′*	N.D.	[redacted]	N.D.	7.2 naphthalene 5.5 2-methylnaph.
B-1, 13.5′	N.D.	N.D.	N.D.	N.D.
[redacted]	N.D.	[redacted]	N.D.	N.D.

	[redacted]					
	mg/l	ug/l	ug/l	ug/l	mg/l	MCL
MW-1**	N.D.	N.D.	N.D.	N.D.	[redacted] 0.02 zinc	0.05 5.0
MW-2	N.D.	----	N.D.	----	----	
MW-3	N.D.	----	N.D.	----	----	

G.W.

* = N.D. for PCB's (8080)
** = N.D. for TPH as diesel and total oil and grease
N.D. = not detected
---- = not analyzed

GROUNDWATER GRADIENT DETERMINATION

Markings at top of casing on each of the three wells were surveyed to a known benchmark by Major's Engineering on December 4, 1990. The wells were marked by Sampling Specialists at the time of water level measurement. Top of casing for each well was found to be between 167.09 feet above mean sea level (MSL) (MW-3) and 167.95 feet above MSL (MW-2). Corresponding water level elevations were between 156.59 feet above MSL (MW-1) and 157.24 feet above MSL (MW-2) at the time of measurement. [illegible] indicated groundwater flow to the southeast at [illegible].

CONCLUSIONS

A soil and groundwater contamination investigation was conducted at the site of a gasoline filling and auto service station located at 5293 Castro Valley Blvd. in Castro Valley, Ca. Two of seven soil samples obtained in June, 1987 from beneath the inverts of 3 gasoline tanks (all removed) and one 300 gallon waste oil tank (removed) showed that site soils had been impacted by petroleum hydrocarbon products. One sample from near the southwestern corner of the tankpit yeilded 100 ppm TPH as gasoline with associated BTEX concentrations. A soil sample from beneath the waste oil tank showed 5,300 ppm TPH as diesel or waste oil, and 16,000 ppm total oil and grease.

A previous (Oct., 1986) boring and soil sampling project had yeilded soil sample analytical results which suggested that an unauthorized release of petroleum products to the soils had occured. A third soil sampling project of January 1988 indicated the presence of petroleum hydrocarbons at one sample location as well.

These findings led to the requirement by the Alameda County Health Care Services Agency that a preliminary site investigation be conducted to determine the vertical and lateral extent of soil and groundwater contamination resulting from the previous operation of the gasoline filling/auto service station.

This document reports the methods and findings of the mandated investigation. Seven soil borings were advanced down to from 15 to 20 feet depth below grade at the relatively flat, vacant site. The site rests upon Quaternary alluvial deposits in the immediate vicinity of the East Chabot Fault trace.. Three of the borings were converted into groundwater monitoring wells.

Soil borings #1-4 (B-1 to B-4) were all drilled to 14-15 feet depth. B-1 and B-2 were located adjacent to the dispenser islands. B-3 and B-4 were drilled along the eastern property line. Groundwater was encountered in the borings at from about 12 to 13 feet depth, with the piezometric levels approximating the same depths.

Monitoring well #1 (MW-1), MW-2, and MW-3 were all drilled to 20 feet depth, and 2 inch shedule 40 PVC monitoring wells installed into each boring. The wells were located between boring locations which made for a line of data points along the eastern property line (N-S: B-4, MW-2, B-3) and a line along the southern property line (E-W: B-3, MW-3, B-2). Two other data points (B-1, MW-1) were utilized in the central areas of the site. The existing building occcupies the northern portion of the site.

The soils were sampled at 5 foot intervals and the secured sample tubes submitted to a State Certified Hazardous Waste Analytical Laboratory following chain of custody procedures. All soil samples were analyzed for TPH as gasoline with BTEX distinction (EPA methods 8015 modified, 8020). Four soil samples were additionally analyzed for TPH as diesel (EPA 3550/8015), total oil and grease (503 d&e), chlorinated hydrocarbons (EPA 8010), semi volatile organics (EPA 8270), and for up to 13 metals.

Four soil samples yeilded detectable levels of petroleum products. Soil sample B-1,11', obtained from the eastern edge of the tankpit contained 790 ppm TPH as gas, BTEX in the hundreds or thousands of ppb's, and 730 ppm total oil and grease. B-2, 13', from the southeastern corner of the dispenser islands and along the southern property line indicated 13 ppm TPH as gas with 24 and 21 ppb ethylbenzene and total xylenes, respectively. MW-1,11', obtained from the eastern side of the dispenser islands, yeilded 14 ppm TPH as gas and 32 ppm total oil and grease. MW-3, 10.5' showed 7.7 ppm TPH as gas with 57 and 76 ppb ethylbenzene and total xylenes, respectively. This analytical result, along with B-2 soil sample analyses show hydrocarbon contamination of soils very near the property line. Metals analyses showed detectable levels of most of those sought, excepting mercury. All metals constituent analyses were well below Total Threshold Limit Concentrations (TTLC's) for each metal, as defined in Title 22, Article 11 of the California Administrative Code.

The wells were developed with an air lift pump, surging tools and bailers, then purged and sampled with precleaned and rinsed Teflon bailers. Groundwater samples were submitted following chain of custody procedues to a State Certified Laboratory for TPH as gas with BTEX (EPA methods 8015, 602). Groundwater from MW-1 was additionally analyzed using EPA methods 3510/8015, 5520 C&F, 601, 625, 601, (7130, 7190, 7470, 7950) due to the results of TPH as gasoline analyses of soil samples from MW-1. MW-1 proved to be the downgradient well, relative to the tankpit. All groundwater samples analyzed N.D. for all hydrocarbon constituents of interest. Though petroleum hydrocarbon contamination is known to exist near the soil/groundwater interface, groundwater samples obtained so far have not been impacted by a soil borne contaminant plume. MW-1 did contain 0.07 ppm lead and 0.020 ppm zinc.

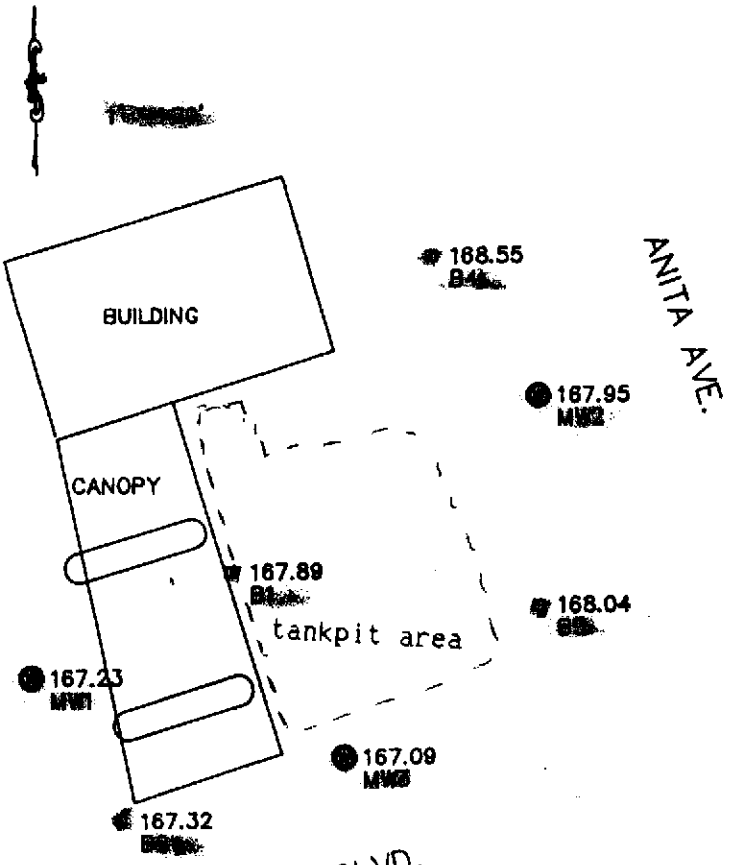
A survey of the top of each well casing by a State Licensed Land Surveyor, coupled with depth to groundwater measurements taken prior to well sampling, have indicated a southwesterly flow of groundwater, toward MW-1 and MW-2.

RECOMMENDATIONS

The groundwater monitoring wells should be sampled quarterly for a period of one year. If chemical constituents continue to be absent from groundwater samples throughout the year, sampling can probably be discontinued and the wells properly abandoned.

MICHAEL J. MAJORS CIVIL ENGINEERS, INC.

Figure 1
Site Plan, Current

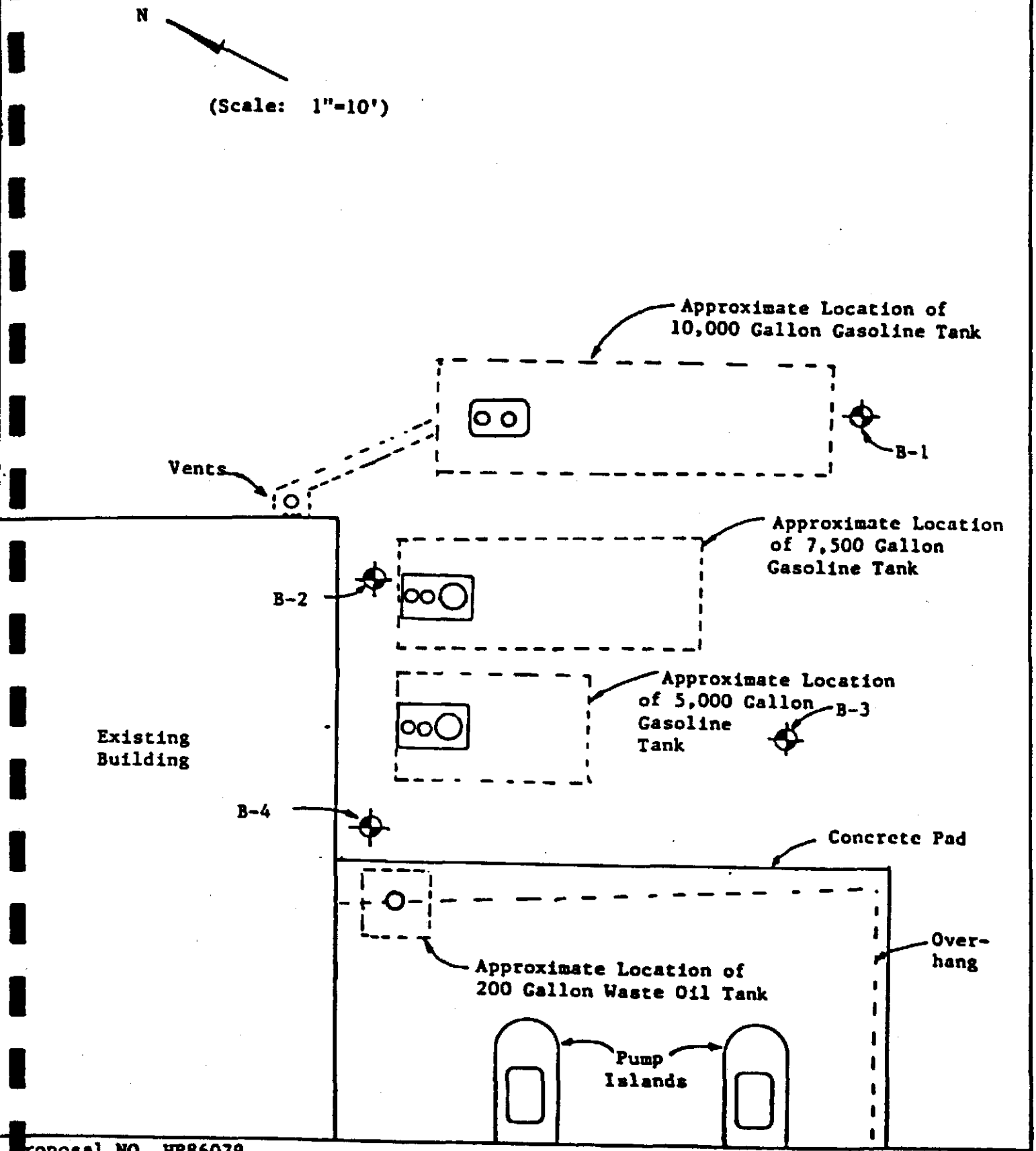


LICENSED LAND SURVEYOR
ROBERT C. GOODMUNDSON
L.S. 4545
Exp. 9-30-91
STATE OF CALIFORNIA

Drawn _____ Job 3905-02 Checked _____

Scale 1 inch = 26 feet Date 12-4-90 Parcel _____

Figure 2
Site Plan, Showing Gas Station Facilities



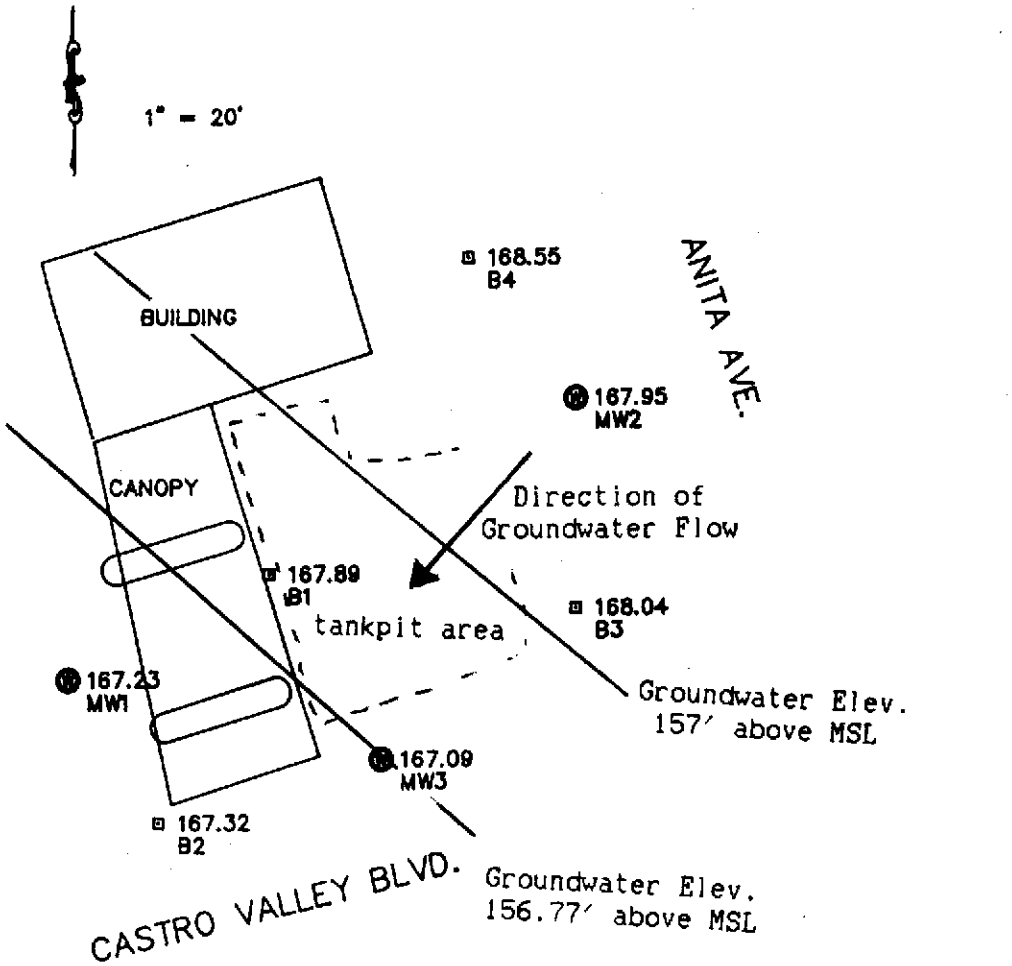
roposal NO. HP86079
September, 1986

FIGURE 1 - SITE SKETCH

jna

MICHAEL J. MAJORS CIVIL ENGINEERS, INC.

Figure 3
Site Plan with
Direction of Groundwater Flow
and Gradient



Drawn _____ Job 3905-02 Checked _____

Scale 1 inch = 26 feet. Date 12-4-90 Parcel _____

APPENDIX A
PERTINENT CORRESPONDENCE
AND
PREVIOUS INVESTIGATION DOCUMENTATION

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

May 22, 1990

Mr. Dan Dineen
Lakeshore Financial
21060 Redwood Road, Ste. 250
Castro Valley, CA 94546

RE: PRELIMINARY SITE ASSESSMENT WORKPLAN PROPOSAL: 2896 CASTRO VALLEY BLVD., CASTRO VALLEY, ALAMEDA COUNTY

Dear Mr. Dineen:

This letter is in response to this Department's review of the April 27, 1990 Aqua Science Engineers, Inc. workplan proposal for the investigation of subsurface contamination at the referenced site. This workplan amends the previous Aqua Science, Inc. workplan dated January 10, 1990.

The noted workplan has been accepted by this office for the initial stages of site investigation. Field activities associated with this project should begin no later than 30-days from the date of this letter, **or by June 22, 1990.** The final Aqua Science Engineers, Inc. report documenting the results of all field activities, well and boring logs, laboratory analyses, gradient determinations and maps, among others, for this stage of site assessment **must** be submitted within 15-days of your receipt of this report.

Please notify this office of the date field activities associated with this project are scheduled to begin. You may contact me at 415/271-4320 should you have any questions.

Sincerely,

Scott O. Seery
Hazardous Materials Specialist

cc: Rafat A. Shahid, Assistant Agency Director, Alameda County Department of Environmental Health
Gil Jensen, Alameda County District Attorney's Office
Howard Hatayama, DHS
Lester Feldman, RWQCB
Bob Bohman, Castro Valley Fire Department
Greg Gouvea, ASE
Greg Burg, ASE
files

aqua science engineers inc.

WORKPLAN/ PROPOSAL
FOR
PRELIMINARY SITE INVESTIGATION

at

2896 Castro Valley Blvd.
Castro Valley, Ca.

for
Lakeshore Financial
21060 Redwood Rd., #250
Castro Valley, Ca. 94546

April 27, 1990

aqua science engineers inc.

April 27, 1990

Mr. Dan Dineen
Lakeshore Financial
21060 Redwood Rd., Suite 250
Castro Valley, Ca. 94546

Re: Workplan-Proposal for Soil and Groundwater Investigation Services at 2896 Castro Valley Blvd., Castro Valley

Dear Mr. Dineen,

The following is Aqua Science Engineer's workplan-proposal for a preliminary site assessment to be conducted at the site referenced above. The scope of work was developed from the Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks of June 2, 1988, revised April, 1989. The format for the proposal is from the Workplan for Initial Subsurface Investigation, Proposal Format attachment that accompanied recent correspondence from the Alameda County Dept. of Environmental Health, Hazardous Materials Program offices.

I. INTRODUCTION

A. Statement of Work Scope:
A soil and groundwater investigation is to be conducted at 2896 Castro Valley Blvd. in Castro Valley, Ca., as a result of earlier investigative activities at the site. The site assessment has been mandated by May 8, 1989 correspondence from the Alameda County Dept. of Environmental Health, Hazardous Materials Program. The May 8 letter requires that the vertical and horizontal extent of gasoline and waste oil contamination in the soils and groundwater be determined.

B. Site Location:
The site is located on the northwest corner of Castro Valley Blvd. and Anita Ave. in Castro Valley, about 1/4 mile north of Interstate 580 (Figure 1). The site relief is low, and the surrounding area slopes gently toward the south.

C.D. Background and Site History:
A gas station operated at the site prior to June, 1987, when 1-5,000, 1-7,500, and 1-10,000 gallon gasoline storage tanks were removed, in addition to 1-300 gallon waste oil tank removal from a separate pit a few feet away. The details of the tank removal and associated sampling are summarized in the project report of June 30, 1987, by Geonomics Inc. (Appendix A).

The project report of October 26, 1986, by JHA Geotechnical Consultants details the methods and findings of a soil boring and sampling job which indicated TPH contamination of the soils around the perimeter of the tank cluster at between 1.3 and 267 ppm TPH, several months prior to the tank removals (Appendix A).

Another soil boring and sampling project conducted by Giles Engineering in January of 1988 showed motorfuel contamination of soils very near the soil/groundwater interface (Appendix A).

An estimate of the amount of fuel products lost into the soils was not made. To date, no other investigative work is known to have been performed at the site.

II. SITE DESCRIPTION

A. Vicinity Description and Hydrogeologic Setting:
The site rests upon recent alluvial deposits in a valley with dimensions of several miles. The inferred location of the East Chabot Fault runs in a NW-SE direction within 1,000 feet west of the site. Groundwater has been encountered during previous investigative work at about 12-13 feet depth below grade.

B, C. Vicinity Map:
Though the tanks and pumps have been removed, the building and pump islands remain. Figure 2 gives the layout of those facilities and the locations of the proposed borings and monitoring wells.

D. Existing Soil Contamination and Excavation:
Soil samples obtained during the October, 1986 boring and sampling job were obtained from native soil at 10 feet depth from the borings which are proximal to the gas tanks, and from native soil at 6 feet depth near the waste oil tank. The samples were collected into tubes of some kind by methods unknown to this company. The soil samples showed from 1.3 to 267 ppm TPH as gasoline and 1.3 ppm TPH as diesel or oil in the sample near the waste oil tank (Table 1). The soils were logged as baserock from 0-4 feet depth and sandy clay from 3-4 feet down to 10 feet depth.

Soil samples associated with the tank removals of June, 1987 indicated no TPH as gasoline contamination of the native soils at each end of the 10,000 and 7,500 gallon tanks. The 5,000 gallon tank soil sample from opposite the fill end showed 100 ppm TPH as gas, 200 ppb toluene, and 2,200 ppb total xylenes. These samples were obtained from 11 feet below grade, at the soil/groundwater interface, about 1 foot above the bottoms of the gas tanks. A sheen was noted on the groundwater within the tankpit.

The sample from beneath the waste oil tank showed 5,300 ppm TPH as diesel/waste oil, 16,000 ppm total oil and grease, and BTXE concentrations indicative of gasoline contamination. A composite sample of soils excavated from the gas tankpit yeilded 15 ppm TPH as gas and 1,100 ppb total xylenes. The soil from the gas tankpit was called medium sand. Another composited sample of soils from the waste oil tankpit showed 2,900 ppm TPH as diesel/waste oil and 7,100 ppm total oil and grease. The sampling methods used are unknown to this company. It is not known to this company where the excavated soil ended up. The tank removal permits have not been provided to ASE.

The complete Giles report has not been provided to ASE and it can be stated only that soil contamination was apparent at the fill ends of the gas tank cluster at about 10 feet depth. The soils encountered during drilling were logged as clayey silt, sandy silt, and gravelly silt from grade to as much as 20 feet depth.

From the information gathered thusfar, it appears that no utilities or problems were encountered during any of the previous investigative work, though USA will be notified as required before commencement of further underground work.

Monitoring well construction permits will be obtained before monitoring well drilling is initiated.

III. Plan For Determining the Extent of Soil Contamination On Site

The plan for determining the extent of soil and groundwater contamination includes drilling, sampling, and analysis of soils and groundwater at the site.

A.B. Describe Method/Technique for Determining the Extent of Soil Contamination on site:

Boring Methods, Numbers, Locations, Abandonment

To determine the extent of soil and groundwater contamination present at the site, up to 7 borings are proposed, three of which will be converted to monitoring wells. The United Soil Classification System will be used by a geologist to make a continuous log of each boring. A Mobile B-61 or B-57 drilling rig with 8 inch hollow stem augers will be used to drill all borings. At all boring locations, drilling will proceed down to first encountered water. At all proposed monitoring well locations drilling will proceed to as much as 25 feet.

A monitoring well (MW-1) will be drilled and installed about 15 feet due south of the southwest corner of the building and a few feet southwest of the waste oil tankpit (Figure 2). MW-2 will be located within 20 feet northeast of the gas tankpit. MW-3 is to be drilled at a point south of the gas tankpit very near the south property line and Castro Valley Blvd.

All three wells will be constructed of 2 inch Schedule 40 PVC casing, with up to 10 feet of .010" slotted schedule 40 PVC, up to 2 feet above the first water level to allow for seasonal fluctuations (Figure 4). The well casing will be inserted through the augers, followed by #3 washed sand through the augers in 1 to 2 foot lifts up to at least 2 feet above the perforated casing. One foot of bentonite pellets will be placed above the sand and activated with some water. The seal will be finished up to the surface with cement, and a locking cap and surface cover will be installed. The wells will be surveyed by a Registered Land Surveyor and water level measurements taken. The local groundwater gradient will be determined from the elevations of groundwater at the three well locations.

It has been established that the tankpit area soils and groundwater have been impacted by motorfuel contamination. Four soil borings (B-1 through B-4) will be drilled to 13 feet maximum and sampled at locations which, with the monitoring wells, will have made a perimeter around the entire site. B-1 will be drilled just south of the location of the formerly stockpiled soils. B-2 will be drilled in the vicinity of the pump islands. B-3 and B-4 will be located east of the tankpit and east of the building, respectively, near the western and eastern property lines.

The four soil borings will be backfilled with Portland cement which will be pumped through a tremmie hose from the bottom of each boring up to original grade.

Soil Classification and Sampling Methods

Each boring will be continuously logged on site by a geologist using the United Soil Classification System. Undisturbed soil samples will be taken at 5 foot intervals with a hammer driven California Split Spoon sampler as drilling progresses, starting at 5 feet depth. The samples will be collected in precleaned 2" X 6" brass tubes and sealed with plastic caps and tape. All sampling equipment will be cleaned with a brush in a bucket of TSP solution and rinsed twice between samplings. The drilling rig and augers will be high pressure hot washed before arriving on site and between borings.

C. Describe Methods/Criteria for Screening Soil and Storing Soil

Soil samples obtained during drilling will be screened with an organic vapor analyzer in the field and all samples yeilding a positive reading of any kind will be submitted for analysis.

Soil cuttings generated during drilling will be stored with plastic sheeting beneath and over the soil, pending lab analyses for later disposal. On site treatment of contaminated soils is not a part of the workplan.

D. Security Measures

A working area will be established with barricades and warning tape around the drill rig. Within the working area only authorized personnel will be allowed.

IV. Plan For Determining Groundwater Contamination

A. Placement and Rationale For Monitoring Well Placement

The three monitoring wells essentially surround the tankpit at distances from points with known contamination to show that whatever groundwater contamination may exist has not migrated offsite. The three wells are located to allow good triangulation of survey points in a groundwater gradient determination, as well as to obtain sample points from specific areas of concern, as noted above. Well construction permits from Alameda County Water District, Zone 7 will be obtained prior to monitoring well drilling.

B. Monitoring Well Drilling and Installation Specs.

Monitoring wells MW-1, 2, 3 will be drilled as described above. All three wells will be constructed of 2 inch Schedule 40 PVC casing, with 10 feet of .010" slotted schedule 40 PVC (Figure 4). The well casing will be inserted through the augers, followed by #3 washed sand through the augers in 1 to 2 foot lifts up to at least 2 feet above the perforated casing. One foot of bentonite pellets will be placed above the sand and activated with some water. The seal will be finished up to the surface with cement, and a locking cap and surface cover will be installed.

Soil samples will be collected at 5 foot intervals, starting at 5 feet depth, obtained as described above.

C. Groundwater Sampling Plans

The wells will be developed by the bailing of water into drums until the water appears to be reasonably clear. The water's clearness will be determined subjectively as bailing proceeds. Wells will be tested for sheen and free product by filling the first bailer only half full. Odors will be checked for nasally. The wells will be sampled as per Pratt Consulting Company's Monitoring Well Protocol of April, 1989 (Appendix B). All soil and groundwater samples to be submitted for analysis will be immediately placed into a cooler with ice and submitted to a State Certified Analytical Laboratory following chain of custody procedures for TPH as gasoline with BTXE distinction using EPA methods 8015/8020/602. Samples from MW-1 and B-1 will be additionally analyzed for total oil and grease (method 503d & e), TPH as diesel, chlorinated hydrocarbons using EPA method 8010/601, prioirty metals (ICAP/AA), and for PCBs, PCP, PNA, and creosote using EPA method 8270.

Laboratory analysis reports will have QA/QC data on the report itself, and groundwater samples will be analyzed with a duplicate and a blank. Purged water will be stored on site in drums until laboratory analyses are available.

The wells will be surveyed by a Registered Land Surveyor to an established benchmark to .01 feet accuracy. Water level measurements will be taken as per Pratt Consulting Co. protocol.

Chain of custody documentation shall accompany every soil and groundwater sample from the site to the laboratory.

V. Site Safety

Prior to commencement of investigative activities each day, a site safety meeting will be held at the designated command post which will be a vehicle which is proximal to the working area. Emergency procedures to follow in case of fire or severe injury or explosion will be outlined at site safety meetings. The hazards of the known or suspected chemicals on site will be explained at these meetings. Level D protection is the anticipated maximum amount of protection needed. A site safety plan will be on site at all times, along with a map which will show the location of nearby medical facilities. The safety plan will adhere to 29 CFR, Part 1910.120 (i) (2) guidelines.

A working area will be established with barricades and warning tape to delineate the zone where hardhats, steel toed shoes must be worn, and where unauthorized personnel will not be allowed.

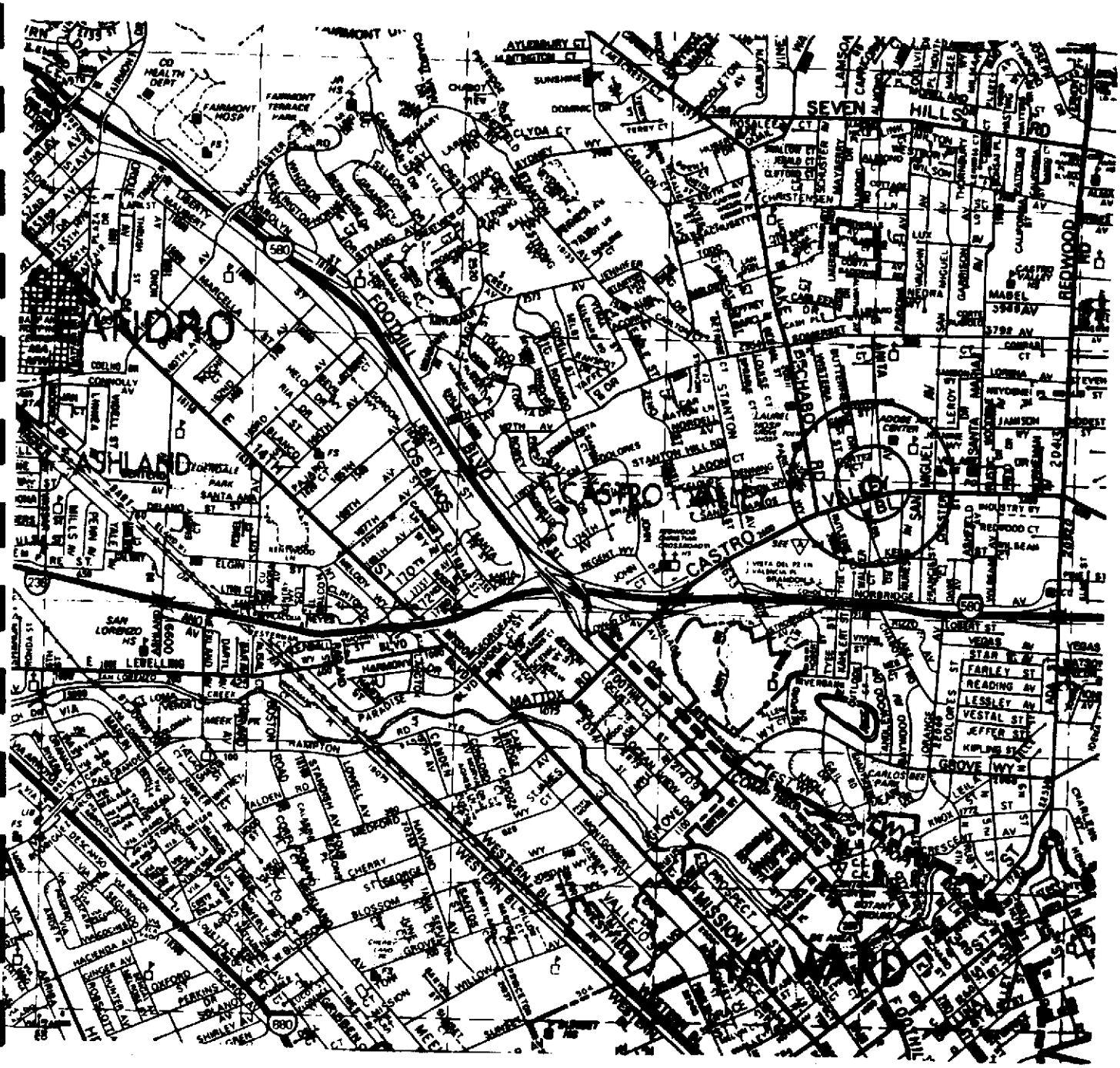
Drilling will not be conducted during lightning storms. If, during drilling, product odors emanating from the hole are deemed to be substantial, drilling personnel will wear Tyvek suits and rubber gloves. Respirators equipped with organic vapor cartridges may be worn as well under these drilling conditions.

REPORTING

A complete report of methods, findings, and conclusions will be submitted to the client for forwarding to all appropriate agencies within 30 days of the completion of the investigation. The report will be submitted under the seal of a qualified, California-Registered Civil Engineer, Mr. Greg Burg (#C36208). Mr. Burg has implimented and managed dozens of site investigations for Aqua Science Engineers in the last 2 years.

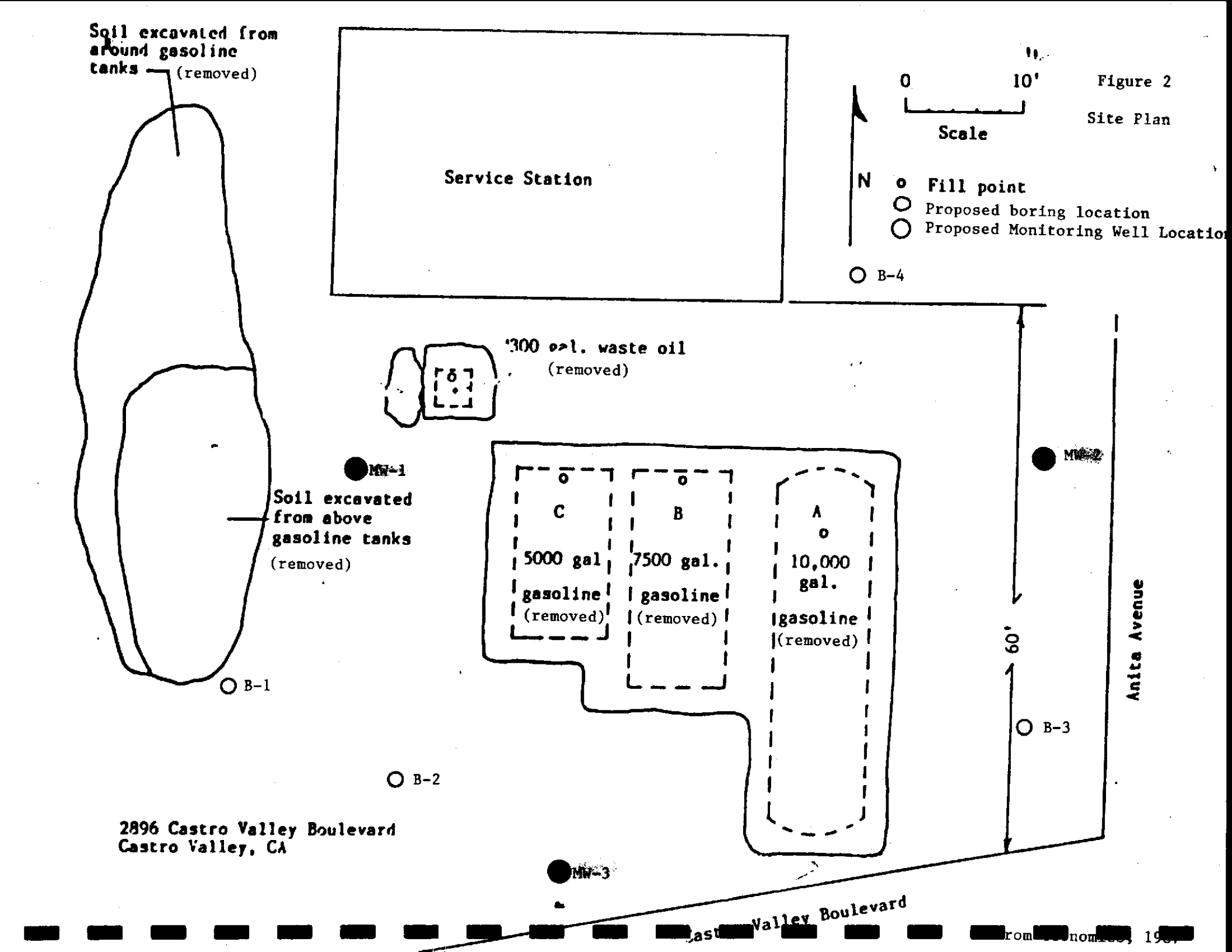
Figure 1

Site Location Map



Site Location

from Thomas Bros., 1988


Soil excavated from around gasoline tanks (removed)
Service Station
0
10'
Scale
Figure 2
Site Plan
N
Fill point
Proposed boring location
Proposed Monitoring Well Location
B-4
300 gal. waste oil
(removed)
MW-1
MW-2
Soil excavated from above gasoline tanks
(removed)
C
5000 gal
gasoline
(removed)
B
7500 gal.
gasoline
(removed)
A
10,000
gal.
gasoline
(removed)
60'
Anita Avenue
B-1
B-2
B-3
2896 Castro Valley Boulevard
Castro Valley, CA
MW-3
Valley Boulevard

APPENDIX A

PREVIOUS
INVESTIGATIVE WORK

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415) 271-4320

SCOTT
SEBY

May 8, 1989

Mr. Walter Quigley
4662 Lockridge Way
Castro Valley, CA 94546

RE: SOIL AND GROUNDWATER CONTAMINATION, 2896 CASTRO VALLEY BLVD., CASTRO VALLEY: REQUEST FOR SITE ASSESSMENT

Dear Mr. Quigley:

Our office has completed a review of several geotechnical reports and tank closure documents generated by various consultants, dating from October 28, 1986 to February 2, 1988, concerning the referenced site. As was outlined in the most recent report by Giles Engineering Associates, Inc. for Quaker State Minit-Lube, Inc. of Salt Lake City, Utah and dated February 2, 1988, significant soil contamination was evidenced in several borings advanced during site exploration activities performed by this firm. Prior reports by Geonomics, Inc. and JHA Geotechnical Consultants, Inc., dated June 30, 1987 and October 28, 1986, respectively, confirm the presence of hydrocarbon contamination in soils associated with the fuel tank cluster and waste oil tank. The referenced Geonomics, Inc. report was generated following closure in June 1987 of three (3) fuel and one (1) waste oil underground storage tanks (UST). This report identified groundwater contamination in the vicinity of the 5000-gallon gasoline tank. Further, soil samples collected from native soil below the waste oil UST contained up to 1.6% (16,000 ppm) of total oil and grease (TOG) and 5300 ppm of total petroleum hydrocarbons characterized as gasoline (TPH-G). The waste oil UST was also observed to suffer from severe corrosion and multiple holes. Contamination of this magnitude ($\geq$ 100 ppm) is referred to as a "confirmed release" by the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB).

Due to this site's "confirmed release" status and the groundwater contamination already identified at this site, additional investigative work must be performed to further define the extent of vertical and lateral impact upon groundwater and soils resulting from the noted contamination. The information gathered by this investigation must be used to determine an appropriate course of action to

remediate the site. This site assessment should be conducted in accordance with the RWQCB Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks. The major elements of such an investigation are summarized in the attached Appendix A.

In order to proceed with the site investigation, you should obtain professional services from a reputable engineering/geotechnical consulting firm. The responsibility of your consultant is to submit for review a proposal outlining planned activities pertinent to meeting the criteria outlined in this letter and the attached Appendix A. Once the site assessment has been completed, a technical report summarizing site related activities and conclusions must be submitted to this office and RWQCB. All reports and proposals must be submitted under seal of a California-Certified Engineering Geologist, California-Registered Geologist, or California-Registered Civil Engineer.

This office will oversee the site assessment for the referenced site. This oversight will include our review and comment on work proposals, and technical guidance on appropriate investigative approaches. However, the issuance of monitoring well installation permits will be through Zone 7. The RWQCB may choose to take over as lead agency if it is determined following the site assessment that there has been a substantial impact upon groundwater.

Please submit a Site Assessment proposal within 30 days of the receipt of this letter. Accompanying this proposal must be a check totalling $831 to help defer the cost of our review of this plan and our oversight of the remediation process. This check should be made out to the County of Alameda. A copy of this proposal should also be sent to the RWQCB (Attn: Scott Hugenberger) for their review.

Further, as was discussed previously in a telephone conversation between yourself and Mr. Scott Seery of this office several weeks ago, the storage of the waste oil UST in its current location, above-grade on the east side of the station building, constitutes a safety hazard. As such, it is in violation of the Uniform Fire Code and California Hazardous Waste Laws to continue to allow this tank to remain on-site. Therefore, you must properly dispose of this tank as a hazardous waste at a licensed treatment, storage, or disposal (TSD) facility. The tank must be accompanied by a Uniform Hazardous Waste Manifest. This activity must also occur within thirty (30) days of your receipt of this letter. You must provide a copy to this office of the manifest used to document this tank's disposal.

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Director

Telephone Number: (415)

March 1, 1990

Mr. Greg Gouvea
Aqua Science Engineers, Inc.
P. O. Box 535
San Ramon, CA 94583

RE: SOIL/GROUNDWATER WORKPLAN PROPOSAL, 2896 CASTRO VALLEY BLVD., CASTRO VALLEY

Dear Mr. Gouvea:

This letter is in response to our review of the January 10, 1990 Aqua Science Engineers, Inc. workplan proposal for the investigation of subsurface contamination at the referenced site. The noted workplan may be approved for this stage of site contaminant assessment providing the following issues are resolved to the satisfaction of this office:

1) All reports and proposals must be submitted under seal of a California-Registered Geologist, -Certified Engineering Geologist, or -Registered Civil Engineer. Include a statement of qualifications;

2) Based upon local topography and surface water drainage patterns within the Castro Valley basin, the approximate groundwater flow direction is presumed to be to the south or southwest, towards Chabot(?) Creek. Therefore, it is recommended that the location of proposed monitoring well MW-1 be moved approximately 15-20 feet to the southeast from its proposed location. This will place MW-1 within 10-feet and somewhat southwest of the former waste oil tank pit, potentially better suited to identify contaminants in both soil and groundwater derived from leaks associated with the waste oil tank.

Concerns about potential contaminant migration in the direction of the original location of proposed MW-1 can be resolved through advancement of an additional boring in this area. Following completion of the current phase of work and determination of the actual groundwater flow direction, additional wells/borings may be required;

3) All borings <u>not</u> completed as wells should be advanced to first groundwater, at a minimum. As indicated in the January 10 proposal, soil samples from all borings should be collected at 5-foot intervals. Additional samples are required at any significant changes in lithology or zones where field screening techniques identify auger cuttings which appear "hot";

4) Describe methods for free product measurement, and observation of sheen and/or odor. This topic was not discussed in the referenced Pratt Consulting Company monitoring protocol (Appendix B);

5) Consistant with RWQCB guidelines, soil samples collected from MW-1 and other borings in proximity to the former waste oil tank pit, as well as water samples collected from MW-1 after development, should also be analyzed for: TPH-D; priority metals (ICAP/AA); PCB, PCP, PNA and creosote (EPA Method 8270). These tests are in addition to TPH-G, TOG (Method 503 A/D & E) and ClHC (Method 8010/601) analyses previously cited in this proposal. Further, be certain that the method used for TPH-G/D detection is that outlined by the LUFT program (GC/FID), and provide a discussion of applicable preservation techniques;

6) Please be certain that the proposed Site Safety Plan adheres to guidelines specified under Part 1910.120 (i)(2) of 29 CFR;

7) Provide assurance that wells will be constructed under appropriate Zone 7 permits;

Please submit, in a timely fashion, a response which adequately addresses the previous list of items. This submittal may be in the form of an addendum to the January 10 proposal. Additionally, please submit copies of all reports, proposals and addenda to the RWQCB (Attn: Lester Feldman), including the January 10 proposal.

Should you have any questions, please call me at 415/271-4320.

Sincerely,

Scott O. Seery
Hazardous Materials Specialist

SOS:mam

cc: Rafat A. Shahid, Assistant Agency Director, Alameda County Department of Environmental Health
Lester Feldman, RWQCB
Howard Hatayama, DHS
Mike Hood, Alameda County Building and Inspection Department
Bob Bohman, Castro Valley Fire Dept.
Gil Jensen, Alameda County District Attorney, Consumer and Environmental Protection Division
Dan Dineen, Lakeshore Financial
Files

e 212
West Rincon Avenue
Campbell, CA 95008

Geonomics Inc.
ENVIRONMENTAL SERVICES DIVISION

(408) 374-9116

June 30, 1987

Mr. Dennis Wade
Battalion Chief
Castro Valley Fire Protection District
20336 San Miguel Avenue
Castro Valley, CA 94546

Dear Chief Wade:

The attached report describes the soil sampling and laboratory test results for a tank removal project at 2896 Castro Valley Blvd., Castro Valley, CA. The tank removal work was performed on June 16, 1987.

If you have any questions after reading the report, please feel free to call our office.

Sincerely,

Frank W. Smith
Geologist

Enclosure

Suite 212
100 West Rincon Avenue
Campbell, CA 95008

Geonomics Inc.
ENVIRONMENTAL SERVICES DIVISION

(408) 374-9116

June 30, 1987

Soil Sampling Report - Underground Storage Tanks

Site address: 2896 Castro Valley Blvd., Castro Valley, CA

Type of work performed: Soil samples taken for laboratory testing during removal of underground storage tanks.

Date sampled: 6/16/87

Number of tanks removed: 4

Tank - capacity (approx.), contents, type, depth to bottom:

A: 10,000 gal., gasoline, fiberglass, 12'
B: 7,500 gal., gasoline, unwrapped steel, 12'
C: 5,000 gal., gasoline, unwrapped steel, 12'
D: 300 gal., waste oil, unwrapped steel, 5'

Soil samples:

Note: The water table was encountered at 11.0 ft, approximately 1 foot above the bottom of each of the three large tanks. It was decided, therefore, to collect soil samples from native soil adjacent to both ends of those tanks, immediately above the water table. A sheen was showing on the surface of the water in the vicinity of tank C. There was sheen on the surface of the water in the vicinity of tank B, but less than that near tank C. The two composite samples were collected at the request of Castro Valley Fire Department Battalion Chief, Dennis Wade.

Sample #	Depth(ft)	Location description (See attached Site Map)
TP147A-1	11.0	Native soil adjacent to fill end of tank A.
TP147A-2	11.0	Native soil adjacent to end opposite fill end of tank A.
TP147B-1	11.0	Native soil adjacent to fill end of tank B.
TP147B-2	11.0	Native soil adjacent to end opposite fill end of tank B.
TP147C-1	11.0	Native soil adjacent to fill end of tank C.
TP147C-2	11.0	Native soil adjacent to end opposite fill end of tank C.

Soil samples (Continued):

TP147D	7.0	Native soil below center of tank D.
TP147E	N/A	Composite sample of backfill soil excavated from around gasoline tanks.
TP147F	N/A	Composite sample of backfill soil excavated from around waste oil tank.

Condition of tanks:

A: Good condition, no holes observed.
B: Some rust and pitting but no holes observed. There was gasoline-soaked soil around the vapor recovery line which was connected to the fill riser.
C: Some rust noted at waterline, approx. one foot above bottom, otherwise good condition.
D: Very rusted and corroded. Multiple holes observed.

Condition of soil taken for samples from excavation pit: The backfill soil from the large tank pit was medium sand with a petroleum odor. Much of it was stained green. All native soil samples were silty clay. Samples TP147A-1, A-2, and B-2 had no noticeable petroleum odor. Samples TP147B-1, C-1, and C-2 contained a slight petroleum odor. Sample TP147D, from below the waste oil tank, was stained and had a nonspecific hydrocarbon odor.

Laboratory results: (lab report attached)

Sample Number	Tested for:	Test results (ug/g = ppm) (ug/kg = ppb)
TP147A-1	Total hydrocarbons (gasoline)	U*
	Benzene	U
	Toluene	U
	Total xylenes	U
TP147A-2	Total hydrocarbons (gasoline)	U
	Benzene	U
	Toluene	U
	Total xylenes	U
TP147B-1	Total hydrocarbons (gasoline)	U
	Benzene	U
	Toluene	U
	Total xylenes	U
TP147B-2	Total hydrocarbons (gasoline)	U
	Benzene	U
	Toluene	U
	Total xylenes	U

Laboratory results (Continued):

TP147C-1	Total hydrocarbons (gasoline)	U
	Benzene	U
	Toluene	U
	Total xylenes	U
TP147C-2	Total hydrocarbons (gasoline)	100.0 ppm
	Benzene	U
	Toluene	0.2 ppm
	Total xylenes	2.2 ppm
TP147D	Diesel/waste oil	5,300 ppm
	Total oil & grease	16,000 ppm
	EPA 8240 Volatile hydrocarbons (Priority pollutants).	
	Those detected were:	
	Benzene	220 ppb
	Toluene	90 ppb
	Ethylbenzene	300 ppb
	Total xylenes	1,500 ppb
TP147E	Total hydrocarbons (gasoline)	16.0 ppm
	Benzene	U
	Toluene	U
	Total xylenes	1.1 ppm
TP147F	Diesel/waste oil	2,900 ppm
	Total oil & grease	7,100 ppm
	EPA 8240 Volatile hydrocarbons (Priority pollutants).	
	None detected	

* U = The compound was analyzed for but was not detected.

(Rev. 5/20/87)

ANAMETRIX, INC.
GC/MS SPECIALISTS
ENVIRONMENTAL • ANALYTICAL SERVICES
2754 AIELLO DRIVE • SAN JOSE, CA 95111 • (408) 629-1137

June 26, 1987
Work Order Number 8706061
Date Received 6/17/87
PO No. NA

Frank Smith
Geonomics Inc.
100 W. Rincon Ave. #212
Campbell, CA 95008

Nine soil samples were received for analysis, seven for total volatile hydrocarbons and BTX by GC and two for volatile hydrocarbons, total extractable hydrocarbons and waste oil by GC and GC/MS using the following EPA method(s):

ANAMETRIX I.D.	SAMPLE I.D.	METHOD(S)
8706061-01	TP147-A1	5020
-02	A2	"
-03	B1	"
-04	B2	"
-05	C1	"
-06	C2	"
-07	D	8240/3550/503A
-08	E	5020
-09	F	8240/3550/503A

RESULTS

See enclosed data sheets, Forms 1-1 thru 2-12.

EXTRA COMPOUNDS

See enclosed data sheet, Form 4-1.

QUALITY ASSURANCE REPORTS

See enclosed data sheet, Form 5-2.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

Paul Gowan

Paul Gowan
GC/MS Supervisor

PBG/qp

Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-19-87
Weight extracted : NA

Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2		U
	Total Xylenes	0.2		U
	Gasoline	10		U
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-1.

ORGANIC ANALYSIS DATA SHEET - HYDROCARBON COMPOUNDS

Sample I.D. : TP147-A1 SPIKE % RECOVERY
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-22-87
Weight extracted : NA

Anametrix I.D. : 8706061 01
Analyst :
Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		NR
108-88-3	Toluene	0.2		NR
	Total Xylenes	0.2		NR
	Gasoline	10	97%	+
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-2.

Sample I.D. : TP147-A2
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-19-87
Weight extracted : NA

Anametrix I.D. : 8706061-02
Analyst : [illegible]
Supervisor : [illegible]
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2		U
	Total Xylenes	0.2		U
	Gasoline	10		U
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-3.

ORGANIC ANALYSIS DATA SHEET - HYDROCARBON COMPOUNDS

Sample I.D. : TP147-B1
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-19-87
Weight extracted : NA

Anametrix I.D. : 8706061-03
Analyst : [illegible]
Supervisor : [illegible]
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2		U
	Total Xylenes	0.2		U
	Gasoline	10		U
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-4.

Sample I.D. : TP147-B2
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-22-87
Weight extracted : NA

Anametrix I.D. : 8706061-04
Analyst :
Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2		U
	Total Xylenes	0.2		U
	Gasoline	10		U
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-5.

ORGANIC ANALYSIS DATA SHEET - HYDROCARBON COMPOUNDS

Sample I.D. : TP147-C1
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-22-87
Weight extracted : NA

Anametrix I.D. : 8706061-05
Analyst :
Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2		U
	Total Xylenes	0.2		U
	Gasoline	10		U
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-6.

Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-22-87
Weight extracted : NA

Analyst :
Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2	0.2	+
	Total Xylenes	0.2	2.2	+
	Gasoline	10	100	+
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-7.

ORGANIC ANALYSIS DATA SHEET - HYDROCARBON COMPOUNDS

Sample I.D. : TP147-C2 DUPLICATE
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-22-87
Weight extracted : NA

Anametrix I.D. : 8706061-06
Analyst :
Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2	0.2	+
	Total Xylenes	0.2	5.9	+
	Gasoline	10	135	+
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-8.

Sample I.D. : TP147-D
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : 6-18-87
Date analyzed : 6-19-87
Weight extracted : 30 g

Anametrix I.D. : 8706061-07
Analyst : [illegible]
Supervisor : [illegible]
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		NR
108-88-3	Toluene	0.2		NR
	Total Xylenes	0.2		NR
	Gasoline	10		NR
	Diesel / Waste Oil	10	5300	+
	Total Oil & Grease	30	16000	+

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-9.

ORGANIC ANALYSIS DATA SHEET - HYDROCARBON COMPOUNDS

Sample I.D. : TP147-D DUPLICATE
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : 6-18-87
Date analyzed : 6-19-87
Weight extracted : 30 g

Anametrix I.D. : 8706061-07
Analyst : [illegible]
Supervisor : [illegible]
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		NR
108-88-3	Toluene	0.2		NR
	Total Xylenes	0.2		NR
	Gasoline	10		NR
	Diesel / Waste Oil	10	6900	+
	Total Oil & Grease	30	18000	+

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-10.

Matrix : SOIL
Date sampled : 6-16-87
Date analyzed : 6-25-87
Dilution : 1:10

Analyst : KM
Supervisor : TC
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/kg)	(ug/kg)	Q
74-87-3	* Chloromethane	70		U
74-83-9	* Bromomethane	70		U
75-01-4	* Vinyl Chloride	70		U
75-00-3	* Chloroethane	70		U
75-09-2	* Methylene Chloride	20		U
67-64-1	**Acetone	100		U
79-69-4	* Trichlorofluoromethane	20		U
75-15-0	**Carbondisulfide	20		U
75-35-4	* 1,1-Dichloroethene	20		U
75-34-3	* 1,1-Dichloroethane	20		U
156-60-5	* Trans-1,2-Dichloroethene	20		U
156-59-2	* Cis-1,2-Dichloroethene	20		U
67-66-3	* Chloroform	20		U
76-13-1	# Trichlorotrifluoroethane	20		U
107-06-2	* 1,2-Dichloroethane	20		U
78-93-3	**2-Butanone	100		U
71-55-6	* 1,1,1-Trichloroethane	20		U
56-23-5	* Carbon Tetrachloride	20		U
108-05-4	**Vinyl Acetate	100		U
75-27-4	* Bromodichloromethane	20		U
78-87-5	* 1,2-Dichloropropane	20		U
10061-02-6	* Trans-1,3-Dichloropropene	20		U
79-01-6	* Trichloroethene	20		U
124-48-1	* Dibromochloromethane	20		U
79-00-5	* 1,1,2-Trichloroethane	20		U
71-43-2	* Benzene	20	220	+
10061-01-5	* cis-1,3-Dichloropropene	20		U
110-75-8	* 2-Chloroethylvinylether	20		U
75-25-2	* Bromoform	20		U
591-78-6	**2-Hexanone	100		U
108-10-1	**4-Methyl-2-Pentanone	100		U
127-18-4	* Tetrachloroethene	20		U
79-34-5	* 1,1,2,2-Tetrachloroethane	20		U
108-88-3	* Toluene	20	90	+
108-90-7	* Chlorobenzene	20		U
100-41-4	* Ethylbenzene	20	300	+
100-42-5	**Styrene	20		U
	**Total Xylenes	20	1500	+
541-73-1	* 1,3-Dichlorobenzene	20		U
95-50-1	* 1,2-Dichlorobenzene	20		U
106-46-7	* 1,4-Dichlorobenzene	20		U

* A 624/8240 approved compound (Federal Register, 10/26/84)
** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
\# A compound added by Anametrix, Inc.

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.

Form 1-1.

Sample I.D.	: TP147-D 1:10 DILUTION	Anametrix I.D.	: 8706061-07
Matrix	: SOIL	Analyst	: [illegible]
Date Sampled	: 6-16-87	Supervisor	: [illegible]
Analyzed VOA	: 6-25-87	Date Released	: 6-26-87
Analyzed SV	: NA		

	CAS #	Scan#	Volatile Fraction Compound Name	Det. Limit ppb	ppb
1	107-83-5	181	2-methylpentane	50	600
2	594-82-1	319	2,2,3,3-tetramethylbutane	50	440
3	111-84-2	825	nonane	50	630
4	124-18-5	1090	decane	50	1400
5	526-73-8	1204	1,2,3-trimethylbenzene	50	1100
6	1120-21-4	1338	undecane	50	710
7				50	
				50	
9				50	
10				50	

	CAS #	Scan#	Semivolatile Fraction Compound Name	Det. Limit ppb	ppb
1				10	
2				10	
3				10	
4				10	
5				10	
6				10	
7				10	
8				10	
9				10	
10				10	
11				10	
12				10	
13				10	
14				10	
15				10	
16				10	
17				10	
18				10	
19				10	
20				10	

Tentatively identified compounds are significant chromatographic peaks (TICs) other than priority pollutants. TIC spectra are compared with entries in the National Bureau of Standards mass spectral library. Identification is made by following US EPA guidelines and acceptance criteria. TICs are quantitated by using the area of the nearest internal standard and assuming a response factor of one (1). Values calculated are ESTIMATES ONLY.

Form 4-1.

Matrix : SOIL
Date sampled : 6-16-87
Date extracted : NA
Date analyzed : 6-22-87
Weight extracted : NA

Analyst :
Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		U
108-88-3	Toluene	0.2		U
	Total Xylenes	0.2	1.1	+
	Gasoline	10	15	+
	Diesel / Waste Oil	10		NR
	Total Oil & Grease	30		NR

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-11.

ORGANIC ANALYSIS DATA SHEET - HYDROCARBON COMPOUNDS

Sample I.D. : TP147-F
Matrix : SOIL
Date sampled : 6-16-87
Date extracted : 6-18-87
Date analyzed : 6-22-87
Weight extracted : 30 g

Analyst :
Supervisor :
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/g)	(ug/g)	Q
71-43-2	Benzene	0.2		NR
108-88-3	Toluene	0.2		NR
	Total Xylenes	0.2		NR
	Gasoline	10		NR
	Diesel / Waste Oil	10	2900	+
	Total Oil & Grease	30	7100	+

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.
NR: Not requested.

Form 2-12.

Sample I.D. : TP147-F
Matrix : SOIL
Date sampled : 6-16-87
Date analyzed : 6-25-87
Dilution : NONE

Anametrix I.D. : 8706061-09
Analyst : MN
Supervisor : RC
Date released : 6-26-87

CAS #	Compound Name	Det. Limit (ug/kg)	(ug/kg)	Q
74-87-3	* Chloromethane	7		U
74-83-9	* Bromomethane	7		U
75-01-4	* Vinyl Chloride	7		U
75-00-3	* Chloroethane	7		U
75-09-2	* Methylene Chloride	2		U
67-64-1	**Acetone	10		U
79-69-4	* Trichlorofluoromethane	2		U
75-15-0	**Carbondisulfide	2		U
75-35-4	* 1,1-Dichloroethene	2		U
75-34-3	* 1,1-Dichloroethane	2		U
156-60-5	* Trans-1,2-Dichloroethene	2		U
156-59-2	* Cis-1,2-Dichloroethene	2		U
67-66-3	* Chloroform	2		U
76-13-1	# Trichlorotrifluoroethane	2		U
107-06-2	* 1,2-Dichloroethane	2		U
78-93-3	**2-Butanone	10		U
71-55-6	* 1,1,1-Trichloroethane	2		U
56-23-5	* Carbon Tetrachloride	2		U
108-05-4	**Vinyl Acetate	10		U
75-27-4	* Bromodichloromethane	2		U
78-87-5	* 1,2-Dichloropropane	2		U
10061-02-6	* Trans-1,3-Dichloropropene	2		U
79-01-6	* Trichloroethene	2		U
124-48-1	* Dibromochloromethane	2		U
79-00-5	* 1,1,2-Trichloroethane	2		U
71-43-2	* Benzene	2		U
10061-01-5	* cis-1,3-Dichloropropene	2		U
110-75-8	* 2-Chloroethylvinylether	2		U
75-25-2	* Bromoform	2		U
591-78-6	**2-Hexanone	10		U
108-10-1	**4-Methyl-2-Pentanone	10		U
127-18-4	* Tetrachloroethene	2		U
79-34-5	* 1,1,2,2-Tetrachloroethane	2		U
108-88-3	* Toluene	2		U
108-90-7	* Chlorobenzene	2		U
100-41-4	* Ethylbenzene	2		U
100-42-5	**Styrene	2		U
	**Total Xylenes	2		U
541-73-1	* 1,3-Dichlorobenzene	2		U
95-50-1	* 1,2-Dichlorobenzene	2		U
106-46-7	* 1,4-Dichlorobenzene	2		U

* A 624/8240 approved compound (Federal Register, 10/26/84)
** A compound on the U.S. EPA CLP Hazardous Substance List (HSL)
\# A compound added by Anametrix, Inc.

For reporting purposes, the following qualifiers (Q) are used:
+ : A value greater than or equal to the method detection limit.
U : The compound was analyzed for but was not detected.

SOIL VOLATILE/SEMIVOLATILE SURROGATE RECOVERY SUMMARY

ANAMETRIX WORKORDER# : 8706061
CLIENT PROJECT# : 308-TP147

SUPERVISOR : PG
ANALYST : LH

#	SAMPLE ID	VO1 (DCE)	VO2 (TOL)	VO3 (BFB)	A1 (2FP)	A2 (PHL)	A3 (TBP)	BN1 (NBZ)	BN2 (FBH)	BN3 (TPH)	TOTAL OUT
01	TP-147-D	103	109	113							
02	TP-147-F	97	96	79							0
03											0
04											
05											
06											
07											
08											
09											
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ANAMETRIX PERCENT RECOVERY LIMITS
(generated from sample data)

VO1 (DCE)	= 1,2-DICHLOROETHANE-D4	84-125%
VO2 (TOL)	= TOLUENE-D8	78-130%
VO3 (BFB)	= 4-BROMOFLUOROBENZENE	70-118%
A1 (2FP)	= 2-FLUOROPHENOL	24-82%
A2 (PHL)	= PHENOL-D5	27-94%
A3 (TBP)	= 2,4,6-TRIBROMOPHENOL	31-118%
BN1 (NBZ)	= NITROBENZENE-D5	21-75%
BN2 (FBH)	= 2-FLUOROBIPHENYL	29-87%
BN3 (TPH)	= TERPHENYL-D14	31-127%

APPENDIX B

MONITORING WELL SAMPLING PROTOCOL

APPENDIX B
HAZARDOUS MATERIALS SITE SAFETY PLAN

aqua science engineers inc.

HEALTH & SAFETY PLAN

for the

LAKESHORE FINANCIAL SITE
2896 CASTRO VALLEY BLVD.
CASTRO VALLEY, CA

prepared by

Aqua Science Engineers, Inc.
2500 Old Crow Canyon Rd. # 121
San Ramon, CA 94583
(1-800) 678-9391

AQUA SCIENCE ENGINEERS, INC.

HAZARDOUS MATERIALS SITE SAFETY PLAN

The below signed personnel have read this plan, understand its contents, and agree to follow the guidelines set forth.

EMPLOYEE NAME (PRINT)	SIGNATURE	DATE
Tom McMullen	Tom McMullen	9-27-90
BOB HOLLAND	Bob Holland	9-27-90
Chris St. Pierre	Chris St. Pierre	9-28-90
Randy Wolfe	R. Wolfe	9-28-90
John Hartt		10-7-90

AQUA SCIENCE ENGINEERS, INC.
HEALTH AND SAFETY PLAN
for the
LAKESHORE FINANCIAL SITE
2896 CASTRO VALLEY BLVD., CASTRO VALLEY CALIFORNIA

A. GENERAL DESCRIPTION

Site: OLD GASOLINE STATION NORTH WEST CORNER OF ANITA AND CASTRO VALLEY BLVD.

Work Scope: AQUA SCIENCE ENGINEERS WILL DRILL APPROXIMATELY 7 SOIL BORINGS TO 20 FEET, SAMPLING EVERY FIVE FEET OF EACH BORING. UPON COMPLETION OF THE BORINGS, 3 MONITORING WELLS WILL BE INSTALLED TO A DEPTH OF 30 FEET.

SAFETY POLICY:

This Health and Safety Plan is written specifically for the Lakeshore Financial Job site, located at 2896 Castro Valley Road, Castro Valley California. All persons on site will follow OSHA safe operating practices as outlined in 29 CFR 1910 and 1926, as well as established guidelines from their respective companies or organizations.

Plan Prepared by: Michael D. Dirk Date: 9/26/90

Plan Approved by: Greg Gouvea Date: 9/26/90

Proposed Start Date of Project: SEPT 27, 1990

Background Review Done ?: Complete: XXX Preliminary:

Overall Hazard: Serious: Low: XXX
Moderate: XXX Unknown:

Project Organization:

Manager: GREG GOUVEA
Site Safety Officer for Aqua Science Engineers: MICHAEL DIRK
Other ASE site Personnel: DRILL HELPERS NOT IDENTIFIED AT THIS TIME

B. SITE/WASTE CHARACTERISTICS

Waste Type(s): Solid: XXX Sludge:
Liquid: XXX (possible) Gas:

Characteristics: GASOLINE AND WASTE OIL RESIDUALS IN SOIL, COMBUSTABLE, TOXIC

Site Parameter: THE DRILL RIG AND A 5 FOOT SURROUNDING AREA, EACH TIME THE EQUIPMENT IS REPOSITIONED FOR MAKING A NEW BORE HOLE OR WELL. THE PROPERTY BOUNDARIES WILL BE THE EXTREME PARAMETER OF THE SITE.

C. HAZARD EVALUATION

CHEMICAL HAZARDS

Potential chemical hazards include skin and eye contact or inhalation exposure to potentially toxic concentrations of gasoline vapors or from waste oil residuals. The potential toxic compounds that may exist at the site are listed below, with descriptions of specific health effects of each. The list includes the primary potential toxic constituants of gasoline, diesel or may be found in waste oil.

1. BENZENE

a. Colorless, clear, highly flammable liquid with characteristic odor.
b. High exposure levels may cause acute restlessness, convulsions, depression, respiratory failure. Benzene is a suspected carcinogen.
c. Permissable exposure level (PEL) for a time weighted average (TWA) over an eight hour period is 1.0 ppm.

2. TOLUENE

a. Colorless liquid with a benzene-like odor.
b. High exposure levels may cause fatigue, euphoria, confusion, dizziness (less toxic then benzene).
c. PEL for an eight hour TWA is 100 ppm.

3. XYLENE

a. Colorless, flammable liquid with aromatic odors.
b. High exposure levels may cause dizziness, drowsiness, narcosis.
c. PEL for an eight hour TWA is 100 ppm.

4. ETHYLBENZENE

a. Clear, colorless, highly flammable liquid with characteristic odor.
b. High exposure levels may cause irritation to skin, nose and throat, dizziness, constriction in chest, loss of conciousness, respiratory failure.
c. PEL for an eight hour TWA is 100 ppm.

5. LEAD
(Lead arsenate)

a. Odorless, colorless solid, with properties hat vary depending upon specific compounds.
b. High exposure levels may cause nausea, diarrhea, inflammed mucous membranes, abdominal pains, weakness. Lead is a suspected carcinogen.
c. PEL for an eight hour TWA is .05 milligrams per cubic meter (airborne).

ALL SUBSTANCES AS THEY EXIST ON SITE ARE EXPECTED TO BE STABLE.

Levels of protective clothing are defined as described the "EPA Standard Operating Safety Guidelines":

LEVEL A PROTECTION
Components:

1.) Pressure-demand, supplied-respirator that is MSHA and NIOSH approved. Respirators may be pressure-demand, self-contained breathing apparatus (SCBA), or pressure-demand, airline respirator with an escape bottle for atmospheres with an extreme IDLH.

2.) Fully encapsulating chemical-resistant suit.

3.) Inner, chemical resistant gloves.

4.) Disposable gloves and boot covers, worn over the fully encapsulating suit.

5.) 2-Way radio communications is highly recommended.

LEVEL B PROTECTION
Components:

1.) Pressure-demand, supplied-air respirator that is MSHA and NIOSH approved. Respirators may be pressure-demand, self-contained breathing apparatus (SCBA), or pressure-demand, airline respirator with an escape bottle for atmospheres with an extreme IDLH.

2.) Chemical resistant clothing which includes overalls and long-sleeved jacket or hooded, one or two-piece chemical-splash siut or disposable chemical-resistant one piece suits.

3.) Outer chemical resistant gloves.

4.) Inner chemical resistant gloves.

5.) Chemical resistant, steel-toed and shank boots.

6.) Disposable chemical resistant boot covers.

7.) Hardhat.

8.) 2-Way radio communications is highly recommended.

Status: Active: Inactive: XXX

Site History: THE SITE WAS AN AUTO GASOLINE STATION

PHYSICAL HAZARDS

On-site hazards may include physical injuries due to the proximity of workers to engine-driven heavy equipment and tools. Heavy equipment used during drilling include many moving parts on the drill rig. Care must be taken when working around the operating machinery to allow for adequate clearances for moving parts. Only trained personnel will operate machines, tools, and equipment; all will be kept clean and in good repair. Safety apparel required around heavy equipment will include a hardhat, gloves and steel-toed boots. All work will be performed in accordance with OSHA guidelines.

Inspections of the drill site, the adjacent areas, and protective systems are to be made by a qualified person while personnel are on site. Attention will be made to note if any evidence of potential cave-in or overhead dangers exist.

1. USE SAFETY EQUIPMENT, MASK RESPIRATOR WITH NIOSH APPROVED C-21 CARTRIDGE FOR ORGANIC VAPORS, if NECESSARY.

2. HAVE AT LEAST ONE DRY CHEMICAL MODEL PA-200 A-B-C FIRE EXTINGUISHER PRESENT.

LEVEL OF PROTECTION

A Contamination Reduction Zone (CRZ) will be maintained and adjusted as the work proceeds and moves around the site. The workers coming into contact with the drill cuttings will wear Level 'D' protective clothing. (This protection level may be upgraded after on-site conclusions of observed soils are completed). THE LEVEL OF PROTECTION FOR PERSONNEL WORKING IN THE AREA WILL BE UPGRADED IF; the organic vapor levels in the operators' breathing zone exceeds 5 ppm above background levels continuously for more then five minutes. In this event, personnel protective equipment will include full face respirators with double-cartridge filters for organic vapors and particulates, in addition to hardhat, gloves, steel-toed boots and coveralls. Drilling will cease, equipment shut down, and personnel will withdraw from the area if either 1) the organic vapor concentration in the operators' breathing zone exceeds 200 ppm for 5 minutes, or 2) the organic vapor concentration at the drilling location exceeds 2,000 ppm or 25% of the lower explosive limit. If work proceeds in an environment where organic vapor concentrations exceed 200 ppm, a self-contained breathing apparatus or airline respirator will be utilized by personnel.

Levels of protective clothing are defined as described the "EPA Standard Operating Safety Guidelines":

LEVEL A PROTECTION
Components:

1.) Pressure-demand, supplied-respirator that is MSHA and NIOSH approved. Respirators may be pressure-demand, self-contained breathing apparatus (SCBA), or pressure-demand, airline respirator with an escape bottle for atmospheres with an extreme IDLH.

2.) Fully encapsulating chemical-resistant suit.

3.) Inner, chemical resistant gloves.

4.) Disposable gloves and boot covers, worn over the fully encapsulating suit.

5.) 2-Way radio communications is highly recommended.

LEVEL B PROTECTION
Components:

1.) Pressure-demand, supplied-air respirator that is MSHA and NIOSH approved. Respirators may be pressure-demand, self-contained breathing apparatus (SCBA), or pressure-demand, airline respirator with an escape bottle for atmospheres with an extreme IDLH.

2.) Chemical resistant clothing which includes overalls and long-sleeved jacket or hooded, one or two-piece chemical-splash siut or disposable chemical-resistant one piece suits.

3.) Outer chemical resistant gloves.

4.) Inner chemical resistant gloves.

5.) Chemical resistant, steel-toed and shank boots.

6.) Disposable chemical resistant boot covers.

7.) Hardhat.

8.) 2-Way radio communications is highly recommended.

LEVEL C PROTECTION
Components:

1.) Air-purifying respirator, full-face, with twin cartridge or cannister equipped filters, that are MSHA and NOISH approved.

2.) Chemical-resistant clothing which includes coveralls or hooded, one-piece or two-piece chemical splash suit or chemical-resistant hood and apron; disposable chemical-resistant coveralls.

3.) Outer chemical resistant gloves.

4.) Inner chemical resistant gloves.

5.) Chemical resistant, steel-toed and shank boots.

6.) Disposable chemical resistant boot covers.

7.) Hardhat.

8.) 2-Way radio communications is recommended.

LEVEL D PROTECTION
Components:

1.) Coveralls

2.) Gloves.

3.) Leather boots or shoes or chemical resistant, with steel toe and shank.

4.) Safety glasses or chemical splash goggles.

5.) Hardhat or face shield.

SITE ENTRY PROCEDURES

Any personnel entering the site will observe all conditions set forth by the owner of the property, including vehicle travel speeds, restricted areas and conduct. Eating, drinking, smoking and any other practices which increase the probability of hand-to-mouth transfer of contamination is prohibited in the work zone. All field personnel will be instructed to thoroughly wash their hands and face upon leaving the work area. A First Aid kit and at least one 20-pound A-B-C fire extinguisher will be available at the site.

DECONTAMINATION PROCEDURES

If required, equipment and personnel decontamination areas will be designated by the Project Manager at the start of the project. To prevent the transfer of contamination from the work site into clean areas, all tools will be cleaned adequately prior to final removal from the work zone. Protective clothing such as tyvek coveralls, latex gloves, boot covers, etc. will be changed on a daily basis or at the discretion of the Project Manager. All disposable protective clothing will be put into plastic bags and disposed of in a proper manner. All respirator cartridges will be discarded and replaced with fresh units on a daily basis, disposal will be in the same manner as the protective clothing. Drill cuttings soil will be stockpiled in an area designated the Project Manager, until chemical analysis has been performed on representative samples.

In the event of a medical emergency, the injured party will be taken through decontamination procedures, if possible. However, the procedures may be omitted when it may aggrevate or cause further harm to the injured party. A member of the work team will accompany the injured party to the medical facility to advise on matters concerning chemical exposure.

Personal Protection:

Level of Protection: A _____ B _____ C _____ D _XXX_

Modifications: PROTECTIVE LEVELS MAY BE UPGRADED TO LEVEL 'C' IN THE EVENT THAT ON SITE CONCLUSIONS DETERMINE A GREATER THEN ANTICIPATED DANGER TO PERSONNEL.

SPECIAL CONDITIONS:

Site Entry: NORMAL, NO SPECIAL CONDITIONS

Decontamination-

Personnel and Equipment: IF REQUIRED, PERSONNEL AND EQUIPMENT WILL BE DECONTAMINATED AS PER USEPA STANDARD OPERATING SAFETY GUIDELINES. A SMALLER MODIFIED DECON LINE WILL BE USED DUE TO SPACE RESTRICTIONS.

Work Limitations (time, weather):

NONE ARE ANTICIPATED, HOWEVER PERSONNEL WORKING ON SITE MAY EXPERIENCE ELEVATED TEMPERATURES DURING THE WORK DAY. IN THE EVENT THAT AMBIENT SITE TEMPERATURES REACH OR EXCEED 80 DEGREES FAHRENHEIT, THE FOLLOWING GUIDELINES ARE RECOMMENDED.

1. Periods of work should be reduced to no more then one hour time frames and seperated by breaks intended to reduce personnel stress due to reduced natural ventalation from wearing protective clothing.

2. All personnel wearing level C protective clothing or greater, will be subject to medical monitoring of body temperature after the work periods, by the following guidelines;

a. Heart Rate (HR) should be measured by counting the radial pulse rate for 30 seconds as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 110 beats per minute. If the HR is higher, the next work period should be shortened by 10 minutes, while the length of the rest period remains the same. If the HR is 100 beats per minute at the beginning of the next rest period, the following work period should be shortened by an additional 10 minutes.

b. Body temperatures should be measured orally with a clinical thermometer as soon as possible in the resting period. Oral temperature (OT) should not exceed 99 degrees fahrenheit. If it does, the next work period should be reduced by 10 minutes, while length of the rest period remains the same. If the OT exceeds 99 degrees fahrenheit at the beginning of the next rest period, the following work period should be reduced by an additional 10 minutes. OT should be measured at the end of the rest period to make sure that it has dropped below 99 degrees fahrenheit.

Body water loss (BWL) from sweating, could result in dehydration and further complications and stress on personnel working in protective clothing under adverse weather conditions. It is strongly recommended that plenty of stress relief beverages be available on site to replace body fluids. Commercial drink mixes that provide electrolyte balancing solutions or water are adequate for replacing body fluids.

Alternate methods of heat stress reduction can be made available such as,

Portable showers or hose-down facilities,
Shelter cover to protect personel against direct sunlight exposure,
Rotating teams of work personnel wearing protective clothing,
Performing extremely arduous tasks early in the workday.

D. EMERGENCY INFORMATION

In the event of an injury or suspected chemical exposure, the first responsibility of the Project Manager will be to prevent further injury. This objective will normally require an immediate stop to work until the situation is remedied. The Project Manager may order evacuation of the work party.
Other primary responsibilities in the event of accident will be first aid and the decontamination of injured team members. The injured party will be moved to a designated safe evacuation area and initial first aid will be rendered.

Employees are asked to make every effort and take personal responsibility to prevent accidents involving machinery or any other aspect of the job, either by individual action or by notifying the Project Manager immediately of any unsafe condition that may exist.

In the event of an unexpected hazardous material discovery on site, the following actions will be taken by all employees;

1. The person having uncovered the unexpected material will notify the Project Manager and other workers of the danger. The site will be cleared of personnel if deemed necessary by the Project Manager. If site evacuation is required, appropriate local agencies such as Fire Department or Health Department will be notified as well.

2. Immediate action will be taken to contain the hazardous material, provided the workers are properly attired with the appropriate protective clothing to avoid exposure.

3. Proper containment procedures will be determined for the hazardous material encountered prior to cleanup commencing. All personnel involved with the cleanup effort will be properly protected to prevent exposure. Backup personnel will be similarly protected, monitoring the work being done for any additional dangers.

4. The container(s) will be staged <u>on site</u> , away from the major activity areas, and in such a way that if loss of containment occurs, the material will be withheld from further spread by a secondary berm or vessel.

5. The owner or agent controller of the property will be notified promptly of the incident and will be apprised as to the options available for proper disposal.

ACUTE EXPOSURE SYMPTOMS AND FIRST AID

EXPOSURE ROUTE	SYMPTOMS	FIRST AID
Skin	Dermatitus	Wash immediately with soap and water, contact ambulance if evacuation is necessary.
Eye	Irritation	Flush with water, transport directly to emergency room, if necessary.
Inhalation	Vertigo, tremor	Move person to fresh air, cover source of chemicals.
Ingestion	Nausea, vomiting	Call Poison Control Center, arrange transport to emergency medical facility.

Local Resources:

HEALTH AND SAFETY CONTACT FOR ASE: MICHAEL DIRK
Office: (415) 820-9391

Ambulance: 911
Poison Control: SF (415) 476-6600
SJ (800) 792-0720

Hospital Emergency Room: (415) 537-1234
Police: 911
Fire: 911

Emergency routes:

WEST on Castro Valley Blvd, 2 Blocks
RIGHT on Lake Chabot Road
Approx 2 blocks on LEFT

HOSPITAL IS JUST PAST CONGRESS WAY, ON THE LEFT

Hospital: - EDEN HOSPITAL
20103 LAKE CHABOT ROAD

Emergency room: (415) 537-1234

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 2896 Castro Valley Blvd. Castro Valley

(2) CLIENT
Name Lakeshore Financial
Address 2100 Redwood Rd. Phone 582-6300
City Castro Valley Zip 94546

(3) APPLICANT
Name Aqua Science Engineers
Address P.O. Box 5335 Phone 820-9391
City San Ramon Zip 94583

(4) DESCRIPTION OF PROJECT
Water Well Construction X Geotechnical ___
Cathodic Protection ___ Well Destruction ___

(5) PROPOSED WATER WELL USE
Domestic ___ Industrial ___ Irrigation ___
Municipal ___ Monitoring X Other ___

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

WELL PROJECTS
Drill Hole Diameter 8 in. Depth(s) 30 ft.
Casing Diameter 2 in. Number 3
Surface Seal Depth * ft. of Wells ___
Driller's License No. 487000

GEOTECHNICAL PROJECTS
Number ___
Diameter ___ in. Maximum Depth ___ ft.

(7) ESTIMATED STARTING DATE 9-27-90
ESTIMATED COMPLETION DATE 9-28-90

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

APPLICANT'S SIGNATURE [signature] Date 9-20-90

FOR OFFICE USE

PERMIT NUMBER 90580
LOCATION NUMBER ___

Approved [signature] Date 21 Sep 90
Todd N. Wendler

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. Notify this office (484-2600) at least one day prior to starting work on permitted work and before placing well seals.
3. 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 bore hole logs and location sketch for geotechnical projects. Permitted work is completed when the last surface seal is placed or the last boring is completed.
4. 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, or equivalent.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material.

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

E. WELL DESTRUCTION. See attached.

* Surface seal depth is to be 15 feet, as discussed with applicant, 21 September 1990.

91987

APPENDIX D
BORING AND WELL COMPLETION LOGS

PROJECT: 2896 Castro Valley Blvd. | **LOG OF SOIL BORING [redacted]**

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	BACKFILL DETAILS	REMARKS
0	4" asphalt		cement-bentonite grout from total depth to original grade	
1	sand, gray, med. gr., soft, loose, fines < 10%, (SP)			
2				
3				no odors
4	sand and gravel, gray, silty 20%, dry, loose, (SW)			
5				soil sample 5-6.5' no odors
6	silt, green gray and black mottled, sandy v. fine to med. gr. 20%, damp, soft, (SM)			
7				
8				
9				
10	silt, green gray and black mottled, sandy v. fine 20-30%, clay 10%, moist, (SM)			soil sample 10-11.5', [redacted] gas odor, sheen on [redacted]
11				
12				
13	sand and gravel, rusty brown red, sand fine to coarse gr. 40%, gravel 1/8" to 1/2" dia. 30%, clay 20%, wet, (SW)			▽ approx. 13' soil sample 13-14.5', no odors
14	Bottom of hole			
15				
16				
17				
18				
19				
20				

AQUA SCIENCE ENGINEERS , SAN RAMON, CA.

Logged By: G. Gouvea Date Logged: 9-27-90

PROJECT: 2896 Castro Valley Blvd.

LOG OF SOIL BORING #B-2

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	BACKFILL DETAILS	REMARKS
0	4" asphalt			
1	gravel, sand, clay, gray, loose, dry, fill			
2	clay, black, silty 10-20%, sandy v. fine 10%, damp			
3				slight petroleum odor
4	silt, olive brown, clayey 30%, rusty mottling, 1/8" capillaries few %, damp, (ML)			
5				soil sample 5-6.5' sl. odor
6				
7				
8				
9	silt, green gray, sandy v. fine gr. 20-30%, olive tan mottling, moist to wet in capillaries, (ML)			mod. gas odor 9'
10				soil sample 10-11.5', mod. gas odor, sheen on soils
11				
12	silt and sand, olive tan, sand v. fine to fine gr. 30-40%, soft, wet, (SM)			▽ approx. 12'
13				soil sample 12-13.5', no odors
	Bottom of hole			
14				
15				
16				
17				
18				
19				
20				

cement-bentonite grout from total depth to original grade

AQUA SCIENCE ENGINEERS , SAN RAMON, CA.

Logged By: G. Gouvea Date Logged: 9-27-90

PROJECT: 2896 Castro Valley Blvd. | **LOG OF SOIL BORING #B-8**

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	BACKFILL DETAILS	REMARKS
0	4" asphalt			
1	angular baserock, 1" dia., fines minor			
2	clay, black, silty 30-40%, sandy v. fine 10%, damp, (CL)			
3				very slight petroleum odor 4-5'
4	silt, olive brown, clayey 30%, olive brown with rusty mottling, few mm. capillaries few %, damp, (ML)			
5				soil sample 6-7.5' no odor
6				
7				
8				
9				
10	silt, olive tan brown with blue gray mottling, sandy v. fine gr. 20-30%,			soil sample 10-11.5', [redacted]dor
11	olive tan mottling, moist to wet in small (few mm) capillaries, (ML)			
12	sand, tan brown, sand v. fine to fine gr., silty 30-40%, soft, wet, (SM)			▽ approx. 12' soil sample 11.5-13', no odors
13	Bottom of hole			
14				
15				
16				
17				
18				
19				
20				

cement-bentonite grout from total depth to original grade

AQUA SCIENCE ENGINEERS , SAN RAMON, CA. | Logged By: G. Gouvea | Date Logged: 9-27-90

PROJECT: 2896 Castro Valley Blvd.

LOG OF SOIL BORING #B-4

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	BACKFILL DETAILS	REMARKS
0	4" asphalt		cement-bentonite grout from total depth to original grade	
1	angular baserock, 1" dia., fines minor			
2	clay, black, silty 30-40%, sandy v. fine 10%, damp, (CL)			
3				
4	silt, olive tan brown, clay 30%, sand v. fine 20%, damp, (ML)			
5				soil sample 5-6.5' no odor
6				
7				
8				
9				
10	silt, olive tan brown with blue gray mottling, black organic specks 10%, sandy v. fine gr. 20-30%,			soil sample 10-11.5', sl. odor gasoline
11	olive tan mottling, moist to wet in small (few mm) capillaries, (ML)			▽ approx. 11-12
12	sand, lt. gray and rusty brown mottled, sand v. fine to med. gr., silty 30-40%, soft, wet, (SM)			soil sample 12-13.5', no odors
13	Bottom of hole			
14				
15				
16				
17				
18				
19				
20				

AQUA SCIENCE ENGINEERS , SAN RAMON, CA.

Logged By: G. Gouvea

Date Logged: 9-27-90

PROJECT: 2896 Castro Valley Blvd.

LOG OF MONITOR WELL [redacted]

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	BACKFILL DETAILS	REMARKS
0	4" asphalt		locking top cap	
1	angular baserock, 1" dia., fines minor		flush well cover	
2	clay, dk. gray to black, silty 30-40%, sandy v. fine 10%, damp, (CL)		cement-bentonite grout	
3				
4	sand, dk. brown, med. gr., garvelly 10-15% to 1" dia., fines v. minor, soft, loose, dry, (SW)			
5			med. bentonite pellets	soil sample 5-6.5' sl. odor
6				
7				
8	silt, olive brown to green gray, sandy v. fine gr. 10-20%, damp, (ML)			
9				
10	silt, green gray and rusty tan mottled, clayey 30-40%, sandy v. fine 10-20%, damp, (ML, CL)			soil sample 10-11.5', mod. odor gas
11				
12				approx. 12-13'
13				
14			#2/12 washed sand	
15	sand, tan brown, fine to coarse gr., gravelly 20-30% 1/8 to 1" dia., clayey 10-20%, (SW)			soil sample 15-16.5', no odor
16				
17	clay, olive tan brown, sandy v. fine 10%, stiff, damp, (CL)			
18				
19				soil sample 18.5-20', no odor
20	Bottom of hole		2" sch. 40 PVC blank and 0.01" slotted casing; threaded bottom cap	

AQUA SCIENCE ENGINEERS , SAN RAMON, CA.

Logged By: G. Gouvea

Date Logged: 9-28-90

PROJECT: 2896 Castro Valley Blvd.

LOG OF MONITOR WELL MW-2

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	BACKFILL DETAILS	REMARKS
0	4" asphalt			
1	angular baserock, 1" dia., fines minor			
2	silt, black, clayey 30-40%, sandy v.fine 10%, soft, dry, (ML)			no odors
5				soil sample 5-6.5' no odor
10	silt, olive tan brown and green gray mottled, clayey 20-30%,sandy v. fine gr. 10%, 1/16" dia. capillaries few %, damp, (ML)			soil sample 10-11.5', no odors, 11.5-13' [redacted] odors
12	silt, green gray and olive tan mottled, sandy v. fine 30-40%, clayey 10%, wet, (ML)			approx. 12-13'
15	sand, rusty tan brown, fine to coarse gr., gravelly 10% 1/8 to 1/2" dia., silty 20-30%, wet, (SW)			soil sample 15-16.5', no odor
17	clay, lt. gray and olive tan mottled, silty 20-30%, sandy v. fine <10%, occ. 1/4" gravel, stiff, damp, (CL)			soil sample 18.5-20', no odor
20	Bottom of hole			

BACKFILL DETAILS: locking top cap; flush well cover; cement-bentonite grout; med. bentonite pellets; #2/12 washed sand; 2" sch. 40 PVC blank and 0.01" slotted casing; threaded bottom cap

AQUA SCIENCE ENGINEERS , SAN RAMON, CA.

Logged By: G. Gouvea

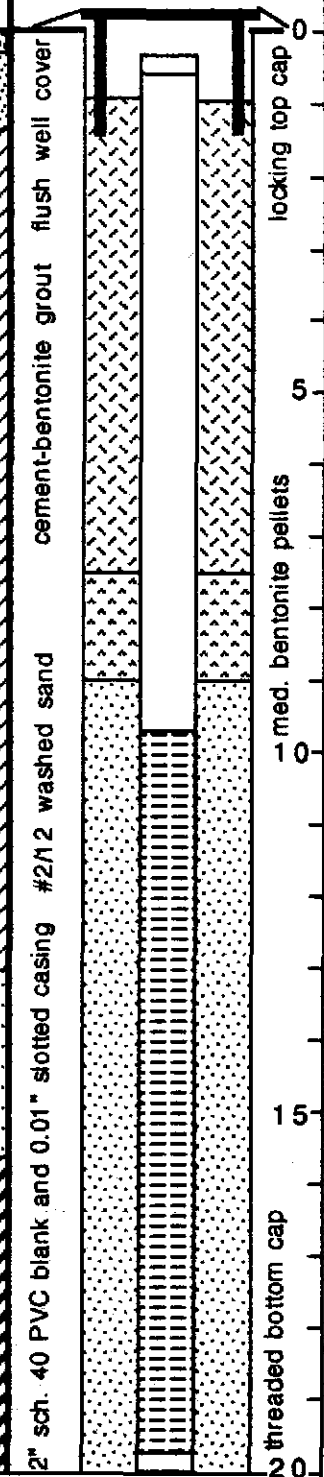
Date Logged: 9-28-90

PROJECT: 2896 Castro Valley Blvd.

LOG OF MONITOR WELL [redacted]

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL
0	4" asphalt	
1	angular baserock, 1" dia., fines minor	
2	clay, black, silty 10-20%, sandy v.fine 10%, soft, damp, (CL)	
3		
4		
5		
6	clay, olive tan brown and lt. gray, mottled, silty 20-30%,sandy v. fine 10%, damp, (CL)	
7		
8		
9		
10	silt, olive rusty tan and green gray mottled, clayey 20-30%, sandy v. fine gr. 10%, 1/16" dia. capillaries few %, moist, (ML)	
11		
12	silt, green gray and olive tan mottled, sandy v. fine 30-40%, clayey 10%, wet, (ML)	
13		
14	sand, rusty tan brown, fine to coarse gr. gravelly 10% 1/8 to 1/2" dia., silty 20-30%, wet, (SW)	
15		
16	clay, lt. gray and olive tan mottled, silty 20-30%, sandy v. fine <10%, occ. 1/4" gravel, stiff, damp, (CL)	
17		
18		
19		
20	Bottom of hole	

BACKFILL DETAILS



REMARKS

- no odors
- soil sample 6-7.5' no odor
- soil sample 10-11.5', mod. odor gas
- ✓ approx. 12-13'
- soil sample 15-16.5', no odor
- soil sample 18.5-20', no odor

AQUA SCIENCE ENGINEERS , SAN RAMON, CA.

Logged By: G. Gouvea

Date Logged: 9-28-90

APPENDIX E
SOIL AND GROUNDWATER SAMPLING DOCUMENTATION

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 12, 1990

ChromaLab File No.: 0990147

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: Eight soil samples for Gasoline/BTEX, Diesel, and Oil & Grease analyses

Project Location: 2896 CV BLVD
Date Sampled: Sept. 27, 1990 Date Submitted: Sept. 27, 1990
Date Extracted: Oct. 4-10, 1990 Date Analyzed: Oct. 4-10, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)	Oil & Grease (mg/Kg)
B-1, 6.5'	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
B1, 11'	790	N.D.	300	1900	4000	8800	730
B-1, 13.5'	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
B-2, 6'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
B-2, 10.5'	13	----	N.D.	N.D.	24	21	----
B-2, 13'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
B-3, 6.5'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
B-3, 11'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.75	93.4%	98.65	99.1%	103.5%	105.6%	----
DUP SPIKED RECOVERY	91.1%	97.8%	89.3%	89.7%	90.0%	107.6%	----
DETECTION LIMIT	2.5	5	5	5	5	5	10
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	503 D&E

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 11, 1990

ChromaLab File # 0990147 A

Client: Agua Scienece Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 27, 1990
Date Submitted: Sept. 27, 1990
Date of Analysis: Oct. 10, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: B-1,6,5'
Method of Analysis: [redacted]
Detection Limit: 5 ug/Kg

COMPOUND NAME	ug/Kg	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	102.3% 98.6%
1,1-DICHLOROETHENE	N.D.	---
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	95.5% 96.7%
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	102.3% 96.2%
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	98.2% 101.2%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 11, 1990

ChromaLab File # 0990147 B

Client: Aqua Scienece Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 27, 1990
Date Submitted: Sept. 27, 1990
Date of Analysis: Oct. 10, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: B-1 11'
Method of Analysis: EPA 8010
Detection Limit: 200 µg/Kg*

COMPOUND NAME	µg/Kg	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	102.3% 98.6%
1,1-DICHLOROETHENE	N.D.	---
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	95.5% 96.7%
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	102.3% 96.2%
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	98.2% 101.2%

*Presence of high concentration of gasoline affects detection limit

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

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Federal ID #68-0140157

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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 11, 1990

ChromaLab File # 0990147 C

Client: Aqua Scienece Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 27, 1990
Date Submitted: Sept. 27, 1990
Date of Analysis: Oct. 10, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: B-1,13.5'
Method of Analysis: EPA 8010
Detection Limit: 5 ug/Kg

COMPOUND NAME	µg/Kg	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	102.3% 98.6%
1,1-DICHLOROETHENE	N.D.	---
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	95.5% 96.7%
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	102.3% 96.2%
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	98.2% 101.2%

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- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 11, 1990

ChromaLab File # 0990147 A

Client: Aqua Science Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 27, 1990
Date Submitted: Sept. 27, 1990
Date Extracted: Oct. 10, 1990
Date Analyzed: Oct. 11, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: B-1,6.5'
Method of Analysis: [redacted]
Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	0.5	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.5	96.7% 98.2%
2-CHLOROPHENOL	N.D.	0.5	-----
1,3-DICHLOROBENZENE	N.D.	0.5	-----
1,4-DICHLOROBENZENE	N.D.	0.5	-----
BENZYL ALCOHOL	N.D.	1.0	-----
1,2-DICHLOROBENZENE	N.D.	0.5	-----
2-METHYLPHENOL	N.D.	0.5	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.5	-----
4-METHYLPHENOL	N.D.	0.5	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.5	-----
HEXACHLOROETHANE	N.D.	0.5	-----
NITROBENZENE	N.D.	0.5	-----
ISOPHORONE	N.D.	0.5	-----
2-NITROPHENOL	N.D.	0.5	-----
2,4-DIMETHYLPHENOL	N.D.	0.5	-----
BENZOIC ACID	N.D.	2.5	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.5	102.2% 96.5%
2,4-DICHLOROPHENOL	N.D.	0.5	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.5	-----
NAPHTHALENE	N.D.	0.5	-----
4-CHLOROANILINE	N.D.	1.0	-----
HEXACHLOROBUTADIENE	N.D.	0.5	-----
4-CHLORO-3-METHYLPHENOL	N.D.	1.0	-----
2-METHYLNAPHTHALENE	N.D.	0.5	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	0.5	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.5	-----
2,4,5-TRICHLOROPHENOL	N.D.	0.5	-----
2-CHLORONAPHTHALENE	N.D.	0.5	-----
2-NITROANILINE	N.D.	2.5	-----
DIMETHYL PHTHALATE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
3-NITROANILINE	N.D.	2.5	-----
ACENAPHTHENE	N.D.	0.5	105.2% 101.2%
2,4-DINITROPHENOL	N.D.	2.5	-----
4-NITROPHENOL	N.D.	2.5	-----
DIBENZOFURAN	N.D.	0.5	-----

(continued on next page)

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Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

ChromaLab File # 0990147 A

Project Name: 2896 CV Blvd.
Sample I.D.: B-1,6.5'
Method of Analysis: [redacted] Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.5	-----
2,6-DINITROTOLUENE	N.D.	0.5	95.6% 95.2%
DIETHYL PHTHALATE	N.D.	0.5	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.5	-----
FLUORENE	N.D.	0.5	-----
4-NITROANILINE	N.D.	2.5	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	2.5	-----
N-NITROSODIPHENYLAMINE	N.D.	0.5	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.5	-----
HEXACHLOROBENZENE	N.D.	0.5	-----
PENTACHLOROPHENOL	N.D.	2.5	102.5% 95.2%
PHENANTHRENE	N.D.	0.5	-----
ANTHRACENE	N.D.	0.5	-----
DI-N-BUTYL PHTHALATE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BUTYLBENZYLPHTHALATE	N.D.	0.5	-----
3,3'-DICHLOROBENZIDINE	N.D.	1.0	-----
BENZO(A)ANTHRACENE	N.D.	0.5	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.5	-----
CHRYSENE	N.D.	0.5	95.3% 89.2%
DI-N-OCTYLPHTHALATE	N.D.	0.5	-----
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	95.7% 101.3%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 11, 1990

ChromaLab File # 0990147 B

Client: Aqua Science Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 27, 1990
Date Submitted: Sept. 27, 1990
Date Extracted: Oct. 10, 1990
Date Analyzed: Oct. 11, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: B-1.11'
Method of Analysis: [redacted]
Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	0.5	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.5	96.7% 98.2%
2-CHLOROPHENOL	N.D.	0.5	-----
1,3-DICHLOROBENZENE	N.D.	0.5	-----
1,4-DICHLOROBENZENE	N.D.	0.5	-----
BENZYL ALCOHOL	N.D.	1.0	-----
1,2-DICHLOROBENZENE	N.D.	0.5	-----
2-METHYLPHENOL	N.D.	0.5	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.5	-----
4-METHYLPHENOL	N.D.	0.5	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.5	-----
HEXACHLOROETHANE	N.D.	0.5	-----
NITROBENZENE	N.D.	0.5	-----
ISOPHORONE	N.D.	0.5	-----
2-NITROPHENOL	N.D.	0.5	-----
2,4-DIMETHYLPHENOL	N.D.	0.5	-----
BENZOIC ACID	N.D.	2.5	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.5	102.2% 96.5%
2,4-DICHLOROPHENOL	N.D.	0.5	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.5	-----
NAPHTHALENE	**7.2**	0.5	-----
4-CHLOROANILINE	N.D.	1.0	-----
HEXACHLOROBUTADIENE	N.D.	0.5	-----
4-CHLORO-3-METHYLPHENOL	N.D.	1.0	-----
2-METHYLNAPHTHALENE	**5.5**	0.5	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	0.5	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.5	-----
2,4,5-TRICHLOROPHENOL	N.D.	0.5	-----
2-CHLORONAPHTHALENE	N.D.	0.5	-----
2-NITROANILINE	N.D.	2.5	-----
DIMETHYL PHTHALATE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
3-NITROANILINE	N.D.	2.5	-----
ACENAPHTHENE	N.D.	0.5	105.2% 101.2%
2,4-DINITROPHENOL	N.D.	2.5	-----
4-NITROPHENOL	N.D.	2.5	-----
DIBENZOFURAN	N.D.	0.5	-----

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CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

ChromaLab File # 0990147 B

Project Name: 2896 CV Blvd.
Sample I.D.: B-1,11'
Method of Analysis: [redacted] Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.5	-----
2,6-DINITROTOLUENE	N.D.	0.5	95.6% 95.2%
DIETHYL PHTHALATE	N.D.	0.5	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.5	-----
FLUORENE	N.D.	0.5	-----
4-NITROANILINE	N.D.	2.5	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	2.5	-----
N-NITROSODIPHENYLAMINE	N.D.	0.5	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.5	-----
HEXACHLOROBENZENE	N.D.	0.5	-----
PENTACHLOROPHENOL	N.D.	2.5	102.5% 95.2%
PHENANTHRENE	N.D.	0.5	-----
ANTHRACENE	N.D.	0.5	-----
DI-N-BUTYL PHTHALATE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BUTYLBENZYLPHTHALATE	N.D.	0.5	-----
3,3'-DICHLOROBENZIDINE	N.D.	1.0	-----
BENZO(A)ANTHRACENE	N.D.	0.5	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.5	-----
CHRYSENE	N.D.	0.5	95.3% 89.2%
DI-N-OCTYLPHTHALATE	N.D.	0.5	-----
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	95.7% 101.3%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

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CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 11, 1990

ChromaLab File # 0990147 C

Client: Aqua Science Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 27, 1990
Date Submitted: Sept. 27, 1990
Date Extracted: Oct. 10, 1990
Date Analyzed: Oct. 11, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: B-1,13.5'
Method of Analysis: EPA 8270
Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	0.5	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.5	96.7% 98.2%
2-CHLOROPHENOL	N.D.	0.5	-----
1,3-DICHLOROBENZENE	N.D.	0.5	-----
1,4-DICHLOROBENZENE	N.D.	0.5	-----
BENZYL ALCOHOL	N.D.	1.0	-----
1,2-DICHLOROBENZENE	N.D.	0.5	-----
2-METHYLPHENOL	N.D.	0.5	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.5	-----
4-METHYLPHENOL	N.D.	0.5	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.5	-----
HEXACHLOROETHANE	N.D.	0.5	-----
NITROBENZENE	N.D.	0.5	-----
ISOPHORONE	N.D.	0.5	-----
2-NITROPHENOL	N.D.	0.5	-----
2,4-DIMETHYLPHENOL	N.D.	0.5	-----
BENZOIC ACID	N.D.	2.5	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.5	102.2% 96.5%
2,4-DICHLOROPHENOL	N.D.	0.5	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.5	-----
NAPHTHALENE	N.D.	0.5	-----
4-CHLOROANILINE	N.D.	1.0	-----
HEXACHLOROBUTADIENE	N.D.	0.5	-----
4-CHLORO-3-METHYLPHENOL	N.D.	1.0	-----
2-METHYLNAPHTHALENE	N.D.	0.5	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	0.5	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.5	-----
2,4,5-TRICHLOROPHENOL	N.D.	0.5	-----
2-CHLORONAPHTHALENE	N.D.	0.5	-----
2-NITROANILINE	N.D.	2.5	-----
DIMETHYL PHTHALATE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
3-NITROANILINE	N.D.	2.5	-----
ACENAPHTHENE	N.D.	0.5	105.2% 101.2%
2,4-DINITROPHENOL	N.D.	2.5	-----
4-NITROPHENOL	N.D.	2.5	-----
DIBENZOFURAN	N.D.	0.5	-----

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CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

ChromaLab File # 0990147 C

Project Name: 2896 CV Blvd.
Sample I.D.: B-1,13.5'
Method of Analysis: [redacted] Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.5	-----
2,6-DINITROTOLUENE	N.D.	0.5	95.6% 95.2%
DIETHYL PHTHALATE	N.D.	0.5	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.5	-----
FLUORENE	N.D.	0.5	-----
4-NITROANILINE	N.D.	2.5	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	2.5	-----
N-NITROSODIPHENYLAMINE	N.D.	0.5	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.5	-----
HEXACHLOROBENZENE	N.D.	0.5	-----
PENTACHLOROPHENOL	N.D.	2.5	102.5% 95.2%
PHENANTHRENE	N.D.	0.5	-----
ANTHRACENE	N.D.	0.5	-----
DI-N-BUTYL PHTHALATE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BUTYLBENZYLPHTHALATE	N.D.	0.5	-----
3,3'-DICHLOROBENZIDINE	N.D.	1.0	-----
BENZO(A)ANTHRACENE	N.D.	0.5	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.5	-----
CHRYSENE	N.D.	0.5	95.3% 89.2%
DI-N-OCTYLPHTHALATE	N.D.	0.5	-----
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	95.7% 101.3%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

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Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 11, 1990

ChromaLab File No.: 0990148

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: Two soil samples for Gasoline/BTEX analysis

Project Location: 2896 CV BLVD
Date Sampled: Sept. 27, 1990 Date Submitted: Sept. 27, 1990
Date Extracted: Oct. 8-10, 1990 Date Analyzed: Oct. 8-10, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)
B-4, 6'	N.D.	N.D.	N.D.	N.D.	N.D.
B-4, 11'	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%
DETECTION LIMIT	2.5	5	5	5	5
METHOD OF ANALYSIS	5030/ 8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
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Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 19, 1990 ChromaLab File No.: 0990147

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: One soil sample for PCB's analysis

Project Name: 2896 CV BLVD
Date Sampled: Sept. 27, 1990 Date Submitted: Sept. 27, 1990
Date of Analysis: October 11, 1990

RESULTS:

Sample No.	[redacted] (mg/Kg)
B-1, 11'	N.D.
BLANK	N.D.
SPIKED RECOVERY	98.7%
DETECTION LIMIT	0.10
METHOD OF ANALYSIS	8080

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

ACCOUNT #	JOB #	AMOUNT

RCVD: CODED: APPRVD:

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

APPLIED ANALYTICAL

Environmental Laboratories

42501 Albrae St., Suite 100
Fremont, CA 94538
Bus: (415) 623-0775
Fax: (415) 651-8647

ANALYSIS REPORT

metal16.

Report Prepared for:
Chromalab, Inc.
2239 Omega Road
San Ramon, CA 94583
Attention: Eric Tam
Project #: 0990147

Date Sampled: 09-28-90
Date Received: 09-28-90
Date Analyzed: 10-17-90
Lab Job #: 19502-L
Matrix: [redacted]
Concentration Units: mg/kg

831-1786

Metal	Detection Limit	B-1, 6.5' S1009415	B-1, 11' S1009416	STLC	B-1, 13' S1009417	TTLC
Silver (Ag)	0.2	ND	0.4		ND	
Arsenic (As)	0.5	21	17	5	14	500
Beryllium (Be)	0.1	0.8	0.6		0.5	
Cadmium (Cd)	0.2	1.5	ND		0.5	
Chromium (Cr)	6.0	50	34	5	[redacted]	2500
Copper (Cu)	1.0	22	15		16	
Mercury (Hg)	2.0	ND	ND		ND	
Nickel (Ni)	0.2	40	32	20	36	2000
Lead (Pb)	30	[redacted]	[redacted]	5	[redacted]	1000
Antimony (Sb)	1.0	7	5		4	
Selenium (Se)	0.2	25	17	1	18	100
Thallium (Tl)	3	7	4		4	
Zinc (Zn)	2	80	47	250	42	5000

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

PROCEDURES

All metals are extracted by the EPA Method 3050 and analyzed using EPA Method 6010, except for mercury, which is analyzed using EPA Method 7470.

Laboratory Representative

October 17, 1990
Date Reported

aqua science engineers inc.

Aqua Science Engineers CHROMALAB FILE # 990147

PO. Box 535, San Ramon, (

Chain of Custo

9-27-90 PAGE 1 OF 2

PROJ. 2896 Castro Valley Blvd.
COMPANY Aqua Science
ADDRESS San Ramon
SAMPLERS (SIGNATURE) [signature]
PHONE NO. 820-9391

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.
B-1, 6.5'	9-27	9:00	Soil	
B-1, 11'	"	9:15	"	
B-1, 13.5'	"	9:30	"	
B-2, 6'	"	10:00	"	
B-2, 10.5'	"	10:15	"	
B-2, 13'	"	10:30	"	
B-3, 6.5'	"	11:00	"	
B-3, 11'	"	11:30	"	

	X	X		X		X	X								X									
	X	X		X		X	X								X									
	X	X		X		X	X								X									
	X																							
	X																							
	X																							
	X																							
	X																							
	X																							

PROJECT INFORMATION
PROJECT: 2896 CV Blvd
PO NO.
SHIPPING ID. NO.
VIA:

SAMPLE RECEIPT
TOTAL NO. OF CONTAINERS: 10
CHAIN OF CUSTODY SEAL:
REC'D GOOD CONDITION/COLD:
CONFORMS TO RECORD:
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS:
10 working day turnaround
5270 analyses – only PCB, PCP, PNA, creosote

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY
[signature] 16:10	(Signature) (Time)	(Signature) (Time)
(Printed Name) 9-27-90 (Date)	(Printed Name) (Date)	(Printed Name) (Date)
Aqua Science	(Company)	(Company)
(Company)		
RECEIVED BY 1.	RECEIVED BY 2.	RECEIVED BY (LABORATORY)
(Signature) (Time)	(Signature) (Time)	[signature] 16:19
(Printed Name) (Date)	(Printed Name) (Date)	ERIC TAM 9/27/90
(Company)	(Company)	CHROMALAB, INC.
		(Date)

aqua science engineers inc.

Aqua Science Engineers In
P.O. Box 535, San Ramon, CA 9

CHROMALAB FILE # 990148

Chain of Custo

-2790 PAGE 2 OF 2

PROJ.
COMPANY Aqua Science
ADDRESS
SAMPLERS (SIGNATURE) PHONE NO.:

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (8020)	TPH - Diesel (EPA 3510, 8015)	PURGEABLE AROMATICS (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270)	TOTAL OIL & GREASE (EPA 5520)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	8270		METALS: Cd, Cr, Pb, Zn	CAM METALS (17) by ICP	PRIORITY POLLUTANT METALS (13)					
B-4, 6'	9-27	13:00	Soil			X																		
B-4, 11	"	13:10	"			X																		
B-4, 13'	9-27	PM	Soil												X									
B-3, 13'	9-27	PM	"												X									

PROJECT INFORMATION

PROJECT: 2894 C V Blvd
PO NO.
SHIPPER ID. NO.
VIA:

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS: 12
CHAIN OF CUSTODY SEALS:
REC'D GOOD CONDITION/COLD:
CONFORMS TO RECORD:
LAB NO.:

SPECIAL INSTRUCTIONS/COMMENTS:

10 day turnaround

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY
(Signature) Eve Bowen 16:10	(Signature) (Time)	(Signature) (Ti
(Printed Name) Eve Bowen (Time) 9-27-90	(Printed Name) (Date)	(Printed Name) (D
(Company) Aqua Science	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY)**
(Signature) (Time)	(Signature) (Time)	(Signature) 1610
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) ERIC TAM 9/27/90
(Company)	(Company)	(Company) CHROMALAB, INC
		LAB

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 18, 1990 ChromaLab File No.: 0990164

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: Six soil samples for Gasoline/BTEX, Diesel, and Oil & Grease analyses

Project Location: 2896 CV BLVD.
Date Sampled: Sept. 28, 1990 Date Submitted: Sept. 28, 1990
Date Extracted: Oct. 6-12, 1990 Date Analyzed: Oct. 6-12, 1990

RESULTS:

Sample No.	Gasoline (mg/Kg)	Diesel (mg/Kg)	Benzene (µg/Kg)	Toluene (µg/Kg)	Ethyl Benzene (µg/Kg)	Total Xylenes (µg/Kg)	Oil & Grease (mg/Kg)
MW-1, 5.5'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
MW-1, 11'	14	N.D.	N.D.	N.D.	N.D.	N.D.	32
MW-2, 5'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
MW-2, 12.5'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
MW-3, 6.5'	N.D.	----	N.D.	N.D.	N.D.	N.D.	----
MW-3, 10.5'	7.7	----	N.D.	N.D.	57	76	----
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	99.1%	98.6%	99.1%	103.5%	105.6%	----
DUP SPIKED RECOVERY	91.1%	93.4%	89.3%	89.7%	90.0%	107.6%	----
DETECTION LIMIT	2.5	5	5	5	5	5	10
METHOD OF ANALYSIS	5030/ 8015	3550/ 8015	8020	8020	8020	8020	503 D&E

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 12, 1990

ChromaLab File # 0990164 B

Client: Aqua Science Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 28, 1990
Date Submitted: Sept. 28, 1990
Date Extracted: Oct. 10, 1990
Date Analyzed: Oct. 11, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: MW-1,11'
Method of Analysis: [redacted]
Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
PHENOL	N.D.	0.5	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.5	96.7% 98.2%
2-CHLOROPHENOL	N.D.	0.5	-----
1,3-DICHLOROBENZENE	N.D.	0.5	-----
1,4-DICHLOROBENZENE	N.D.	0.5	-----
BENZYL ALCOHOL	N.D.	1.0	-----
1,2-DICHLOROBENZENE	N.D.	0.5	-----
2-METHYLPHENOL	N.D.	0.5	-----
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.5	-----
4-METHYLPHENOL	N.D.	0.5	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.5	-----
HEXACHLOROETHANE	N.D.	0.5	-----
NITROBENZENE	N.D.	0.5	-----
ISOPHORONE	N.D.	0.5	-----
2-NITROPHENOL	N.D.	0.5	-----
2,4-DIMETHYLPHENOL	N.D.	0.5	-----
BENZOIC ACID	N.D.	2.5	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.5	102.2% 96.5%
2,4-DICHLOROPHENOL	N.D.	0.5	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.5	-----
NAPHTHALENE	N.D.	0.5	-----
4-CHLOROANILINE	N.D.	1.0	-----
HEXACHLOROBUTADIENE	N.D.	0.5	-----
4-CHLORO-3-METHYLPHENOL	N.D.	1.0	-----
2-METHYLNAPHTHALENE	N.D.	0.5	-----
HEXACHLOROCYCLOPENTADIENE	N.D.	0.5	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.5	-----
2,4,5-TRICHLOROPHENOL	N.D.	0.5	-----
2-CHLORONAPHTHALENE	N.D.	0.5	-----
2-NITROANILINE	N.D.	2.5	-----
DIMETHYL PHTHALATE	N.D.	0.5	-----
ACENAPHTHYLENE	N.D.	0.5	-----
3-NITROANILINE	N.D.	2.5	-----
ACENAPHTHENE	N.D.	0.5	105.2% 101.2%
2,4-DINITROPHENOL	N.D.	2.5	-----
4-NITROPHENOL	N.D.	2.5	-----
DIBENZOFURAN	N.D.	0.5	-----

(continued on next page)

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415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

ChromaLab File # 0990164 B

Project Name: 2896 CV Blvd.
Sample I.D.: MW-1,11'
Method of Analysis: EPA 8270 Matrix: soil

COMPOUND NAME	Sample mg/Kg	MDL mg/Kg	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.5	-----
2,6-DINITROTOLUENE	N.D.	0.5	95.6% 95.2%
DIETHYL PHTHALATE	N.D.	0.5	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.5	-----
FLUORENE	N.D.	0.5	-----
4-NITROANILINE	N.D.	2.5	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	2.5	-----
N-NITROSODIPHENYLAMINE	N.D.	0.5	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.5	-----
HEXACHLOROBENZENE	N.D.	0.5	-----
PENTACHLOROPHENOL	N.D.	2.5	102.5% 95.2%
PHENANTHRENE	N.D.	0.5	-----
ANTHRACENE	N.D.	0.5	-----
DI-N-BUTYL PHTHALATE	N.D.	0.5	-----
FLUORANTHENE	N.D.	0.5	-----
PYRENE	N.D.	0.5	-----
BUTYLBENZYLPHTHALATE	N.D.	0.5	-----
3,3'-DICHLOROBENZIDINE	N.D.	1.0	-----
BENZO(A)ANTHRACENE	N.D.	0.5	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.5	-----
CHRYSENE	N.D.	0.5	95.3% 89.2%
DI-N-OCTYLPHTHALATE	N.D.	0.5	-----
BENZO(B)FLUORANTHENE	N.D.	0.5	-----
BENZO(K)FLUORANTHENE	N.D.	0.5	-----
BENZO(A)PYRENE	N.D.	0.5	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.5	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.5	-----
BENZO(G,H,I)PERYLENE	N.D.	0.5	95.7% 101.3%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

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Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 12, 1990

ChromaLab File # 0990164 B

Client: Aqua Science Engineers
Attn: Greg Gouvea
Date Sampled: Sept. 28, 1990
Date Submitted: Sept. 28, 1990
Date of Analysis: Oct. 09, 1990

Project Name: 2896 CV Blvd.
Sample I.D.: MW-1,11'
Method of Analysis: EPA 8010 Detection Limit: 5 µg/Kg

COMPOUND NAME	µg/Kg	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	102.3% 98.6%
1,1-DICHLOROETHENE	N.D.	---
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	95.5% 96.7%
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	102.3% 96.2%
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	98.2% 101.2%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

aqua science engineers inc.

CHROMALAB FILE # 990164 · 415-820-9391

Chain of Custo

DATE 9-28-90 PAGE 1 OF 1

PROJ. 2896 CV Blvd.
COMPANY
ADDRESS Aqua Science

SAMPLERS (SIGNATURE) Lisa Bowen
PHONE NO.: 820 9391

ANALYSIS REQUEST

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625/625, 8270)	TOTAL OIL & GREASE (EPA 5520E&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)			METALS: Cd, Cr, Pb, Zn	CAM METALS (17) w/Cr VI	PRIORITY POLLUTANT METALS (13)					
MW-1, 5.5'	9/28/90	AM	Soil			X			X		X	X							X					
MW-1, 11'	"		"			X	X		X		X	X							X					
MW-2, 5'	"		"			X																		
MW-2, 12.5'	"		"			X																		
MW-3, 6.5'	"		"			X																		
MW-3, 10.5'	"	PM	"			X																		

PROJECT INFORMATION
PROJECT: 2896 CV Blvd
PO NO.:
SHIPPING ID. NO.:
VIA:

SAMPLE RECEIPT
TOTAL NO. OF CONTAINERS: 6
CHAIN OF CUSTODY SEALS:
REC'D GOOD CONDITION/COLD:
CONFORMS TO RECORD:
LAB NO.:

SPECIAL INSTRUCTIONS/COMMENTS:
10 day turn

RELINQUISHED BY 1.
Lisa Bowen 16:30
(Signature) (Time)
Lisa Bowen 9-28-90
(Printed Name) (Date)
Aqua Science
(Company)

RECEIVED BY 1.
(Signature) (Time)
(Printed Name) (Date)
(Company)

RELINQUISHED BY 2.
(Signature) (Time)
(Printed Name) (Date)
(Company)

RECEIVED BY 2.
(Signature) (Time)
(Printed Name) (Date)
(Company)

RELINQUISHED BY
(Signature) (Time)
(Printed Name) (Date)
(Company)

RECEIVED BY (LABORATORY)
16:30
ERIC AM 9/28/90
CHROMALAB
(Lab)

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

October 16, 1990 ChromaLab File No.: 1090059

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: Three water samples for Gasoline/BTEX analysis

Project Name: CASTRO VALLEY
Date Sampled: Oct. 9, 1990 Date Submitted: Oct. 9, 1990
Date Extracted: Oct. 15-16, 1990 Date Analyzed: Oct. 15-16,1990

RESULTS:

Sample No.	Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl Benzene (µg/L)	Total Xylenes (µg/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
MW-2	N.D.	N.D.	N.D.	N.D.	N.D.
MW-3	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	91.7%	98.6%	99.1%	103.5%	105.6%
DUP SPIKED REC	91.1%	89.3%	89.7%	90.0%	107.6%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/ 8015	602	602	602	602

CHROMALAB, INC.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

2239 Omega Road, #1 • San Ramon, California 94583
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Federal ID #68-0140157

SAMPLING SPECIALISTS COMPANY

ENVIRONMENTAL SAMPLE COLLECTION SPECIALISTS

Office Locations
3146 Manor Avenue
Walnut Creek, California 94596

12003 49th Street North
Building 307
Clearwater, Florida 34622

1-(415)-932-4356 Office
1-(415)-932-4256 Fax

CHAIN OF CUSTODY DOCUMENT

CHROMALAB FILE # 1090059

PROJECT NUMBER:		
PROJECT NAME: AQUA SCIENCE CASTRO VALLEY		
SAMPLERS/TECHNICIANS: BOSCO DUTRA		
CHECK FOR 10 DAY VERBAL/FAX SERVICE:		100%
CHECK FOR 5 DAY VERBAL/FAX SERVICE:	*	125%
CHECK FOR EMERGENCY 48 HOUR VERBAL/FAX SERVICE:		175%
CHECK FOR EMERGENCY 24 HOUR VERBAL/FAX SERVICE:		200%

DATES 00/00/00	TIME 00:00AM	SAMPLE ID	# OF SAMPLE	TPHG BTEX	TPHD	TOG	PH	PB	CU				
10/09/90		MW-1	4	*									
		MW-2	4	"									
		MW-3	4	"									

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Bosco Dutra	10/9/90	1630	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
FAX RESULTS TO: 1-415-932-4256 (AND) 1-			
BILL SAMPLING SPECIALISTS UNLESS INDICATED AQUASCIENCE			

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

November 9, 1990 ChromaLab File No.: 1190009

AQUA SCIENCE ENGINEERS, INC.

Attn: Greg Gouvea

RE: One water sample for Diesel, Oil & Grease, Cadmium, Chrome Lead, and Zinc analysses

Project Name: CASTRO VALLEY DETAIL SHOP
Date Sampled: Oct. 30, 1990 Date Submitted: Nov. 2, 1990
Date Extracted: Nov. 5-9, 1990 Date Analyzed: Nov. 5-9, 1990

RESULTS:

Sample No.	Oil & Grease (mg/L)	Diesel (µg/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)	Zinc (mg/L)
MW-1	N.D.	N.D.	N.D.	N.D.	0.07	0.020
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED REC.	----	111.8%	100.0%	102.5%	103.5%	99.1%
DETECTION LIMIT	1.0	50	0.005	0.05	0.05	0.005
METHOD OF ANALYSIS	5520 C&F	3510/ 8015	7130	7190	7420	7950

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Laboratory Director

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Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
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- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

November 9, 1990 ChromaLab File # 1190009

Client: Aqua Science Engineers Attn: Greg Gouvea
Date Sampled: Oct. 30, 1990 Date Submitted: Nov. 02, 1990
Date of Analysis: Nov. 09, 1990

Project Name: Castro Valley Detail Shop
Sample I.D.: MW-1
Method of Analysis: EPA 601 Detection Limit: 0.5µg/L

COMPOUND NAME	µg/L	Spike Recovery
CHLOROMETHANE	N.D	---
VINYL CHLORIDE	N.D.	---
BROMOMETHANE	N.D.	---
CHLOROETHANE	N.D.	---
TRICHLOROFLUOROMETHANE	N.D.	98.5% 97.2%
1,1-DICHLOROETHENE	N.D.	---
METHYLENE CHLORIDE	N.D.	---
1,2-DICHLOROETHENE (TOTAL)	N.D.	---
1,1-DICHLOROETHANE	N.D.	---
CHLOROFORM	N.D.	101.3% 92.5%
1,1,1-TRICHLOROETHANE	N.D.	---
CARBON TETRACHLORIDE	N.D.	---
1,2-DICHLOROETHANE	N.D.	---
TRICHLOROETHENE	N.D.	---
1,2-DICHLOROPROPANE	N.D.	---
BROMODICHLOROMETHANE	N.D.	---
2-CHLOROETHYLVINYLETHER	N.D.	---
TRANS-1,3-DICHLOROPROPENE	N.D.	---
CIS-1,3-DICHLOROPROPENE	N.D.	---
1,1,2-TRICHLOROETHANE	N.D.	108.3% 102.5%
TETRACHLOROETHENE	N.D.	---
DIBROMOCHLOROMETHANE	N.D.	---
CHLOROBENZENE	N.D.	---
BROMOFORM	N.D.	---
1,1,2,2-TETRACHLOROETHANE	N.D.	---
1,3-DICHLOROBENZENE	N.D.	---
1,4-DICHLOROBENZENE	N.D.	---
1,2-DICHLOROBENZENE	N.D.	92.8% 96.5%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

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415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

November 8, 1990 ChromaLab File # 1190009

Client: Aqua Science Engineers Attn: Greg Gouvea
Date Sampled: Oct. 30, 1990 Date Submitted: Nov. 02, 1990
Date Extracted: Nov. 07, 1990 Date of Analysis: Nov. 8, 1990

Project Name: Castro Valley Detail Shop
Sample I.D.: MW-1
Method of Analysis: EPA 625 Matrix: water

COMPOUND NAME	Sample mg/L	MDL mg/L	Spike Recovery
PHENOL	N.D.	0.01	-----
BIS(2-CHLOROETHYL) ETHER	N.D.	0.01	96.0%
2-CHLOROPHENOL	N.D.	0.01	-----
1,3-DICHLOROBENZENE	N.D.	0.01	-----
1,4-DICHLOROBENZENE	N.D.	0.01	-----
BENZYL ALCOHOL	N.D.	0.02	-----
1,2-DICHLOROBENZENE	N.D.	0.01	-----
2-METHYLPHENOL	N.D.	0.01	96.2%
BIS(2-CHLOROISOPROPYL)ETHER	N.D.	0.01	-----
4-METHYLPHENOL	N.D.	0.01	-----
N-NITROSO-DI-N-PROPYLAMINE	N.D.	0.01	-----
HEXACHLOROETHANE	N.D.	0.01	-----
NITROBENZENE	N.D.	0.01	-----
ISOPHORONE	N.D.	0.01	-----
2-NITROPHENOL	N.D.	0.01	-----
2,4-DIMETHYLPHENOL	N.D.	0.01	93.7%
BENZOIC ACID	N.D.	0.05	-----
BIS(2-CHLOROETHOXY)METHANE	N.D.	0.01	92.4%
2,4-DICHLOROPHENOL	N.D.	0.01	-----
1,2,4-TRICHLOROBENZENE	N.D.	0.01	-----
NAPHTHALENE	N.D.	0.01	-----
4-CHLOROANILINE	N.D.	0.02	-----
HEXACHLOROBUTADIENE	N.D.	0.01	-----
4-CHLORO-3-METHYLPHENOL	N.D.	0.02	-----
2-METHYLNAPHTHALENE	N.D.	0.01	107.9%
HEXACHLOROCYCLOPENTADIENE	N.D.	0.01	-----
2,4,6-TRICHLOROPHENOL	N.D.	0.01	- - - - -
2,4,5-TRICHLOROPHENOL	N.D.	0.01	-----
2-CHLORONAPHTHALENE	N.D.	0.01	-----
2-NITROANILINE	N.D.	0.05	-----
DIMETHYL PHTHALATE	N.D.	0.01	-----
ACENAPHTHYLENE	N.D.	0.01	-----
3-NITROANILINE	N.D.	0.05	-----
ACENAPHTHENE	N.D.	0.01	101.7%
2,4-DINITROPHENOL	N.D.	0.05	-----
4-NITROPHENOL	N.D.	0.05	-----
DIBENZOFURAN	N.D.	0.01	-----

(continued on next page)

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E694)
- Drinking Water (#955)
- Waste Water
- Consultation

ChromaLab File # 1190009

Project Name: Castro Valley Detail Shop
Sample I.D.: MW-1
Method of Analysis: EPA 625 Matrix: water

COMPOUND NAME	Sample mg/L	MDL mg/L	Spike Recovery
2,4-DINITROTOLUENE	N.D.	0.01	-----
2,6-DINITROTOLUENE	N.D.	0.01	104.8%
DIETHYL PHTHALATE	N.D.	0.01	-----
4-CHLORO-PHENYL PHENYL ETHER	N.D.	0.01	-----
FLUORENE	N.D.	0.01	-----
4-NITROANILINE	N.D.	0.05	-----
4,6-DINITRO-2-METHYL PHENOL	N.D.	0.05	-----
N-NITROSODIPHENYLAMINE	N.D.	0.01	-----
4-BROMOPHENYL PHENYL ETHER	N.D.	0.01	-----
HEXACHLOROBENZENE	N.D.	0.01	-----
PENTACHLOROPHENOL	N.D.	0.05	111.6%
PHENANTHRENE	N.D.	0.01	-----
ANTHRACENE	N.D.	0.01	-----
DI-N-BUTYL PHTHALATE	N.D.	0.01	-----
FLUORANTHENE	N.D.	0.01	-----
PYRENE	N.D.	0.01	-----
BUTYLBENZYLPHTHALATE	N.D.	0.01	-----
3,3'-DICHLOROBENZIDINE	N.D.	0.02	-----
BENZO(A)ANTHRACENE	N.D.	0.01	-----
BIS(2-ETHYLHEXYL)PHTHALATE	N.D.	0.01	-----
CHRYSENE	N.D.	0.01	100.5%
DI-N-OCTYLPHTHALATE	N.D.	0.01	-----
BENZO(B)FLUORANTHENE	N.D.	0.01	-----
BENZO(K)FLUORANTHENE	N.D.	0.01	-----
BENZO(A)PYRENE	N.D.	0.01	-----
INDENO(1,2,3 C,D)PYRENE	N.D.	0.01	-----
DIBENZO(A,H)ANTHRACENE	N.D.	0.01	-----
BENZO(G,H,I)PERYLENE	N.D.	0.01	89.5%

ChromaLab, Inc.

David Duong
Senior Chemist

Eric Tam
Lab Director

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

SAMPLING SPECIALISTS COMPANY

ENVIRONMENTAL SAMPLE COLLECTION SPECIALISTS

Office Locations
3146 Manor Avenue
Walnut Creek, California 94596

12003 49th Street North
Building 307
Clearwater, Florida 34622

CHROMALAB FILE # 1190009

CHAIN OF CUSTODY DOCUMENT

PROJECT NUMBER: 5017-038-027		
PROJECT NAME: CASTRO VALLEY DETAIL SHOP		
SAMPLERS/TECHNICIANS: MS & BA		
CHECK FOR 10 DAY VERBAL/FAX SERVICE:		100%
CHECK FOR 5 DAY VERBAL/FAX SERVICE:	*	125%
CHECK FOR EMERGENCY 48 HOUR VERBAL/FAX SERVICE:		175%
CHECK FOR EMERGENCY 24 HOUR VERBAL/FAX SERVICE:		200%

DATES 00/00/00	TIME 00:00AM	SAMPLE ID	# OF SAMPLE	TPHG BTEX	TPHD	TOG 503	PH	PB	CU	8010	8270	6010	
10-30-90		MW-1	8		*	*				*	*		

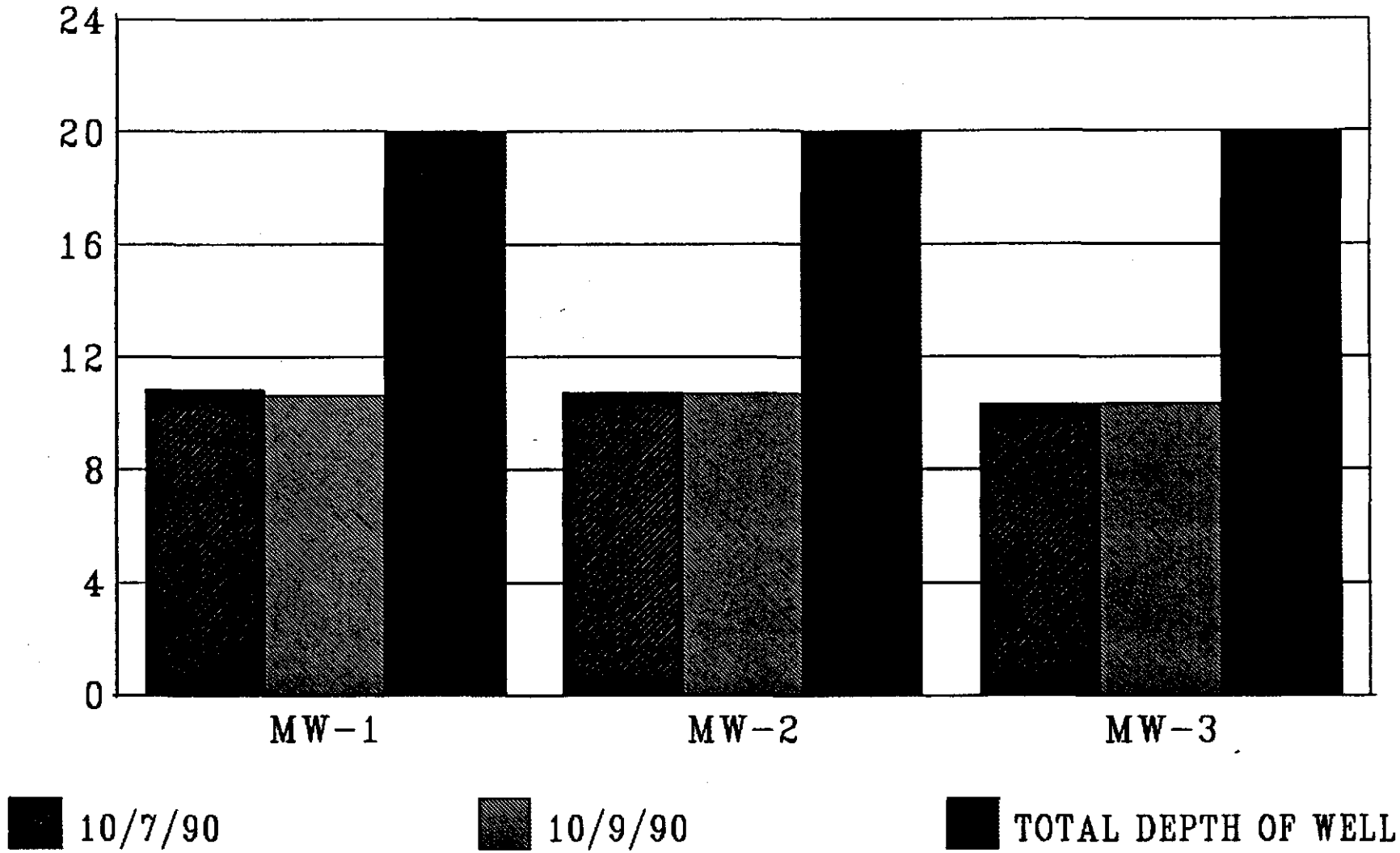
PCP
PCB
HVAC

CAM-17 METALS

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
FAX RESULTS TO: 1-415-932-4256 (AND) 1-			
BILL ~~SAMPLING SPECIALISTS~~ UNLESS INDICATED AQUASCIENCE			

DEPTH TO GROUNDWATER IN FEET

AQUASCIENCE ENGINEERS CASTRO VALLEY, CA SITE 10170271



SAMPLING SPECIALISTS COMPANY
INDEPENDENT THIRD PARTY SAMPLING & ANALYSIS
COMPLETE WELL DEVELOPMENT SERVICES

ENVIRONMENTAL SAMPLE
COLLECTION SPECIALISTS
AIR, LIQUID AND SOLID SAMPLING

COMPLETE BAILING, PURGING AND SAMPLING SERVICE FOR
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1-(415)-932-4356 Office
1-(415)-932-4256 Fax

October 23, 1990

Aqua Science Engineers, Inc.
Mr. Greg Gouvea
P.O. Box 535
San Ramon, California 94583

Re: Castro Valley, California Detail Shop

Dear Mr. Greg Gouvea,

This report presents the results of the Monthly groundwater monitoring of the existing wells by Sampling Specialists Company on October 7-9, 1990.

Sampling Specialists Company
Well Monitoring Procedure

The well manway and top of casing seals are first inspected for possible leaks into the well of surrounding standing water. Next using a liquid level indicator the depth to groundwater and casing bottom are recorded. Using a NEW BAILER CORD and a DISPOSABLE BAILER we collect the first draw of product from the well being careful to only let the bailer enter the groundwater halfway. After extracting the bailer we check for the amount of free-floating hydrocarbons if any or note the sheen. Then using our previous measurements to groundwater and casing bottom we calculate how much well column is in the water. We then multiply this number by .17 gallons per foot for 2" column, .66 gallons per foot for 4" column etc. Finally we multiply by 3 to calculate the number of gallons we bail before sample collection. After allowing the well to recover to at least 90% of it's pre-bailed groundwater level we again take a measurement to groundwater level prior to sampling. VOA's vials are filled first from the first draw from well and from the same sampler. Liters are then filled. Duplicates are always collected when VOA's vials are used. Samples are kept on ice and delivered to the state certified laboratory within 24 hours of collection.

* NOTE *
The practice of using new bailer cord and disposable bailers/samplers for each well eliminates the possibility of cross contamination.

Analysis Requested

The samples were delivered to the state certified laboratory of CHROMALAB, INC. in San Ramon, California. The analysis were for:

Total Petroleum Hydrocarbons as Gasoline with BTEX

The analysis results and chain of custody will be forwarded directly to you from the laboratory. If you have any further questions or concerns please feel free to call our office.

Sincerely,
SAMPLING SPECIALISTS COMPANY

Mr. John T. Pratt
General Manager

1017-038-027

SAMPLING SPECIALISTS COMPANY
INDEPENDENT THIRD PARTY SAMPLING & ANALYSIS
COMPLETE WELL DEVELOPMENT SERVICES

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1-(415)-932-4356 Office
1-(415)-932-4256 Fax

MONITORING WELL FIELD NOTES

CASTRO VALLEY, CA	PROJECT NAME
1017-038-027	PROJECT NUMBER
10/09/90	DATE OF SAMPLING ACTIVITIES
TF / JP	BY (SAMPLING TECHNICIANS)
[redacted]	CLIENT'S MONITORING/RECOVERY/ VADOSE WELL NUMBER
CLIENT TO PROVIDE	TOP OF CASING ELEVATION (Provided By Client)
10.64'	DEPTH TO WATER FROM WELL CASING BEFORE BAILING
20'	TOTAL DEPTH OF USABLE COLUMN (TO NEAREST FOOT MARKING)
2"	DIAMETER OF MONITORING/RECOVERY/ VADOSE WELL
09.36'	AMOUNT OF WELL COLUMN IN WATER (INCLUDING OIL INTERFACE)
07.96 GALLONS	REQUIRED AMOUNT OF GROUNDWATER TO PURGE FROM WELL IS
10 GALLONS	APPROXIMATE AMOUNT GROUNDWATER REMOVED FROM WELL
GRADE LEVEL MANWAY	TYPE OF SEAL AT GRADE (VANDAL PROOF MANWAY LID/ELEVATED STOVEPIPE)
YES	IS SEAL AT GRADE WATER TIGHT
2" WING NUT PLUG	TYPE OF CAP
YES	IS CAP WATER TIGHT

4	NUMBER OF SAMPLES COLLECTED (40mil VOA FOR GAS/BTEX AND Liters For Diesel
NO	DID 40 mil VOA CONTAINERS HAVE HEADSPACE BEFORE DELIVERY TO LABORATORY
YES	WERE CONTAINERS KEPT ON ICE PRIOR TO BEING DELIVERED TO LABORATORY
YES	WAS THERE A QA / QC SAMPLER BLANK SAMPLE COLLECTED

(All Groundwater Samples Collected Within 300 Miles From Bay Area Are Kept On ice And Delivered To The Laboratory For Analysis In Less Than 24 Hours After being Collected, All others Are Delivered Within 48 Hours.)

79.40	SAMPLE TEMPERATURE (F) (Special Request)
07.10	SAMPLE PH LEVEL (Special Request)
NR	SAMPLE CONDUCTIVITY (Special Request)
NR	SAMPLE TURBIDITY (Special Request)
NA	CONDITION OF WATER DURING DEVELOPMENT (IF APPLIES)
CLOUDY	CONDITION OF WATER DURING INITIAL BAILING PERIOD
CLOUDY	CONDITION OF WATER FOR SAMPLE
NO	DID BAILED PRODUCT HAVE ANY TYPE OF PETROLEUM ODOR
NA	DOES WELL NEED REDEVELOPED
TPH/GAS/BTEX	TYPE OF ANALYSIS REQUESTED
NORMAL	TURNAROUND TIME REQUESTED
DISPOSABLE	TYPE OF BAILER USED
NO	WAS BAILER CLEANED IN FIELD

This monitoring well field guide is provided to give you the necessary answers to questions you might have concerning the condition of the well. Any recommendations that we make are solely based on knowledge gained from a visual inspection of the well during bailing and sampling. On request we would furnish a cost estimate to complete any recommendations that we made. If you have any further questions concerning this well please call our office for assistance.

1017-038-027.001

SAMPLING SPECIALISTS COMPANY
INDEPENDENT THIRD PARTY SAMPLING & ANALYSIS
COMPLETE WELL DEVELOPMENT SERVICES

ENVIRONMENTAL SAMPLE
COLLECTION SPECIALISTS
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Building 307
Clearwater, Florida 34622

1-(415)-932-4356 Office
1-(415)-932-4256 Fax

MONITORING WELL FIELD NOTES

CASTRO VALLEY, CA	PROJECT NAME
1017-038-027	PROJECT NUMBER
10/09/90	DATE OF SAMPLING ACTIVITIES
TF / JP	BY (SAMPLING TECHNICIANS)
[redacted]	CLIENT'S MONITORING/RECOVERY/ VADOSE WELL NUMBER
CLIENT TO PROVIDE	TOP OF CASING ELEVATION (Provided By Client)
10.71'	DEPTH TO WATER FROM WELL CASING BEFORE BAILING
20'	TOTAL DEPTH OF USABLE COLUMN (TO NEAREST FOOT MARKING)
2"	DIAMETER OF MONITORING/RECOVERY/ VADOSE WELL
09.29'	AMOUNT OF WELL COLUMN IN WATER (INCLUDING OIL INTERFACE)
07.90 GALLONS	REQUIRED AMOUNT OF GROUNDWATER TO PURGE FROM WELL IS
10 GALLONS	APPROXIMATE AMOUNT GROUNDWATER REMOVED FROM WELL
GRADE LEVEL MANWAY	TYPE OF SEAL AT GRADE (VANDAL PROOF MANWAY LID/ELEVATED STOVEPIPE)
YES	IS SEAL AT GRADE WATER TIGHT
2" WING NUT PLUG	TYPE OF CAP
YES	IS CAP WATER TIGHT

4	NUMBER OF SAMPLES COLLECTED (40mil VOA FOR GAS/BTEX AND Liters For Diesel
NO	DID 40 mil VOA CONTAINERS HAVE HEADSPACE BEFORE DELIVERY TO LABORATORY
YES	WERE CONTAINERS KEPT ON ICE PRIOR TO BEING DELIVERED TO LABORATORY
YES	WAS THERE A QA / QC SAMPLER BLANK SAMPLE COLLECTED

(All Groundwater Samples Collected Within 300 Miles From Bay Area Are Kept On ice And Delivered To The Laboratory For Analysis In Less Than 24 Hours After being Collected, All others Are Delivered Within 48 Hours.)

79.40	SAMPLE TEMPERATURE (F) (Special Request)
07.10	SAMPLE PH LEVEL (Special Request)
NR	SAMPLE CONDUCTIVITY (Special Request)
NR	SAMPLE TURBIDITY (Special Request)
NA	CONDITION OF WATER DURING DEVELOPMENT (IF APPLIES)
CLEAR	CONDITION OF WATER DURING INITIAL BAILING PERIOD
CLEAR	CONDITION OF WATER FOR SAMPLE
NO	DID BAILED PRODUCT HAVE ANY TYPE OF PETROLEUM ODOR
NA	DOES WELL NEED REDEVELOPED
TPH/GAS/BTEX	TYPE OF ANALYSIS REQUESTED
NORMAL	TURNAROUND TIME REQUESTED
DISPOSABLE	TYPE OF BAILER USED
NO	WAS BAILER CLEANED IN FIELD

This monitoring well field guide is provided to give you the necessary answers to questions you might have concerning the condition of the well. Any recommendations that we make are solely based on knowledge gained from a visual inspection of the well during bailing and sampling. On request we would furnish a cost estimate to complete any recommendations that we made. If you have any further questions concerning this well please call our office for assistance.

1017-038-027.001

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INDEPENDENT THIRD PARTY SAMPLING & ANALYSIS
COMPLETE WELL DEVELOPMENT SERVICES

ENVIRONMENTAL SAMPLE
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Building 307
Clearwater, Florida 34622

1-(415)-932-4356 Office
1-(415)-932-4256 Fax

MONITORING WELL FIELD NOTES

CASTRO VALLEY, CA	PROJECT NAME
1017-038-027	PROJECT NUMBER
10/09/90	DATE OF SAMPLING ACTIVITIES
TF / JP	BY (SAMPLING TECHNICIANS)
[redacted]	CLIENT'S MONITORING/RECOVERY/ VADOSE WELL NUMBER
CLIENT TO PROVIDE	TOP OF CASING ELEVATION (Provided By Client)
[redacted]	DEPTH TO WATER FROM WELL CASING BEFORE BAILING
20'	TOTAL DEPTH OF USABLE COLUMN (TO NEAREST FOOT MARKING)
2"	DIAMETER OF MONITORING/RECOVERY/ VADOSE WELL
09.64'	AMOUNT OF WELL COLUMN IN WATER (INCLUDING OIL INTERFACE)
08.19 GALLONS	REQUIRED AMOUNT OF GROUNDWATER TO PURGE FROM WELL IS
10 GALLONS	APPROXIMATE AMOUNT GROUNDWATER REMOVED FROM WELL
GRADE LEVEL MANWAY	TYPE OF SEAL AT GRADE (VANDAL PROOF MANWAY LID/ELEVATED STOVEPIPE)
YES	IS SEAL AT GRADE WATER TIGHT
2" WING NUT PLUG	TYPE OF CAP
YES	IS CAP WATER TIGHT

4	NUMBER OF SAMPLES COLLECTED (40mil VOA FOR GAS/BTEX AND Liters For Diesel
NO	DID 40 mil VOA CONTAINERS HAVE HEADSPACE BEFORE DELIVERY TO LABORATORY
YES	WERE CONTAINERS KEPT ON ICE PRIOR TO BEING DELIVERED TO LABORATORY
YES	WAS THERE A QA / QC SAMPLER BLANK SAMPLE COLLECTED

(All Groundwater Samples Collected Within 300 Miles From Bay Area Are Kept On ice And Delivered To The Laboratory For Analysis In Less Than 24 Hours After being Collected, All others Are Delivered Within 48 Hours.)

78.00	SAMPLE TEMPERATURE (F) (Special Request)
07.25	SAMPLE PH LEVEL (Special Request)
NR	SAMPLE CONDUCTIVITY (Special Request)
NR	SAMPLE TURBIDITY (Special Request)
NA	CONDITION OF WATER DURING DEVELOPMENT (IF APPLIES)
CLOUDY	CONDITION OF WATER DURING INITIAL BAILING PERIOD
CLOUDY	CONDITION OF WATER FOR SAMPLE
NO	DID BAILED PRODUCT HAVE ANY TYPE OF PETROLEUM ODOR
NA	DOES WELL NEED REDEVELOPED
TPH/GAS/BTEX	TYPE OF ANALYSIS REQUESTED
NORMAL	TURNAROUND TIME REQUESTED
DISPOSABLE	TYPE OF BAILER USED
NO	WAS BAILER CLEANED IN FIELD

This monitoring well field guide is provided to give you the necessary answers to questions you might have concerning the condition of the well. Any recommendations that we make are solely based on knowledge gained from a visual inspection of the well during bailing and sampling. On request we would furnish a cost estimate to complete any recommendations that we made. If you have any further questions concerning this well please call our office for assistance.

1017-038-027.001

SAMPLING SPECIALISTS COMPANY
INDEPENDENT THIRD PARTY SAMPLING & ANALYSIS
COMPLETE WELL DEVELOPMENT SERVICES

ENVIRONMENTAL SAMPLE
COLLECTION SPECIALISTS
AIR, LIQUID AND SOLID SAMPLING

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1-(415)-932-4256 Fax

SAMPLING SPECIALISTS COMPANY

WELL MONITORING & SAMPLING PROTOCOL

The following is a list of the steps that we use when monitoring and sampling, monitoring and recovery wells for sample collection and analysis:

1) Remove well box cover at grade and remove cap on well pipe checking the integrity of each and making sure not to allow any standing water or soil/sand to fall into the well pipe. The size of the well and condition of both caps/seals is then noted on the monitoring well field log.

2) Using a water level indicator we measure the distance between the top of the well casing and groundwater level before bailing or sampling. This distance is then noted in the monitoring well field log.

3) Using the water level indicator we then measure the approximate total depth of usable column. This distance is then noted in the monitoring well field log.

4) After finishing with the water level indicator we wash and clean it. (SEE "CLEANING THE EQUIPMENT")

5) We calculate the well diameter and the total depth of usable column to determine how many gallons of groundwater we would have to bail from the well to achieve 3-5 well volumes of groundwater. This is then noted in the monitoring well field log.

6) Depending on the size of the well and the depth to groundwater PCC uses 4 different methods to remove the required amount of groundwater. The first 3 methods require the use of precleaned equipment. (SEE "CLEANING THE EQUIPMENT")

Method 1 — We use standard 1.66", 2" or 3.65" PVC or Acrylic bailers. We use fresh nylon mesh rope for each well. We bail the required amount of water out and empty it into a trough which is then pumped up into the holding tanks on the truck. The amount of groundwater which is removed is then noted in the monitoring well field log.

Method 2 — On 2" wells where groundwater is shallow we use a 3/4" suction pump with precleaned sections of pipe which pumps the groundwater directly into the holding tanks on the truck. On deeper wells we use a 1.60" stainless steel air lift pump which pumps directly into holding tank on truck.

Method 3 — On 4" or larger wells where groundwater is shallow we use a 1,1/2" suction pump with precleaned sections of pipe which pumps the groundwater directly into the holding tanks on the truck. On deeper wells we use a 3.6" stainless steel air lift pump which pumps directly into holding tank on truck.

Method 4 — We use completely disposable bailers which are discarded properly after being used.

7) After finishing with the suction pumps, pipe sections, or bailers we wash and clean them between wells. (SEE "CLEANING THE EQUIPMENT")

8) Using a water level indicator we measure the distance between the top of the well casing and groundwater level after bailing and before sampling. This distance is then noted in the monitoring well field log.

9) We allow the well to recover to a minimum of 80% of it's original level before taking the required samples for analysis. The level of the groundwater at the time of sampling is then noted in the monitoring well field log.

10) We preclean a TEFLON 12" bailer (SEE "CLEANING THE EQUIPMENT") and after the final rinse we refill it with distilled or de-ionized water. We collect a sample for analysis from the bailer using a 40 mil VOA vial for quality control purposes. This sample is also submitted to the laboratory.

11) After the well has recovered we use a precleaned TEFLON 12" bailer with sampling ends and a new piece of nylon mesh rope to obtain the groundwater sample in the well. We then carefully fill 2, 40 mil VOA vials and cap them and verify there is no head space present. The VOA vials are then carefully labeled and placed in a zip lock bag in a cooler to be stored until delivered to the laboratory. The temperature in the cooler is kept at 4 degrees Celsius.

12) After finishing with the TEFLON bailer we wash and clean it. (SEE "CLEANING THE EQUIPMENT")

13) We close the well up making sure not to spill any water, sand etc. into the well.

CLEANING THE EQUIPMENT

We use three different types of cleaning solutions depending upon the site specific data available. They are; TSP, Alquinox and liquinox. We always use distilled or de-ionized water for cleaning and rinsing the equipment. If the equipment has been contaminated to the point where we do not feel safe with it before thorough cleaning we take that piece of equipment out of service for the duration of that days project. On occasion that the equipment has been heavily contaminated we use pesticide grade Isopropenahl to clean the equipment followed by rinsing. The equipment consists of pumps, pipe sections, bailers, samplers, water level indicator, and wash buckets.

We reference for sampling the protocol indicated in the EPA's Operating Procedures and Quality Assurance Manual put out in April of 1986. This was written by EPA Region 4. There are additional tests that can be performed such as; PH level, conductivity, and additional analysis that can be performed. Please feel free to contact our office with your questions and concerns.
Sincerely,

SAMPLING SPECIALISTS COMPANY
Mr. John T. Pratt
General Manager

SAMPLING SPECIALISTS COMPANY
INDEPENDENT THIRD PARTY SAMPLING & ANALYSIS
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November 5, 1990

Aqua Science Engineers, Inc.
Mr. Greg Gouvea
P.O. Box 535
San Ramon, California 94583

Re: Castro Valley, California Detail Shop

Dear Mr. Greg Gouvea,

This report presents the results of the Monthly groundwater monitoring of the existing wells by Sampling Specialists Company on October 30, 1990.

Sampling Specialists Company
Well Monitoring Procedure

The well manway and top of casing seals are first inspected for possible leaks into the well of surrounding standing water. Next using a liquid level indicator the depth to groundwater and casing bottom are recorded. Using a NEW BAILER CORD and a DISPOSABLE BAILER we collect the first draw of product from the well being careful to only let the bailer enter the groundwater halfway. After extracting the bailer we check for the amount of free-floating hydrocarbons if any or note the sheen. Then using our previous measurements to groundwater and casing bottom we calculate how much well column is in the water. We then multiply this number by .17 gallons per foot for 2" column, .66 gallons per foot for 4" column etc. Finally we multiply by 3 to calculate the number of gallons we bail before sample collection. After allowing the well to recover to at least 90% of it's pre-bailed groundwater level we again take a measurement to groundwater level prior to sampling. VOA's vials are filled first from the first draw from well and from the same sampler. Liters are then filled. Duplicates are always collected when VOA's vials are used. Samples are kept on ice and delivered to the state certified laboratory within 24 hours of collection.

* NOTE *
The practice of using new bailer cord and disposable bailers/samplers for each well eliminates the possibility of cross contamination.

Analysis Requested

The samples were delivered to the state certified laboratory of CHROMALAB, INC. in San Ramon, California. The analysis were for:

Total Petroleum Hydrocarbons as Diesel / 8015 / Total Oil & Grease 503 D&E / 8010 / Metals Cam-13 / 6010 / 8270 were the requested analysis.

The analysis results and chain of custody will be forwarded directly to you from the laboratory. If you have any further questions or concerns please feel free to call our office.
Sincerely,
SAMPLING SPECIALISTS COMPANY

Mr. John T. Pratt
General Manager

1017-038-027

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MONITORING WELL FIELD NOTES

CASTRO VALLEY, CA	PROJECT NAME
1017-038-027	PROJECT NUMBER
10/30/99	DATE OF SAMPLING ACTIVITIES
MS	BY (SAMPLING TECHNICIANS)
MW-1	CLIENT'S MONITORING/RECOVERY/ VADOSE WELL NUMBER
CLIENT TO PROVIDE	TOP OF CASING ELEVATION (Provided By Client)
10.57'	DEPTH TO WATER FROM WELL CASING BEFORE BAILING
20'	TOTAL DEPTH OF USABLE COLUMN (TO NEAREST FOOT MARKING)
2"	DIAMETER OF MONITORING/RECOVERY/ VADOSE WELL
09.43'	AMOUNT OF WELL COLUMN IN WATER (INCLUDING OIL INTERFACE)
08.02 GALLONS	REQUIRED AMOUNT OF GROUNDWATER TO PURGE FROM WELL IS
15 GALLONS	APPROXIMATE AMOUNT GROUNDWATER REMOVED FROM WELL
GRADE LEVEL MANWAY	TYPE OF SEAL AT GRADE (VANDAL PROOF MANWAY LID/ELEVATED STOVEPIPE)
YES	IS SEAL AT GRADE WATER TIGHT
2" WING NUT PLUG	TYPE OF CAP
YES	IS CAP WATER TIGHT

8	NUMBER OF SAMPLES COLLECTED (40mil VOA FOR GAS/BTEX AND Liters For Diesel
NO	DID 40 mil VOA CONTAINERS HAVE HEADSPACE BEFORE DELIVERY TO LABORATORY
YES	WERE CONTAINERS KEPT ON ICE PRIOR TO BEING DELIVERED TO LABORATORY
YES	WAS THERE A QA / QC SAMPLER BLANK SAMPLE COLLECTED

(All Groundwater Samples Collected Within 300 Miles From Bay Area Are Kept On ice And Delivered To The Laboratory For Analysis In Less Than 24 Hours After being Collected, All others Are Delivered Within 48 Hours.)

74.30	SAMPLE TEMPERATURE (F) (Special Request)
07.36	SAMPLE PH LEVEL (Special Request)
NR	SAMPLE CONDUCTIVITY (Special Request)
NR	SAMPLE TURBIDITY (Special Request)
NA	CONDITION OF WATER DURING DEVELOPMENT (IF APPLIES)
CLOUDY/SAND	CONDITION OF WATER DURING INITIAL BAILING PERIOD
CLOUDY/SAND	CONDITION OF WATER FOR SAMPLE
NO	DID BAILED PRODUCT HAVE ANY TYPE OF PETROLEUM ODOR
NA	DOES WELL NEED REDEVELOPED
SEE ATTACHED	TYPE OF ANALYSIS REQUESTED
NORMAL	TURNAROUND TIME REQUESTED
DISPOSABLE	TYPE OF BAILER USED
NO	WAS BAILER CLEANED IN FIELD

This monitoring well field guide is provided to give you the necessary answers to questions you might have concerning the condition of the well. Any recommendations that we make are solely based on knowledge gained from a visual inspection of the well during bailing and sampling. On request we would furnish a cost estimate to complete any recommendations that we made. If you have any further questions concerning this well please call our office for assistance.

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