Remedial Investigation Report

for

PG&E

ENCON-GAS Transmission and Distribution Construction Yard

Former Tank Cluster Area

4930 Coliseum Way, Oakland, California

Submitted to:

Alameda County Health Care Services Agency

Department of Environmental Health

Division of Hazardous Materials

July 23, 1991

Aqua Resources Inc.

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EXECUTIVE SUMMARY

Aqua Resources Incorporated (ARI) conducted an investigation of potential soil contamination at the Pacific Gas and Electric Company (PG&E) ENCON-GAS Transmission and Distribution Construction Yard located at 4930 Coliseum Way, Oakland, California, under the supervision of a registered civil engineer from November 1990 to May 1991. The purpose of this investigation was to determine the extent of petroleum hydrocarbon impacted soils in the vicinity of a former underground tank cluster and to determine if any upgradient sources of contamination might exist. This report describes the results of that investigation. Figure ES-1 presents the site plan.

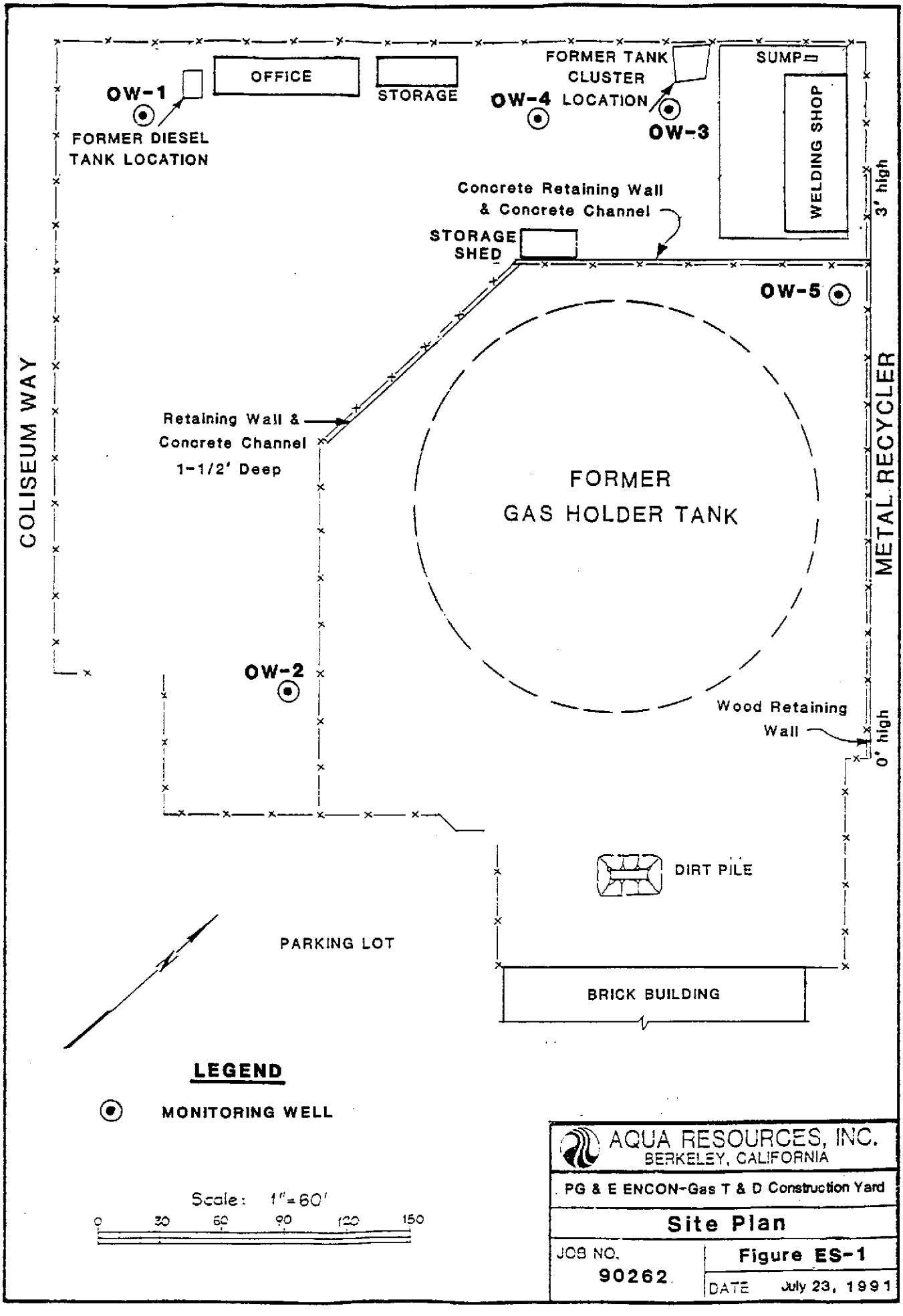
Conclusions

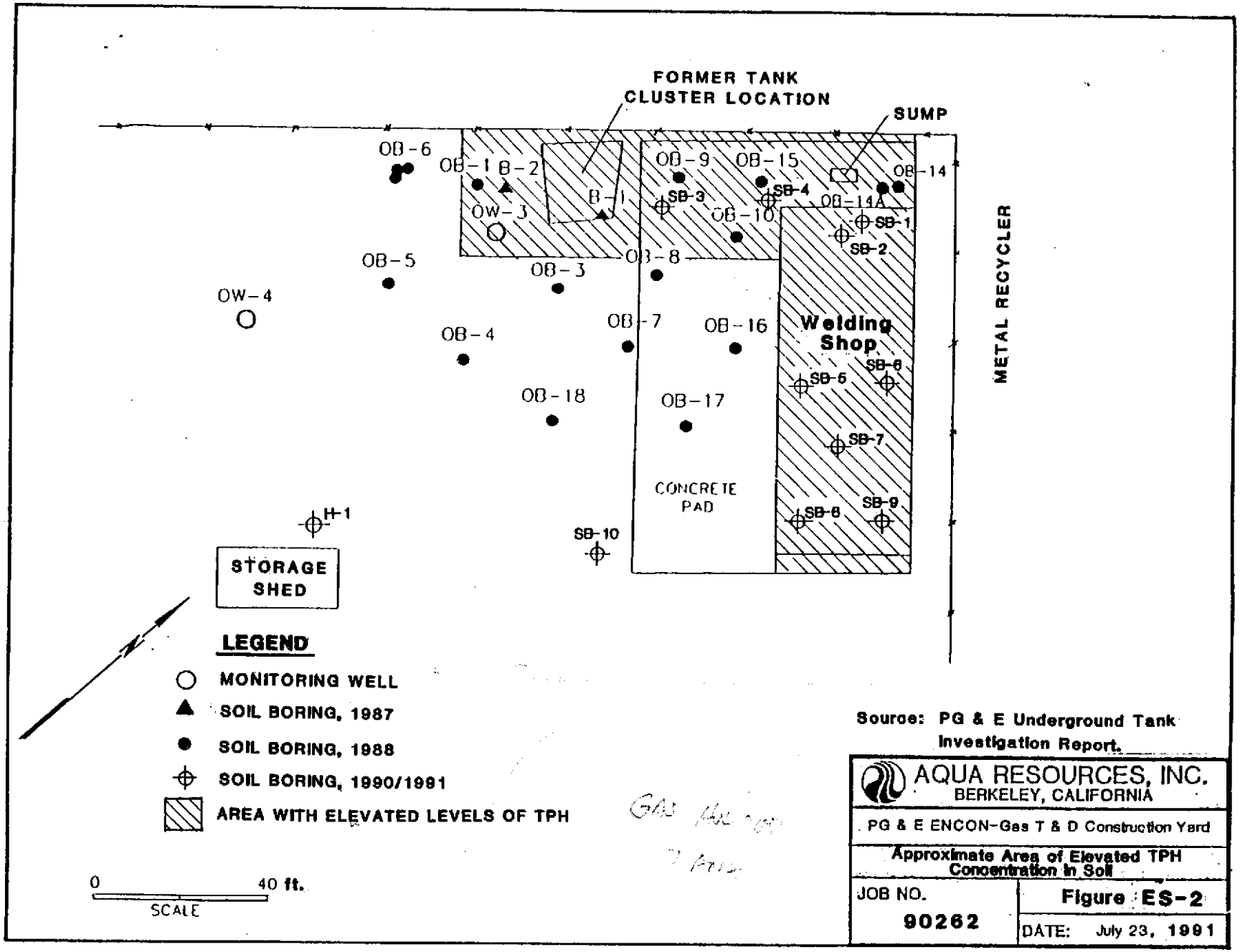
ARI estimates that approximately 2,250 cubic yards of soil in the vicinity of the former tank cluster contain elevated levels of petroleum hydrocarbons, predominantly diesel fuel and oil and grease. The location of this soil is shown on Figure ES-2.

Groundwater samples obtained from monitoring wells located downgradient from the former tank cluster have been found to slightly exceed maximum contaminant levels for 1,1-Dichloroethane, 1,2-Dichloroethane, and 1,4-Dichlorobenzene. Semi-volatile petroleum hydrocarbons have also been found in nearly all groundwater samples.

An off-site source of fuel contamination is believed to exist upgradient from well OW-5, near the northeast property boundary of the site (see Figure ES-1). This conclusion was reached because groundwater samples obtained nearest that property line were found to contain higher levels of benzene and other fuel components than samples obtained immediately downgradient from the former tank cluster.

Three locations in the eastern portion of the yard near a former natural gas holder tank contained elevated levels of petroleum hydrocarbons in soil. However, the nature and extent of detected petroleum hydrocarbons in those areas suggest, that they are not related to spills or leaks from the former tank cluster. In fact, two of these areas appear to be impacted by an off-site fuel leak.


OW-1
FORMER DIESEL TANK LOCATION
OFFICE
STORAGE
FORMER TANK CLUSTER LOCATION
OW-4
OW-3
SUMP
WELDING SHOP
3' high
Concrete Retaining Wall & Concrete Channel
STORAGE SHED
OW-5
COLISEUM WAY
METAL RECYCLER
Retaining Wall & Concrete Channel 1-1/2' Deep
FORMER GAS HOLDER TANK
OW-2
Wood Retaining Wall
0' high
DIRT PILE
PARKING LOT
BRICK BUILDING
LEGEND
MONITORING WELL
Scale: 1"=60'
0 30 60 90 120 150
AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA
PG & E ENCON-Gas T & D Construction Yard
Site Plan
JOB NO. 90262
Figure ES-1
DATE July 23, 1991



Source: PG & E Underground Tank Investigation Report.

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PG & E ENCON-Gas T & D Construction Yard

Approximate Area of Elevated TPH Concentration in Soil

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Figure ES-2

DATE: July 23, 1991

1.0 INTRODUCTION

1.1 Statement of Purpose

This report presents the results of the Remedial Investigation (RI) for the PG&E ENCON-GAS Transmission and Distribution Construction Yard, located at 4930 Coliseum Way in the City of Oakland, California. Figure 1.1 presents the site location map.

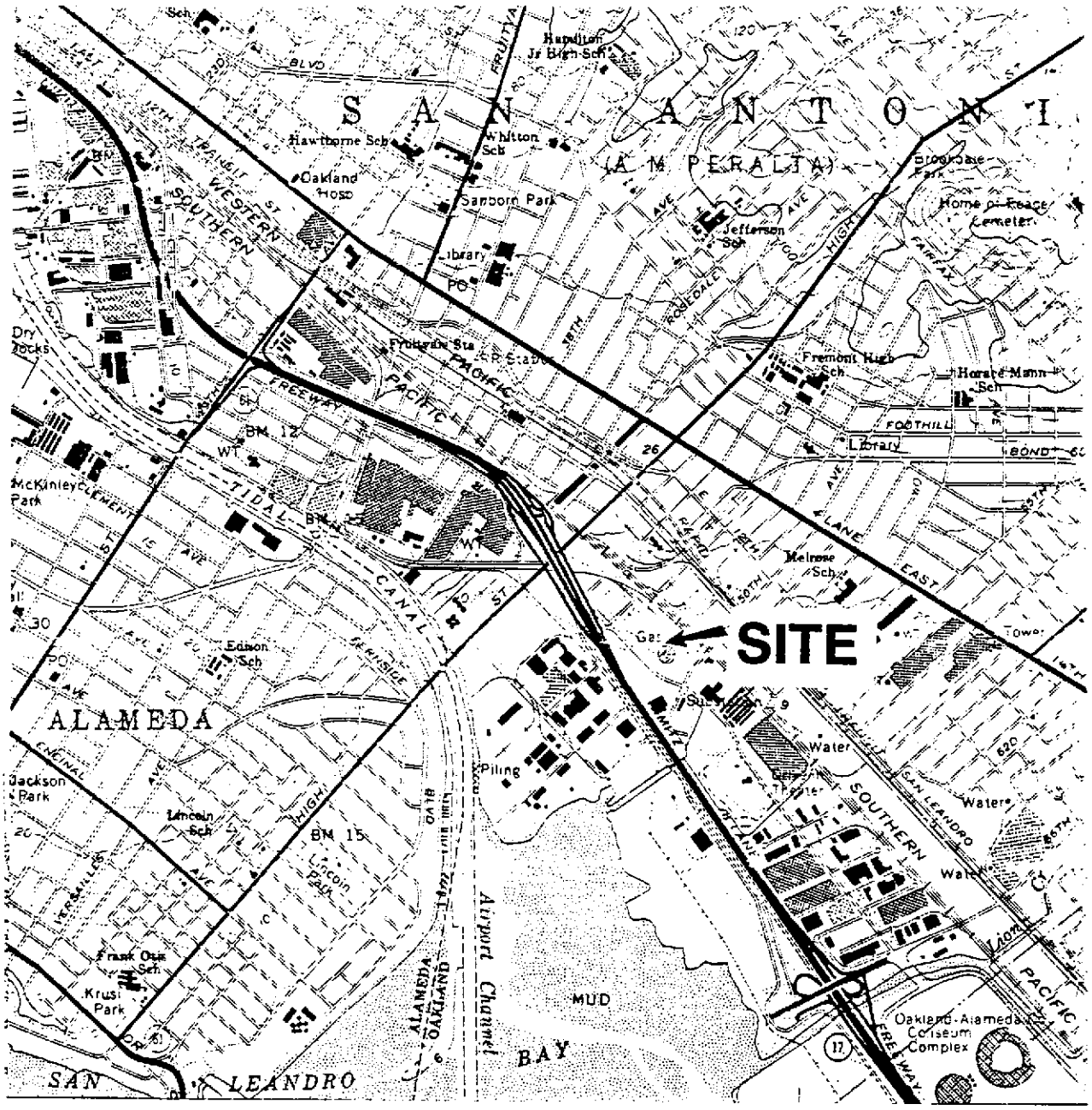
The purpose of the RI was to identify the horizontal and vertical extent of elevated levels of petroleum hydrocarbons in soil in the vicinity of a former underground tank cluster.

1.2 Report Organization

This Remedial Investigation Report consists of the following elements:

- Site Background
- Potential Sources of Upgradient Contamination
- Results of Remedial Investigations conducted for period February 1987 to July 1988
- Results of Remedial Investigations conducted for period November 1990 to May 1991

The Site Sampling and Analysis Plan and QA/QC Plan, the soil boring and monitoring well logs, chain-of-custody documentation, and certified chemical analyses reports and other pertinent documentation are presented as appendices to the report.



Scale

0 1/2 1

MILE

N

Source: United States Geological Survey, 1959, photorevised 1980, Oakland East 7.5 minute topographic quadrangle.

AQUA RESOURCES, INC. BERKELEY, CALIFORNIA	
PG & E ENCON-Gas T & D Construction Yard	
Site Location Map	
JOB NO. **90262**	**Figure 1.1**
	DATE: July 23, 1991

2.0 SITE BACKGROUND

The PG&E ENCON-GAS Transmission and Distribution (T&D) Construction Yard is located at 4930 Coliseum Way in Oakland, California. Soil and groundwater conditions related to the removal of five underground storage tanks at the site were investigated by the Technical and Ecological Services Department of PG&E in 1987 and 1988. The activities performed, along with laboratory results, were presented in the July 1988, Underground Tank Investigation Report # 402.331-88.32 (internal PG&E document), from which the following information on the site background is excerpted.

2.1 Site Description and Previous Activities

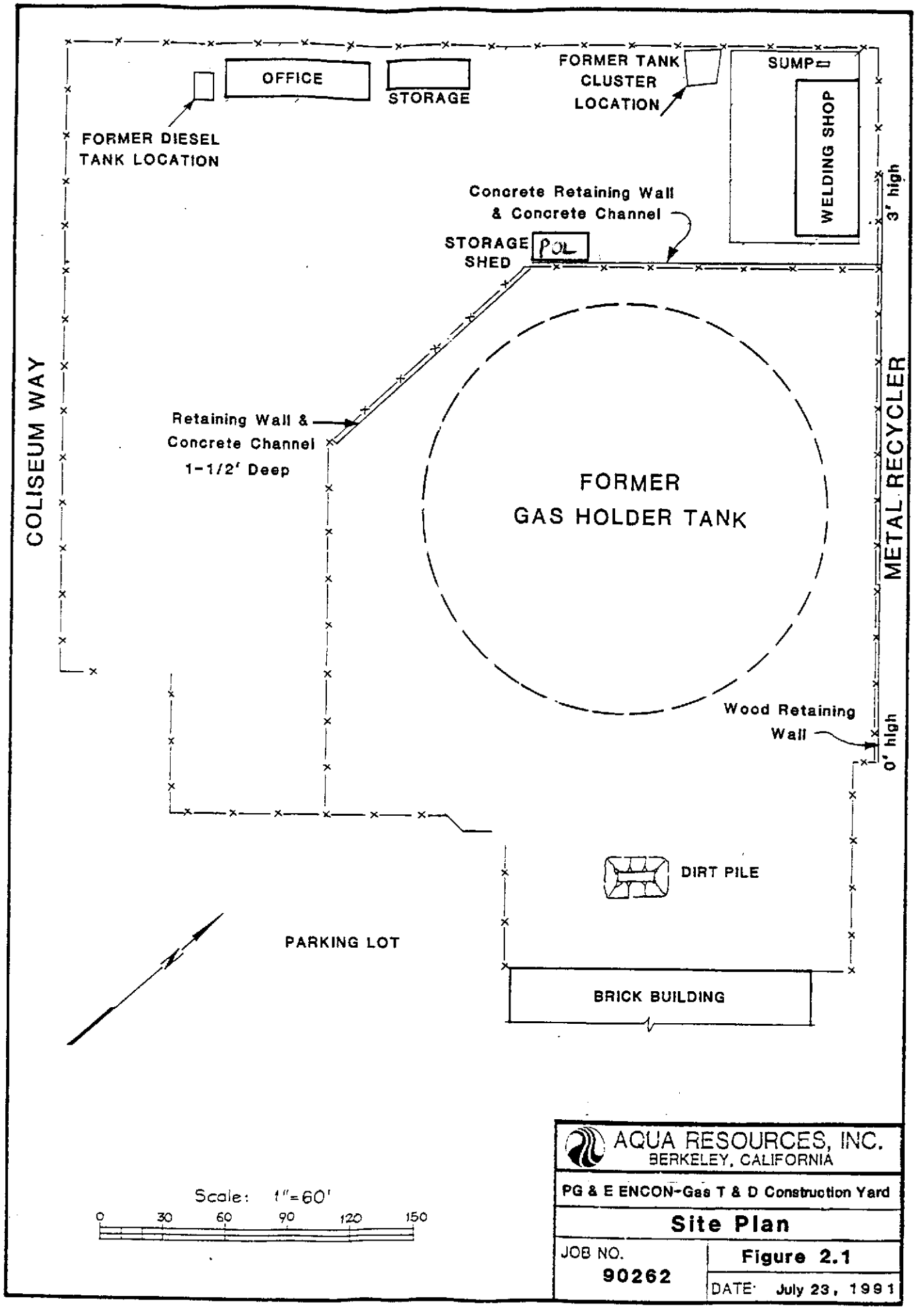
The T&D Construction Gas Yard is wholly owned by PG&E and is used as a vehicle, materials, and equipment storage and distribution facility. Historically, the site was also used as a vehicle service center and aboveground natural gas storage facility.

The site is surrounded by industrial properties. Immediately to the northeast of the site is a metal recycling operation; to the northwest is a plaster casting company, a pattern company and a metal foundry; to the west and southwest (across Coliseum Way) are two motels and a recreational vehicle sales facility; to the southeast (across 50th Street) is a trucking facility.

Figure 2.1 shows the site layout including the former locations of underground storage tanks. An office building, material storage warehouse, welding shop, and a petroleum, oil and lubricant (POL) storage shed are located on-site. The welding shop was previously used as a vehicle repair garage. Except for an asphalt parking lot and concrete pads located in front of the welding shop and under the former aboveground gas tank, the site is graveled.

Five underground tanks were formerly located on-site. Four of the tanks (three 500-gallon tanks and one 350-gallon tank) were located in a cluster near the north corner of the site by the welding shop ("tank cluster"). These tanks were thought to be used to store waste oils. A 1000-gallon tank was located near the west corner of the site near the office building ("diesel tank"). It was used to store diesel fuel. The bottom of each tank was approximately 7 feet below the ground surface.

On the north side of the welding shop, about 50 feet northeast of the former tank cluster location, is a concrete sump. The underground layout of the sump and its associated piping is unknown.



AQUA RESOURCES, INC.
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PG & E ENCON-Gas T & D Construction Yard

Site Plan

JOB NO. 90262

Figure 2.1

DATE: July 23, 1991

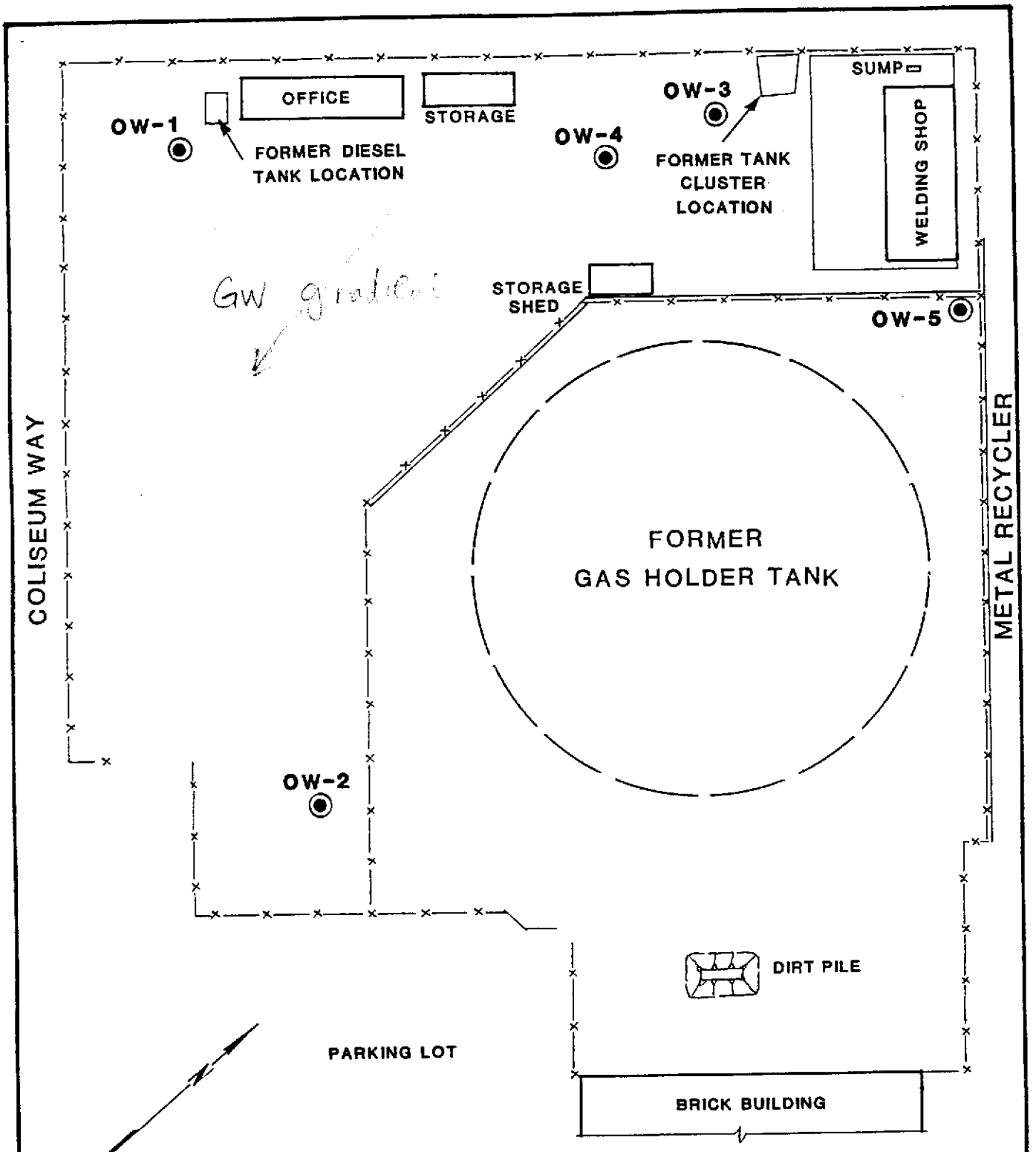
In December 1987, the contents of the five tanks were analyzed by PG&E's Department of Engineering Research chemical laboratory. Two of the tanks in the cluster were found to contain mineral spirits (paint thinner and water) and three tanks contained heavy oil (diesel and/or hydraulic oil). PCBs were not detected in any of the tanks. The five tanks were removed and disposed of on January 13, 1988 by Universal Engineering, Inc.

In March and May 1988 four shallow monitoring wells (OW-1 through OW-4) were installed by PG&E to investigate the groundwater quality and to determine the groundwater flow direction and gradient. The locations of the monitoring wells are shown in Figure 2.2. Well OW-3 is located approximately hydraulically downgradient of the former tank cluster location, and Well OW-1 is located downgradient of the former diesel tank. Since October 1989, quarterly groundwater samples were collected by PG&E's Technical and Ecological Services Department to monitor the distribution of waste oil, solvents, and fuel compounds in the uppermost aquifer beneath the northern part of the yard, near the former site of the five underground storage tanks.

2.2 Site History

The earliest aerial photographs made available to us at the California Division of Mines and Geology (CDMG) photo library that cover the site were taken in August of 1939. These photos showed that the area was already heavily developed. Very large commercial/industrial buildings existed along both sides of San Leandro Street between High Street and 50th Avenue. A large round tank was in place on the PG&E site; however, the shadow of the tank prevented our determining if any structures existed on the site of the present-day scrap metal business. There were large buildings east of the railroad track and west of San Leandro Street. There were no large buildings at 4700-4800 Coliseum Way. Some small buildings were in place around Coliseum Way and 46th Avenue. The East Creek Slough drainage penetrated farther inland to the south and east of the site than it does at present. The only other aerial photograph available for this area was taken in March of 1984. It showed the site in approximately the same condition as it is at present.

Historical topographic maps for the Oakland East Quadrangle were also reviewed at the DMG. These maps were dated 1949, 1959, and 1959 photo revised 1968. Each of these maps used a pink coloration to designate a developed area, rather than showing individual buildings. Only the aboveground gas holder tank was shown on these maps.



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PG & E ENCON-Gas T & D Construction Yard

MONITORING WELL LOCATIONS

JOB NO. 90262

Figure 2.2

DATE: July 23, 1991

3.0 SITE GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Geologic maps of the region prepared by the CDMG (1961) and by Goldman (1969) show the site is underlain by Quaternary marine and marsh deposits. These sediments consist predominantly of highly plastic, blue-grey Bay Mud interbedded with grey, organic-rich silty sands and clayey marsh deposits.

3.2 Site Geology

The welding shop (see Figure 2.1) was constructed over a concrete pad, 4-6 inches thick. Beneath the concrete was 6 to 12 inches of fine sand fill, brown in color. In the borings inside the shop, typically 1 to 2 feet below the concrete slab, the driller could not push the sampler in, indicating that they were hitting hard or densely packed materials. These materials could be part of the fill, rather than natural sediments. In SB-6, a 4-inch long piece of metal came up on the auger with the cuttings from this depth; SB-2 and SB-6 also had pieces of lumber down to approximately 5 feet below the concrete slab (see Figure 6.1 for soil boring locations). The soil units varied among the borings but generally consisted of a silty or sandy clay overlying units containing 30-50% or more sand and gravel.

The two borings in the building which were farthest to the west (SB-5 and SB-6) had approximately two feet of black gravelly sand underlying the find brown sand. The gravelly sand in both borings contained evidence of aged oil. SB-6 and SB-3 contained viscous black oil in a silty clay unit to a depth of approximately 8 feet below the concrete slab. SB-1, SB-2 and SB-4 contained evidence of oil to a depth of approximately 5 feet below the concrete pad.

The welding shop is located about 3 to 4 feet above the ground surface of the former gas holder tank. A concrete and wood retaining wall (see Site Plan, Figure 2.1) mark the difference in height between the welding shop and the former gas holder tank area and between the neighbor metal recycler and the gas holder tank area, respectively.

The area near the removed gas holder tank had a gravel surface. Seven borings and one monitoring well were located in this area. The subsurface materials typically consisted of 2-1/2 to 3-1/2 feet of silty clay with a small percentage of sand and gravel. Underlying this unit was 2 to 3 feet of gravelly sandy clay. The unit at the bottom of the borings was sand or an approximately 50/50 mixture of clay/sand and gravel.

SB-20 differed from the above borings, in that angular rocks up to 3-inch in diameter were found to a depth of 1 foot below the surface, overlying the gravelly sandy clay.

The monitoring well (OW-5) was completed to a depth of 17 feet. The upper soils were similar to the borings, and overlay more units of interbedded silty clay and sandy clay.

3.3 Site Hydrogeology

The topography of the area in the vicinity of the site is relatively flat. Regional surface water flow is to the southwest (toward San Leandro Bay). Surface water bodies nearest the site include San Leandro Bay (located approximately one third of a mile south of the site) and a canal that extends north from San Leandro Bay (located about one half of a mile west of the site). The potentiometric surface of the uppermost water bearing zone beneath the site was found to be approximately 3 to 4-1/2 feet below the ground surface in monitoring wells OW-1 to OW-4. These water levels were found to be relatively high, probably caused by the rainy period in March 1991.

In borings SB-1 to SB-10 saturated soil was encountered at 8 to 10 feet below ground surface. Comparing the stabilized groundwater level and the depth of first encounter indicates some degree of confinement. In soil borings near the northeastern property line, saturated soil was encountered at 5 to 7 feet below ground surface, which is located about 3 feet below the area of the welding shop.

Groundwater surface elevations in OW-1, OW-2, and OW-5 confirm the general regional groundwater flow direction to the southwest. However, groundwater elevations in OW-3 and OW-4 are anomalously high and indicate the presence of an artificial water source, such as a leaking pipe, in this area.

4.0 POTENTIAL SOURCES OF UPGRADIENT CONTAMINATION

ARI conducted a limited Phase I preliminary site assessment of the Coliseum Way facility in November and December 1990. The purpose of this assessment was to attempt to determine if potential sources of groundwater contamination may exist upgradient from the Coliseum facility. The site assessment consisted of the following activities:

1) field reconnaissance of the site and surrounding area,
2) a file search of selected regulatory agencies,
3) a review of available maps and aerial photographs.

The results of the first two activities are described below; the results of the third activity are described in Section 2.2, Site History.

4.1 Results of Field Reconnaissance

The nearby area bounded by Coliseum Way and San Leandro Street, 45th Avenue and 54th Avenue, is presently occupied by industrial and commercial businesses, primarily concerned with metal processing and finishing, scrap metal sales, and auto service and body work.

The yard of the scrap metal dealer immediately adjacent to the site on the northeast contains various types of electrical equipment and machinery, hydraulic equipment, welding equipment, air conditioning equipment, transformers, drums marked battery fluid, paint cans, and oil soaked wood and a trailer. The metal finishing operations appear to include chrome plating, anodizing, and industrial plating. CIM Inc., a construction materials firm, is located at 833 47th Avenue. Chevron has a large facility on San Leandro Street between 45th and 46th Avenues which includes several large aboveground storage tanks.

4.2 Agency Data

A city directory from 1969 at the Oakland Public Library shows that similar industries were in the area at that time. In addition, the Titanium Pigment Corporation, Division of the National Lead Co., a paint manufacturing company, was located at 4825 San Leandro Street in 1969. Superior Products Co., sealing compounds, occupied 833 47th Avenue in 1969.

The East Slough drainage is currently west and south of the PG&E property. The information provided by PG&E (Underground Tank Investigation Report, July 1988: Figure 9 — "Potentiometric Contour Map for July 21, 1988") indicates that the groundwater gradient at that time was toward the southwest. There are several sites which have been

investigated by the Regional Water Quality Control Board (RWQCB) in the vicinity of the subject site, but none of them is located within 1000 feet of the site and upgradient (north to east). Figure 4.1 shows the locations of several sites with reported toxic or fuel spills in the vicinity of the PG&E site.

Learner Company at 768 46th Avenue is approximately 1100 feet from the site to the northwest. The soil under this site is contaminated with petroleum hydrocarbons and PCBs; however, it is unknown at the present time if the groundwater is contaminated. L&M Plating at 920 54th Avenue is approximately 1200 feet east of the property. The report at the RWQCB states that the groundwater under L&M has not been significantly impacted; however, the California Department of Toxic Substances Control is considering reopening the case.

Peterson Properties at 1066 47th Avenue is approximately 1500 feet north of the site. The Chevron Asphalt Terminal at 4525 San Leandro Street is approximately 1700 feet north of the site. The groundwater under both the Peterson site and the Chevron site has been reportedly contaminated with 560 ppb and 590 ppb total petroleum hydrocarbons respectively.

F&K Investment at 1259 48th Avenue is approximately 2000 feet northeast of the site. The groundwater under this site has been tested and had contamination levels of 46,000 ppb total petroleum hydrocarbons. It is unknown whether or not the contamination has migrated off site. AAA Equipment Co. at 765 50th Avenue is southeast of the site, across 50th Avenue; however, this site is so close to the property that if the groundwater has been affected by the diesel contamination on that site, and if there is any variation in the groundwater gradient, it may affect the property. The RWQCB has no information at this time regarding the status of the groundwater at this site.

The California Department of Toxic Substances Control makes available various sources of information to assist in site investigations. The following sources were reviewed:

CERCLIS — the Environmental Protection Agency's computerized database

ASPIS — the Abandoned Site Program Information System used to track potential historical and present day hazardous waste sites

Cortese List — data received from the State Water Resources Control Board, the California Integrated Waste Management Board, and the California Department of Toxic Substances Control

Bond Expenditure Plan — list of sites for which State bond funds will be spent for cleanup or oversight. These sites are also knwon as State

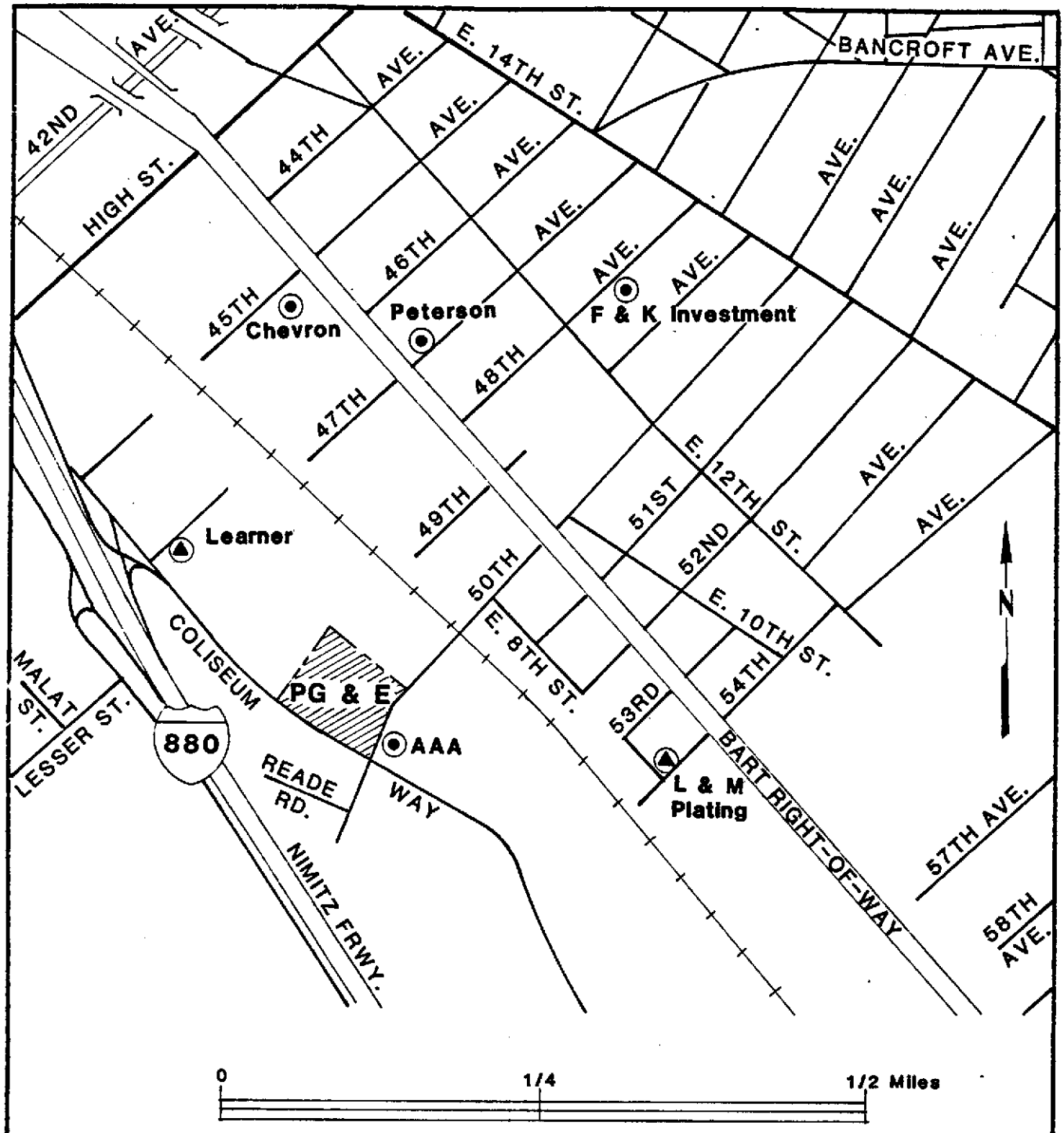
"Superfund" sites.

The CERCLIS list included NL Industries Inc., Pigments and Chemical Division, at 4701 San Leandro Street. We have contacted the local office of the U.S. Environmental Protection Agency which has the CERCLIS files. The reply we received stated that the NL Industries Inc. site was put on the CERCLIS list by error and there does not appear to be an uncontrolled hazardous waste problem at the site.

The ASPIS list also included the NL Industries site, noting that the plant is inactive and that no file was found at California Department of Toxic Substances Control.

4.3 Conclusions

The information provided by agencies and agency personnel was used as reported. Although we have not found any agency file documentation that contaminated groundwater has migrated to the PG&E site, results of soil and groundwater samples indicate that an off-site, upgradient fuel leak may have occurred. This evidence is described further in Section 6.



LEGEND

- ▲ TOXIC LEAK CASE
- ◉ FUEL LEAK CASE

Source: Regional Water Quality Control Board

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PG & E ENCON-Gas T & D Construction Yard

Known Toxic and Fuel Leak Cases

JOB NO: 90262

Figure 4.1

DATE: July 23, 1990

5.0 RESULTS OF REMEDIAL INVESTIGATIONS FOR PERIOD FEBRUARY 1987 TO JULY 1988

5.1 Soil Investigations Near the Former Underground Tank Locations

In February 1987, PG&E's Department of Engineering Research conducted a preliminary underground tank leakage study around the tank cluster and the diesel tank. Detailed information on the investigation activities are presented in PG&E's Underground Tank Investigation Report #402.331-88.32, prepared in July 1988. The results of this study are summarized below.

Three exploratory borings were drilled to approximately 9 feet below ground surface and soil samples were collected at 3 to 5 foot intervals. Two borings (B-1 and B-2) were located adjacent to the tank cluster and boring B-3 was located next to the diesel tank. Figures 5.1 and 5.2 show the boring locations. The soil samples obtained from borings B-1 and B-2 were analyzed for total petroleum hydrocarbons (TPH as gasoline, kerosene, diesel, and oil), polychlorinated biphenyls (PCBs) and purgeable aromatics (BTEX-benzene, toluene, ethylbenzene and xylenes). The soil sample collected from boring B-3 was analyzed for total petroleum hydrocarbons.

Table 5.1 provides a summary of the sample results from the February 1987 investigation. Elevated levels of oil and grease and trace amounts of BTEX and PCBs were found in soil samples collected from both borings drilled near the tank cluster. Soil samples collected from boring B-3, which was drilled near the diesel tank, were nondetectable for petroleum hydrocarbons.

During the tank removal process on January 13, 1988, soil samples were collected from the tank cluster excavation and analyzed for high boiling point petroleum hydrocarbons, oil and grease, and VOCs. Elevated levels of high boiling point petroleum hydrocarbons (up to 1100 mg/kg) and oil and grease (up to 5400 mg/kg) were found, whereas VOCs were not detected. Soil samples from the diesel tank excavation hole were analyzed for high boiling point petroleum hydrocarbons, which were not detected. Results of these analyses are summarized in Table 5.2.

During the installation of four groundwater monitoring wells (OW-1 to OW-4) in March and May 1988, soil samples were collected at 2 to 3 foot intervals. Figure 2.2 shows the monitoring well locations. Soil samples were also collected from fourteen soil borings (OB-1, OB-3 to OB-10, OB-14 to OB-18) drilled in the vicinity of the former tank cluster location and three soil borings (OB-11 to OB-13) drilled near the former diesel tank location. Figures 5.1 and 5.2 show the locations of these soil borings. The soil samples were analyzed for high boiling point petroleum hydrocarbons (as kerosene, mineral spirits, and diesel), VOCs and oil and grease.

Laboratory analyses of soil samples collected from borings drilled near the former tank cluster location detected high boiling point petroleum hydrocarbons and oil and grease. Low levels of BTEX were detected in some of the samples, collected at depths of 5 to 8 feet. In a few of the soil samples, concentrations of petroleum hydrocarbons and/or oil and grease were found to be above 1,000 mg/kg. Table 5.3 summarizes the analytical results.

Laboratory analyses of soil samples collected from borings drilled near the former diesel tank location did not detect high boiling point petroleum hydrocarbons, oil and grease, or VOCs in any of the samples. The results of these analyses are presented in Table 5.4.

The results of laboratory analyses of soil samples indicate that the tank cluster leaked mineral spirits, oil and grease and possibly diesel to the surrounding soil; and the sump (and/or piping connecting the sump to the tank cluster) leaked kerosene, oil and grease, and possibly diesel to the surrounding soil.

5.2 Groundwater Investigations

During the 1987 preliminary underground tank leakage study conducted by PG&E's Department of Engineering Research water samples were collected from the three borings (B-1 to B-3) drilled near the tank cluster and the diesel tank. The analyses showed trace amounts of BTEX near the tank cluster.

Water samples collected from the tank cluster excavation hole in January 1988, showed elevated levels of high boiling point petroleum hydrocarbons (30 mg/l) and oil and grease (8000 mg/l). Water samples collected from the diesel tank excavation hole also showed elevated levels of high boiling point petroleum hydrocarbons (up to 150 mg/l).

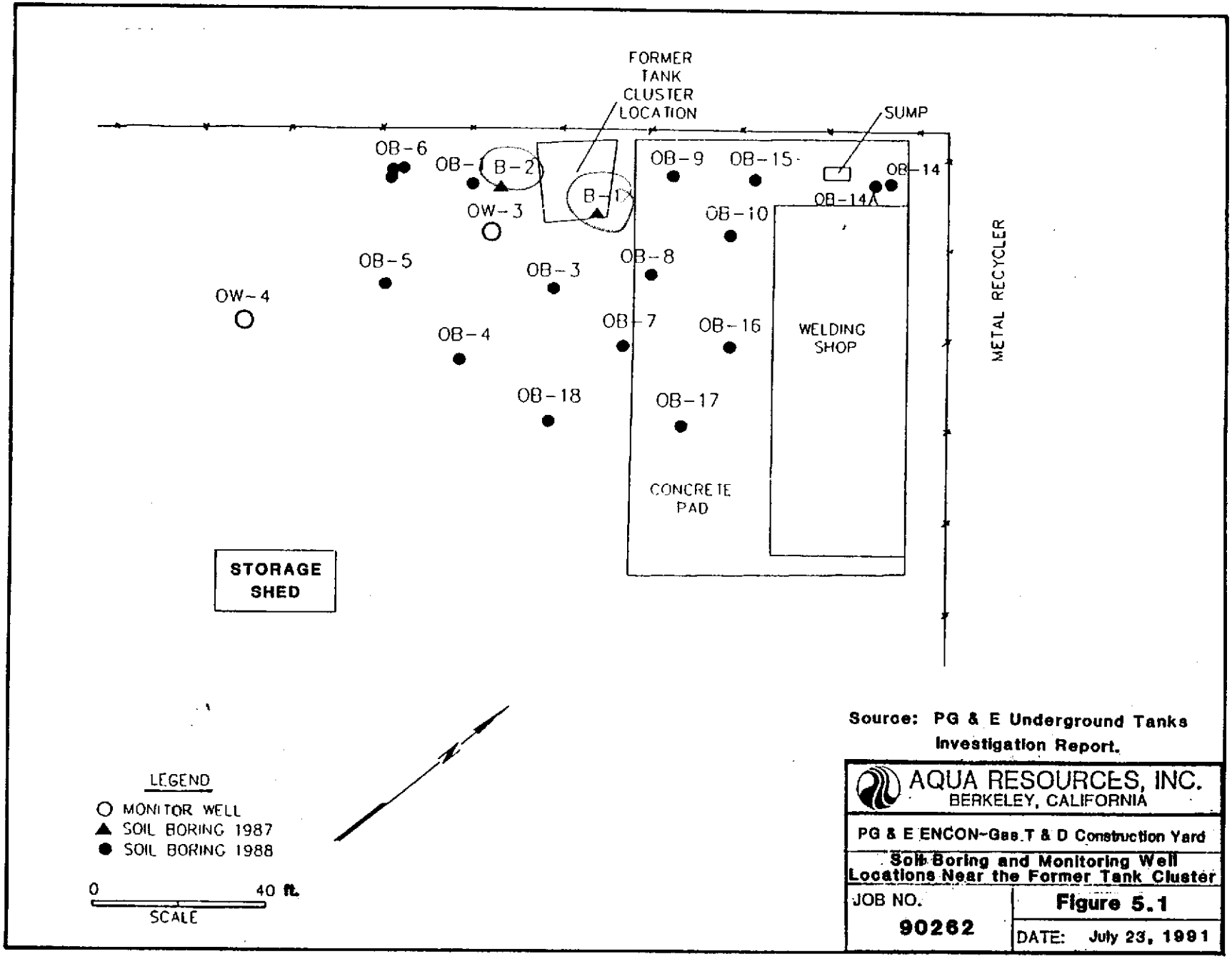
Since 1989, quarterly groundwater samples were collected from the four monitoring wells by PG&E's Technical and Ecological Services. Figure 2.2 shows the locations of monitoring wells OW-1 to OW-4. Table 5.5 summarizes the analytical results for petroleum hydrocarbons and volatile aromatics and Table 5.6 shows the results for detected halogenated volatile organics in samples collected from January 1990 to January 1991. These results are excerpted from the quarterly groundwater monitoring reports presented by PG&E's Technical and Ecological Services Department.

Semi-volatile petroleum hydrocarbons as diesel and kerosene have been found in almost all of the collected groundwater samples. The detected maximum was 570 µg/l in a sample from well OW-3 collected in April 1990. TPH as oil was detected in a sample from well OW-3 collected in January 1991 (1200 µg/l). However, TPH as oil was not detected in the duplicate sample. The detection limit was 500 µg/l. Total volatile hydrocarbons as gasoline were found in well OW-1 and OW-3 (maximum 120 µg/l) on one occasion.

The halogenated volatile organic compounds detected in groundwater samples, including dichlorobenzene, dichloroethane, dichloroethene, fluorobenzene, methylene chloride, chlorobenzene, and a diisopropyl ether, are listed in Table 5.6.

An analysis of water level data collected from March to July 1988 indicated that groundwater flow in the uppermost water bearing zone beneath the site was consistently in a south southwesterly direction. Monitoring well OW-1 is then hydraulically downgradient of the former diesel tank location, and wells OW-3 and OW-4 are hydraulically downgradient of the former tank cluster location.

Although water level measurements in the monitoring wells indicate that the potentiometric water elevation of the uppermost water-bearing zone is 3 to 5 feet below the ground surface, soil borings were drilled 7 to 10 feet deep before saturated samples were obtained. This suggests that the uppermost water-bearing zone is confined below the soil material containing elevated levels of petroleum hydrocarbons.



Source: PG & E Underground Tanks Investigation Report.

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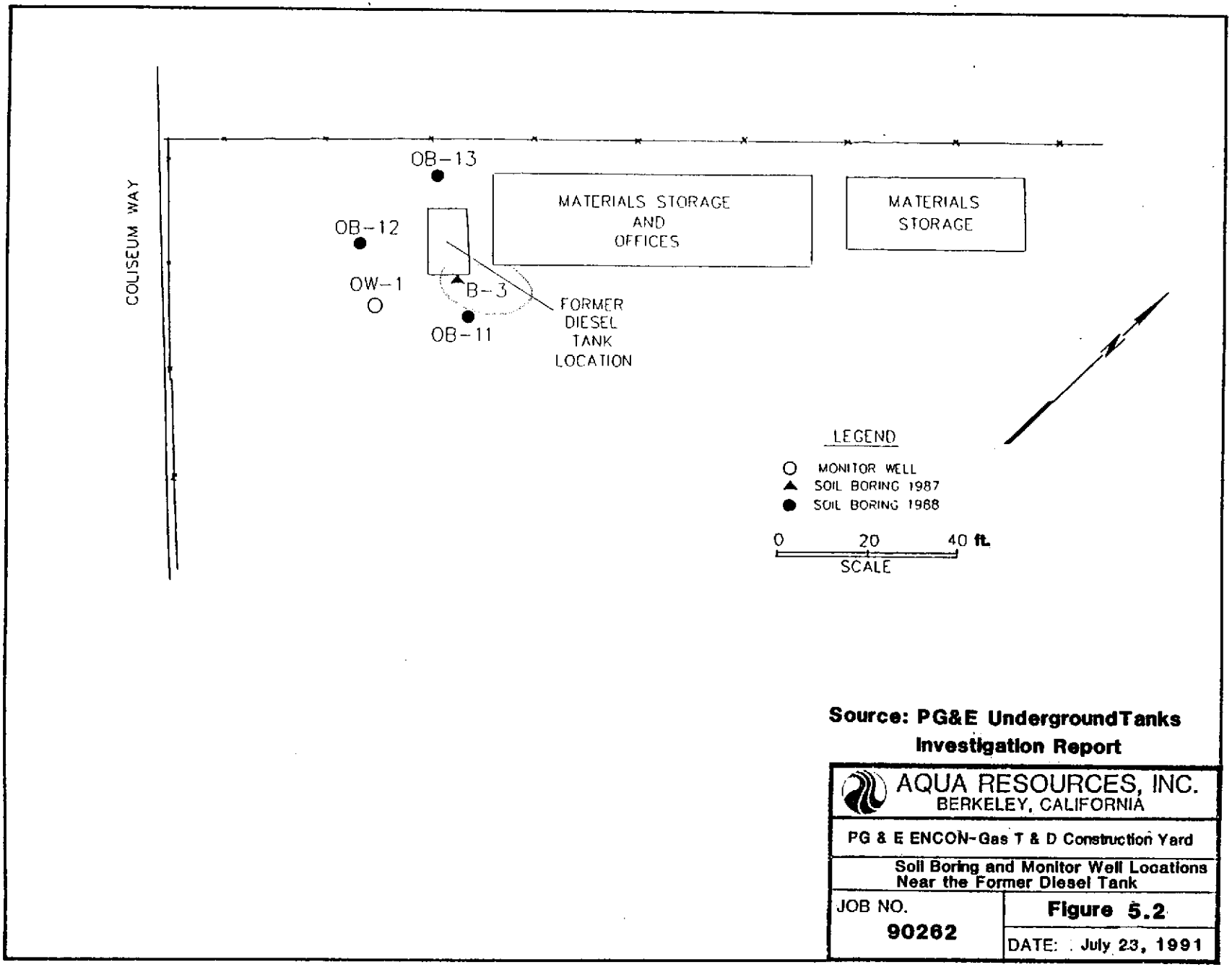
Soil Boring and Monitoring Well Locations Near the Former Tank Cluster

JOB NO. **90262**

Figure 5.1

DATE: July 23, 1991



Source: PG&E UndergroundTanks Investigation Report

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PG & E ENCON-Gas T & D Construction Yard	
Soil Boring and Monitor Well Locations Near the Former Diesel Tank	
JOB NO. 90262	Figure 5.2
	DATE: July 23, 1991

Table 5.1 Petroleum Hydrocarbons, Volatile Aromatics, and PCBs in Soil (February 1987 Investigation), in mg/kg

Sample No	Depth (feet)	Gasoline	Kerosene	Diesel	Oil	Benzene	Toluene	Ethyl-benzene	Xylenes	PCBs
B1-1-1	3	ND	ND	ND	2000	ND	ND	ND	ND	0.02
B1-2-1	5.5	ND	ND	ND	180	ND	ND	0.056	0.15	ND
B2-1-1	5	0.73	ND	ND	3500	ND	ND	1.2	1.9	0.06
B2-2-1	8.5	ND	ND	ND	1200	ND	ND	0.12	0.09	0.03
B3-1-1	5.5	ND	ND	ND	ND	--	--	--	--	--
EPA Method		8015	8100	8100	8100	8020	8020	8020	8020	8080
Method Detection Limit		0.1	10	20	100	0.04	0.03	0.02	0.04	0.01

Source: PG&E - Underground Tanks Investigation Report, July 1988.

Table 5.2 Petroleum Hydrocarbons and Volatile Aromatics in Soil (January 1988 Investigation), in mg/kg

Tank Removal Soils

Sample Location	Sample ID	TPH	Oil and Grease	Volatile Organics
Tank Cluster	West Sand	320	29,600	ND
Tank Cluster	West Wall	30	2,650	ND
Tank Cluster	North Sand	63	14,200	ND
Tank Cluster	North Soil	12	2,300	ND
Tank Cluster	North Wall	ND	26	ND
Tank Cluster	South Sand	88	55,400	ND
Tank Cluster	South Soil	310	7,000	ND
Tank Cluster	South Wall	19	3,850	ND
Tank Cluster	East Wall	1100	10,500	ND
Tank Cluster	East Liquid (below tank)	30	8,000	ND
Diesel Tank	Soil	ND	--	--
Diesel Tank	Liquid (below tank)	95	--	--
Diesel Tank	Liquid (below tank)	150	--	--
EPA Method		mod 8015	(SM) 503E	8240
Method Detection Limit		10	10	0.2

TPH = High boiling point petroleum hydrocarbons
ND = Not detected at or above method detection limit
-- = Not analyzed

Source: PG&E - Underground Tanks Investigation Report, July 1988.

Table 5.3 Petroleum Hydrocarbons and Volatile Organic Compounds in Selected Soil Samples Collected from Borings near the Former Tank Cluster Location (March and May 1988 Investigation), in mg/kg

Soil boring	TIP Sample Depth (feet)	TIP reading	Analytical Sample Depth (feet)	TPH (diesel)	TPH (mineral spirits)	TPH (kerosene)	Oil and Grease	Volatile Organics	Benzene	Toluene	Ethylbenzene	Xylenes	Misc. C4 - C12
OB-1	6-6.5	105	6.5-7	ND	54	ND	630	ND					
OB-1	8-8.5	115	9-9.5	ND	ND	ND	ND	ND					
OB-3	3.5-4	33	4-4.5	ND	ND	ND	27	ND					
OB-3	5.5-6	99	6.5-7	ND	30	ND	250	ND					
OB-3	7.5-8	128	8.5-9	ND	ND	ND	13	ND					
OB-4	7.5-8	2	8-8.5	ND	ND	ND	29	ND					
OB-5	7-7.5	2	7.5-8	ND	ND	ND	ND	ND					
OB-6	9.5-10	3	10-10.5	ND	ND	ND	21	ND					
OB-7	7.5-8	10	8-8.5	ND	59	ND	34	ND					
OB-8	8.5-9	2	9-9.5	ND	ND	ND	ND	33 (methylene chloride)					
OB-9	4-4.5	92	5-5.5	3900	ND	ND	52000	1.1 (ethylbenzene)					
OB-9	6-6.5	22	7-7.5	400	ND	ND	1000	ND					
OB-9	12-12.5	15	12.5-13	ND	ND	ND	ND	ND					
OB-10	11-11.5	2	11.5-12	ND	ND	ND	ND	ND					
OB-14A	7-7.5	55	7.5-8	ND	ND	260	1200	--	ND	ND	ND	ND	80
OB-14A	10.5-11	0	11-11.5	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
OB-15	6-6.5	40	6.5-7	ND	ND	340	4800	--	ND	ND	ND	1	130
OB-15	9.5-10	3	10-10.5	ND	ND	ND	5	--	ND	ND	ND	ND	ND
OB-16	6.5-7	5	7-7.5	ND	ND	ND	100	--	ND	ND	ND	ND	ND
OB-16	8.5-9	4	9-9.5	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
OB-17	6-6.5	3	6.5-7	ND	ND	ND	9	--	ND	ND	ND	ND	ND
OB-17	8.5-9	3	9-9.5	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
OB-18	6.5-7	3	7-7.5	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
OB-18	8.5-9	3	9-9.5	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
OW-3	4-4.5	16	4.5-5	210	ND	ND	220	ND					
OW-3	6-6.5	96	6.5-7	ND	ND	ND	1100	ND					
OW-3	7.5-8	292	8.5-9	ND	ND	ND	ND	ND					
OW-4	7-7.5	2	7.5-8	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
OW-4	10.5-11	3	11-11.5	ND	ND	ND	ND	--	ND	ND	ND	ND	ND
EPA Method				<------- modified 8015 ------->			413.2	8010/8020	<---------- 8015/8020 ---------->				
Method Detection Limit				10	10	10	5	various	0.5	0.5	0.5	0.5	1.0

Source: PG&E - Underground Tanks Investigation Report, July 1988.

Table 5.4 Petroleum Hydrocarbons and Volatile Organic Compounds in Selected Soil Samples Collected from Borings Near the Former Diesel Tank Location (March 1988 Investigation), in mg/kg

Soil boring	TIP Sample Depth (feet)	TIP reading	Analytical Sample Depth (feet)	TPH (diesel)	TPH (mineral spirits)	TPH (kerosene)	Oil and Grease	Volatile Organics
OB-11	10-10.5	1	10.5-11	ND	ND	ND	ND	ND
OB-12	10-10.5	2	10.5-11	ND	ND	ND	ND	ND
OB-13	--	-	4-4.5	ND	ND	ND	ND	ND
OB-13	--	-	8.5-9	ND	ND	ND	ND	ND
OW-1	10-10.5	3	10.5-11	ND	ND	ND	ND	ND
EPA Method				<---- modified 8015 ---->			413.2	8010/8020
Method Detection Limit				1	1	1	5	various

TPH - total petroleum hydrocarbons

ND - not detected at or above method detection limit.

Source: PG&E - Underground Tanks Investigation Report, July 1988.

Table 5.5 Petroleum Hydrocarbons and Volatile Aromatics in Groundwater (January 1990 to January 1991)

Well / Date Sampled	TPH (mg/l)	TPH-gas (ug/l)	TPH-diesel/oil (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)
OW-1							
01-26-90	<5	<50	190	3.2	2.3	<.3	2.6*
04-23-90	<5	82	300	<.3	0.4	<.3	2.4*
07-05-90	<5	<50	200	<1	<1	<1	<1**
10-12-90	<5	<50	200	<1	<1	<1	<1**
01-10-91	<5	<500	90[1]	<1	<1	<1	<1**
OW-2							
01-26-90	<5	<50	130	0.4	0.4	<.3	0.4*
04-23-90	<5	<50	140	<.3	0.6	<.3	0.8*
07-05-90	<5	<50	68	<1	<1	<1	<1**
10-12-90	<5	<50	90	<1	<1	<1	<1**
01-10-91	<5	<50	<50	<1	<1	<1	<1**
OW-3							
01-26-90	<5	<50	440	0.5	0.4	<.3	0.7*
04-23-90	<5	52	470	<.3	0.8	0.5	2.1*
07-05-90	<5	<50	450	<1	<1	<1	<1**
10-12-90	<5	<50	130	<1	<1	<1	<1**
01-10-91	<5	<50	110[1]/1200[2]	<1	<1	<1	<1**
OW-3 (duplicate)							
01-26-90	<5	<50	550	0.6	0.5	0.4	1.3*
04-23-90	<5	120	570	0.5	0.9	0.8	1.3*
07-05-90	<5	<50	500	<1	<1	<1	<1**
10-12-90	<5	<50	270	<1	<1	<1	<1**
01-10-91	<5	<50	130	<1	<1	<1	<1**
OW-4							
01-26-90	<5	<50	150	<.3	<.3	<.3	0.6*
04-23-90	<5	<50	210	0.5	0.6	0.3	2.0*
07-05-90	<5	<50	150	<1	<1	<1	<1**
10-12-90	<5	<50	150	<1	<1	<1	<1**
01-10-91	<5	<50	<50	<1	<1	<1	<1**

TPH = total petroleum hydrocarbons by infared method (EPA Method 418.1)
TPH-G = total petroleum hydrocarbons as gasoline (EPA Method 5030/8015)
TPH-diesel/oil = total petroleum hydrocarbons as diesel or motor oil (EPA Method 3510/8015)
BTEX = benzene, toluene, ethylbenzene, and xylenes (EPA Method 5030/8020* or 8240**)
< = not detected at or above method detection limit
1 = identified as diesel
2 = identified as heavy oil

Source: PG&E — Technical and Ecological Services Department, Quarterly Groundwater Monitoring Report, January 1991.

Table 5.6 Halogenated Volatile Organics in Groundwater (January 1990 to January 1991)

Well Date Sampled	1,1-DCA (ug/l)	1,2-DCB (ug/l)	1,3-DCB (ug/l)	1,4-DCB (ug/l)	Fluoro-benzene (ug/l)	cis-1,2-DCE (ug/l)	Diisopropyl ether (ug/l)	Methylene chloride (ug/l)	Chloro-benzene (ug/l)
OW-1									
01-26-90	4	<1	1	5	ND	<1	5	<5	<1
04-23-90	4	<1	4	13	ND	<1	7	<5	<1
07-05-90	2	<1	4	11	ND	<1	ND	<5	<1
10-12-90	2	<1	1	6	ND	<1	ND	<5	<1
01-10-91	1	<1	3	3	ND	<1	ND	<5	<1
OW-2									
01-26-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
04-23-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
07-05-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
10-12-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
01-10-91	<1	<1	<1	<1	ND	<1	ND	<5	<1
OW-3									
01-26-90	29	2	3	2	ND	<1	8	<5	<1
04-23-90	14	<1	<1	<1	ND	33	ND	9	<1
07-05-90	17	1	2	<1	ND	<1	ND	<5	<1
10-12-90	17	1	2	2	ND	1	ND	<5	<1
01-10-91	15	1	1	1	ND	1	ND	<5	1
OW-3 (duplicate)									
01-26-90	30	2	3	2	ND	<1	9	<5	<1
04-23-90	13	<1	4	13	ND	40	ND	10	<1
07-05-90	21	2	2	<1	10	<1	ND	<5	<1
10-12-90	16	1	2	2	ND	1	ND	<5	<1
01-10-91	17	1	2	2	ND	1	ND	<5	1
OW-4									
01-26-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
04-23-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
07-05-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
10-12-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
01-10-91	3	<1	<1	<1	ND	<1	ND	<5	<1
Field Blank									
01-26-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
04-23-90	na	na	na	na	na	na	na	na	<1
07-05-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
10-12-90	<1	<1	<1	<1	ND	<1	ND	<5	<1
01-10-91	<1	<1	<1	<1	ND	<1	ND	<5	<1
Maximum Containment Level	–	–	–	75	–	–	–	–	1000

Notes:

DCA = dichloroethane
DCB = dichlorobenzene
DCE = dichloroethene
ND = not detected (detection limit not stated)
na = not analyzed

Source: PG&E — Technical and Ecological Services Department, Quarterly Groundwater Monitoring Report, January 1991.

6.0 RESULTS OF REMEDIAL INVESTIGATIONS FOR PERIOD NOVEMBER 1990 TO MAY 1991

In November 1990, and April and May 1991, ARI investigated soil and groundwater conditions at the PG&E ENCON-GAS Transmission and Distribution Construction Yard. The main goal of the investigation activities was to determine the extent of elevated levels of petroleum hydrocarbons in soil and possibly in groundwater related to the former tank cluster in the northern part of the yard. The former tank cluster, the concrete sump with connecting piping, the welding shop, and the POL storage shed were considered as possible on-site sources for elevated levels of chemicals in soil and groundwater.

The following investigations were performed:

- Soil sampling near the POL storage shed
- Soil sampling inside and in front of the welding shop
- Soil sampling in the northeastern area of the yard between the welding shop and the concrete pad
- Installation and development of a new groundwater monitoring well
- Quarterly groundwater sampling of five on-site monitoring wells

The objectives, scope, and results of each investigation are described below.

6.1 Soil Investigations

As part of the investigation activities, eighteen soil borings were drilled and several soil samples were collected from each boring. The borings were drilled using hollow stem auger or solid flight auger drilling equipment. Soil sampling procedures, equipment decontamination, handling of drill cuttings, and boring backfilling procedures, are described in the Site Sampling and Analysis Plan and QA/QC Plan attached as Appendix A.

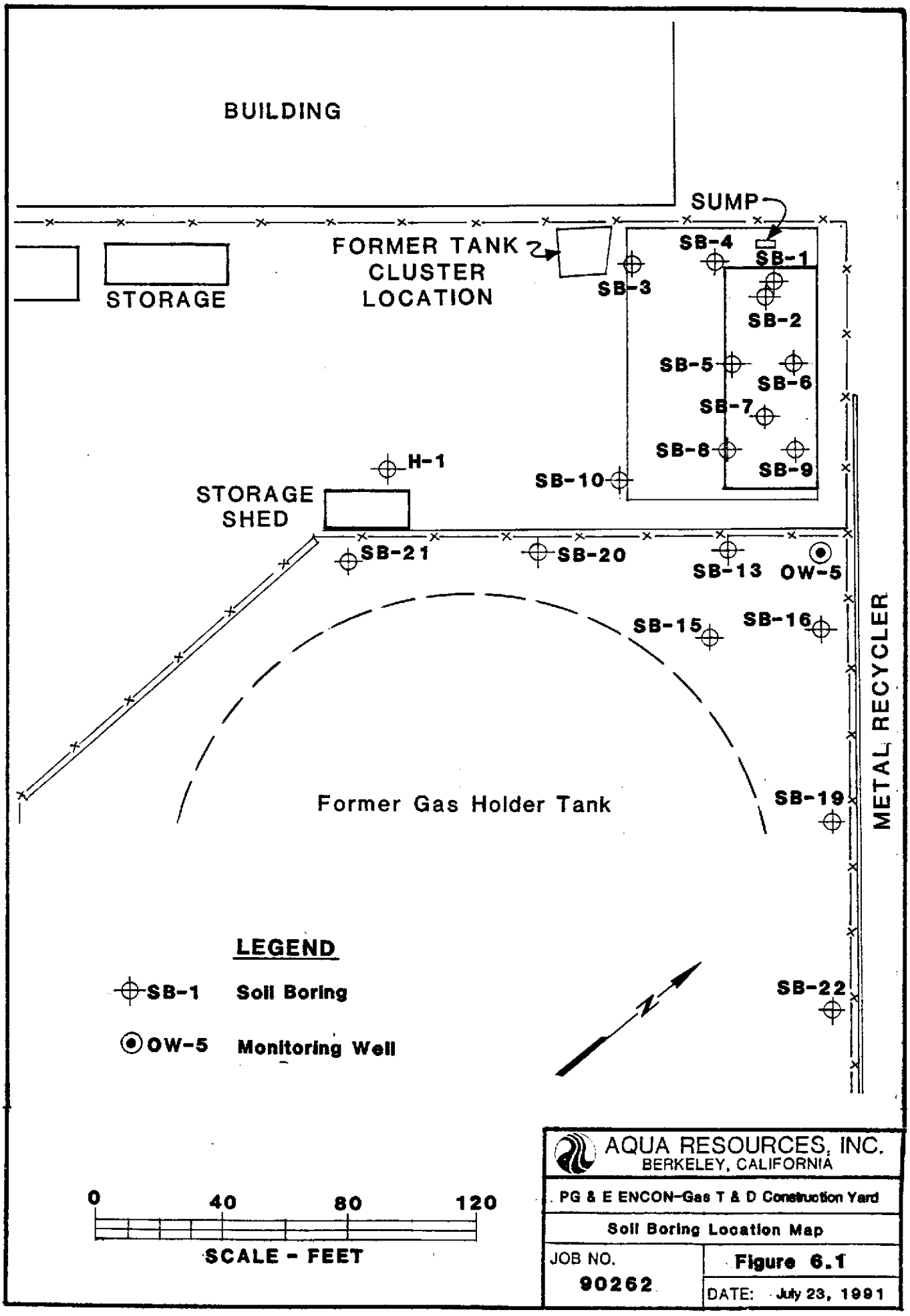
6.1.1 Petroleum, Oil and Lubricant Storage Shed- In November 1990, the soils in the vicinity of the POL storage shed were investigated in an effort to determine the source of the low levels of VOCs found in groundwater at the site.

Materials in the POL storage shed included:

- one 55 gallon drum of brake and wheel cleaner (possibly solvent)
- one 55 gallon drum of hydraulic oil
- four 55 gallon drums of non-flammable biodegradable cleaner
- oily rags
- paint cans
- aerosol cans
- 1 quart oil cans (empty)
- five 5 gallon hydraulic oil cans
- emergency spill equipment
- gas meters

All materials were stored neatly in drums on a concrete pad with concrete stub walls and a berm surrounding the entire area. No soil discoloration or other evidence of spills were observed by ARI during the investigation.

A soil sample was taken from 0 to 6 inches depth immediately outside the door of the storage building, using hand auger sampling equipment. Sampling procedures are the same as for the split barrel sampler and are outlined in the Site Sampling and Analysis Plan (Appendix A). The sample location (H-1) was tape measured and is shown in Figure 6.1.



AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG & E ENCON-Gas T & D Construction Yard

Soil Boring Location Map

JOB NO. 90262

Figure 6.1

DATE: July 23, 1991

6.1.2 Welding Shop - In April and May 1991, ARI investigated soils beneath the welding shop. The goal of this effort was to determine the horizontal extent of elevated levels of petroleum hydrocarbons in soil. Previous investigations performed by PG&E found elevated levels of hydrocarbons in the vicinity of the building which were suspected of also being present under the building.

Prior to the soil sampling activities, a Ground Penetrating Radar (GPR) survey was performed in the northwest end of the welding shop. The goal of this effort was to attempt to determine if buried engines or transmissions are present under the concrete floor in this area.

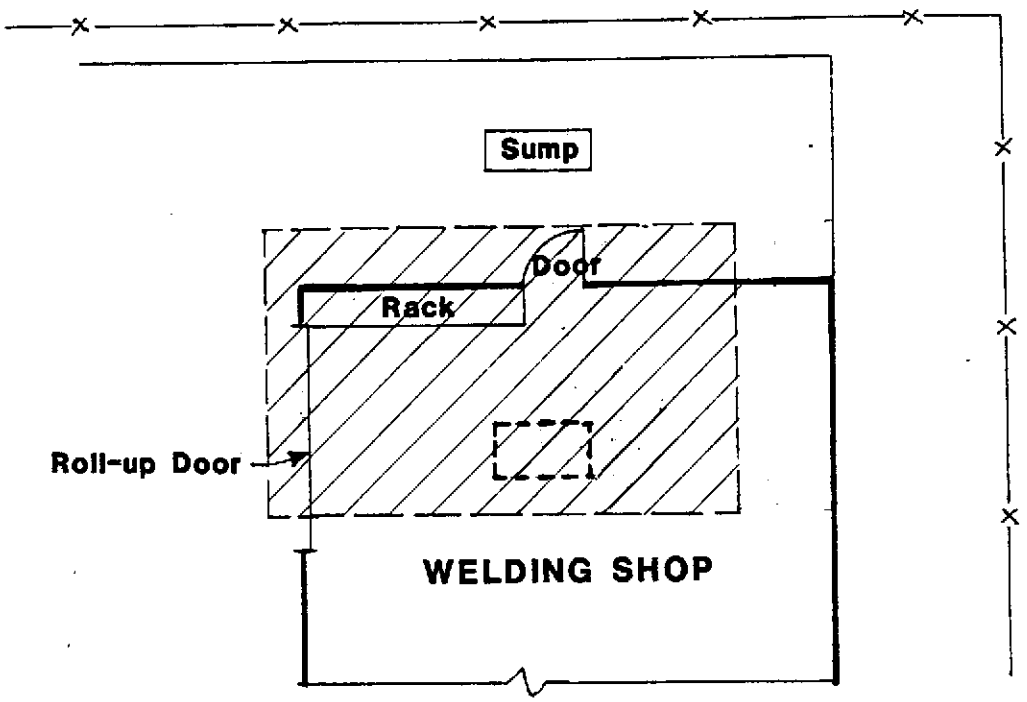
The GPR survey was performed by SPECTRUM E.S.I. from Fremont, California. The surveyed area as shown in Figure 6.2 was approximately 15 feet by 25 feet. No obvious metal objects were detected, but a 3' x 5' anomaly was thought to be found at 8 1/2 feet from the northwestern wall at about 3-foot to 4-foot depth below the concrete surface. The GPR did not give adequate definition to confidently rule out the presence of buried engine blocks.

On April 15, 1991, two soil borings (SB-1 and SB-2) were drilled inside the welding shop and two other soil borings (SB-3 and SB-4) were drilled in front of the building in the concrete apron. Boring locations were tape measured and are presented in Figure 6.1.

Boring SB-2 was located within the 3' x 5' anomaly found by the GPR survey. However, no metal objects were detected during the drilling. Boring SB-3 was located in the area known to be impacted by petroleum hydrocarbons.

Two or three soil samples were collected at various depths (maximum depth was 10 feet) from each boring SB-1, SB-2, and SB-4 and were submitted for chemical analysis to determine the horizontal extent of elevated levels of petroleum hydrocarbons near the northwest end of the welding shop. Soil samples from SB-3 and SB-1 were submitted for a biotreatability study. The borings logs are presented in Appendix B.

Samples from borings SB-1, SB-2 and SB-4 contained evidence of oil to a depth of approximately 5 feet below the concrete pad. Boring SB-3 contained oil to a depth of approximately 8 feet below the concrete slab.



LEGEND:

GPR Survey Area

Possible Anomaly

0 10 20 30

APPROXIMATE SCALE - FEET

AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA

PG & E ENCON-Gas T & D Construction Yard

GPR Survey

JOB NO. **90262**

Figure 6.2

DATE: July 23, 1991

On May 23, 1991, six additional soil borings were drilled in the area of the welding shop in order to determine the extent of elevated levels of petroleum hydrocarbons under the building. Borings SB-5 to SB-9 were drilled inside the building and boring SB-10 was drilled near the southern end of the concrete slab in front of the building. Boring locations are shown on Figure 6.1. The borings were drilled to between 9-foot to 10-foot depth. Three soil samples were collected at various depths from each boring. Boring logs are presented in Appendix B. The sample identified as SB-7-1a was manually scraped from the borehole wall in boring SB-7. A regular sample could not be collected because the sampler hit hard and densely packed materials.

The welding shop is constructed over a concrete pad, 4 to 6 inches thick, overlying 6 to 12 inches of fine sand fill. In the borings, drilled inside the building, typically 1 to 2 feet below the concrete slab, the driller could not push the sampler in, indicating they were hitting hard or densely packed materials. These materials could be part of the fill, rather than natural sediments; in boring SB-6, a 4-inch long piece of metal came up on the auger with the cuttings from this depth and pieces of lumber were found down to approximately 5 feet depth. Samples from borings SB-5 and SB-6 appeared to contain aged oil (dark brown, nonviscous) from 3 to 5 feet depth. SB-6 also contained viscous oil.

6.1.3 Near Northeastern Property Line - On April 16, 1991, the borehole for the installation of a fifth monitoring well (OW-5) was drilled immediately east of the welding shop. The goal of this effort was to determine if upgradient sources of petroleum hydrocarbons may have impacted the site. The boring was drilled to 17 feet depth. Soil samples were collected continuously down to 9.5-foot depth and then in a 3-foot interval down to 17-foot depth. Samples from about 5-foot depth appeared to contain liquid oil.

In order to determine the horizontal extent of elevated levels of hydrocarbons in soils in the vicinity of monitoring well OW-5, seven additional soil borings (SB-13, SB-15, SB-16, SB-19 to SB-22) were drilled on May 20, 1991. Figure 6.1 shows the boring locations. Three soil samples were collected from each boring at a depth of about 2.0, 4.5, and 7 feet. The boring logs are presented in Appendix B. The sample identified as SB-19-1 was manually collected form the drill cuttings because the soil was extremely soft so that the soil could not be forced into the splitspoon sampler but it was rather pushed to the wall of the boring.

A slight oil odor was found in soil samples from SB-13, SB-15, and SB-16. Brown oil spots of 1/16-inch in diameter were found in the sampler shoe immediately below 5 1/2-foot depth in boring SB-13. However, no oil was visible in the sample collected from 5 to 5 1/2-foot depth.

concentrations of petroleum hydrocarbons seem to be limited to a maximum depth of 9 feet. Extractable petroleum hydrocarbons quantified as diesel were detected at a maximum concentration of 8,900 mg/kg in SB-1 at 4-foot depth. Soil samples from SB-1, SB-2, and SB-4 analyzed for total petroleum hydrocarbons (TPH) showed a maximum concentration of 47,000 mg/kg in SB-2 at 4.0 to 4.5-foot depth. 6,900 mg/kg of TPH were detected in SB-4 at 8.0 to 8.5-foot depth.

These results confirm the levels of petroleum hydrocarbon discovered during the previous investigations in the vicinity of the former tank cluster and confirm the suspected contamination beneath the welding shop.

Near the Northeastern Property Line. The highest concentration of oil and grease (2,300 mg/kg) was detected in a sample from boring SB-15, collected at 2.0 to 2.5-foot depth. Samples from all other borings did not exceed concentrations of 120 mg/kg oil and grease. TPH-Diesel was detected in SB-16 at 7.0 to 7.5-foot depth at 510 mg/kg. A sample taken at 4.5 to 5.0-foot depth from the monitoring well boring OW-5 contained a non-specified hydrocarbon fuel of 3,750 mg/kg, which did not match diesel fuel.

Table 6.1. Petroleum Hydrocarbons in Soil, in mg/kg

Sample ID	Depth [feet]	Oil and Grease	TPH	TEH Diesel	TVH Gasoline
SB-1-1b	4.0		32,000	8,900	
SB-1-2	5.0-5.5		11,000	2,100 (a)	
SB-1-3	10.0-10.5		11	< 2.5	
SB-2-1	4.0-4.5		47,000	1,600 (b)	
SB-2-2	8.0-8.5		8	< 2.5	
SB-4-1	5.75-6.25		14,000		
SB-4-2	7.25-7.75		5,800		
SB-4-3	8.0-8.5		6,900		
SB-5-1	2.75-3.25	9,200			
SB-5-2	5.0-5.5	3,500			
SB-5-3	8.0-8.5	<50			
SB-6-1	3.0-3.5	13,000		1,700	
SB-6-2	4.5-5.0	3,600			
SB-6-3	7.5-8.0	2,400			
SB-6-4	9.0-9.5	<50			
SB-7-1	0.5-1.0	96			
SB-7-1a	1.0-1.5 (disturbed)	3,900			
SB-7-2	6.0-6.5	<50			
SB-7-3	8.0-8.5	<50			
SB-8-1	0.0-0.5	<50			
SB-8-2	3.0-3.5	2,700		47	
SB-8-3	5.0-5.5	<50			
SB-8-4	8.0-8.5	<50			
SB-9-1	1.0-1.5	2,100		210	
SB-9-2	5.0-5.5	2,400			
SB-9-3	7.0-7.5	<50			
SB-10-1	2.5-3.0	770			
SB-10-2	5.0-5.5	56			
SB-10-3	8.0-8.5	<50			

(Continued ->)

Notes:

1) (a) = Sample contains a hydrocarbon fuel of approximately 3700 mg/kg, including 2149 mg/kg of diesel fuel
2) (b) = Sample contains a hydrocarbon fuel of approximately 2000 mg/kg, including 1571 mg/kg of diesel fuel
3) Blank = Not Analyzed
4) < = Not Detected at or above Reporting Limit
5) TPH = Total Petroleum Hydrocarbons (EPA method 418.1)
6) TEH-Diesel = Total Extractable Petroleum Hydrocarbons as Diesel (EPA method 8015 mod./3550)
7) TVH-Gasoline = Volatile Hydrocarbons as Gasoline (EPA method 8015 mod./3550)
8) Oil and Grease = Hydrocarbon Oil and Grease (SMWW 17:5520EF)

Table 6.1. Petroleum Hydrocarbons in Soil, in mg/kg (continued)

Sample ID	Depth [feet]	Oil and Grease	TPH	TEH-Diesel	TVH-Gasoline
SB-13-1	2.0-2.5	78			
SB-13-2	5.0-5.5	20			
SB-13-3	7.0-7.5	18			
SB-15-1	2.0-2.5	2,300			
SB-15-2	4.0-4.5	30			
SB-15-3	7.0-7.5	18			
SB-16-1	2.0-2.5	<5.0			
SB-16-2	4.0-4.5	8			
SB-16-3	7.0-7.5	110		510	
SB-19-1	~2.0 (cuttings)	66			
SB-19-2	5.0-5.5	6			
SB-19-3	7.0-7.5	22			
SB-20-1	2.5-3.0	82			
SB-20-2	4.0-4.5	120		66	
SB-20-3	7.0-7.5	34			
SB-21-1	2.0-2.5	24			
SB-21-2	5.0-5.5	< 50		< 1.0	
SB-21-3	7.0-7.5	< 50		< 1.0	
SB-22-1	3.75-4.25	28			
SB-22-2	5.0-5.5	< 50		< 1.0	
SB-22-3	7.0-7.5	< 50		< 1.0	
OW-5-5	2.5-3.0		450		
OW-5-9	4.5-5.0		600	< 50 (c)	2
OW-5-12	6.0-6.5		75		

Notes:

1) (c) = Sample contains a hydrocarbon fuel of approximately 3750 mg/kg, which does not match diesel fuel
2) Blank = Not Analyzed
3) < = Not Detected at or above Reporting Limit
4) TPH = Total Petroleum Hydrocarbons (EPA method 418.1)
5) TEH-Diesel = Total Extractable Petroleum Hydrocarbons as Diesel (EPA method 8015 mod./3550)
6) TVH-Gasoline = Volatile Hydrocarbons as Gasoline (EPA method 8015 mod./3550)
7) Oil and Grease = Hydrocarbon Oil and Grease (SMWW 17:5520EF)

Table 6.2. Volatile Organic Compounds in Soil, in ug/kg

PURGEABLE HALOCARBONS	Sample ID -> Depth [feet] -> MDL	H-1 0.0-0.5 (x1)	SB-1-1 4.0 (x5)	SB-1-2 5.0-5.5 (x5)	SB-1-3 10.0-10. (x1)	SB-2-1 4.0-4.5 (x5)	SB-2-2 8.0-8.5 (x5)	SB-6-1 3.0-3.5 (x2)	SB-8-2 3.0-3.5 (x1)	SB-9-1 1.0-1.5 (x1)
Dichlorodifluoromethane	5		ND	ND	ND	ND	ND			
Chloromethane	5	<10	ND	ND	ND	ND	ND	<20	<10	<10
Vinyl chloride	5	<10	ND	ND	ND	ND	ND	<20	<10	<10
Bromomethane	5	<10	ND	ND	ND	ND	ND	<20	<10	<10
Chloroethane	5	<10	ND	ND	ND	ND	ND	<20	<10	<10
Trichlorofluoromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichlorothene	5	ND						ND	ND	ND
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND	ND	230	13	ND
Chloroform	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	5	ND						ND	ND	ND
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND	ND	310	9.3	ND
Carbon Tetrachloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinylether	10	ND						ND	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	44	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	100		ND	ND	ND	ND	ND			
1,3-Dichlorobenzene	5	ND	ND	ND	19	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND	20	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
PURGEABLE AROMATICS	**MDL**	**(x1)**	**(x5)**	**(x5)**	**(x1)**	**(x5)**	**(x1)**	**(x2)**	**(x1)**	**(x1)**
Benzene	5	ND	ND	ND	ND	ND	ND	16	ND	ND
Toluene	5	30	ND	ND	ND	ND	ND	120	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5	ND	45	ND	ND	30	ND	220	45	ND
P-&m-xylene	10		ND	ND	ND	ND	ND			
O-xylene	5		25	ND	ND	ND	ND			
Total Xylenes	5	ND						730	ND	ND
1,3-Dichlorobenzene	5	ND	ND	ND	13	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND	14	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND

(continued ->)

Table 6.2. Volatile Organic Compounds in Soil, in ug/kg (continued)

PURGEABLE HALOCARBONS	Sample ID -> Depth [feet] -> MDL	SB-16-3 7.0-7.5 (x10)	SB-20-2 4.0-4.5 (x1)	SB-21-2 5.0-5.5 (x1)	SB-22-3 7.0-7.5 (x1)	OW-5-9 4.5-5 (x1)
Dichlorodifluoromethane	5					ND
Chloromethane	5	<100	<10	<10	<10	ND
Vinyl chloride	5	<100	<10	<10	<10	ND
Bromomethane	5	<100	<10	<10	<10	ND
Chloroethane	5	<100	<10	<10	<10	ND
Trichlorofluoromethane	5	ND	ND	ND	ND	ND
1,1-Dichloroethene	5	ND	ND	ND	ND	ND
Dichloromethane	5	ND	ND	ND	ND	ND
cis-1,2-Dichlorothene	5	ND	ND	ND	ND	
trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND
Chloroform	5	ND	ND	ND	ND	ND
Freon 113	5	ND	ND	ND	ND	
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	ND	ND	ND	ND	ND
Trichloroethene	5	ND	ND	ND	ND	ND
1,2-Dichloropropane	5	ND	ND	ND	ND	ND
Bromodichloromethane	5	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5	ND	ND	ND	ND	ND
Tetrachloroethene	5	ND	ND	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND	ND	ND
2-Chloroethylvinylether	10	ND	ND	ND	ND	
Chlorobenzene	5	ND	ND	ND	ND	ND
Bromoform	5	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	44					ND
2-Chlorotoluene	100					ND
1,3-Dichlorobenzene	5	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND	ND	ND
PURGEABLE AROMATICS	MDL	(x10)	(x1)	(x1)	(x1)	(x1)
Benzene	5	110	ND	ND	ND	ND
Toluene	5	79	ND	ND	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND
Ethylbenzene	5	ND	ND	ND	ND	ND
P-&m-xylene	10					ND
O-xylene	5					ND
Total Xylenes	5	140	ND	ND	ND	
1,3-Dichlorobenzene	5	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	5	ND	ND	ND	ND	ND

Notes:
1) MDL = Method Detection Limit
2) (x5) = Factor to be multiplied with the MDL to determine the individual Reporting Limit
3) ND = Not Detected at or above Reporting Limit
4) Blank = Not Analyzed
5) Purgeable Halocarbons (EPA method 8010)
6) Purgeable Aromatics (EPA method 8020)

Table 6.3. PCBs in Soil, in mg/kg

Sample ID	Depth [feet]	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
SB-1-1b	4.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
SB-2-1	4.0-4.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
SB-6-1	3.0-3.5	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
SB-9-1	1.0-1.5	<0.017	<0.017	<0.017	<0.017	<0.017	1.7	<0.017
SB-13-2	5.0-5.5	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
SB-16-3	7.0-7.5	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
SB-19-3	7.0-7.5	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
OW-5-1	0.5-1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Notes:
1) < = Not Detected at or above Reporting Limit
2) PCBs = Polychlorinated Biphenyls (EPA method 8080)

Table 6.4. Metals in Soil, in mg/kg

Sample ID ->	SB-1-1b	SB-6-1	SB-9-1	SB-13-2	SB-16-3	SB-19-3	OW-5-9
Depth [feet] ->	4.0	3.0-3.5	1.0-1.5	5.0-5.5	7.0-7.5	7.0-7.5	4.5-5.0
Metals							
Antimony	19	<2.9	6.6	<2.9	<3.0	<3.0	<8
Arsenic	17	3.3	3.9	<2.5	<2.5	<2.5	6
Barium	290	156	571	133	118	108	190
Beryllium	0.22	0.22	0.42	0.36	0.38	0.35	1.2
Cadmium	0.8	2	4.2	1.9	1.8	1.7	0.29
Chromium VI	<0.4						<0.4
Chromium (total)	28	40.1	51.6	40	46.6	36.2	110
Cobalt	6.9	9.1	13.5	11.8	9.7	11.4	14
Copper	28	39.7	63.9	29.8	21.2	19.4	35
Lead (total)	210	26	168	12.2	5.4	5.5	8.6
Lead (soluble)	6.4		2.57				
Mercury	<0.17	0.11	0.22	0.12	<0.1	<0.1	0.7
Molybdenum	0.7	2.6	<0.7	<0.68	<0.69	<0.7	<0.24
Nickel	60	37.7	66.1	73.5	74.5	70.6	150
Selenium	<1	<2.5	<2.5	<2.5	<2.5	<2.5	<1
Silver	<0.8	<0.49	<0.5	<0.49	<0.49	<0.5	<0.8
Thallium	5.6	<2.5	<2.5	<2.5	<2.5	<2.5	<3
Vanadium	63	27.7	47.4	29.5	29	22.6	59
Zinc	90	50.2	252	43.8	40.2	36.6	80

Notes:
1) Blank = Not Analyzed
2) < = Not Detected at or above Reporting Limit
3) Metal analyses performed according to CCR Title 26

6.2 Groundwater Investigations

As part of the site investigation activities, ARI installed a fifth groundwater monitoring well on-site and performed the quarterly groundwater sampling in April 1991. Monitoring well installation procedures and groundwater sampling procedures are described in the Site Sampling and Analysis Plan and QA/QC Plan attached as Appendix A.

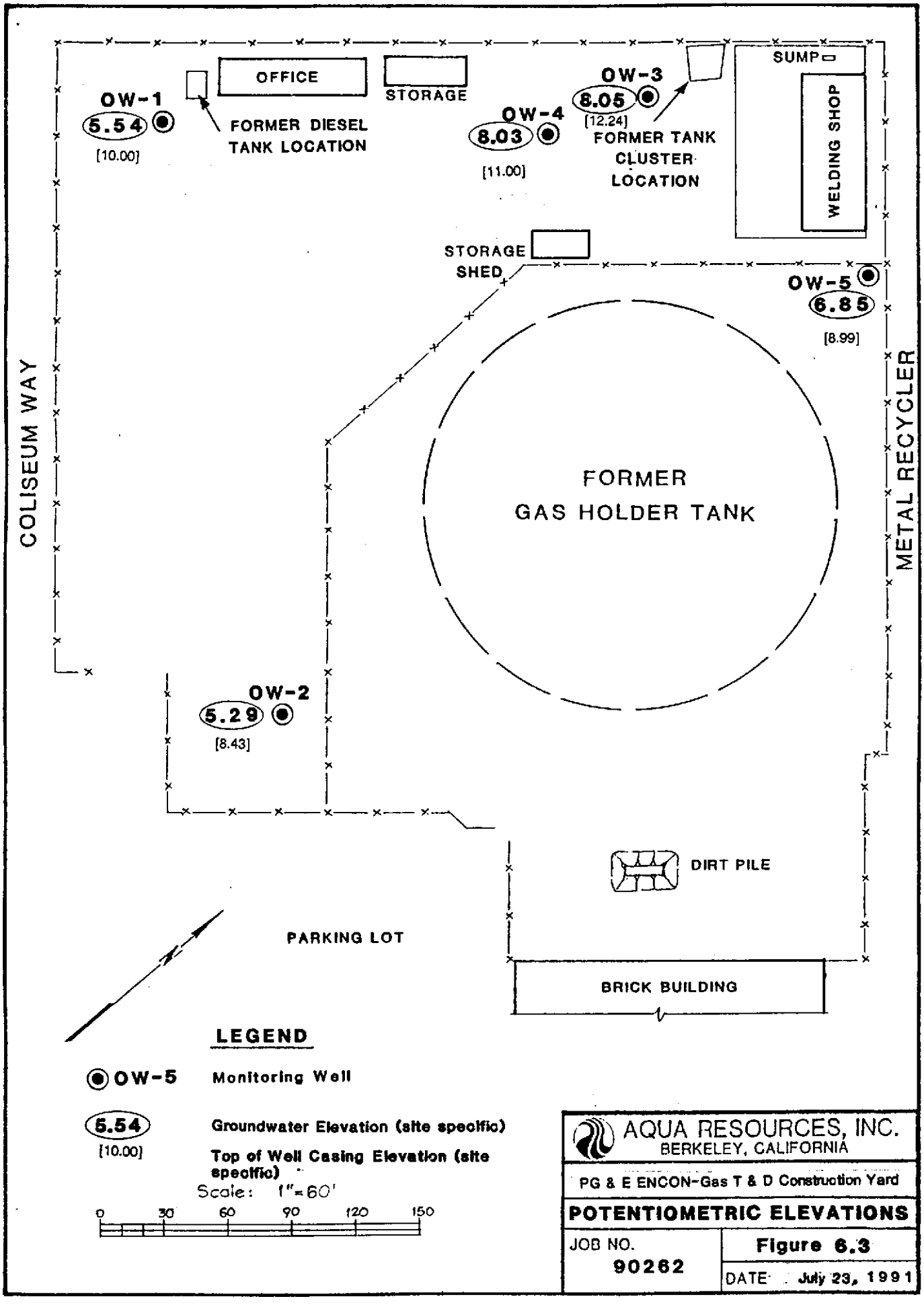
6.2.1 Monitoring Well Installation and Development - On April 16, 1991, one additional groundwater monitoring well (OW-5) was installed to the east of the welding shop and as close as possible to the property line. The purpose was to assess if upgradient sources of petroleum hydrocarbons may have impacted the groundwater underlying the site. The regional groundwater flow direction is to the southwest. The location of the previously installed monitoring wells OW-1 to OW-4 and the newly installed well OW-5 are shown on Figure 6.3.

The boring was drilled to 17 feet depth by HEW Drilling. Soil samples were collected continuously to a depth of 9.5-foot and then in 3-foot intervals down to 17-foot depth. Details on soil sampling procedures are described in the Site Sampling Plan attached as Appendix A.

The monitoring well was installed under the supervision of a registered civil engineer. The monitoring well log, the Observation Well Installation Report, and the Water Well Drillers Report are attached as Appendix C. The elevation of the new monitoring well was surveyed on April 17, 1991, in relation to an assumed elevation of OW-1 (top of the well casing is 10.00 feet).

The monitoring well was developed by surging and swabbing by Garcia Well Pump Co., of Palo Alto, California. A galvanized steel bailer (25 feet long, about 2.5 gallon of volume) that fit tightly in the well casing was used for surging purposes. The bailer created a mild pressure when moved down the well casing and created a vacuum when moved up in order to pull in the particles which needed to be removed. This procedure was used, because the pressure created by a bailer is lower than the pressure created by a regular surge block, which reduces the possibility of disturbing the sand pack. About 55 gallons of groundwater were bailed into a U.S. Department of Transportation approved drum.

6.2.2 Groundwater Sampling - On April 17, 1991, ARI performed the quarterly groundwater sampling on the T&D Construction Gas Yard. Groundwater analyses are performed to monitor the distribution of waste oil, solvents, and fuel compounds in the uppermost aquifer beneath the site. Prior to purging and sampling monitoring wells OW-1 to OW-5 the depth to groundwater was measured using an electric water level indicator.


OFFICE
STORAGE
SUMP
WELDING SHOP
OW-1
5.54
[10.00]
FORMER DIESEL TANK LOCATION
OW-4
8.03
[11.00]
OW-3
8.05
[12.24]
FORMER TANK CLUSTER LOCATION
STORAGE SHED
OW-5
6.85
[8.99]
COLISEUM WAY
METAL RECYCLER
FORMER GAS HOLDER TANK
OW-2
5.29
[8.43]
DIRT PILE
PARKING LOT
BRICK BUILDING
LEGEND
OW-5 Monitoring Well
5.54 [10.00] Groundwater Elevation (site specific) Top of Well Casing Elevation (site specific)
Scale: 1"=60'
0 30 60 90 120 150
AQUA RESOURCES, INC.
BERKELEY, CALIFORNIA
PG & E ENCON-Gas T & D Construction Yard
POTENTIOMETRIC ELEVATIONS
JOB NO. 90262
Figure 6.3
DATE July 23, 1991

The groundwater surface elevations are shown on Figure 6.3. The elevation is shown in relation to an assumed elevation of the top of the casing of monitoring well OW-1. Elevations in OW-1, OW-2, and OW-5 confirm a general regional groundwater flow direction to the southwest. However, if horizontal isotropic conditions prevailed on the whole site, elevations in OW-3 and OW-4 would be about 1.5 feet lower than actually measured. This might indicate the presence of an artificial water source, such as a leaking pipe, in the vicinity of OW-3 and OW-4.

A minimum of three casing volumes were purged from each well before groundwater samples were collected. Each well was checked for the presence of free floating product (diesel or oil) but no free floating product was observed.

6.2.3 Chemical Analyses - Groundwater samples were submitted to a California Department of Toxic Substances Control certified laboratory under chain-of-custody control. Chemical analyses were performed by TETC Analytical Laboratories in Huntington Beach, California.

The following analyses were performed for each groundwater sample:

- Total Petroleum Hydrocarbons (EPA Method 418.1)
- Total Extractable Hydrocarbons as Diesel (EPA Method 8015 modified/3550)
- Volatile Organic Compounds (EPA Methods 601 and 602)

In addition, a sample from OW-3 was analyzed for total dissolved solids to assess if groundwater beneath the site would be considered a potential drinking water source by the RWQCB. For quality control purposes, a duplicate sample was collected from well OW-3 and one trip blank was analyzed for purgeable aromatics (EPA Method 602).

The results of the laboratory analyses are presented in the following subsections.

6.2.3.1 Petroleum Hydrocarbons - Six groundwater samples, including one duplicate sample were analyzed for petroleum hydrocarbons. The sample designated OW-3-2 is a duplicate of OW-3-1 collected from monitoring well OW-3. The results are presented in Table 6.5. Extractable petroleum hydrocarbons as diesel were detected only in monitoring well OW-4 at 0.58 mg/l. According to the laboratory analyses, hydrocarbon fuels which did not match diesel fuel were detected in samples from OW-3 and OW-5, at 0.7 mg/l and 0.6 mg/l, respectively. This could be mineral spirits or lubricating oil. All samples were below the reporting limit for TPH.

Table 6.5. Petroleum Hydrocarbons in Groundwater, in mg/l

Sample ID	TPH	TEH-Diesel
OW-1-1	<0.5	<0.2
OW-2-1	<0.5	<0.2
OW-3-1	<0.5	<0.2 (a)
OW-3-2	<0.5	<0.2(a)
OW-4-1	<0.5	0.58
OW-5-1	<0.5	<0.2(b)

Notes:

1) (a) sample contains a hydrocarbon fuel of approximately 0.7 mg/l, which does not match diesel fuel
2) (b) sample contains a hydrocarbon fuel of approximately 0.6 mg/l, which does not match diesel fuel
3) < = Not Detected at or above Reporting Limit
4) TPH = Total Petroleum Hydrocarbons (EPA method 418.1)
5) TEH-Diesel = Total Extractable Petroleum Hydrocarbons as Diesel (EPA method 8015 mod./EPA 3550)

6.2.3.2 Volatile Organic Compounds - Six groundwater samples, including one duplicate sample from OW-3, were analyzed for VOCs. The results are summarized in Table 5.6 Several VOCs were detected in all groundwater samples. The State maximum contaminant level (MCL) for 1,1-Dichloroethane of 5 µg/l was exceeded in monitoring wells OW-3 (16 µg/l) and OW-4 (6.1 µg/l). Samples from OW-1 (0.63 µg/l 1,1-DCA) and OW-3 (0.55 µg/l 1,1-DCA) exceeded the MCL for 1,1-Dichloroethane of 0.5 µg/l. In OW-1, 1,4-Dichlorobenzene was detected at 6.7 µg/l, above the MCL of 5 µg/l. The concentration of benzene in the new monitoring well OW-5 was measured at 15 µg/l, exceeding the MCL of 1 µg/l. The detection of benzene in OW-5, located immediately adjacent to the northeastern property line, might indicate an upgradient (off-site) source of fuel contamination. Benzene was also detected in a soil sample from boring SB-16, also located near the property line, at 7.0 to 7.5 feet depth. All other organic compounds are below the MCLs.

One trip blank was analyzed for purgeable aromatics for quality control purposes. No constituents were detected at or above the reporting limit in the blank.

6.2.3.3 Total Dissolved Solids - One groundwater sample from monitoring well OW-3 was analyzed for total dissolved solids (TDS). TDS were measured at 780 mg/l indicating that groundwater beneath the site could be considered a potential drinking water source by the RWQCB.

Sample ID	TDS
OW-3-1	780 mg/l

Table 6.6. Volatile Organic Compounds in Groundwater, in ug/l

PURGEABLE HALOCARBONS	MCL	MDL	Sample ID					
			OW-1-1	OW-2-1	OW-3-1	OW-3-2 (Duplicate of OW-3-1)	OW-4-1	OW-5-1
Chloromethane		2	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.5	1	ND	ND	ND	ND	ND	ND
Bromomethane		1	ND	ND	ND	ND	ND	ND
Chloroethane		1	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	150	0.5	ND	ND	0.82	ND	ND	ND
1,1-Dichloroethene	6	0.5	ND	ND	ND	0.69	ND	ND
Dichloromethane	5#	0.5	ND	ND	ND	ND	ND	ND
Trans-1,2-Dichloroethene	10	0.5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	0.4	2.6	ND	16	17	6.1	1.8
Chloroform	100#*	0.2	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200	0.2	ND	ND	2.5	1.6	ND	6
Carbon Tetrachloride	0.5	0.5	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.5	0.2	0.63	ND	0.55	0.43	0.49	ND
Trichloroethene	5	0.5	ND	ND	ND	ND	ND	0.75
1,2-Dichloropropane	5	0.2	ND	ND	ND	ND	ND	ND
Bromodichloromethane	100#*	0.5	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5***	0.5	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5***	0.5	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	32	0.1	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5	0.2	1.1	0.53	1.4	0.68	ND	0.7
Dibromochloromethane	100#*	0.5	ND	ND	ND	ND	ND	ND
Chlorobenzene	30	0.5	ND	ND	2.3	1	ND	ND
Bromoform	100#*	0.5	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1	0.2	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene		0.5	1.8	ND	3.3	1.8	ND	ND
1,4-Dichlorobenzene	5	0.5	6.7	ND	3.1	1.8	ND	ND
1,2-Dichlorobenzene	600#	0.5	0.58	ND	2.3	1.2	ND	ND
PURGEABLE AROMATICS								
Benzene	1	0.5	ND	ND	0.54	ND	ND	14
Toluene	1000#	0.5	ND	ND	ND	ND	ND	0.57
Chlorobenzene	30	0.5	ND	ND	2.8	2.9	ND	ND
Ethylbenzene	680	0.5	ND	ND	ND	ND	ND	0.58
P-&m-xylene	1750**	1	ND	ND	ND	ND	ND	4.5
O-xylene	1750**	0.5	ND	ND	ND	ND	ND	1.1
1,3-Dichlorobenzene		0.5	1.6	ND	3.2	3.7	ND	ND
1,4-Dichlorobenzene	5	0.5	7.2	ND	3	3.1	ND	ND
1,2-Dichlorobenzene	600#	0.5	ND	ND	2.1	2.7	ND	ND

Notes:
1) MDL = Method Detection Limit
2) MCL = Maximum Contaminant Level in drinking water (State MCL, if not noted otherwise)
3) # = EPA MCL
4) * = MCL for sum of four compounds
5) ** = MCL for sum of all xylene isomers
6) *** = MCL for sum of trans- and cis-1,3-Dichloropropene
7) ND = Not Detected at or above MDL
8) Purgeable Halocarbons (EPA method 601)
9) Purgeable Aromatics (EPA method 602)

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PG&E - Technical and Ecological Services Department, Quarterly Groundwater Monitoring Reports.

Aerial photos: BUT-289-49 & 50, taken 8/2/39, black and white, 1:20,000; WAC-84C 2-27, taken 3/18/84, black and white, 1:24,000

LIST OF ACRONYMS AND ABBREVIATIONS

ARI	Aqua Resources Incorporated
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CCR	California Code of Regulations
CDMG	California Division of Mines and Geology
EPA	Environmental Protection Agency
GPR	Ground Penetrating Radar
LC	Lethal Concentration
MCL	Maximum Contaminant Level
PCB	Polychlorinated Biphenyl
PG&E	Pacific Gas and Electric Company
POL	Petroleum, oil, and lubricant
QA/QC	Quality Assurance/Quality Control
RI	Remedial Investigation
RWQCB	Regional Water Quality Control Board
SMWW	Standard Methods for the Evaluation of Water and Wastewater
STLC	Soluble Threshold Limit Concentration
TDS	Total Dissolved Solids
TEH	Total Extractable Petroleum Hydrocarbons
TETC	The Earth Technology Corporation
TPH	Total Petroleum Hydrocarbons
TTLC	Total Threshold Limit Concentration
TVH	Total Volatile Hydrocarbons
VOC	Volatile Organic Compounds

APPENDIX A

Site Sampling and Analysis Plan and QA/QC Plan

Site Sampling and Analysis Plan
and
Quality Assurance and Quality Control Plan

PG&E General Construction Gas Yard
4930 Coliseum Way, Oakland, California

Aqua Resources Inc.

April 8, 1991

SAMPLING AND QA/QC PLAN

SITE LOCATION

The site is the PG&E General Construction Gas Yard located at 4930 Coliseum Way in Oakland, California.

OBJECTIVE

The purpose of the field sampling effort is to obtain additional information on the extent of soil and groundwater contamination from releases of petroleum hydrocarbons and volatile organic compounds. The horizontal and lateral extent of soil contamination will be explored through soil samples collected from boreholes drilled using hollow stem auger or solid flight auger drilling equipment. One additional monitoring well will be installed and groundwater samples will be collected with a bailer from the four existing monitoring wells and the newly installed well.

SOIL BORING LOCATIONS AND SAMPLING PROCEDURE

Several soil borings will be located inside the welding shop. The goal of this effort is to attempt to determine if soils under the building are also saturated with hydrocarbons. The borings will be terminated just above the groundwater and two to three samples will be collected from each boring at about 3, 5, and 8 feet depth. The final sample depth will be determined based on actual field observation. Two other soil borings will be drilled in the immediate vicinity of the former tank cluster location and one soil boring will be drilled near the southern end of the concrete pad in front of the welding shop. One sample, with an apparently high concentration of petroleum hydrocarbons will be submitted for a biotreatability study. Several soil borings will be drilled west of the welding shop near the northeastern property line in order to assess if possible upgradient sources of contamination may have impacted the site. All soil borings will be drilled using hollow stem auger or solid flight auger drilling equipment. All augers will be steam cleaned prior to the drilling of each boring.

Borings will be logged by or under the supervision of a Registered Civil Engineer. Standard ARI boring log field forms will be completed using waterproof ink. Figure 2 is a copy of ARI's boring log form. The boring logs generally include the following:

- The depth that groundwater is first encountered in the boring;

- The date and time at which each sample is taken.

Prior to obtaining each sample, including the initial one, the disassembled sampler will be washed and rinsed. The wash consists of a solution of TSP in water. Each piece will be triple rinsed with the final rinse being distilled water. A standard split barrel sampler with 2-5/8" OD and 2" ID will generally be used. The sampler has the capacity to obtain an 18-inch sample using three 6-inch long liners. The brass liners used for soil sampling are precleaned.

When the sampler is removed from the boring, it will be immediately opened. The lowermost sample liner (next to the shoe) will be used for any required chemical analyses. For continuous sampling all three brass tubes will be submitted for chemical analysis. The soil exposed in the ends of the tube will be quickly noted. The ends will then be sealed with teflon tape and new, snug-fitting plastic caps, and the edges of the caps will be sealed with plastic tape. The cap will be immediately labeled with the sample number, the depth, the project number, and the date. The sample number is the boring number followed by a dash and the consecutive number of the sample from the boring. The caps will be labeled using a fine-tipped waterproof marker. The sample will immediately be placed in a chilled (approximately $4^{o}C$) ice chest for storage and transport to the analytical laboratory. Standard chain of custody forms (Figure 3) will be completed and kept with the samples.

If the second sample is not required for a duplicate chemical analysis, it will be retained in its liner and saved for possible later inspection or physical properties testing. The upper sample, from the third liner, will be inspected and used for the soil description. The soil description will follow the guidelines of ASTM D2488, "Description of Soils." The uppermost sample will only be saved if the second sample is not available.

Soil cuttings, spent sampling and safety equipment, and decontamination fluids will be disposed of into DOT approved drums. Used drums will be left on-site, pending determination of appropriate disposal. Soil borings will be grouted with a neat cement-bentonite grout.

MONITORING WELL INSTALLATION PROCEDURE

The well permit from Alameda County Flood Control and Water Conservation District has been coordinated by ARI personnel. A copy of the well permit will be maintained in the project files. The monitoring well will be installed and developed in accordance with the Regional Water Quality Control Board (RWQCB) guidelines.

Prior to installation of the monitoring well, a site reconnaissance will be performed to field locate the monitoring well. The monitoring well will be installed using hollow stem auger drilling equipment. Augers will be steam cleaned prior to drilling. A standard split barrel sampler, with a 2-5/8 inch outer diameter and 2 inch inner diameter, will be used for soil sampling. Soil samples will be collected continuously. A boring log will be prepared for the monitoring well in the field.

The monitoring well will be installed at the conclusion of soil sampling. The monitoring well casing will consist of two-inch diameter Schedule 40 PVC pipe. The bottom of the well casing will be fitted with a closed screw-on cap. The well casing will be slotted (slot opening 0.020 inches) between 9 feet below ground surface to the base of the monitoring well. The annulus between the casing and bore wall will be filled with #3 RMC Lonestar sand to about one foot above the top of slotted casing. A one foot seal of 3/8-inch diameter bentonite pellets will be constructed immediately above the sand pack, and the remainder of the annulus will be filled with cement grout. The top of the well casing will be fitted with a locking cap. The well will be completed to prevent water from ponding around the well head. The monitoring well will be constructed within a christy box for security, and to prevent damage from vehicle impact.

GROUNDWATER SAMPLING

The monitoring well will be developed by surging and swabbing. As part of well development, approximately six casing volumes will be evacuated from the well, using a teflon bailer or centrifugal pump. The water removed from the well will be placed in sealed containers and stored onsite pending results of chemical analyses and determination of appropriate disposal.

After the monitoring well is developed and allowed to recover, a groundwater sample will be collected using a bailer. The existing monitoring wells will also be purged before sampling. The groundwater sampling methods will follow guidelines presented in EPA-600/4-84-076, Section 3.4.3, Method III-9, "Sampling Monitoring Wells with a Bucket Type Bailer." Precleaned teflon bailer will be used to collect the samples. Each sample will be labeled with a boring number, time, date, and placed in a cooled ice chest for transportation to the laboratory. A new length of nylon rope at each well will be used for lowering and raising the bailer. The first sample from the well will be retrieved from the surface of the water, and the contents of the bailer will be observed to assess whether there is any floating product present. The sample vials and jars, provided by the laboratory, will be filled from the bailer. The groundwater sample vials will be transported to the laboratory under chain-of-custody control.

Cleaned sample containers will be provided by the laboratory, and will contain any required preservatives as specified by the requested EPA analytical method.

ANALYSES PLAN

Soil and groundwater samples selected for chemical analysis will be submitted to a State certified laboratory utilizing chain of custody protocols. Chemical analyses will be performed by The Earth Technology Analytical Laboratories in Huntington Beach, California, and Curtis & Tompkins Analytical Laboratories in Berkeley, California. Chemical analyses to be performed are described in the following table.

Sample I.D.	Sample Type	Proposed Analyses
SB-1 through SB-20 OW-5	Soil	Purgeable Halocarbons Purgeable Aromatics TPH as diesel Oil and Grease
SB-1	Soil	Bioassay
SB-3 or SB-4	Soil	Biotreatability Study
OW-1 through OW-5	Water	Purgeable Halocarbons Purgeable Aromatics TPH as diesel Oil and Grease

Final determination of the type of chemical analyses performed on individual samples will be based on actual field observation.

EQUIPMENT DECONTAMINATION

All augers will be steam cleaned prior to the drilling of each boring. Prior to obtaining each sample including the initial one, the disassembled sampler will be washed and rinsed. The wash will consist of a solution of TSP in water, followed by a triple rinse with the final rinse being deionized water. The brass liners are precleaned and do not need to be washed.

CHAIN OF CUSTODY

Official custody of samples will be maintained and documented from the time of sample collection through the completion of laboratory analyses. The following custody

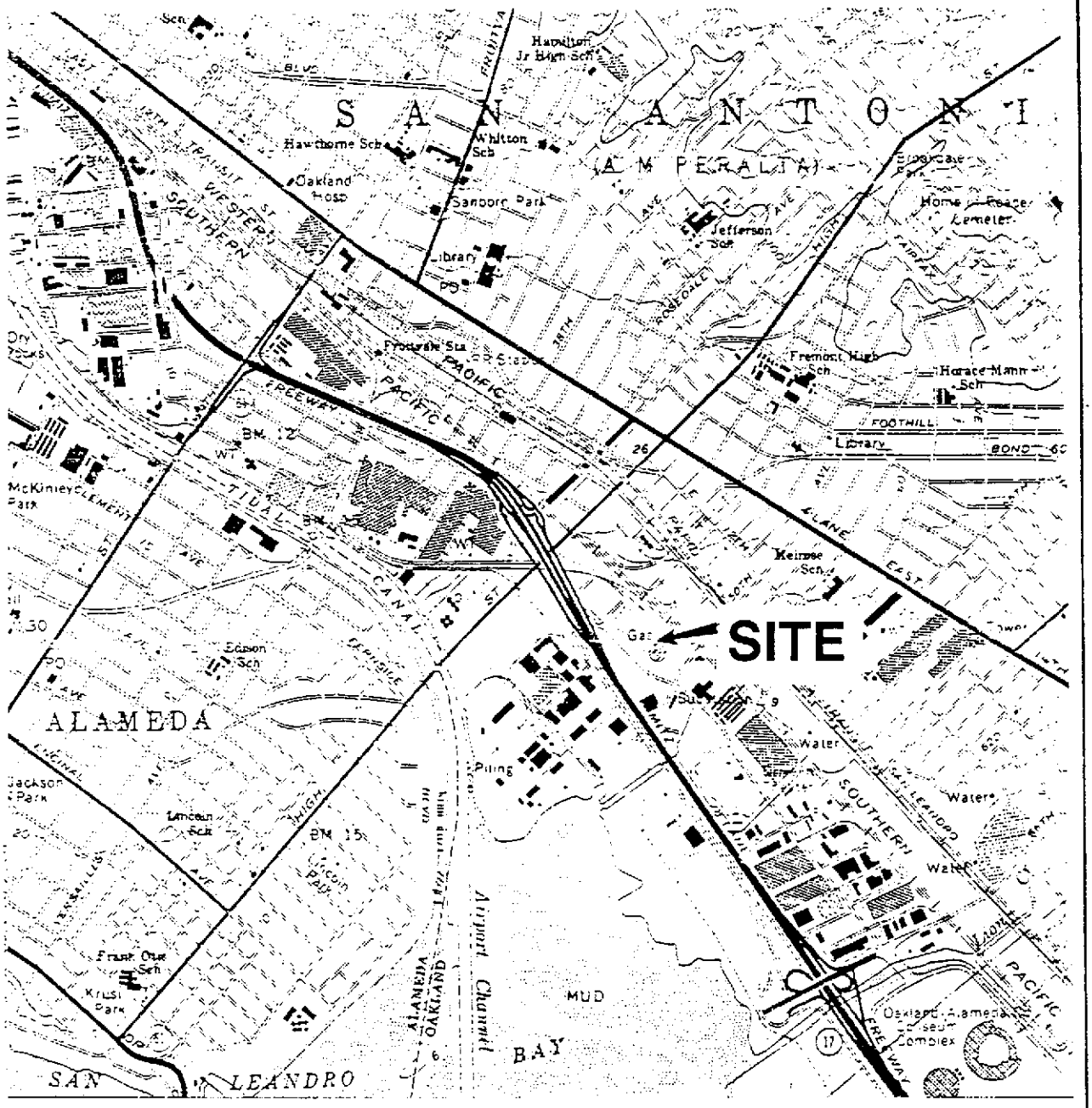
documentation procedure was developed by the National Enforcement Investigations Center of the EPA, and was used on this project.

A sample is considered to be in an individual's custody if the following criteria are met: it is in his/her possession or it is in his/her view after being in his/her possession; it was in his/her possession and then locked up or transferred to a designated secure area. Under this definition, the team members actually performing the sampling are personally responsible for the care and custody of the samples collected until they were transferred or dispatched properly. The QA Officer will review all field activities to confirm that proper custody procedures are followed during the field work.

The Chain of Custody Record/Sampling Log is employed as physical evidence of sample custody. The individual performing the sampling will complete a Chain of Custody Record to accompany each sample shipment from the field to the laboratory. Basic information was recorded on the Chain of Custody Record, including the project number and name and samplers' signatures. For each sample number, the sampler will indicate the sample number, depth, date, time, whether the sample was a composite or grab, and number of containers. When relinquishing the samples, the sampler will sign in the space indicated at the bottom of the form. The recipient will sign in the "Received by" section of the form, entering the date and time the samples were received.

The custody record will be completed using waterproof ink. Any corrections shall be made by drawing a line through and initialing the error, then entering the correct information.

The original signature copy of the Chain of Custody Record will be secured to the samples it covered. A copy of the custody record will be retained for the sampler's files. The laboratory representative accepting the incoming sample shipment shall sign and date the Chain of Custody Record to acknowledge receipt of the samples, completing the sample transfer process. It shall be the laboratory's responsibility to maintain internal log books and records that provide a custody record throughout sample preparation and analysis.



Scale

1:24 000

0 1/2 1

MILE

Source: United States Geological Survey, 1959, photorevised 1980, Oakland East 7.5 minute topographic quadrangle.

AQUA RESOURCES, INC. BERKELEY, CALIFORNIA	
PG & E General Construction Gas Yard	
Site Location Map	
JOB NO. **90262**	**Figure 1**
	DATE: **April 3, 1991**

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION	JOB NAME	JOB NO
DRILLING COMPANY		BORING NO.
DRILLER'S NAME		
DRILL RIG [ ] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash		SHEET OF
SAMPLER TYPE: [ ] 2.5" I.D. Split Barrel [ ] 2.8" I.D. Shelby Tube [ ] SPT		
DRIVE WEIGHT LB.	FALL IN.	START TIME AM PM / FINISH TIME AM PM
WATER LEVEL (Feet)		
TIME		
DATE		DATE
CASING DEPTH (FEET)		
ELEVATION FEET	FIELD ENGINEER	

DATUM: [ ] Mean Sea Level [ ] Other

SLOWS PER HALF FOOT	BLOWS/ft.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	USCS CLASSIFICATION
				0	
				1	
				2	
				3	
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	
				12	
				13	
				14	
				15	
				16	
				17	
				18	
				19	
				20	

SURFACE CONDITIONS

FIGURE 2

AQUA RESOURCES, INC.

SHIPMENT NO.:_____

CHAIN OF CUSTODY RECORD

PAGE_____OF_____

DATE_____

PROJECT NAME:_____

PROJECT NO.:_____

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	

Total Number of Samples Shipped:

Sampler's Signature:

Relinquished By:
Signature_____
Printed Name_____
Company_____
Reason_____

Received By:
Signature_____
Printed Name_____
Company_____

Date / /

Time _____

Relinquished By:
Signature_____
Printed Name_____
Company_____
Reason_____

Received By:
Signature_____
Printed Name_____
Company_____

Date / /

Time _____

REMARKS:

Special Shipment / Handling / Storage Requirements:

FIGURE 3

APPENDIX B

Soil Boring Logs

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: NEW Drilling		BORING NO.: SB-1
DRILLER'S NAME: Phil		SHEET: 1 OF 1
DRILL RIG: CME 55 [X] Hollow Auger [ ] Solid Flight Auger [ ] Rotary Wash		
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] 6"		
DRIVE WEIGHT: LB. / FALL: IN.		START TIME: 11:00 AM/PM
WATER LEVEL (Feet):		FINISH TIME: 11:30 AM/PM
TIME:		DATE: 4/15/91
DATE:		
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/ft.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO	SURFACE CONDITIONS: concrete
				0		Concrete, 4" thick
				1		Sand, brown, dry (SP)
						Gravelly sand (SW)
				2		Sandy clay, dark grayish brown, moist, contains oil (CL)
				3		Silty clay, dark grayish brown (CL)
				4	1a	
					1b	Silty clay, dark grayish brown, some sand and gravel up to 1/8" diam. (CL)
				5		
					2	Sandy clay, dark grayish, contains oil (CL)
				6		Silty clay, dark gray, moist, medium stiff, slightly plastic, some sand and gravel up to 1/2" diam. (CL)
				7		
				8		
				9		
				10		
					3	Sandy gravelly clay, dark gray, saturated, medium stiff, 40-50% sand and gravel up to 3/4" diam. (CL)
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO.: SB-2
DRILLER'S NAME: Phil		SHEET: 1 OF 1
DRILL RIG: CME 55 [X] Hollow Auger [ ] Solid Flight Auger [ ] Rotary Wash		
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 3.0" I.D. Shelby Tube [ ] Bit		
DRIVE WEIGHT: LB. FALL: IN.		START: TIME 11:35 AM
WATER LEVEL (Feet):		FINISH: TIME 12:00 AM
TIME:		DATE: 4/15/91
DATE:		
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/ft.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: concrete
				0		Concrete, 5" thick
				1		Sand, brown, dry, appears to contain oil residue (SP)
				2		Silty clay, dark gray, moist, some gravel up to 1/2" diam. (CL)
				3		Sandy clay, dark gray, moist, some gravel up to 1/2" diam. (CL)
				4	1	Silty clay, dark grayish brown, moist, some sand & gravel, wood particles and pockets of black viscous oil, pockets are 1/8" diam. More oil at 3-1/2' to 4-1/2' than at 5'. (CL)
				5		
				6		
				7		
				8	2	Gravelly clay, grayish green with dark gray and reddish brown mottling from decomposed rock, moist, medium stiff, 40-50% gravel up to 3/4" diam. Small lenses of fine sand, grayish green. (CL)
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1	
DRILLING COMPANY: HEW Drilling		BORING NO.: SB-3	
DRILLER'S NAME: Phil		SHEET: 1 OF 1	
DRILL RIG: CME 55 [X] Hollow Auger [ ] Solid Flight Auger [ ] Rotary Wash			
SAMPLER TYPE: [X] 2.6" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] Grab			
DRIVE WEIGHT: LB. / FALL: IN.		START TIME: 9:00 AM PM	FINISH TIME: 9:50 AM PM
WATER LEVEL (Feet):		DATE: 4/15/91	
TIME:			
DATE:			
CASING DEPTH (FEET):			
ELEVATION: FEET	FIELD ENGINEER:		

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: concrete
				0		Concrete, 7" thick
				1		Silty clay, dark gray, moist (CL)
				2		Silty clay, dark brown, moist, some gravel up to 1/2" diam. (CL)
				3		
				4		
				5		
				6		Silty clay, dark gray with brown mottling, moist, 15-25% gravel up to 1" diam. Contains pockets of viscous black oil, pockets are 1/8" diam. (CL)
				7		Gravelly clay, dark gray with brown & white mottling from decomposed rock, 30-40% gravel up to 2" diam. 2" thick lens of fine sand, grayish green, at approx. 7-1/4'. Very few pockets of black oil. (CL)
				8		
				9		Gravelly sand, dark gray, saturated, some gravel up to 1-1/2" diam. (SW)
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E		JOB NO: 90262.1
DRILLING COMPANY: NEW Drilling			BORING NO.: SB-4
DRILLER'S NAME: Phil			SHEET: 1 OF 1
DRILL RIG: CME 55 [X] Hollow Augers [ ] Solid Flight Augers [ ] Rotary Wash			
SAMPLER TYPE: [X] 2.6" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] SPT			
DRIVE WEIGHT: LB.	FALL: IN.	START	FINISH
WATER LEVEL (Feet)		TIME: 10:00 AM PM	TIME: 10:30 AM PM
TIME		DATE: 4/15/91	
DATE			
CASING DEPTH (FEET)			
ELEVATION: FEET	FIELD ENGINEER		

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/ft.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	
						SURFACE CONDITIONS: concrete
				0		Concrete, 9-1/2" thick
				1		Sandy clay, dark brown, slightly moist, some gravel up to 1-1/2" diam. (CL)
				2		
				3		
				4		
				5		
				6	1	Clayey sand, dark brown, dry, appears to contain aged oil (SC)
				7		Silty clay, dark gray, moist, some gravel up to 1/2" diam. (CL)
				8	2	Clayey sand, dark brown, dry (SC)
				9		Silty clay, dark gray, moist, some gravel up to 1/2" diam. (CL)
				10	3	Gravelly clay, dark gray, contains lenses of fine sand, grayish green and clayey gravel, saturated. (CL)
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

CASING & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO: SB-5
DRILLER NAME: Phil		SHEET: 1 OF 1
DRILL RIG: CME45	[X] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash	
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 3.0" I.D. Shelby Tube [ ] PCT		
DRIVE WEIGHT: LB.	FALL: IN.	START TIME: 12:35 AM/PM
WATER LEVEL (feet):		FINISH TIME: 1:05 PM
TIME:		
DATE:		DATE: 5/23/91
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

NOTE: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: concrete
				0		Concrete, 4" thick
				1		Sand, fine, brown, dry, loose (SP)
				2		Driller could not push sampler in.
				3	1	Gravelly sand, black, dry, loose, gravel up to 1" diam. Appeared to contain aged oil, not viscous (SW)
				4		
				5		
				6	2	Gravelly sand, black, moist, medium dense, gravel up to 1" diam., interbedded with Silty clay, dark gray (SW)
				7		
				8	3	Gravelly sandy clay varying to clayey gravelly sand, dark gray, wet to saturated, medium stiff/medium dense, gravel up to 1" diam. (CL)
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

CAUTION NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO: SB-6
DRILLER'S NAME: Phil		SHEET: 1 OF 1
DRILL RIG: CME45 [X] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash		
SAMPLER USED: [X] 3.5" I.D. Split Barrel [ ] 2.5" I.D. Shelby Tube [ ] Rock Core		
DRIVE WEIGHT: 140 LB.	FALL: 30 IN.	START TIME: 10:35 AM
WATER LEVEL (Feet):		FINISH TIME: 11:05 AM
TIME:		DATE: 5/23/91
DATE:		
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT PCF	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: concrete
				0		
				1		Concrete, 5" thick
				2		Sand, fine, brown, dry, loose (SP)
				3		Driller could not push sampler in.
				4		Piece of metal (4" long, 2" wide) came up on augers
				5	1	Gravelly sand, black, moist, loose to medium dense, gravel up to 1" diam. Contained viscous black oil and aged oil (SW)
				6		
				7	2	Silty clay, dark gray, wet, soft, moderately plastic, 3-7% gravel up to 3/4" diam., contains viscous black oil, with brown oil specks on wet surfaces. Also contains pieces of flat wood, 2-3" long. (CL)
				8		
				9	3	
				10	4	Clayey gravelly sand varying to gravelly clayey sand, dark gray to brown, saturated, medium dense to dense. Contains specks and veins of viscous black oil in sample from approximately 7' to 8-1/2'. No oil seen in sample below 8-1/2'. (SC)
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION: Oakland, CA
JOB NAME: PG&E
JOB NO: 90262.1
DRILLING COMPANY: NEW DRILLING
BORING NO: SB-7
DRILLER NAME: Phil
DRILL RIG: CME45 [ ] Hollow Auger [-] Rotary Wash
SHEET: 1 OF 1
SAMPLER TYPE: [X] 3.5" I.D. Split Spoon [ ] 2.5" I.D. Shelby Tube [ ] Oth
DRIVE WEIGHT: ___ LB. FALL: ___ IN.
WATER LEVEL, Feet: ___ ___
TIME: ___ ___
DATE: ___ ___
CASING DEPTH (FEET): ___ ___
ELEVATION: ___ FEET
START: TIME 1:10 AM PM; DATE 5/23/91
FINISH: TIME 1:50 AM PM
FIELD ENGINEER:

DATUM: [ ] Mean Sea Level [ ] Other

LOCATION & NOTES:

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT pcf	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: concrete
				0		Concrete, 5" thick
				1	1	Sand, fine, brown, dry, loose (SP)
				2	1a	Silty clay, dark gray, moist, medium stiff, slightly plastic, 3-7% gravel up to 1" diam. Driller could not push sampler in further. (CL)
				3		Sandy clay, dark gray (CL)
				4		
				5		
				6	2	Silty clay, dark gray, wet, medium stiff, slightly plastic, 1-3% gravel up to 1/4" diam. (CL)
				7		Gravelly sandy clay, dark gray with reddish brown mottling, moist, stiff, slightly plastic, 30% sand & gravel up to 2" diam. (CL)
				8	3	Clayey gravelly sand varying to gravelly sandy clay, brown, saturated, medium dense/medium stiff, gravel up to 3/4" diam. (SC)
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

CATHODIC NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO: SB-8
DRILLER'S NAME: Phil		SHEET: 1 OF 1
DRILL RIG: CME45 [ ] Hollow Auger [ ] Rotary Wash	[X] Solid Flight Auger	
SAMPLER TYPE: [X] 3.6" I.D. Split Barrel [ ] 2.5" I.D. Shelby Tube [ ] Ref.		
DRIVE WEIGHT: LB.	DROP: IN.	START TIME: 9:25 AM/PM
WATER LEVEL (feet):		FINISH TIME: 10:00 AM/PM
TIME:		
DATE:		DATE: 5/23/91
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

ATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT pcf	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS / DESCRIPTION
						concrete
				0		Concrete, 4-5" thick
				1	1	Sand, fine, brown, dry, loose (SP)
				2		Gravel up to 1" diam., driller could not push sampler in farther.
				3	2	Silty clay, reddish brown grading to dark gray, moist to wet, soft to medium stiff, slightly plastic, 3-5% gravel up to 1" diam. (CL)
				4		
				5	3	
				6		
				7		
				8	4	Gravelly sandy clay, brown with yellowish brown mottling, moist, stiff, not plastic, 40-50% sand and decomposed rock & gravel up to 1-1/2" diam. (CL)
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

QUA RESOURCES, INC.

BORING LOG

LOCATION MAP & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO.: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO.: SB-10
DRILLER NAME: Phil		SHEET: 1 OF 1
DRILL RIG: CME45	[ ] Hollow Auger [ ] Rotary Wash [X] Solid Flight Auger	
SAMPLER TYPE: [X] 3.5" I.D. Split Barrel [ ] 2.5" I.D. Shelby Tube [ ] Bit		
DRIVE WEIGHT: LB.	DROP: IN.	START TIME: 10:00 AM
WATER LEVEL (ft.):		FINISH TIME: 10:30 AM
TIME:		DATE: 5/23/91
DATE:		
CASING DEPTH (FEET):		FIELD ENGINEER:
ELEVATION: FEET		

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT pcf	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: gravel
				0		
				1		18" of gravel pack (fill)
				2	1	Silty clay, blackish brown, moist, stiff, slightly plastic, some sand at 3'. Contains pieces of metal slag and concrete up to 2" diam. (CL)
				3		
				4		
				5	2	Silty clay, dark brown with reddish brown mottling, moist, soft, slightly plastic, 7-10% sand and gravel up to 1/2" diam., increasing to 15% toward bottom of sample (CL)
				6		
				7		
				8	3	Gravelly sandy clay varying to clayey gravelly sand, dark gray with yellowish brown and green mottling, wet, stiff/medium dense, clay slightly plastic, gravel up to 3/4" diam. (CL)
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1	
DRILLING COMPANY: BEW Drilling		BORING NO.: SB-13	
DRILLER'S NAME: Phil		SHEET: 1 OF 1	
DRILL RIG: [X] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash			
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] Grab			
DRIVE WEIGHT: LB.	FALL: IN.	START: TIME 9:45 AM PM	FINISH: TIME 10:20 AM PM
WATER LEVEL (Feet):			
TIME:			
DATE:		DATE: 5/20/91	
CASING DEPTH (FEET):			
ELEVATION: FEET	FIELD ENGINEER:		

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: gravel
				0		
				1	1	Silty clay, dark gray, moist, medium stiff, slightly plastic, 1-3% sand and gravel up to 1/8" diam. (CL)
				2		
				3		
				4	2	Gravelly sandy clay, medium brown with grayish green mottling, saturated, stiff, not plastic, 40-50% sand and gravel up to 1/16" diam. Brown oil spots seen in sample immediately below 5-1/2'. (CL)
				5		
				6		
				7	3	Sand, fine, medium brown, saturated, medium dense (SP)
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO: SB-15
DRILLER'S NAME: Phil		SHEET: 1 of 1
DRILL RIG: (X) Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash		
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 3.0" I.D. Shelby Tube [ ] Oth		
DRIVE WEIGHT: LB. FALL: IN.		START TIME: 2:55 AM PM
WATER LEVEL (Feet):		FINISH TIME: 3:45 AM PM
TIME:		
DATE:		DATE: 5/20/91
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT pcf	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: gravel
				0		
				1	1	Silty clay, dark gray, moist, medium stiff, slightly plastic, 15-20% sand and gravel up to 3/4" diam., % decreasing toward bottom of sample (CL)
				2		
				3	2	Gravelly sandy clay, dark gray, moist, very stiff, slightly plastic, 20-30% sand and gravel up to 1" diam. (CL)
				4		
				5		
				6		
				7	3	Gravelly clayey sand, brown, saturated, dense, gravel up to 1/4" diam. (SC)
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO: SB-16
DRILLER NAME: Phil		SHEET: 1 OF 1
DRILL RIG: [X] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash		
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] Grab		

DRIVE WEIGHT: LB.	FALL: IN.	START TIME: 8:50 AM/PM	FINISH TIME: 9:30 AM/PM	
WATER LEVEL (Feet):				
TIME:				
DATE:				DATE: 5/20/91
CASING DEPTH (FEET):				
ELEVATION: FEET		FIELD ENGINEER:		

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT pcf	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: gravel
				0		
				1	1	Silty clay, blackish brown, moist, medium stiff, slightly plastic, 1-3% sand and gravel up to 1/16" diam. (CL)
				2		
				3	2	Sandy clay, gray with reddish brown mottling, moist, medium stiff, slightly plastic, 15-20% sand and gravel up to 1" diam. (CL)
				4		
				5		
				6	3	Gravelly clayey sand, medium brown, saturated, medium dense, gravel up to 1/2" diam. (SC)
				7		
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO: SB-19
DRILLER'S NAME: Phil		SHEET: 1 OF 1
DRILL RIG: [X] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash		
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] Ref.		
DRIVE WEIGHT: LB. / DROP: IN.	START TIME: 10:50 AM PM	FINISH TIME: 11:30 AM PM
WATER LEVEL (Feet):		
TIME:		
DATE:	DATE: 5/20/91	
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: gravel
				0		
				1	1	Silty clay, blackish brown, moist, soft, slightly plastic, 1-3% sand and gravel up to 1/16" diam. (CL)
				2		
				3		
				4	2	Gravelly sandy clay, dark gray with reddish brown mottling, moist, stiff, not plastic, 40-50% sand and gravel up to 1-1/2" diam. (CL)
				5		
				6		Clayey gravelly sand, dark gray, saturated, medium dense, gravel up to 1" diam. (SC)
				7	3	Gravelly sandy clay, gray with green and brown mottling, saturated, stiff, not plastic, 40-50% sand and gravel up to 1" diam. (CL)
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION & NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E	JOB NO: 90262.1
DRILLING COMPANY: HEW Drilling		BORING NO.: SB-20
DRILLER'S NAME: Phil		SHEET: 1 OF 1
DRILL RIG: [X] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash		
SAMPLER TYPE: [X] 2.5" I.D. Split Barrel [ ] 3.0" I.D. Shelby Tube [ ] PBT		
DRIVE WEIGHT: LB. FALL: IN.		START TIME: 11:35 AM PM
WATER LEVEL (Feet):		FINISH TIME: 12:05 AM PM
TIME:		
DATE:		DATE: 5/20/91
CASING DEPTH (FEET):		
ELEVATION: FEET	FIELD ENGINEER:	

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS: gravel
				0		
				1		Large angular rocks (3" diam.)
				2		Gravelly sandy clay, gray with reddish brown mottling, moist, medium stiff, not plastic, 40-50% sand and gravel up to 1" diam. (CL)
				3	1	
				4	2	Sandy clay, gray, wet, soft, slightly plastic, 5-10% gravel up to 1/4" diam. (CL)
				5		
				6		Clayey gravelly sand, gray, saturated, medium dense, gravel up to 1" diam. (SC)
				7		
				8	3	Gravelly sandy clay, brown, saturated, stiff, not plastic, 40-50% gravel up to 1" diam. (CL)
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

AQUA RESOURCES, INC.

BORING LOG

LOCATION: Oakland, CA
JOB NAME: PG&E
JOB NO: 90262.1
DRILLING COMPANY: NEW DRILLING
DRILLER NAME: Phil
BORING NO: SB-22
DRILL RIG: [X] Solid Flight Auger [ ] Hollow Auger [ ] Rotary Wash
SHEET: 1 OF 1
SAMPLER TYPES: [X] 2.5" I.D. Split Spoon [ ] 3.0" I.D. Shelby Tube [ ] Bit
DRIVE WEIGHT: LB. FALL: IN.
WATER LEVEL (Feet): TIME: DATE:
CASING DEPTH (FEET):
ELEVATION: FEET
START: TIME 2:05 AM PM DATE 5/23/91
FINISH: TIME 2:40 AM PM
FIELD ENGINEER:

LOCATION NOTES:

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER 6" OR SAMPLE FOOT	BLOWS/FT.	MOISTURE CONTENT %	DRY UNIT WEIGHT pcf	DEPTH IN FEET	SAMPLE NO.	
						SURFACE CONDITIONS: gravel
				0		
				1		Silty clay, blackish brown, moist, soft, slightly plastic, 1-3% sand and gravel up to 1/16" diam. (CL)
				2		
				3	1	
				4		Gravelly sandy clay, dark gray, moist, stiff, not plastic, 40-50% sand and gravel up to 1" diam. (CL)
				5	2	Gravelly sandy clay, dark gray with brown mottling, moist, stiff, not plastic, 40-50% sand and gravel up to 2" diam. (CL)
				6		
				7	3	Clayey gravelly sand, brown, saturated, dense, gravel up to 3/4" diam. (SC)
				8		
				9		
				10		
				11		
				12		
				13		
				14		
				15		
				16		
				17		
				18		
				19		
				20		

APPENDIX C

Monitoring Well Boring Log and Installation Documentation

AQUA RESOURCES, INC.

BORING LOG

LOCATION NOTES

LOCATION: Oakland, CA	JOB NAME: PG&E		JOB NO: 90262.1
DRILLING COMPANY: NEW Drilling			BORING NO: OW-5
DRILLER NAME: Anibal	[ ] Solid Flight Auger		SHEET: 1 of 1
DRILL RIG: CME55	[X] Hollow Auger	[ ] Rotary Wash	
SAMPLER TYPE: [X] 3.5" I.D. Split Barrel [ ] 2.0" I.D. Shelby Tube [ ] Ref.			
DRIVE WEIGHT: ___ LB.	FALL: ___ IN.		START TIME: 8:40 AM
WATER LEVEL (Feet): ___			FINISH TIME: 10:45 AM
TIME: ___			DATE: 4/16/91
DATE: ___			
CASING DEPTH (FEET): ___			
ELEVATION: ___ FEET	FIELD ENGINEER:		

DATUM: [ ] Mean Sea Level [ ] Other

BLOWS PER HALF FOOT	BLOWS/ft.	MOISTURE CONTENT %	DRY UNIT WEIGHT (pcf)	DEPTH IN FEET	SAMPLE NO.	SURFACE CONDITIONS / DESCRIPTION
				0		SURFACE CONDITIONS: gravel
				1	1	Silty clay, very dark brown to black, moist, soft, slightly plastic, some gravel up to 1/2" diam. (CL)
				2	2	
				3	3	Silty clay, dark gray, moist, medium stiff, slightly plastic, some decomposed rock & gravel up to 1" diam. (CL)
				4	4	
				5	5	
				6	6	Sandy gravelly clay varying to gravelly sandy clay, dark gray mottled with brown & white from decomposed rock, moist, medium stiff to stiff, slightly plastic, some gravel up to 1" diam. Liquid brown oil at 5' (CL)
				7	7	
				8	8	
				9	9	
				10	10	
				11	11	
				12	12	
				13	13	Clayey sand, with interbedded clayey gravel, medium brown, wet, loose, some gravel up to 1" diam. (SC)
				14	14	
				15	15	
				16	16	Sandy clay, interbedded with silty clay, medium brown with black and reddish brown mottling, saturated, medium stiff to stiff, slightly plastic, small amount of gravel up to 1/4" diam. (CL)
				17	17	
				18	18	
				19	19	
				20	20	
				21	21	
				22	22	
				23	23	
				24	24	

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

APPENDIX D

Certified Laboratory Results and Chain-of-Custody Documentation

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: MARLEAH M. MARTIN
Phone: (714) 892-2565

Aqua Resources, Inc.
2030 Addison Street
Berkeley, CA 94704

Attn: Clancy Tenley
Invoice Number:

Order #: 91-04-054
Date: 05/07/91 16:22
Work ID: 90262/PG and E
Date Received: 04/16/91
Date Completed: 05/07/91

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	SB-1-1B	02	SB-1-2
03	SB-1-3	04	SB-4-1
05	SB-4-2	06	SB-4-3
07	SB-2-1	08	SB-2-2

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Not detected.
B = Analyte was present in the blank.

Certified By
Marleah M. Martin

eceived: 04/16/91 Results by Sample

AMPLE ID SB-1-1B FRACTION 01A TEST CODE 8010 NAME VOA Halo. HCs in soil
Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Dichlorodifluoromethane	ND	0.0050	5.0	04/19/91	
Chloromethane	ND	0.0050	5.0	04/19/91	
Vinyl chloride	ND	0.0050	5.0	04/19/91	
Bromomethane	ND	0.0050	5.0	04/19/91	
Chloroethane	ND	0.0050	5.0	04/19/91	
Trichlorofluoromethane	ND	0.0050	5.0	04/19/91	
1,1-dichloroethene	ND	0.0050	5.0	04/19/91	
Dichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,2-DCE	ND	0.0050	5.0	04/19/91	
1,1-dichloroethane	ND	0.0050	5.0	04/19/91	
Chloroform	ND	0.0050	5.0	04/19/91	
1,1,1-trichloroethane	ND	0.0050	5.0	04/19/91	
Carbon Tetrachloride	ND	0.0050	5.0	04/19/91	
1,2-dichloroethane	ND	0.0050	5.0	04/19/91	
Trichloroethylene	ND	0.0050	5.0	04/19/91	
1,2-dichloropropane	ND	0.0050	5.0	04/19/91	
Bromodichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,3-DCP	ND	0.0050	5.0	04/19/91	
Cis-1,3-DCP	ND	0.0050	5.0	04/19/91	
1,1,2-trichloroethane	ND	0.0050	5.0	04/19/91	
Tetrachloroethene	ND	0.0050	5.0	04/19/91	
Dibromochloromethane	ND	0.0050	5.0	04/19/91	
Chlorobenzene	ND	0.0050	5.0	04/19/91	
Bromoform	ND	0.0050	5.0	04/19/91	
1,1,2,2-TCA	ND	0.0050	5.0	04/19/91	
1,2,3-Trichloropropane	ND	0.044	5.0	04/19/91	
2-Chlorotoluene	ND	0.10	5.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	5.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED
ANALYST DL
FILE ID 5AA-288
UNITS mg/Kg
BATCH_ID 3VOA-011
COMMENTS

Received: 04/16/91 Results by Sample

SAMPLE ID SB-1-1B FRACTION 01A TEST CODE 8020 NAME VOA Arom. HCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Benzene	ND	0.0050	5.0	04/19/91	
Toluene	ND	0.0050	5.0	04/19/91	
Chlorobenzene	ND	0.0050	5.0	04/19/91	
Ethylbenzene	0.045	0.0050	5.0	04/19/91	
P-&m-xylene	ND	0.010	5.0	04/19/91	
O-xylene	0.025	0.0050	5.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	5.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 10AA-271

UNITS mg/Kg

BATCH_ID 5VOA-252

COMMENTS

eceived: 04/16/91

Results by Sample

AMPLE ID SB-1-1B FRACTION 01A TEST CODE AQTOX NAME Aquatic Toxicity

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Aquatic Toxicity	>500	LC50>500	N/A	04/13/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST JB

UNITS mg/L

BATCH_ID N/A

COMMENTS

eceived: 04/16/91

Results by Sample

AMPLE ID SB-1-1B FRACTION 01A TEST CODE SLFTD NAME HCs Diesel by EXT in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	8,900	2.5	50	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/18/91

ANALYST MP

FILE ID

UNITS mg/Kg

BATCH_ID LDS-3

COMMENTS

ETAL REPORT Work Order # 91-04-054

eceived: 04/16/91

Results by Sample

AMPLE ID SB-1-1B FRACTION 01A TEST CODE SMSC4 NAME MISC test soil

Date & Time Collected 04/15/91 Category

ANALYTES	RESULT	LIMIT	D_F	DATE_ANAL
Chromium VI	ND	0.4	1.0	05/01/91
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		

Notes and Definitions for this Report:

EXTRACTED 05/01/91

ANALYST SN

FILE ID N/A

UNITS mg/Kg

BATCH_ID SCHR6-2

COMMENTS

eceived: 04/16/91

Results by Sample

MPLE ID SB-1-1B FRACTION 01A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	32000	5.0	100	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91
ANALYST MG
UNITS mg/Kg
BATCH_ID STPH-24
COMMENTS

eceived: 04/16/91

Results by Sample

AMPLE ID SB-1-1B FRACTION 01A TEST CODE STTLC NAME TTLC (CCR) Metals in Soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	DATE_EXT
Antimony, Sb	19	2.0	4.0	04/17/91	04/17/91
Arsenic, As	17	0.25	10	04/22/91	04/17/91
Barium, Ba	290	0.040	4.0	04/17/91	04/17/91
Beryllium, Be	0.22	0.020	4.0	04/17/91	04/17/91
Cadmium, Cd	0.8	0.060	4.0	04/17/91	04/17/91
Chromium, Cr	28	0.040	4.0	04/17/91	04/17/91
Cobalt, Co	6.9	0.040	4.0	04/17/91	04/17/91
Copper, Cu	28	0.050	4.0	04/17/91	04/17/91
Lead, Pb	210	0.50	4.0	04/17/91	04/17/91
Mercury, Hg	ND	0.17	1.0	04/17/91	04/17/91
Molybdenum, Mo	0.7	0.060	4.0	04/17/91	04/17/91
Nickel, Ni	60	0.20	4.0	04/17/91	04/17/91
Selenium, Se	ND	0.25	4.0	04/17/91	04/17/91
Silver, Ag	ND	0.20	4.0	04/17/91	04/17/91
Thallium, Tl	5.6	3.0	1.0	04/18/91	04/17/91
Vanadium, V	63	0.50	4.0	04/17/91	04/17/91
Zinc, Zn	90	0.070	4.0	04/17/91	04/17/91

Notes and Definitions for this Report:

ANALYST AW

UNITS mg/Kg

BATCH_ID GFS-50, GFS-52, IFS-70, HGS-46

COMMENTS

Received: 04/16/91

Results by Sample

SAMPLE ID SB-1-2 FRACTION 02A TEST CODE 8010 NAME VOA Halo. HCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Dichlorodifluoromethane	ND	0.0050	5.0	04/19/91	
Chloromethane	ND	0.0050	5.0	04/19/91	
Vinyl chloride	ND	0.0050	5.0	04/19/91	
Bromomethane	ND	0.0050	5.0	04/19/91	
Chloroethane	ND	0.0050	5.0	04/19/91	
Trichlorofluoromethane	ND	0.0050	5.0	04/19/91	
1,1-dichloroethene	ND	0.0050	5.0	04/19/91	
Dichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,2-DCE	ND	0.0050	5.0	04/19/91	
1,1-dichloroethane	ND	0.0050	5.0	04/19/91	
Chloroform	ND	0.0050	5.0	04/19/91	
1,1,1-trichloroethane	ND	0.0050	5.0	04/19/91	
Carbon Tetrachloride	ND	0.0050	5.0	04/19/91	
1,2-dichloroethane	ND	0.0050	5.0	04/19/91	
Trichloroethylene	ND	0.0050	5.0	04/19/91	
1,2-dichloropropane	ND	0.0050	5.0	04/19/91	
Bromodichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,3-DCP	ND	0.0050	5.0	04/19/91	
Cis-1,3-DCP	ND	0.0050	5.0	04/19/91	
1,1,2-trichloroethane	ND	0.0050	5.0	04/19/91	
Tetrachloroethene	ND	0.0050	5.0	04/19/91	
Dibromochloromethane	ND	0.0050	5.0	04/19/91	
Chlorobenzene	ND	0.0050	5.0	04/19/91	
Bromoform	ND	0.0050	5.0	04/19/91	
1,1,2,2-TCA	ND	0.0050	5.0	04/19/91	
1,2,3-Trichloropropane	ND	0.044	5.0	04/19/91	
2-Chlorotoluene	ND	0.10	5.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	5.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 5AA-289

UNITS mg/Kg

BATCH_ID 3VOA-011

COMMENTS

AQUA RESOURCES, INC.

OBSERVATION WELL INSTALLATION REPORT

Well # OW-5

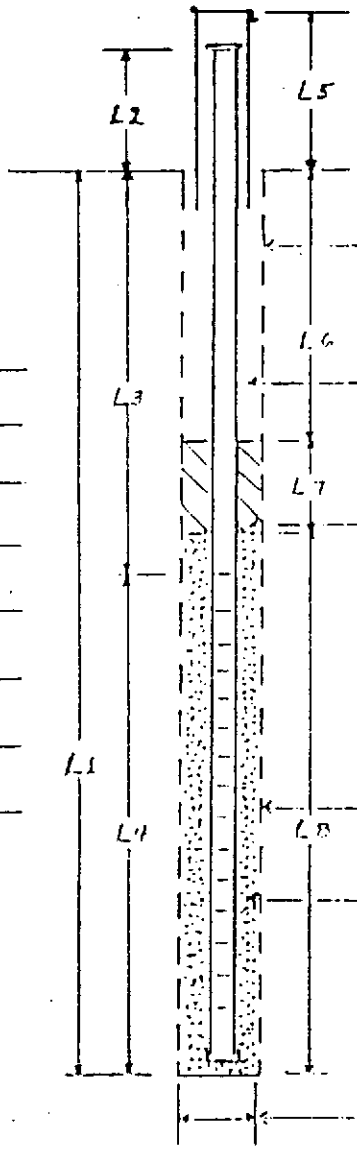
Project PG&E

Location 4930 Coliseum Way, Oakland, CA 94601

Type of Rig CME 55 Installed by HEW Drilling

Date Started 4/16/91 Date Finished 4/16/91

Type of Observation Well water Ground Elev. _____ Casing Top, Elev. _____



L1 16½ feet

L2 ½ foot

L3 6½ feet

L4 10 feet

L5 ½ foot

L6 5 feet

L7 1 foot

L8 10½ feet

Cap locking cap and sealed well cover

Type of Casing 2" pvc

Type of Backfill cement grout

Type of Seal Material bentonite pellets

Size of Openings .020 inch

Type of Filter Material #3 sand

Diameter of Boring 8 inches

Remarks _____

Observed by _____

eceived: 04/16/91 Results by Sample

MPLE ID SB-1-2 FRACTION 02A TEST CODE 8020 NAME VOA Arom. HCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Benzene	ND	0.0050	5.0	04/19/91	
Toluene	ND	0.0050	5.0	04/19/91	
Chlorobenzene	ND	0.0050	5.0	04/19/91	
Ethylbenzene	ND	0.0050	5.0	04/19/91	
P-&m-xylene	ND	0.010	5.0	04/19/91	
O-xylene	ND	0.0050	5.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	5.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 6AA-289

UNITS mg/Kg

BATCH_ID 3VOA-011

COMMENTS

ETAL REPORT Work Order # 91-04-054

Received: 04/16/91

Results by Sample

SAMPLE ID SB-1-2 FRACTION 02A TEST CODE SLFTD NAME ECs Diesel by EXT in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
ECs Diesel fuel	*2,100	2.5	50	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/18/91

ANALYST MP

FILE ID

UNITS mg/Kg

BATCH_ID LDS-3

COMMENTS * = See appendix

eceived: 04/16/91 Results by Sample

MPLE ID SB-1-2 FRACTION 02A TEST CODE STPH NAME Total petroleum HCs/soil
Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	11000	5.0	100	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91
ANALYST MG
UNITS mg/Kg
BATCH_ID STPH-24
COMMENTS

ETAL REPORT Work Order # 91-04-054

eceived: 04/16/91

Results by Sample

AMPLE ID SB-1-3 FRACTION 03A TEST CODE 8010 NAME VOA Halo. HCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Dichlorodifluoromethane	ND	0.0050	1.0	04/19/91	
Chloromethane	ND	0.0050	1.0	04/19/91	
Vinyl chloride	ND	0.0050	1.0	04/19/91	
Bromomethane	ND	0.0050	1.0	04/19/91	
Chloroethane	ND	0.0050	1.0	04/19/91	
Trichlorofluoromethane	ND	0.0050	1.0	04/19/91	
1,1-dichloroethene	ND	0.0050	1.0	04/19/91	
Dichloromethane	ND	0.0050	1.0	04/19/91	
Trans-1,2-DCE	ND	0.0050	1.0	04/19/91	
1,1-dichloroethane	ND	0.0050	1.0	04/19/91	
Chloroform	ND	0.0050	1.0	04/19/91	
1,1,1-trichloroethane	ND	0.0050	1.0	04/19/91	
Carbon Tetrachloride	ND	0.0050	1.0	04/19/91	
1,2-dichloroethane	ND	0.0050	1.0	04/19/91	
Trichloroethylene	ND	0.0050	1.0	04/19/91	
1,2-dichloropropane	ND	0.0050	1.0	04/19/91	
Bromodichloromethane	ND	0.0050	1.0	04/19/91	
Trans-1,3-DCP	ND	0.0050	1.0	04/19/91	
Cis-1,3-DCP	ND	0.0050	1.0	04/19/91	
1,1,2-trichloroethane	ND	0.0050	1.0	04/19/91	
Tetrachloroethene	ND	0.0050	1.0	04/19/91	
Dibromochloromethane	ND	0.0050	1.0	04/19/91	
Chlorobenzene	ND	0.0050	1.0	04/19/91	
Bromoform	ND	0.0050	1.0	04/19/91	
1,1,2,2-TCA	ND	0.0050	1.0	04/19/91	
1,2,3-Trichloropropane	ND	0.044	1.0	04/19/91	
2-Chlorotoluene	ND	0.10	1.0	04/19/91	
1,3-dichlorobenzene	0.019	0.0050	1.0	04/19/91	
1,4-dichlorobenzene	0.02	0.0050	1.0	04/19/91	
1,2-dichlorobenzene	0.008 B	0.0050	1.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 5AA-290

UNITS mg/Kg

BATCH_ID 3VOA-011

COMMENTS

:ceived: 04/16/91 Results by Sample

-MPLE ID SB-1-3 FRACTION 03A TEST CODE 8020 NAME VOA Arom. HCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Benzene	ND	0.0050	1.0	04/19/91	
Toluene	ND	0.0050	1.0	04/19/91	
Chlorobenzene	ND	0.0050	1.0	04/19/91	
Ethylbenzene	ND	0.0050	1.0	04/19/91	
P-&m-xylene	ND	0.010	1.0	04/19/91	
O-xylene	ND	0.0050	1.0	04/19/91	
1,3-dichlorobenzene	0.013	0.0050	1.0	04/19/91	
1,4-dichlorobenzene	0.014	0.0050	1.0	04/19/91	
1,2-dichlorobenzene	0.013 B	0.0050	1.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 6AA-290

UNITS mg/Kg

BATCH_ID 3VOA-011

COMMENTS

Received: 04/16/91

Results by Sample

SAMPLE ID SB-1-3 FRACTION 03A TEST CODE SLFTD NAME HCs Diesel by EXT in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	ND	2.5	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/18/91

ANALYST MP

FILE ID

UNITS mg/Kg

BATCH_ID LDS-3

COMMENTS

ETAL REPORT Work Order # 91-04-054

ceived: 04/16/91

Results by Sample

MPLE ID SB-1-3 FRACTION 03A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	11	5.3	1.0	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91

ANALYST MG

UNITS mg/Kg

BATCH_ID STPH-24

COMMENTS

ETAL REPORT Work Order # 91-04-054

eceived: 04/16/91

Results by Sample

MPLE ID SB-4-1 FRACTION 04A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	14000	5.0	100	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91

ANALYST MG

UNITS mg/Kg

BATCH_ID STPH-24

COMMENTS

eceived: 04/16/91

Results by Sample

AMPLE ID SB-4-2 FRACTION 05A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	5800	5.0	100	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91

ANALYST MG

UNITS mg/Kg

BATCH_ID STPH-24

COMMENTS

eceived: 04/16/91

Results by Sample

AMPLE ID SB-4-3 FRACTION 06A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	6900	5.0	100	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91

ANALYST MG

UNITS mg/Kg

BATCH_ID STPH-24

COMMENTS

eceived: 04/16/91 Results by Sample

MPLE ID SB-2-1 FRACTION 07A TEST CODE 8010 NAME VOA Halo. HCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Dichlorodifluoromethane	ND	0.0050	5.0	04/19/91	
Chloromethane	ND	0.0050	5.0	04/19/91	
Vinyl chloride	ND	0.0050	5.0	04/19/91	
Bromomethane	ND	0.0050	5.0	04/19/91	
Chloroethane	ND	0.0050	5.0	04/19/91	
Trichlorofluoromethane	ND	0.0050	5.0	04/19/91	
1,1-dichloroethene	ND	0.0050	5.0	04/19/91	
Dichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,2-DCE	ND	0.0050	5.0	04/19/91	
1,1-dichloroethane	ND	0.0050	5.0	04/19/91	
Chloroform	ND	0.0050	5.0	04/19/91	
1,1,1-trichloroethane	ND	0.0050	5.0	04/19/91	
Carbon Tetrachloride	ND	0.0050	5.0	04/19/91	
1,2-dichloroethane	ND	0.0050	5.0	04/19/91	
Trichloroethylene	ND	0.0050	5.0	04/19/91	
1,2-dichloropropane	ND	0.0050	5.0	04/19/91	
Bromodichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,3-DCP	ND	0.0050	5.0	04/19/91	
Cis-1,3-DCP	ND	0.0050	5.0	04/19/91	
1,1,2-trichloroethane	ND	0.0050	5.0	04/19/91	
Tetrachloroethene	ND	0.0050	5.0	04/19/91	
Dibromochloromethane	ND	0.0050	5.0	04/19/91	
Chlorobenzene	ND	0.0050	5.0	04/19/91	
Bromoform	ND	0.0050	5.0	04/19/91	
1,1,2,2-TCA	ND	0.0050	5.0	04/19/91	
1,2,3-Trichloropropane	ND	0.044	5.0	04/19/91	
2-Chlorotoluene	ND	0.10	5.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	5.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 5AA-291

UNITS mg/Kg

BATCH_ID 3VOA-011

COMMENTS

eceived: 04/16/91

Results by Sample

AMPLE ID SB-2-1 FRACTION 07A TEST CODE 8020 NAME VOA Arom. HCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Benzene	ND	0.0050	5.0	04/19/91	
Toluene	ND	0.0050	5.0	04/19/91	
Chlorobenzene	ND	0.0050	5.0	04/19/91	
Ethylbenzene	0.030	0.0050	5.0	04/19/91	
P-&m-xylene	ND	0.010	5.0	04/19/91	
O-xylene	ND	0.0050	5.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	5.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 6AA-291

UNITS mg/Kg

BATCH_ID 3VOA-011

COMMENTS

eceived: 04/16/91

Results by Sample

AMPLE ID SB-2-1 FRACTION 07A TEST CODE SLFTD NAME HCs Diesel by EET in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	+1,600	2.5	50	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/18/91
ANALYST MP
FILE ID
UNITS mg/Kg
BATCH_ID LDS-3
COMMENTS * = See appendix

eceived: 04/16/91

Results by Sample

AMPLE ID SB-2-1 FRACTION 07A TEST CODE STPE NAME Total petroleum HCs/soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	47000	5.0	100	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91

ANALYST MG

UNITS mg/Kg

BATCH_ID STPE-24

COMMENTS

SAMPLE ID SB-2-2 FRACTION 08A TEST CODE 8010 NAME VOA Halo. HCs in soil
Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Dichlorodifluoromethane	ND	0.0050	5.0	04/19/91	
Chloromethane	ND	0.0050	5.0	04/19/91	
Vinyl chloride	ND	0.0050	5.0	04/19/91	
Bromomethane	ND	0.0050	5.0	04/19/91	
Chloroethane	ND	0.0050	5.0	04/19/91	
Trichlorofluoromethane	ND	0.0050	5.0	04/19/91	
1,1-dichloroethene	ND	0.0050	5.0	04/19/91	
Dichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,2-DCE	ND	0.0050	5.0	04/19/91	
1,1-dichloroethane	ND	0.0050	5.0	04/19/91	
Chloroform	ND	0.0050	5.0	04/19/91	
1,1,1-trichloroethane	ND	0.0050	5.0	04/19/91	
Carbon Tetrachloride	ND	0.0050	5.0	04/19/91	
1,2-dichloroethane	ND	0.0050	5.0	04/19/91	
Trichloroethylene	ND	0.0050	5.0	04/19/91	
1,2-dichloropropane	ND	0.0050	5.0	04/19/91	
Bromodichloromethane	ND	0.0050	5.0	04/19/91	
Trans-1,3-DCP	ND	0.0050	5.0	04/19/91	
Cis-1,3-DCP	ND	0.0050	5.0	04/19/91	
1,1,2-trichloroethane	ND	0.0050	5.0	04/19/91	
Tetrachloroethene	ND	0.0050	5.0	04/19/91	
Dibromochloromethane	ND	0.0050	5.0	04/19/91	
Chlorobenzene	ND	0.0050	5.0	04/19/91	
Bromoform	ND	0.0050	5.0	04/19/91	
1,1,2,2-TCA	ND	0.0050	5.0	04/19/91	
1,2,3-Trichloropropane	ND	0.044	5.0	04/19/91	
2-Chlorotoluene	ND	0.10	5.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	5.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	5.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED
ANALYST DL
FILE ID 5AA-292
UNITS mg/Kg
BATCH_ID 3VOA-011
COMMENTS

Received: 04/16/91

Results by Sample

SAMPLE ID SB-2-2 FRACTION 08A TEST CODE 8020 NAME VOA Arom. BCs in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Benzene	ND	0.0050	1.0	04/19/91	
Toluene	ND	0.0050	1.0	04/19/91	
Chlorobenzene	ND	0.0050	1.0	04/19/91	
Ethylbenzene	ND	0.0050	1.0	04/19/91	
P-&m-xylene	ND	0.010	1.0	04/19/91	
O-xylene	ND	0.0050	1.0	04/19/91	
1,3-dichlorobenzene	ND	0.0050	1.0	04/19/91	
1,4-dichlorobenzene	ND	0.0050	1.0	04/19/91	
1,2-dichlorobenzene	ND	0.0050	1.0	04/19/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 6AA-292

UNITS mg/Kg

BATCH_ID 3VOA-011

COMMENTS

Received: 04/16/91

Results by Sample

SAMPLE ID SB-2-2 FRACTION 08A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	8.0	5.0	1.0	04/24/91

Notes and Definitions for this Report:

EXTRACTED 04/23/91

ANALYST MG

UNITS mg/Kg

BATCH_ID STPH-24

COMMENTS

Cuz Resources, Inc.

APPENDIX

- Sample #02A contains a Hydrocarbon Fuel approximately 3700 mg/Kg, in this amount, there is 2,149 mg/Kg of Diesel Fuel.

Sample #07A contains a Hydrocarbon Fuel approximately 2000 mg/Kg, in this amount, there is 1571 mg/Kg of Diesel Fuel.

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: MARLEAH M. MARTIN
Phone: (714) 892-2565

Aqua Resources, Inc.
2030 Addison Street
Berkeley, CA 94704

Attn: Clancy Tenley
Invoice Number:

Order #: 91-05-026
Date: 05/16/91 19:48
Work ID: P, G & E/ 90262
Date Received: 05/08/91
Date Completed: 05/14/91

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	SB-1-1B		

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Not detected.
B = Analyte was present in the blank.

Certified By
Marleah M. Martin

Received: 05/08/91

Results by Sample

SAMPLE ID SB-1-1B FRACTION 01A TEST CODE SMSC3 NAME MISC test soil

Date & Time Collected 04/15/91 Category

ANALYTES	RESULT	LIMIT	D_F	DATE_ANAL
Lead, Pb	6.4	0.20	1.0	05/13/91
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		

Notes and Definitions for this Report:

EXTRACTED 05/13/91

ANALYST AW

FILE ID N/A

UNITS mg/L

BATCH_ID IPW-71

COMMENTS STLC ANALYSIS FOR LEAD WAS PERFORMED BY FAA.

eceived: 05/08/91 05/16/91 19:48:57

rua Resources, Inc.

lease note all results are reported as wet weight.

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: MARLEAH M. MARTIN
Phone: (714) 892-2565

Aqua Resources, Inc.
2030 Addison Street
Berkeley, CA 94704

Attn: Clancy Tenley
Invoice Number:

Order #: 91-04-064
Date: 05/07/91 11:46
Work ID: 90262/PG & E
Date Received: 04/17/91
Date Completed: 05/07/91

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	W5-1	02	W5-2
03	W5-3	04	W5-4
05	W5-5	06	W5-6
07	W5-7	08	W5-8
09	W5-9	10	W5-10
11	W5-11	12	W5-12
13	W5-13	14	W5-14
15	W5-15	16	W5-16
17	W5-17	18	W5-18
19	W5-19	20	W5-21
21	W5-20	22	W5-22
23	W5-23	24	W5-24

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Not detected.
B = Analyte was present in the blank.

Certified By
Marleah M. Martin

eceived: 04/17/91 Results by Sample

AMPLE ID W5-5 FRACTION 05A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	450	5.0	1.0	04/30/91

Notes and Definitions for this Report:

EXTRACTED 04/30/91
ANALYST JB
UNITS mg/Kg
BATCH_ID STPH-25
COMMENTS

eceived: 04/17/91

Results by Sample

AMPLE ID W5-9 FRACTION 09A TEST CODE 8010 NAME VOA Halo. HCs in soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Dichlorodifluoromethane	ND	0.0050	1.0	04/25/91	
Chloromethane	ND	0.0050	1.0	04/25/91	
Vinyl chloride	ND	0.0050	1.0	04/25/91	
Bromomethane	ND	0.0050	1.0	04/25/91	
Chloroethane	ND	0.0050	1.0	04/25/91	
Trichlorofluoromethane	ND	0.0050	1.0	04/25/91	
1,1-dichloroethene	ND	0.0050	1.0	04/25/91	
Dichloromethane	ND	0.0050	1.0	04/25/91	
Trans-1,2-DCE	ND	0.0050	1.0	04/25/91	
1,1-dichloroethane	ND	0.0050	1.0	04/25/91	
Chloroform	ND	0.0050	1.0	04/25/91	
1,1,1-trichloroethane	ND	0.0050	1.0	04/25/91	
Carbon Tetrachloride	ND	0.0050	1.0	04/25/91	
1,2-dichloroethane	ND	0.0050	1.0	04/25/91	
Trichloroethylene	ND	0.0050	1.0	04/25/91	
1,2-dichloropropane	ND	0.0050	1.0	04/25/91	
Bromodichloromethane	ND	0.0050	1.0	04/25/91	
Trans-1,3-DCP	ND	0.0050	1.0	04/25/91	
Cis-1,3-DCP	ND	0.0050	1.0	04/25/91	
1,1,2-trichloroethane	ND	0.0050	1.0	04/25/91	
Tetrachloroethene	ND	0.0050	1.0	04/25/91	
Dibromochloromethane	ND	0.0050	1.0	04/25/91	
Chlorobenzene	ND	0.0050	1.0	04/25/91	
Bromoform	ND	0.0050	1.0	04/25/91	
1,1,2,2-TCA	ND	0.0050	1.0	04/25/91	
1,2,3-Trichloropropane	ND	0.044	1.0	04/25/91	
2-Chlorotoluene	ND	0.10	1.0	04/25/91	
1,3-dichlorobenzene	ND	0.0050	1.0	04/25/91	
1,4-dichlorobenzene	ND	0.0050	1.0	04/25/91	
1,2-dichlorobenzene	ND	0.0050	1.0	04/25/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST JY

FILE ID 9AA-315

UNITS mg/Kg

BATCH_ID 8VOA-254

COMMENTS

eceived: 04/17/91

Results by Sample

AMPLE ID W5-9 FRACTION 09A TEST CODE 8020 NAME VOA Arom. BCs in soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	CONF_RESULT
Benzene	ND	0.0050	1.0	04/25/91	
Toluene	ND	0.0050	1.0	04/25/91	
Chlorobenzene	ND	0.0050	1.0	04/25/91	
Ethylbenzene	ND	0.0050	1.0	04/25/91	
P-&m-xylene	ND	0.010	1.0	04/25/91	
O-xylene	ND	0.0050	1.0	04/25/91	
1,3-dichlorobenzene	ND	0.0050	1.0	04/25/91	
1,4-dichlorobenzene	ND	0.0050	1.0	04/25/91	
1,2-dichlorobenzene	ND	0.0050	1.0	04/25/91	

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 10AA-315

UNITS mg/Kg

BATCH_ID 5VOA-254

COMMENTS

ceived: 04/17/91

ETAL REPORT Work Order # 91-04-064

Results by Sample

MPLE ID WS-9 FRACTION 09A TEST CODE SLFTD NAME HCs Diesel by EXT in soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	ND*	2.5	20	04/18/91

Notes and Definitions for this Report:

EXTRACTED 04/18/91
ANALYST MP
FILE ID
UNITS mg/Kg
BATCH_ID LDS-3
COMMENTS * = See appendix

eceived: 04/17/91

Results by Sample

MPLE ID W5-9 FRACTION 09A TEST CODE SLFTG NAME HCs Gas by P & T in soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Gasoline fuel	2.0	0.10	1.0	04/29/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST MP

FILE ID

UNITS mg/Kg

BATCH_ID 7GAS-006

COMMENTS

sceived: 04/17/91

Results by Sample

MPLE ID W5-9 FRACTION 09A TEST CODE SMSC4 NAME MISC test soil

Date & Time Collected 04/16/91 Category

ANALYTES	RESULT	LIMIT	D_F	DATE_ANAL
Chromium VI	ND	0.4	1.0	05/01/91
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		

Notes and Definitions for this Report:

EXTRACTED 05/01/91
ANALYST SC
FILE ID N/A
UNITS mg/Kg
BATCH_ID SCHR6-2
COMMENTS

:ceived: 04/17/91

Results by Sample

MPLE ID W5-9 FRACTION 09A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	600	5.0	1.0	04/30/91

Notes and Definitions for this Report:

EXTRACTED 04/30/91

ANALYST JB

UNITS mg/Kg

BATCH_ID STPH-25

COMMENTS

eceived: 04/17/91

Results by Sample

AMPLE ID W5-9 FRACTION 09A TEST CODE STTLC NAME TTLC (CCR) Metals in Soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL	DATE_EXT
Antimony, Sb	ND	2.0	4.0	04/29/91	04/23/91
Arsenic, As	6.0	0.25	8.0	05/02/91	04/30/91
Barium, Ba	190	0.040	4.0	04/29/91	04/30/91
Beryllium, Be	1.2	0.020	4.0	04/29/91	04/30/91
Cadmium, Cd	0.29	0.060	4.0	04/29/91	04/30/91
Chromium, Cr	110	0.040	4.0	04/29/91	04/30/91
Cobalt, Co	14	0.040	4.0	04/29/91	04/30/91
Copper, Cu	35	0.050	4.0	04/29/91	04/30/91
Lead, Pb	8.6	2.0	1.0	04/26/91	04/23/91
Mercury, Hg	0.7	0.17	1.0	05/01/91	05/01/91
Molybdenum, Mo	ND	0.060	4.0	04/29/91	04/30/91
Nickel, Ni	150	0.20	4.0	04/29/91	04/30/91
Selenium, Se	ND	0.25	4.0	05/01/91	04/30/91
Silver, Ag	ND	0.20	4.0	04/29/91	04/30/91
Thallium, Tl	ND	3.0	1.0	04/29/91	04/30/91
Vanadium, V	59	0.030	4.0	04/29/91	04/30/91
Zinc, Zn	80	0.070	4.0	04/29/91	04/30/91

Notes and Definitions for this Report:

ANALYST WN

UNITS mg/Kg

BATCH_ID IFS-73, GFS-55, HGS-50

COMMENTS

eceived: 04/17/91

Results by Sample

AMPLE ID WS-12 FRACTION 12A TEST CODE STPH NAME Total petroleum HCs/soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	75	5.0	1.0	04/30/91

Notes and Definitions for this Report:

EXTRACTED 04/30/91
ANALYST JB
UNITS mg/Kg
BATCH_ID STPH-25
COMMENTS

rua Resources, Inc.

APPENDIX

* Sample #09A contains a Hydrocarbon fuel approximately 3750 mg/Kg. This Hydrocarbon doesn't match diesel fuel.

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: MARLEAH M. MARTIN
Phone: (714) 892-2565

Aqua Resources, Inc.
2030 Addison Street
Berkeley, CA 94704

Attn: Clancy Tenley
Invoice Number:

Order #: 91-04-086
Date: 05/03/91 13:57
Work ID: 90262-P, G & E
Date Received: 04/25/91
Date Completed: 05/03/91

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	SB-1-1B	02	SB-2-1
03	W5-1		

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Not detected.
B = Analyte was present in the blank.

Certified By
Val Mallari

eceived: 04/25/91 Results by Sample

AMPLE ID SB-1-1B FRACTION 01A TEST CODE SPCB NAME PCBs only in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
PCB-1016	ND	0.10	10	05/02/91
PCB-1221	ND	0.10	10	05/02/91
PCB-1232	ND	0.10	10	05/02/91
PCB-1242	ND	0.10	10	05/02/91
PCB-1248	ND	0.10	10	05/02/91
PCB-1254	ND	0.10	10	05/02/91
PCB-1260	ND	0.10	10	05/02/91

Notes and Definitions for this Report:

EXTRACTED 04/29/91
ANALYST NL
FILE ID 2AA-796
UNITS mg/Kg
BATCH_ID PCBS-14
COMMENTS

:eceived: 04/25/91

Results by Sample

:AMPLE ID SB-2-1 FRACTION 02A TEST CODE SPCB NAME PCBs only in soil

Date & Time Collected 04/15/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
PCB-1016	ND	0.10	10	05/02/91
PCB-1221	ND	0.10	10	05/02/91
PCB-1232	ND	0.10	10	05/02/91
PCB-1242	ND	0.10	10	05/02/91
PCB-1248	ND	0.10	10	05/02/91
PCB-1254	ND	0.10	10	05/02/91
PCB-1260	ND	0.10	10	05/02/91

Notes and Definitions for this Report:

EXTRACTED 04/29/91
ANALYST NL
FILE ID 2AA-797
UNITS mg/Kg
BATCH_ID PCBS-14
COMMENTS

eceived: 04/25/91

Results by Sample

AMPLE ID W5-1 FRACTION 03A TEST CODE SPCB NAME PCBs only in soil

Date & Time Collected 04/16/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
PCB-1016	ND	0.10	1.0	05/02/91
PCB-1221	ND	0.10	1.0	05/02/91
PCB-1232	ND	0.10	1.0	05/02/91
PCB-1242	ND	0.10	1.0	05/02/91
PCB-1248	ND	0.10	1.0	05/02/91
PCB-1254	ND	0.10	1.0	05/02/91
PCB-1260	ND	0.10	1.0	05/02/91

Notes and Definitions for this Report:

EXTRACTED 04/29/91
ANALYST NL
FILE ID 2AA-795
UNITS mg/Kg
BATCH_ID PCBS-14
COMMENTS

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: MARLEAH M. MARTIN
Phone: (714) 892-2565

Aqua Resources, Inc.
2030 Addison Street
Berkeley, CA 94704

Attn: Clancy Tenley
Invoice Number: 209

Order #: 91-04-071
Date: 05/22/91 15:46
Work ID: PG&E/690262
Date Received: 04/19/91
Date Completed: 05/03/91

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	OW-1-1	02	OW-1-2
03	OW-3-1	04	OW-3-2
05	OW-4-1	06	OW-4-2
07	OW-5-1	08	0W-5-2
09	0W-1-1	10	OW-1-1
11	OW-4-1	12	0W-4-1
13	OW-3-1	14	OW-3-1
15	OW-3-2	16	OW-3-2
17	OW-1-1	18	OW-1-1
19	0W-5-1	20	OW-5-1
21	OW-5-1	22	OW-5-1
23	OW-3-1	24	OW-2-1
25	OW-2-1	26	OW-2-1
27	OW-2-1	28	OW-2-1
29	OW-2-2	30	FIELD BLANK
31	FIELD BLANK	32	FIELD BLANK
33	TRIP BLANK	34	TRIP BLANK
35	TRIP BLANK	36	0W-4-1
37	OW-4-1	38	OW-3-1
39	OW-3-1	40	OW-3-2
41	OW-3-2		

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Not detected.
B = Analyte was present in the blank.

Certified By
Marleah M. Martin

eceived: 04/19/91 Results by Sample

AMPLE ID OW-1-1 FRACTION 09A TEST CODE WTPH NAME Total petroleum HCs/water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	ND	0.50	1.0	05/02/91

Notes and Definitions for this Report:

EXTRACTED 05/02/91
ANALYST JB
UNITS mg/L
BATCH_ID WTPH-13
COMMENTS

ceived: 04/19/91 Results by Sample

MPLE ID OW-1-1 FRACTION 10A TEST CODE WLFTD NAME HCs Diesel by EXT in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	ND	0.20	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/22/91
ANALYST MP
FILE ID N/A
UNITS mg/L
BATCH_ID LDW-8
COMMENTS

eceived: 04/19/91 Results by Sample

AMPLE ID OW-4-1 FRACTION 11A TEST CODE 601 NAME VOA Halo. HCs in water
Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	NOT REQ.	.		
Chloromethane	ND	2.0	1.0	04/23/91
Vinyl chloride	ND	1.0	1.0	04/23/91
Bromomethane	ND	1.0	1.0	04/23/91
Chloroethane	ND	1.0	1.0	04/23/91
Trichlorofluoromethane	ND	0.50	1.0	04/23/91
1,1-dichloroethene	ND	0.50	1.0	04/23/91
Dichloromethane	ND	0.50	1.0	04/23/91
Trans-1,2-DCE	ND	0.50	1.0	04/23/91
1,1-dichloroethane	6.1	0.40	1.0	04/23/91
Chloroform	ND	0.20	1.0	04/23/91
1,1,1-trichloroethane	ND	0.20	1.0	04/23/91
Carbon Tetrachloride	ND	0.50	1.0	04/23/91
1,2-dichloroethane	0.49	0.20	1.0	04/23/91
Trichloroethylene	ND	0.50	1.0	04/23/91
1,2-dichloropropane	ND	0.20	1.0	04/23/91
Bromodichloromethane	ND	0.50	1.0	04/23/91
Trans-1,3-DCP	ND	0.50	1.0	04/23/91
Cis-1,3-DCP	ND	0.50	1.0	04/23/91
1,1,2-trichloroethane	ND	0.10	1.0	04/23/91
Tetrachloroethene	ND	0.20	1.0	04/23/91
Dibromchloromethane	ND	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Bromoform	ND	0.50	1.0	04/23/91
1,1,2,2-TCA	ND	0.20	1.0	04/23/91
1,2,3-Trichloropropane	NOT REQ.	.		
2-Chlorotoluene	NOT REQ.	.		
1,3-dichlorobenzene	ND	0.50	1.0	04/23/91
1,4-dichlorobenzene	ND	0.50	1.0	04/23/91
1,2-dichlorobenzene	ND	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED
ANALYST DL
FILE ID 9AA-289
UNITS ug/L
BATCH_ID 5VOA-253
COMMENTS NOT REQ. = TARGET ANALYTE NOT REQUIRED

eceived: 04/19/91

Results by Sample

AMPLE ID OW-4-1 FRACTION 12A TEST CODE 602 NAME VOA Arom. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	0.50	1.0	04/23/91
Toluene	ND	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Ethylbenzene	ND	0.50	1.0	04/23/91
P-&m-xylene	ND	1.0	1.0	04/23/91
O-xylene	ND	0.50	1.0	04/23/91
1,3-dichlorobenzene	ND	0.50	1.0	04/23/91
1,4-dichlorobenzene	ND	0.50	1.0	04/23/91
1,2-dichlorobenzene	ND	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 10AA-289

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS

eceived: 04/19/91 Results by Sample

AMPLE ID OW-3-1 FRACTION 13A TEST CODE 601 NAME VOA Halo. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	NOT REQ.	.		
Chloromethane	ND	2.0	1.0	04/23/91
Vinyl chloride	ND	1.0	1.0	04/23/91
Bromomethane	ND	1.0	1.0	04/23/91
Chloroethane	ND	1.0	1.0	04/23/91
Trichlorofluoromethane	0.82	0.50	1.0	04/23/91
1,1-dichloroethene	ND	0.50	1.0	04/23/91
Dichloromethane	1.9 B	0.50	1.0	04/23/91
Trans-1,2-DCE	ND	0.50	1.0	04/23/91
1,1-dichloroethane	16	0.40	1.0	04/23/91
Chloroform	ND	0.20	1.0	04/23/91
1,1,1-trichloroethane	2.5	0.20	1.0	04/23/91
Carbon Tetrachloride	ND	0.50	1.0	04/23/91
1,2-dichloroethane	0.55	0.20	1.0	04/23/91
Trichloroethylene	ND	0.50	1.0	04/23/91
1,2-dichloropropane	ND	0.20	1.0	04/23/91
Bromodichloromethane	ND	0.50	1.0	04/23/91
Trans-1,3-DCP	ND	0.50	1.0	04/23/91
Cis-1,3-DCP	ND	0.50	1.0	04/23/91
1,1,2-trichloroethane	ND	0.10	1.0	04/23/91
Tetrachloroethene	1.4	0.20	1.0	04/23/91
Dibromchloromethane	ND	0.50	1.0	04/23/91
Chlorobenzene	2.3	0.50	1.0	04/23/91
Bromoform	ND	0.50	1.0	04/23/91
1,1,2,2-TCA	ND	0.20	1.0	04/23/91
1,2,3-Trichloropropane	NOT REQ.	.		
2-Chlorotoluene	NOT REQ.	.		
1,3-dichlorobenzene	3.3	0.50	1.0	04/23/91
1,4-dichlorobenzene	3.1	0.50	1.0	04/23/91
1,2-dichlorobenzene	2.3	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 9AA-290

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS NOT REQ. = TARGET ANALYTE NOT REQUIRED

:ceived: 04/19/91

Results by Sample

:MPLE ID OW-3-1 FRACTION 14A TEST CODE 602 NAME VOA Arom. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	0.54	0.50	1.0	04/23/91
Toluene	ND	0.50	1.0	04/23/91
Chlorobenzene	2.8	0.50	1.0	04/23/91
Ethylbenzene	ND	0.50	1.0	04/23/91
P-&m-xylene	ND	1.0	1.0	04/23/91
O-xylene	ND	0.50	1.0	04/23/91
1,3-dichlorobenzene	3.2	0.50	1.0	04/23/91
1,4-dichlorobenzene	3.0	0.50	1.0	04/23/91
1,2-dichlorobenzene	2.1	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 10AA-290

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS

Received: 04/19/91 Results by Sample

SAMPLE ID OW-3-2 FRACTION 15A TEST CODE 601 NAME VOA Halo. ECs in water
Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	NOT REQ.	.		
Chloromethane	ND	2.0	1.0	04/27/91
Vinyl chloride	ND	1.0	1.0	04/27/91
Bromomethane	ND	1.0	1.0	04/27/91
Chloroethane	ND	1.0	1.0	04/27/91
Trichlorofluoromethane	ND	0.50	1.0	04/27/91
1,1-dichloroethene	0.69	0.50	1.0	04/27/91
Dichloromethane	1.1 B	0.50	1.0	04/27/91
Trans-1,2-DCE	ND	0.50	1.0	04/27/91
1,1-dichloroethane	17	0.40	1.0	04/27/91
Chloroform	ND	0.20	1.0	04/27/91
1,1,1-trichloroethane	1.6	0.20	1.0	04/27/91
Carbon Tetrachloride	ND	0.50	1.0	04/27/91
1,2-dichloroethane	0.43	0.20	1.0	04/27/91
Trichloroethylene	ND	0.50	1.0	04/27/91
1,2-dichloropropane	ND	0.20	1.0	04/27/91
Bromodichloromethane	ND	0.50	1.0	04/27/91
Trans-1,3-DCP	ND	0.50	1.0	04/27/91
Cis-1,3-DCP	ND	0.50	1.0	04/27/91
1,1,2-trichloroethane	ND	0.10	1.0	04/27/91
Tetrachloroethene	0.68	0.20	1.0	04/27/91
Dibromchloromethane	ND	0.50	1.0	04/27/91
Chlorobenzene	1.0	0.50	1.0	04/27/91
Bromoform	ND	0.50	1.0	04/27/91
1,1,2,2-TCA	ND	0.20	1.0	04/27/91
1,2,3-Trichloropropane	NOT REQ.	.		
2-Chlorotoluene	NOT REQ.	.		
1,3-dichlorobenzene	1.8	0.50	1.0	04/27/91
1,4-dichlorobenzene	1.8	0.50	1.0	04/27/91
1,2-dichlorobenzene	1.2	0.50	1.0	04/27/91

Notes and Definitions for this Report:

EXTRACTED
ANALYST DL
FILE ID 9AA-291
UNITS ug/L
BATCH_ID 5VOA-253
COMMENTS NOT REQ. = TARGET ANALYTE NOT REQUIRED

eceived: 04/19/91 Results by Sample

AMPLE ID OW-3-2 FRACTION 16A TEST CODE 602 NAME VOA Arom. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	0.50	1.0	04/23/91
Toluene	ND	0.50	1.0	04/23/91
Chlorobenzene	2.9	0.50	1.0	04/23/91
Ethylbenzene	ND	0.50	1.0	04/23/91
P-&m-xylene	ND	1.0	1.0	04/23/91
O-xylene	ND	0.50	1.0	04/23/91
1,3-dichlorobenzene	3.7	0.50	1.0	04/23/91
1,4-dichlorobenzene	3.1	0.50	1.0	04/23/91
1,2-dichlorobenzene	2.7	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 6AA-390

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS

ceived: 04/19/91 Results by Sample

MPLE ID OW-1-1 FRACTION 17A TEST CODE 601 NAME VOA Halo. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	NOT REQ.	.		
Chloromethane	ND	2.0	1.0	04/23/91
Vinyl chloride	ND	1.0	1.0	04/23/91
Bromomethane	ND	1.0	1.0	04/23/91
Chloroethane	ND	1.0	1.0	04/23/91
Trichlorofluoromethane	ND	0.50	1.0	04/23/91
1,1-dichloroethene	ND	0.50	1.0	04/23/91
Dichloromethane	0.85 B	0.50	1.0	04/23/91
Trans-1,2-DCE	ND	0.50	1.0	04/23/91
1,1-dichloroethane	2.6	0.40	1.0	04/23/91
Chloroform	ND	0.20	1.0	04/23/91
1,1,1-trichloroethane	ND	0.20	1.0	04/23/91
Carbon Tetrachloride	ND	0.50	1.0	04/23/91
1,2-dichloroethane	0.63	0.20	1.0	04/23/91
Trichloroethylene	ND	0.50	1.0	04/23/91
1,2-dichloropropane	ND	0.20	1.0	04/23/91
Bromodichloromethane	ND	0.50	1.0	04/23/91
Trans-1,3-DCP	ND	0.50	1.0	04/23/91
Cis-1,3-DCP	ND	0.50	1.0	04/23/91
1,1,2-trichloroethane	ND	0.10	1.0	04/23/91
Tetrachloroethene	1.1	0.20	1.0	04/23/91
Dibromchloromethane	ND	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Bromoform	ND	0.50	1.0	04/23/91
1,1,2,2-TCA	ND	0.20	1.0	04/23/91
1,2,3-Trichloropropane	NOT REQ.	.		
2-Chlorotoluene	NOT REQ.	.		
1,3-dichlorobenzene	1.8	0.50	1.0	04/23/91
1,4-dichlorobenzene	6.7	0.50	1.0	04/23/91
1,2-dichlorobenzene	0.58	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 9AA-292

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS NOT REQ. = TARGET ANALYTE NOT REQUIRED

eceived: 04/19/91 Results by Sample

AMPLE ID OW-1-1 FRACTION 18A TEST CODE 602 NAME VOA Arom. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	0.50	1.0	04/23/91
Toluene	ND	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Ethylbenzene	ND	0.50	1.0	04/23/91
P-&m-xylene	ND	1.0	1.0	04/23/91
O-xylene	ND	0.50	1.0	04/23/91
1,3-dichlorobenzene	1.6	0.50	1.0	04/23/91
1,4-dichlorobenzene	7.2	0.50	1.0	04/23/91
1,2-dichlorobenzene	ND	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 10AA-292

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS

eceived: 04/19/91 Results by Sample

AMPLE ID OW-5-1 FRACTION 19A TEST CODE 601 NAME VOA Halo. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	NOT REQ.	.		
Chloromethane	ND	2.0	1.0	04/23/91
Vinyl chloride	ND	1.0	1.0	04/23/91
Bromomethane	ND	1.0	1.0	04/23/91
Chloroethane	ND	1.0	1.0	04/23/91
Trichlorofluoromethane	ND	0.50	1.0	04/23/91
1,1-dichloroethene	ND	0.50	1.0	04/23/91
Dichloromethane	2.4 B	0.50	1.0	04/23/91
Trans-1,2-DCE	ND	0.50	1.0	04/23/91
1,1-dichloroethane	1.8	0.40	1.0	04/23/91
Chloroform	ND	0.20	1.0	04/23/91
1,1,1-trichloroethane	6.0	0.20	1.0	04/23/91
Carbon Tetrachloride	ND	0.50	1.0	04/23/91
1,2-dichloroethane	ND	0.20	1.0	04/23/91
Trichloroethylene	0.75	0.50	1.0	04/23/91
1,2-dichloropropane	ND	0.20	1.0	04/23/91
Bromodichloromethane	ND	0.50	1.0	04/23/91
Trans-1,3-DCP	ND	0.50	1.0	04/23/91
Cis-1,3-DCP	ND	0.50	1.0	04/23/91
1,1,2-trichloroethane	ND	0.10	1.0	04/23/91
Tetrachloroethene	0.7	0.20	1.0	04/23/91
Dibromchloromethane	ND	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Bromoform	ND	0.50	1.0	04/23/91
1,1,2,2-TCA	ND	0.20	1.0	04/23/91
1,2,3-Trichloropropane	NOT REQ.	.		
2-Chlorotoluene	NOT REQ.	.		
1,3-dichlorobenzene	ND	0.50	1.0	04/23/91
1,4-dichlorobenzene	ND	0.50	1.0	04/23/91
1,2-dichlorobenzene	ND	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 9AA-293

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS NOT REQ. = TARGET ANALYTE NOT REQUIRED

ceived: 04/19/91 Results by Sample

MPLE ID OW-5-1 FRACTION 20A TEST CODE 602 NAME VOA Arom. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	14	0.50	1.0	04/23/91
Toluene	0.57	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Ethylbenzene	0.58	0.50	1.0	04/23/91
P-&m-xylene	4.5	1.0	1.0	04/23/91
O-xylene	1.1	0.50	1.0	04/23/91
1,3-dichlorobenzene	ND	0.50	1.0	04/23/91
1,4-dichlorobenzene	ND	0.50	1.0	04/23/91
1,2-dichlorobenzene	ND	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 10AA-293

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS

eceived: 04/19/91 Results by Sample

-MPLE ID OW-5-1 FRACTION 21A TEST CODE WTPH NAME Total petroleum HCs/water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	ND	0.50	1.0	05/02/91

Notes and Definitions for this Report:

EXTRACTED 05/02/91
ANALYST JB
UNITS mg/L
BATCH_ID WTPH-13
COMMENTS

ceived: 04/19/91 Results by Sample

MPLE ID OW-5-I FRACTION 22A TEST CODE WLFTD NAME HCs Diesel by EXT in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	ND	0.20	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/22/91
ANALYST MP
FILE ID N/A
UNITS mg/L
BATCH_ID LDW-8
COMMENTS SEE APPENDIX

ceived: 04/19/91 Results by Sample

MPLE ID OW-3-1 FRACTION 23A TEST CODE WTDS NAME Total DIS. solids in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Dissolved Solids	780	10	N/A	05/02/91

Notes and Definitions for this Report:

EXTRACTED 05/02/91

ANALYST WN

UNITS mg/L

BATCH_ID TDS-4

COMMENTS

:PLE ID OW-2-1 FRACTION 24A TEST CODE 601 NAME VOA Halo. HCs in water
Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Dichlorodifluoromethane	NOT REQ.	.		
Chloromethane	ND	2.0	1.0	04/23/91
Vinyl chloride	ND	1.0	1.0	04/23/91
Bromomethane	ND	1.0	1.0	04/23/91
Chloroethane	ND	1.0	1.0	04/23/91
Trichlorofluoromethane	ND	0.50	1.0	04/23/91
1,1-dichloroethene	ND	0.50	1.0	04/23/91
Dichloromethane	2.0 B	0.50	1.0	04/23/91
Trans-1,2-DCE	ND	0.50	1.0	04/23/91
1,1-dichloroethane	ND	0.40	1.0	04/23/91
Chloroform	ND	0.20	1.0	04/23/91
1,1,1-trichloroethane	ND	0.20	1.0	04/23/91
Carbon Tetrachloride	ND	0.50	1.0	04/23/91
1,2-dichloroethane	ND	0.20	1.0	04/23/91
Trichloroethylene	ND	0.50	1.0	04/23/91
1,2-dichloropropane	ND	0.20	1.0	04/23/91
Bromodichloromethane	ND	0.50	1.0	04/23/91
Trans-1,3-DCP	ND	0.50	1.0	04/23/91
Cis-1,3-DCP	ND	0.50	1.0	04/23/91
1,1,2-trichloroethane	ND	0.10	1.0	04/23/91
Tetrachloroethene	0.53	0.20	1.0	04/23/91
Dibromchloromethane	ND	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Bromoform	ND	0.50	1.0	04/23/91
1,1,2,2-TCA	ND	0.20	1.0	04/23/91
1,2,3-Trichloropropane	NOT REQ.	.		
2-Chlorotoluene	NOT REQ.	.		
1,3-dichlorobenzene	ND	0.50	1.0	04/23/91
1,4-dichlorobenzene	ND	0.50	1.0	04/23/91
1,2-dichlorobenzene	ND	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED
ANALYST DL
FILE ID 9AA-294
UNITS ug/L
BATCH_ID 5VOA-253
COMMENTS NOT REQ. = TARGET ANALYTE NOT REQUIRED

ceived: 04/19/91 Results by Sample

:PLE ID OW-2-1 FRACTION 25A TEST CODE 602 NAME VOA Arom. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	0.50	1.0	04/23/91
Toluene	ND	0.50	1.0	04/23/91
Chlorobenzene	ND	0.50	1.0	04/23/91
Ethylbenzene	ND	0.50	1.0	04/23/91
P-&m-xylene	ND	1.0	1.0	04/23/91
O-xylene	ND	0.50	1.0	04/23/91
1,3-dichlorobenzene	ND	0.50	1.0	04/23/91
1,4-dichlorobenzene	ND	0.50	1.0	04/23/91
1,2-dichlorobenzene	ND	0.50	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED

ANALYST DL

FILE ID 10AA-294

UNITS ug/L

BATCH_ID 5VOA-253

COMMENTS

ceived: 04/19/91 Results by Sample

PLE ID OW-2-1 FRACTION 26A TEST CODE WLFTD NAME HCs Diesel by EXT in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	ND	0.20	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/22/91
ANALYST MP
FILE ID N/A
UNITS mg/L
BATCH_ID LDW-8
COMMENTS

ceived: 04/19/91 Results by Sample

PLE ID OW-2-1 FRACTION 27A TEST CODE WTPH NAME Total petroleum HCs/water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	ND	0.50	1.0	05/02/91

Notes and Definitions for this Report:

EXTRACTED 05/02/91
ANALYST JB
UNITS mg/L
BATCH_ID WTPH-13
COMMENTS

ceived: 04/19/91 Results by Sample

MPLE ID DW-4-1 FRACTION 36A TEST CODE WLFTD NAME HCs Diesel by EXT in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	0.58	0.20	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/22/91
ANALYST MP
FILE ID N/A
UNITS mg/L
BATCH_ID LDW-8
COMMENTS

ceived: 04/19/91 Results by Sample

MPLE ID OW-4-1 FRACTION 37A TEST CODE WTPH NAME Total petroleum HCs/water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	ND	0.50	1.0	05/02/91

Notes and Definitions for this Report:

EXTRACTED 05/02/91

ANALYST JB

UNITS mg/L

BATCH_ID WTPH-13

COMMENTS

:eived: 04/19/91 Results by Sample

:PLE ID OW-3-1 FRACTION 38A TEST CODE WLFTD NAME HCs Diesel by EXT in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	ND	0.20	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/22/91
ANALYST MP
FILE ID N/A
UNITS mg/L
BATCE_ID LDW-8
COMMENTS SEE APPENDIX

ceived: 04/19/91 Results by Sample

PLE ID OW-3-1 FRACTION 39A TEST CODE WTPH NAME Total petroleum HCs/water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	ND	0.50	1.0	05/02/91

Notes and Definitions for this Report:

EXTRACTED 05/02/91

ANALYST JB

UNITS mg/L

BATCH_ID WTPH-13

COMMENTS

ceived: 04/19/91 Results by Sample

PLE ID OW-3-2 FRACTION 40A TEST CODE WLFTD NAME HCs Diesel by EXT in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
HCs Diesel fuel	ND	0.20	1.0	04/23/91

Notes and Definitions for this Report:

EXTRACTED 04/22/91
ANALYST MP
FILE ID N/A
UNITS mg/L
BATCH_ID LDW-8
COMMENTS SEE APPENDIX

ceived: 04/19/91 Results by Sample

MPLE ID OW-3-2 FRACTION 41A TEST CODE WTPE NAME Total petroleum HCs/water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Total Petroleum HCs	ND	0.50	1.0	05/02/91

Notes and Definitions for this Report:

EXTRACTED 05/02/91

ANALYST JB

UNITS mg/L

BATCH_ID WTPE-13

COMMENTS

ceived: 04/19/91 05/22/91 15:46:33

ca Resources, Inc.

FTD:

mple 22A contains a hydrocarbon fuel at approximately 0.6 mg/L.
is fuel does not match diesel fuel.

mple 38A contains a hydrocarbon fuel at approximately 0.7 mg/L.
is fuel does not match diesel fuel.

mple 40A contains a hydrocarbon fuel at approximately 0.7 mg/L.
is fuel does not match diesel fuel.

JOB NO. 90262
FILE lab results

THE EARTH TECHNOLOGY CORP.
ANALYTICAL LABORATORIES
5702 BOLSA AVENUE
HUNTINGTON BEACH, CA 92649
Attn: MARLEAH M. MARTIN
Phone: (714) 892-2565

Aqua Resources, Inc.
2030 Addison Street
Berkeley, CA 94704

Attn: Clancy Tenley
Invoice Number:

Order #: 91-05-027
Date: 05/29/91 09:56
Work ID: P, G & E/90262
Date Received: 05/08/91
Date Completed: 05/28/91

SAMPLE IDENTIFICATION

Sample Number	Sample Description	Sample Number	Sample Description
01	FIELD BLANK	02	FIELD BLANK
03	FIELD BLANK	04	TRIP BLANK
05	TRIP BLANK	06	TRIP BLANK

MULTIPLY THE DETECTION LIMIT BY THE DILUTION FACTOR.
ND = Not detected.
B = Analyte was present in the blank.

Certified By
Marleah M. Martin

Received: 05/08/91

ETAL REPORT Work Order # 91-05-027

Results by Sample

SAMPLE ID TRIP BLANK FRACTION 06A TEST CODE 602 NAME VOA Arom. HCs in water

Date & Time Collected 04/17/91 Category

PARAMETER	RESULT	LIMIT	D_F	DATE_ANAL
Benzene	ND	0.50	1.0	05/14/91
Toluene	ND	0.50	1.0	05/14/91
Chlorobenzene	ND	0.50	1.0	05/14/91
Ethylbenzene	ND	0.50	1.0	05/14/91
P-&m-xylene	ND	1.0	1.0	05/14/91
O-xylene	ND	0.50	1.0	05/14/91
1,3-dichlorobenzene	ND	0.50	1.0	05/14/91
1,4-dichlorobenzene	ND	0.50	1.0	05/14/91
1,2-dichlorobenzene	ND	0.50	1.0	05/14/91

Notes and Definitions for this Report:

EXTRACTED
ANALYST JY
FILE ID N/A
UNITS ug/L
BATCH_ID 3VOA-011
COMMENTS

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 05/20/91
DATE REPORTED: 05/31/91

AQUA RESOURCES, INC
RECEIVED
JUN - 6 1991

LAB NUMBER: 103863

JOB NO. _____
FILE _____

CLIENT: AQUA RESOURCES

PROJECT ID: 90262

LOCATION: PG & E

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103863-1
CLIENT: AQUA RESOURCES
PROJECT #: 90262
LOCATION: PG & E
SAMPLE ID: SB-21-2

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/29/91
DATE REPORTED: 05/31/91

EPA 8010
Purgeable Halocarbons in Soil

Compound	Result ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
1,1,2-trichloroethane	ND	5.0
trans-1,3-dichloropropene	ND	5.0
dibromochloromethane	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
tetrachloroethene	ND	5.0
1,1,2,2-tetrachloroethane	ND	5.0
chlorobenzene	ND	5.0
1,3-dichlorobenzene	ND	5.0
1,2-dichlorobenzene	ND	5.0
1,4-dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103863-1
CLIENT: AQUA RESOURCES
PROJECT #: 90262
LOCATION: PG & E
SAMPLE ID: SB-21-2

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/29/91
DATE REPORTED: 05/31/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soil

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	96

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103863-4
CLIENT: AQUA RESOURCES
PROJECT #: 90262
LOCATION: PG & E
SAMPLE ID: SB-22-3

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/29/91
DATE REPORTED: 05/31/91

EPA 8010
Purgeable Halocarbons in Soil

Compound	Result ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
1,1,2-trichloroethane	ND	5.0
trans-1,3-dichloropropene	ND	5.0
dibromochloromethane	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
tetrachloroethene	ND	5.0
1,1,2,2-tetrachloroethane	ND	5.0
chlorobenzene	ND	5.0
1,3-dichlorobenzene	ND	5.0
1,2-dichlorobenzene	ND	5.0
1,4-dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit..

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	99

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103863-4
CLIENT: AQUA RESOURCES
PROJECT #: 90262
LOCATION: PG & E
SAMPLE ID: SB-22-3

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/29/91
DATE REPORTED: 05/31/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soil

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	96

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103863
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
LOCATION: PG & E

DATE RECEIVED: 05/20/91
DATE EXTRACTED: 05/21/91
DATE ANALYZED: 05/21/91
DATE REPORTED: 05/22/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
103863-1	SB-21-2	ND	ND	1.0
103863-2	SB-21-3	ND	ND	1.0
103863-3	SB-22-2	ND	ND	1.0
103863-4	SB-22-3	ND	ND	1.0

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	113

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 103863

Project Name: PG & E
Project Number: 90262

Report Date: 21 May 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD:** SMWW 17:5520EF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
103863-001	SB-21-2	Soil	20-MAY-91	20-MAY-91	21-MAY-91	ND	mg/Kg	50	TR	1483
103863-002	SB-21-3	Soil	20-MAY-91	20-MAY-91	21-MAY-91	ND	mg/Kg	50	TR	1483
103863-003	SB-22-2	Soil	20-MAY-91	20-MAY-91	21-MAY-91	ND	mg/Kg	50	TR	1483
103863-004	SB-22-3	Soil	20-MAY-91	20-MAY-91	21-MAY-91	ND	mg/Kg	50	TR	1483

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/20/91
DATE REPORTED: 06/07/91

LAB NUMBER: 103864

CLIENT: AQUA RESOURCES, INC.

PROJECT ID: 90262

LOCATION: PG&E

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-3
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
LOCATION: PG&E
SAMPLE ID: SB-16-3

DATE RECEIVED: 05/20/91
DATE ANALYZED: 06/04/91
DATE REPORTED: 06/07/91

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	100
bromomethane	ND	100
vinyl chloride	ND	100
chloroethane	ND	100
methylene chloride	ND	50
trichlorofluoromethane	ND	50
1,1-dichloroethene	ND	50
1,1-dichloroethane	ND	50
cis-1,2-dichloroethene	ND	50
trans-1,2-dichloroethene	ND	50
chloroform	ND	50
freon 113	ND	50
1,2-dichloroethane	ND	50
1,1,1-trichloroethane	ND	50
carbon tetrachloride	ND	50
bromodichloromethane	ND	50
1,2-dichloropropane	ND	50
cis-1,3-dichloropropene	ND	50
trichloroethylene	ND	50
1,1,2-trichloroethane	ND	50
trans-1,3-dichloropropene	ND	50
dibromochloromethane	ND	50
2-chloroethylvinyl ether	ND	100
bromoform	ND	50
tetrachloroethylene	ND	50
1,1,2,2-tetrachloroethane	ND	50
chlorobenzene	ND	50
1,3-dichlorobenzene	ND	50
1,2-dichlorobenzene	ND	50
1,4-dichlorobenzene	ND	50

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Duplicate: Relative % Difference	21
Spike: Average % Recovery	91

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-3
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
LOCATION: PG&E
SAMPLE ID: SB-16-3

DATE RECEIVED: 05/20/91
DATE ANALYZED: 06/04/91
DATE REPORTED: 06/07/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Resul ug/Kg	Reporting Limit ug/Kg
Benzene	110	50
Toluene	79	50
Ethyl Benzene	ND	50
Total Xylenes	140	50
Chlorobenzene	ND	50
1,4-Dichlorobenzene	ND	50
1,3-Dichlorobenzene	ND	50
1,2-Dichlorobenzene	ND	50

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	12
RECOVERY, %	90

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-11
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
LOCATION: PG&E
SAMPLE ID: SB-20-2

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
1,1,2-trichloroethane	ND	5.0
trans-1,3-dichloropropene	ND	5.0
dibromochloromethane	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
tetrachloroethylene	ND	5.0
1,1,2,2-tetrachloroethane	ND	5.0
chlorobenzene	ND	5.0
1,3-dichlorobenzene	ND	5.0
1,2-dichlorobenzene	ND	5.0
1,4-dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Duplicate: Relative % Difference	13
Spike: Average % Recovery	98

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-11
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
LOCATION: PG&E
SAMPLE ID: SB-20-2

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Resul ug/Kg	Reporting Limit ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	94

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 103864

Project Name: PG & E
Project Number: 90262

Report Date: 04 June 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD:** SMWW 17:5520EF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
103864-001	SB-16-1	Soil	20-MAY-91	20-MAY-91	30-MAY-91	ND	mg/Kg	5	TR	1554
103864-002	SB-16-2	Soil	20-MAY-91	20-MAY-91	30-MAY-91	8.0	mg/Kg	5	TR	1554
103864-003	SB-16-3	Soil	20-MAY-91	20-MAY-91	30-MAY-91	110	mg/Kg	5	TR	1554
103864-004	SB-13-1	Soil	20-MAY-91	20-MAY-91	30-MAY-91	78.	mg/Kg	5	TR	1554
103864-005	SB-13-2	Soil	20-MAY-91	20-MAY-91	30-MAY-91	20.	mg/Kg	5	TR	1554
103864-006	SB-13-3	Soil	20-MAY-91	20-MAY-91	30-MAY-91	18.	mg/Kg	5	TR	1554
103864-007	SB-19-1	Soil	20-MAY-91	20-MAY-91	30-MAY-91	66.	mg/Kg	5	TR	1554
103864-008	SB-19-2	Soil	20-MAY-91	20-MAY-91	30-MAY-91	6.0	mg/Kg	5	TR	1554
103864-009	SB-19-3	Soil	20-MAY-91	20-MAY-91	30-MAY-91	22.	mg/Kg	5	TR	1554
103864-010	SB-20-1	Soil	20-MAY-91	20-MAY-91	30-MAY-91	82.	mg/Kg	5	TR	1554
103864-011	SB-20-2	Soil	20-MAY-91	20-MAY-91	30-MAY-91	120	mg/Kg	5	TR	1554
103864-012	SB-20-3	Soil	20-MAY-91	20-MAY-91	30-MAY-91	34.	mg/Kg	5	TR	1554
103864-013	SB-21-1	Soil	20-MAY-91	20-MAY-91	30-MAY-91	24.	mg/Kg	5	TR	1554
103864-014	SB-22-1	Soil	20-MAY-91	20-MAY-91	30-MAY-91	28.	mg/Kg	5	TR	1554
103864-015	SB-15-1	Soil	20-MAY-91	20-MAY-91	30-MAY-91	2300	mg/Kg	5	TR	1554
103864-016	SB-15-2	Soil	20-MAY-91	20-MAY-91	30-MAY-91	30.	mg/Kg	5	TR	1554

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 103864

Project Name: PG & E
Project Number: 90262

Report Date: 04 June 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD:** SMWW 17:5520EF

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
103864-017	SB-15-3	Soil	20-MAY-91	20-MAY-91	30-MAY-91	18.	mg/Kg	5	TR	1554

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
LOCATION: PG & E

DATE RECEIVED: 05/20/91
DATE EXTRACTED: 05/24/91
DATE ANALYZED: 05/24/91
DATE REPORTED: 06/04/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
103864-3	SB-16-3	ND	510	10
103864-11	SB-20-2	ND	66	10

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	13
RECOVERY, %	101

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-3
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
SAMPLE ID: SB-16-3

DATE RECEIVED: 05/20/91
DATE EXTRACTED: 05/28/91
DATE ANALYZED: 06/03/91
DATE REPORTED: 06/04/91

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3550

AROCLOR TYPE	RESULT (ug/Kg)	REPORTING LIMIT (ug/Kg)
AROCLOR 1221	ND	17
AROCLOR 1232	ND	17
AROCLOR 1016	ND	17
AROCLOR 1242	ND	17
AROCLOR 1248	ND	17
AROCLOR 1254	ND	17
AROCLOR 1260	ND	17

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	27
RECOVERY, %	95

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-5
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
SAMPLE ID: SB-13-2

DATE RECEIVED: 05/20/91
DATE EXTRACTED: 05/28/91
DATE ANALYZED: 06/03/91
DATE REPORTED: 06/04/91

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3550

AROCLOR TYPE	RESULT (ug/Kg)	REPORTING LIMIT (ug/Kg)
AROCLOR 1221	ND	17
AROCLOR 1232	ND	17
AROCLOR 1016	ND	17
AROCLOR 1242	ND	17
AROCLOR 1248	ND	17
AROCLOR 1254	ND	17
AROCLOR 1260	ND	17

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	27
RECOVERY, %	95

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-9
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
SAMPLE ID: SB-19-3

DATE RECEIVED: 05/20/91
DATE EXTRACTED: 05/28/91
DATE ANALYZED: 06/03/91
DATE REPORTED: 06/04/91

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3550

AROCLOR TYPE	RESULT (ug/Kg)	REPORTING LIMIT (ug/Kg)
AROCLOR 1221	ND	17
AROCLOR 1232	ND	17
AROCLOR 1016	ND	17
AROCLOR 1242	ND	17
AROCLOR 1248	ND	17
AROCLOR 1254	ND	17
AROCLOR 1260	ND	17

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	27
RECOVERY, %	95

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-3
CLIENT: AQUA RESOURCES
LOCATION: PG & E
SAMPLE ID: SB-16-3

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/21,28-29/91
DATE REPORTED: 06/05/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	3.0	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	118	0.25	EPA 6010
Beryllium	0.38	0.10	EPA 6010
Cadmium	1.8	0.25	EPA 6010
Chromium (total)	46.6	0.49	EPA 6010
Cobalt	9.7	0.90	EPA 6010
Copper	21.2	0.49	EPA 6010
Lead	5.4	3.0	EPA 7420
Mercury	ND	0.10	EPA 7471
Molybdenum	ND	0.69	EPA 6010
Nickel	74.5	1.6	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	0.49	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	29.0	0.49	EPA 6010
Zinc	40.2	0.49	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	2	102	Mercury	2	97
Arsenic	3	108	Molybdenum	1	88
Barium	3	93	Nickel	1	87
Beryllium	<1	94	Selenium	3	93
Cadmium	3	92	Silver	1	82
Chromium	2	88	Thallium	2	110
Cobalt	2	89	Vanadium	<1	90
Copper	4	91	Zinc	2	90
Lead	6	90			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-5
CLIENT: AQUA RESOURCES
LOCATION: PG & E
SAMPLE ID: SB-13-2

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/21,28-29/91
DATE REPORTED: 06/05/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	2.9	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	133	0.24	EPA 6010
Beryllium	0.36	0.10	EPA 6010
Cadmium	1.9	0.24	EPA 6010
Chromium (total)	40.0	0.49	EPA 6010
Cobalt	11.8	0.88	EPA 6010
Copper	29.8	0.49	EPA 6010
Lead	12.2	3.0	EPA 7420
Mercury	0.12	0.10	EPA 7471
Molybdenum	ND	0.68	EPA 6010
Nickel	73.5	1.6	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	0.49	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	29.5	0.49	EPA 6010
Zinc	43.8	0.49	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	2	102	Mercury	2	97
Arsenic	3	108	Molybdenum	1	88
Barium	3	93	Nickel	1	87
Beryllium	<1	94	Selenium	3	93
Cadmium	3	92	Silver	1	82
Chromium	2	88	Thallium	2	110
Cobalt	2	89	Vanadium	<1	90
Copper	4	91	Zinc	2	90
Lead	6	90			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103864-9
CLIENT: AQUA RESOURCES
LOCATION: PG & E
SAMPLE ID: SB-19-3

DATE RECEIVED: 05/20/91
DATE ANALYZED: 05/21,28-29/91
DATE REPORTED: 06/05/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	3.0	EPA 6010
Arsenic	ND	2.5	EPA 7060
Barium	108	0.25	EPA 6010
Beryllium	0.35	0.10	EPA 6010
Cadmium	1.7	0.25	EPA 6010
Chromium (total)	36.2	0.50	EPA 6010
Cobalt	11.4	0.90	EPA 6010
Copper	19.4	0.50	EPA 6010
Lead	5.5	3.0	EPA 7420
Mercury	ND	0.10	EPA 7471
Molybdenum	ND	0.70	EPA 6010
Nickel	70.6	1.6	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	0.50	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	22.6	0.50	EPA 6010
Zinc	36.6	0.50	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	2	102	Mercury	2	97
Arsenic	3	108	Molybdenum	1	88
Barium	3	93	Nickel	1	87
Beryllium	<1	94	Selenium	3	93
Cadmium	3	92	Silver	1	82
Chromium	2	88	Thallium	2	110
Cobalt	2	89	Vanadium	<1	90
Copper	4	91	Zinc	2	90
Lead	6	90			

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 05/23/91
DATE REPORTED: 06/07/91

LAB NUMBER: 103913

CLIENT: AQUA RESOURCES

PROJECT ID: 90262.1

LOCATION: PG & E

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 103913

Project Name: P.G. & E.
Project Number: 90262.1

Report Date: 07 June 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD: SMWW 17:5520EF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
103913-001	SB-9-1	Soil	23-MAY-91	23-MAY-91	05-JUN-91	2100	mg/Kg	50	TR	1600
103913-002	SB-9-2	Soil	23-MAY-91	23-MAY-91	31-MAY-91	2400	mg/Kg	50	TR	1571
103913-003	SB-9-3	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-004	SB-8-1	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-005	SB-8-2	Soil	23-MAY-91	23-MAY-91	31-MAY-91	2700	mg/Kg	50	TR	1571
103913-006	SB-8-3	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-007	SB-8-4	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-008	SB-10-1	Soil	23-MAY-91	23-MAY-91	31-MAY-91	770	mg/Kg	50	TR	1571
103913-009	SB-10-2	Soil	23-MAY-91	23-MAY-91	31-MAY-91	56.	mg/Kg	50	TR	1571
103913-010	SB-10-3	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-011	SB-6-1	Soil	23-MAY-91	23-MAY-91	05-JUN-91	13000	mg/Kg	250	TR	1600
103913-012	SB-6-2	Soil	23-MAY-91	23-MAY-91	31-MAY-91	3600	mg/Kg	50	TR	1571
103913-013	SB-6-3	Soil	23-MAY-91	23-MAY-91	31-MAY-91	2400	mg/Kg	50	TR	1571
103913-014	SB-6-4	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-015	SB-5-1	Soil	23-MAY-91	23-MAY-91	31-MAY-91	9200	mg/Kg	50	TR	1571
103913-016	SB-5-2	Soil	23-MAY-91	23-MAY-91	31-MAY-91	3500	mg/Kg	50	TR	1571

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

Client: Aqua Resources

Laboratory Login Number: 103913

Project Name: P.G. & E.
Project Number: 90262.1

Report Date: 07 June 91

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD: SMWW 17:5520EF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
103913-017	SB-5-3	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-018	SB-7-1	Soil	23-MAY-91	23-MAY-91	31-MAY-91	96.	mg/Kg	50	TR	1571
103913-019	SB-7-2	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-020	SB-7-3	Soil	23-MAY-91	23-MAY-91	31-MAY-91	ND	mg/Kg	50	TR	1571
103913-021	SB-7-1A	Soil	23-MAY-91	23-MAY-91	31-MAY-91	3900	mg/Kg	50	TR	1571

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
LOCATION: PG & E

DATE RECEIVED: 05/23/91
DATE EXTRACTED: 05/29/91
DATE ANALYZED: 06/04/91
DATE REPORTED: 06/07/91

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
103913-1	SB-9-1	ND	210	10
103913-5	SB-8-2	ND	47	10
103913-11	SB-6-1	ND	1,700	100

ND = Not Detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	115

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-1
CLIENT: AQUA RESOURCES
LOCATION: PG & E
SAMPLE ID: SB-9-1

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/28-30/91
DATE REPORTED: 06/07/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	6.6	3.0	EPA 6010
Arsenic	3.9	2.5	EPA 7060
Barium	571	0.25	EPA 6010
Beryllium	0.42	0.10	EPA 6010
Cadmium	4.2	0.25	EPA 6010
Chromium (total)	51.6	0.50	EPA 6010
Cobalt	13.5	0.90	EPA 6010
Copper	63.9	0.50	EPA 6010
Lead	168	3.0	EPA 7420
Mercury	0.22	0.10	EPA 7471
Molybdenum	ND	0.70	EPA 6010
Nickel	66.1	1.6	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	0.50	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	47.4	0.50	EPA 6010
Zinc	252	0.50	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	2	87	Mercury	2	97
Arsenic	<1	116	Molybdenum	<1	88
Barium	<1	92	Nickel	2	86
Beryllium	1	94	Selenium	10	95
Cadmium	1	86	Silver	2	100
Chromium	3	83	Thallium	2	116
Cobalt	2	85	Vanadium	1	86
Copper	<1	93	Zinc	2	90
Lead	2	96			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-11
CLIENT: AQUA RESOURCES
LOCATION: PG & E
SAMPLE ID: SB-6-1

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/28-30/91
DATE REPORTED: 06/07/91

Title 26 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	REPORTING LIMIT mg/Kg	METHOD
Antimony	ND	2.9	EPA 6010
Arsenic	3.3	2.5	EPA 7060
Barium	156	0.25	EPA 6010
Beryllium	0.22	0.10	EPA 6010
Cadmium	2.0	0.25	EPA 6010
Chromium (total)	40.1	0.49	EPA 6010
Cobalt	9.1	0.88	EPA 6010
Copper	39.7	0.49	EPA 6010
Lead	26	3.0	EPA 7420
Mercury	0.11	0.10	EPA 7471
Molybdenum	2.6	0.68	EPA 6010
Nickel	37.7	1.6	EPA 6010
Selenium	ND	2.5	EPA 7740
Silver	ND	0.49	EPA 6010
Thallium	ND	2.5	EPA 7841
Vanadium	27.7	0.49	EPA 6010
Zinc	50.2	0.49	EPA 6010

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

	RPD,%	RECOVERY,%		RPD,%	RECOVERY,%
Antimony	2	87	Mercury	2	97
Arsenic	<1	116	Molybdenum	<1	88
Barium	<1	92	Nickel	2	86
Beryllium	1	94	Selenium	10	95
Cadmium	1	86	Silver	2	100
Chromium	3	83	Thallium	2	116
Cobalt	2	85	Vanadium	1	86
Copper	<1	93	Zinc	2	90
Lead	2	96			

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 103913-1
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
LOCATION: PG&E
SAMPLE ID: SB-9-1

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	ND	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
1,1,1-trichloroethane	ND	5.0
carbon tetrachloride	ND	5.0
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
1,1,2-trichloroethane	ND	5.0
trans-1,3-dichloropropene	ND	5.0
dibromochloromethane	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
tetrachloroethylene	ND	5.0
1,1,2,2-tetrachloroethane	ND	5.0
chlorobenzene	ND	5.0
1,3-dichlorobenzene	ND	5.0
1,2-dichlorobenzene	ND	5.0
1,4-dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Duplicate: Relative % Difference	13
Spike: Average % Recovery	98

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-1
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
LOCATION: PG&E
SAMPLE ID: SB-9-1

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Resul ug/Kg	Reporting Limit ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	ND	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-5
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
LOCATION: PG&E
SAMPLE ID: SB-8-2

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	10
bromomethane	ND	10
vinyl chloride	ND	10
chloroethane	ND	10
methylene chloride	ND	5.0
trichlorofluoromethane	ND	5.0
1,1-dichloroethene	ND	5.0
1,1-dichloroethane	13	5.0
cis-1,2-dichloroethene	ND	5.0
trans-1,2-dichloroethene	ND	5.0
chloroform	ND	5.0
freon 113	ND	5.0
1,2-dichloroethane	ND	5.0
1,1,1-trichloroethane	9.3	5.0
carbon tetrachloride	ND	5.0
bromodichloromethane	ND	5.0
1,2-dichloropropane	ND	5.0
cis-1,3-dichloropropene	ND	5.0
trichloroethylene	ND	5.0
1,1,2-trichloroethane	ND	5.0
trans-1,3-dichloropropene	ND	5.0
dibromochloromethane	ND	5.0
2-chloroethylvinyl ether	ND	10
bromoform	ND	5.0
tetrachloroethylene	ND	5.0
1,1,2,2-tetrachloroethane	ND	5.0
chlorobenzene	ND	5.0
1,3-dichlorobenzene	ND	5.0
1,2-dichlorobenzene	ND	5.0
1,4-dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Duplicate: Relative % Difference	13
Spike: Average % Recovery	98

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-5
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
LOCATION: PG&E
SAMPLE ID: SB-8-2

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Resul ug/Kg	Reporting Limit ug/Kg
Benzene	ND	5.0
Toluene	ND	5.0
Ethyl Benzene	45	5.0
Total Xylenes	ND	5.0
Chlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-11
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
LOCATION: PG&E
SAMPLE ID: SB-6-1

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8010: Volatile Halocarbons in Soil & Wastes
Extraction Method: EPA 5030 - Purge & Trap

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
chloromethane	ND	20
bromomethane	ND	20
vinyl chloride	ND	20
chloroethane	ND	20
methylene chloride	ND	10
trichlorofluoromethane	ND	10
1,1-dichloroethene	ND	10
1,1-dichloroethane	230	10
cis-1,2-dichloroethene	ND	10
trans-1,2-dichloroethene	ND	10
chloroform	ND	10
freon 113	ND	10
1,2-dichloroethane	ND	10
1,1,1-trichloroethane	310	10
carbon tetrachloride	ND	10
bromodichloromethane	ND	10
1,2-dichloropropane	ND	10
cis-1,3-dichloropropene	ND	10
trichloroethylene	ND	10
1,1,2-trichloroethane	ND	10
trans-1,3-dichloropropene	ND	10
dibromochloromethane	ND	10
2-chloroethylvinyl ether	ND	20
bromoform	ND	10
tetrachloroethylene	ND	10
1,1,2,2-tetrachloroethane	ND	10
chlorobenzene	ND	10
1,3-dichlorobenzene	ND	10
1,2-dichlorobenzene	ND	10
1,4-dichlorobenzene	ND	10

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Duplicate: Relative % Difference	13
Spike: Average % Recovery	98

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-11
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
LOCATION: PG&E
SAMPLE ID: SB-6-1

DATE RECEIVED: 05/23/91
DATE ANALYZED: 05/30/91
DATE REPORTED: 06/07/91

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Resul ug/Kg	Reporting Limit ug/Kg
Benzene	16	10
Toluene	120	10
Ethyl Benzene	220	10
Total Xylenes	730	10
Chlorobenzene	ND	10
1,4-Dichlorobenzene	ND	10
1,3-Dichlorobenzene	ND	10
1,2-Dichlorobenzene	ND	10

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	94

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-1
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
SAMPLE ID: SB-9-1

DATE RECEIVED: 05/23/91
DATE EXTRACTED: 05/28/91
DATE ANALYZED: 06/03/91
DATE REPORTED: 06/07/91

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3550

AROCLOR TYPE	RESULT (ug/Kg)	REPORTING LIMIT (ug/Kg)
AROCLOR 1221	ND	17
AROCLOR 1232	ND	17
AROCLOR 1016	ND	17
AROCLOR 1242	ND	17
AROCLOR 1248	ND	17
AROCLOR 1254	1,700	17
AROCLOR 1260	ND	17

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	27
RECOVERY, %	95

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103913-11
CLIENT: AQUA RESOURCES
PROJECT ID: 90262.1
SAMPLE ID: SB-6-1

DATE RECEIVED: 05/23/91
DATE EXTRACTED: 05/28/91
DATE ANALYZED: 06/03/91
DATE REPORTED: 06/07/91

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3550

AROCLOR TYPE	RESULT (ug/Kg)	REPORTING LIMIT (ug/Kg)
AROCLOR 1221	ND	17
AROCLOR 1232	ND	17
AROCLOR 1016	ND	17
AROCLOR 1242	ND	17
AROCLOR 1248	ND	17
AROCLOR 1254	ND	17
AROCLOR 1260	ND	17

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	27
RECOVERY, %	95

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone (415) 486-0900

DATE RECEIVED: 05/20/91
DATE REQUESTED: 05/29/91
DATE REPORTED: 06/10/91

LAB NUMBER: 103943

CLIENT: AQUA RESOURCES, INC.

PROJECT ID: 90262

LOCATION: PG&E

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 103943
CLIENT: AQUA RESOURCES
PROJECT ID: 90262
LOCATION: PG&E

DATE RECEIVED: 05/20/91
DATE REQUESTED: 05/29/91
DATE ANALYZED: 06/03/91
DATE REPORTED: 06/10/91

ANALYSIS: SOLUBLE LEAD
EXTRACTION BY WASTE EXTRACTION TEST: CCR TITLE 26 SECTION 22-66700
ANALYSIS METHOD: EPA 7420

LAB ID	CLIENT ID	RESULT	UNITS	REPORTING LIMIT
103943-1	SB-19-1	27.5	mg/L	0.3
103943-2	SB-20-1	27.4	mg/L	0.3
103943-3	SB-20-2	32.0	mg/L	0.3
103943-4	SB-20-3	3.05	mg/L	0.06
103943-5	SB-22-1	3.18	mg/L	0.06
103943-6	SB-9-1	2.57	mg/L	0.06
103943-7	SB-10-1	18.2	mg/L	0.06
103943-8	SB-7-1	0.52	mg/L	0.06

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	97

The Earth Technology Corporation

Chain of Custody Record

Lab job no.: _____
Date _____
Page _____ of _____

Laboratory: Earth Technology Analytical Laboratories
Address: 5702 Bolsa Ave.
Huntington Beach, CA. 92649
714.892.2565 Fax 714.890.4032
Client: ~~PGrand E~~ ARI - Berkeley
Address: _____
Project Name / Number: 90262 / PGrand E
Contract / Purchase Order / Quote: _____

Method of Shipment: Fed Ex
Shipment No. _____
Project Manager: Clancy Tenley
Telephone No.: 415-~~510~~ 540-6959
Fax. No.: 415-540-7496
Samplers: (Signature)

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Filtered Y	No. of Containers	8010	8020	TPH Diesel (Luft)	Oil & Grease (Hydro-carbon)	Bioassay	TTLC Metals	PCB	Remarks
SB-1-1b	4'	4/15		Soil	Brass Tube	5°C	—			V	V	V	V	V	V	V	odor, oil
SB-1-2	5'-5½'	4/15								V	V	V	V				odor, grease
SB-1-3	10'-10½'	4/15								V	V	V	V				less odor
SB-4-1	5¾-6¼	4/15											V				old oil, slight odor
SB-4-2	7¼-7¾	4/15											V				no odor
SB-4-3	8'-8½'	4/15											V				no odor
SB-2-1	4'-4½'	4/15								V	V	V	V			V	oil, grease
SB-2-2	8'-8½'	4/15								V	V	V	V				No oil

Analysis Required

Relinquished by:	Date	Time	Received by:	Date	Time
Signature:			Signature:		
Printed: Clarence Tenley			Printed:		
Company: ARI			Company:		
Reason: to lab			Reason:		

Relinquished by:	Date	Time	Received by:	Date	Time
Signature:			Signature:		
Printed:			Printed:		
Company:			Company:		
Reason:			Reason:		

Comments: TTLC Metals is California title 22 metals with Chrome III separate from Chrome total.
Biossay is CA Title 22 Biossay.

Relinquished by:	Date	Time	Received by:	Date	Time
Signature:			Signature:		
Printed:			Printed:		
Company:			Company:		
Reason:			Reason:		

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F1000
2/15/91

The Earth Technology Corporation

Chain of Custody Record

Lab job no.: ______
Date ______
Page ______ of ______

Laboratory: Earth Technology Analytical Laboratories
Address: 5702 Bolsa Ave.
Huntington Beach, CA. 92649
714.892.2565 Fax 714.890.4032

Client: ARI - Berkeley
Address: ______

Project Name / Number: 90262 / PG&E

Contract / Purchase Order / Quote: ______

Method of Shipment: Fed Ex
Shipment No. ______
Project Manager: Clancy Tenley
Telephone No. 415-540-6954
Fax. No. 415-540-7496
Samplers: (Signature) [signature]

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered √	No. of Containers	Pb-TTLC	Pb-STLC *	8010	8020	TPH-Diesel	Oil and Grease (Hydrocarbons)	TPH Gasoline	TTLC-Metals	PCB	Remarks
WS-1	6"-1'	4/16		Soil	Brass Tube	3°C	—			✓	✓							✓	
WS-2	1'-1.5'	↓		↓	↓	↓	↓			✓	✓								
WS-3	1.5-2'	↓		↓	↓	↓	↓			✓	✓								
WS-4	2'-2.5'	↓		↓	↓	↓	↓			✓	✓								
WS-5	2.5'-3'	↓		↓	↓	↓	↓			✓	✓				✓				
WS-6	3'-3.5'	↓		↓	↓	↓	↓			✓	✓								
WS-7	3.5'-4'	↓		↓	↓	↓	↓			✓	✓								
WS-8	4'-4.5'	↓		↓	↓	↓	↓			✓	✓								
WS-9	4.5'-5'	↓		↓	↓	↓	↓			✓	✓	✓	✓	✓	✓	✓	✓		O.C
WS-10	5'-5.5'	↓		↓	↓	↓	↓			✓	✓								
WS-11	5.5'-6'	↓		↓	↓	↓	↓			✓	✓								
WS-12	6.0'-6.5'	↓		↓	↓	↓	↓			✓	✓				✓				

Relinquished by:
Signature: [signature]
Printed: BEATE NEUENHOFER
Company: ARI-Berkeley
Reason: ______
Date ______ Time ______

Received by:
Signature ______
Printed ______
Company ______
Reason ______
Date ______ Time ______

Relinquished by:
Signature ______
Printed ______
Company ______
Reason ______
Date ______ Time ______

Received by:
Signature ______
Printed ______
Company ______
Reason ______
Date ______ Time ______

Relinquished by:
Signature ______
Printed ______
Company ______
Reason ______
Date ______ Time ______

Received by:
Signature ______
Printed ______
Company ______
Reason ______
Date ______ Time ______

Comments: * Hold Pb-STLC until results of TTLC are in

TTLC Metals is California title 22 metals with Chrome VI separate from chrome total

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F1000
2/15/91

The Earth Technology Corporation

Chain of Custody Record

Lab job no.: ____________
Date ____________
Page ______ of ______

Laboratory: Earth Technology Analytical Laboratories
Address: 5702 Bolsa Ave.
Huntington Beach, CA. 92649
714.892.2565 Fax 714.890.4032

Client: ARI- Berkeley
Address: ____________

Project Name / Number: PG&E / 690262

Contract / Purchase Order / Quote: ____________

Method of Shipment: Fed Ex
Shipment No. ____________
Project Manager: Clancy Tenley
Telephone No. 415-540-6954
Fax. No. 415-540-7476
Samplers: (Signature) Bale Nkrualfo

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered √	No. of Containers	Lft Diesel	Oil & Grease (Hydrocarbons)					Remarks
OW-4-1		04/17		Water	Jar / qt	5°C	—			✓						
OW-4-1		↓		↓	↓	↓	H_2SO_4				✓					
OW-3-1		↓		↓	↓	↓	—			✓						
OW-3-1		↓		↓	↓	↓	H_2SO_4				✓					
OW-3-2		↓		↓	↓	↓	—			✓						
OW-3-2		↓		↓	↓	↓	H_2SO_4				✓					

(Analysis Required annotation: "4.")

Relinquished by:	Date / Time	Received by:	Date / Time	Relinquished by:	Date / Time	Received by:	Date / Time
Signature: Bale Nkrualfo	Date: 04/18	Signature:	Date	Signature:	Date	Signature:	Date
Printed: BLATE NEUENHOFER		Printed:		Printed:		Printed:	
Company: ARI-Berkeley	Time: 4 pm	Company:	Time	Company:	Time	Company:	Time
Reason: lab analysis		Reason:		Reason:		Reason:	

Comments: ____________

Relinquished by:	Date / Time	Received by:	Date / Time
Signature:	Date	Signature:	Date
Printed:		Printed:	
Company:	Time	Company:	Time
Reason:		Reason:	

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

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2/15/91

Chain of Custody Record

The Earth Technology Corporation
Analytical Laboratories
5702 Bolsa Ave.
Huntington Beach, Ca. 92649
(714) 892-2565 FAX (714) 890-4032

Lab job no.: _____
Date _____
Page _____ of _____

Client: ARI - Berkeley
Address: _____
Project Name / Number: PG&E 1690262
Contract / Purchase Order / Quote: _____

Project Manager: Clancy Tenley
Telephone No.: 415-540-6954
Fax. No.: 415-540-7496
Samplers: (Signature) Beate Neuenhofer

Lab Sample Number	Field Sample Number	Location	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	No. of Containers	Analysis Requested: 601	602	Luft Diesel	BTEX (Hydrocarbons)	Pb *			Remarks
	OW-2-1		4/17		Water	VOA vial	3°C	/	1	✓							
	OW-2-1					VOA vial		HCl	1		✓						
	OW-2-1					Jar / qt.		/	1			✓					
	OW-2-1					Jar / qt.		H_2SO_4	1				✓				
	OW-2-1					Plastic bottle / qt.		/	1					✓			
	OW-2-2					Plastic bottle / qt.		/	1					✓			
	Field blank				Dist. Water	Jar / qt.		/	1			✓					Hold until results of samples are in
	Field blank					Jar / qt.		H_2SO_4	1				✓				
	Field blank					Plastic bottle / qt.		/	1					✓			
	Trip blank					Jar / qt		H_2SO_4	1				✓				
	Trip blank					Jar / qt.		/	1			✓					
	Trip blank		↓			VOA vial	↓	HCl	1		✓						

Relinquished by:	Date	Received by:	Relinquished by:	Date	Received by:
Signature: Beate Neuenhofer	04/18	Signature:	Signature:		Signature:
Printed: BEATE NEUENHOFER	Time: 4p.m.	Printed:	Printed:	Time:	Printed:
Company: ARI - Berkeley		Company:	Company:		Company:
Reason: Lab Analysis		Reason:	Reason:		Reason:

Method of Shipment: Fed Ex
Shipment No.: _____
Special Instructions: _____

Comments: * Pb samples must be filtered before analysis

After analysis, samples are to be:
- ☐ Disposed of (additional fee)
- ☐ Stored (90 days max)
- ☐ Stored over 90 days (additional fee)
- ☐ Returned to customer

F1000

The Earth Technology Corporation
Analytical Laboratories
5702 Bolsa Ave.
Huntington Beach, Ca. 92649
(714) 892-2565 FAX (714) 890-4032

Chain of Custody Record

Lab job no.: ____
Date ____
Page ____ of ____

Client: ARI - Berkeley
Address: ____
Project Name / Number: PG&E / 690262
Contract / Purchase Order / Quote: ____

Project Manager: Clancy Tenley
Telephone No.: 415-540-6954
Fax. No.: 415-540-7496
Samplers: (Signature) Beate Neuenhofer

Analysis Required: No. of Containers | Pb * | Luft Diesel | ~~Oil & Grease~~ (Hydrocarbons) 418.1 | 601

Laboratory Sample Number	Field Sample Number	Location	Date	Time	Sample Type	Type/Size of Container	Temp.	Chemical	No. of Containers	Pb *	Luft Diesel	Oil & Grease (Hydrocarbons) 418.1	601			Remarks
	~~Tripblank~~		~~4/17~~			~~Plastic bottle~~	~~3°C~~		~~1~~	~~✓~~						~~Hold until results are in~~
	OW-1-1		↓		Water	Plastic bottle / qt	↓	/	1	✓						
	OW-1-2				↓	↓		/	1	✓						
	OW-3-1							/	1	✓						
	OW-3-2							/	1	✓						
	OW-4-1							/	1	✓						
	OW-4-2							/	1	✓						
	OW-5-1							/	1	✓						
	OW-5-2							/	1	✓						
	OW-1-1					Jar / qt.		H_2SO_4	1			✓				
	OW-1-1					Jar / qt.		/	1		✓					
	OW-4-1		↓		↓	VOA vial	↓	/	1				✓			

Relinquished by:	Date	Received by:	Relinquished by:	Date	Received by:
Signature: Beate Neuenhofer	04/18	Signature:	Signature:		Signature:
Printed: BEATE NEUENHÖFER		Printed:	Printed:		Printed:
Company: ARI - Berkeley	Time	Company:	Company:	Time	Company:
Reason: lab analysis	4 pm.	Reason:	Reason:		Reason:

Method of Shipment: Fed Ex
Shipment No. ____
Special Instructions: ____

Comments: * Pb samples need to be filtered before analysis!

After analysis, samples are to be:
- ☐ Disposed of (additional fee)
- ☐ Stored (90 days max)
- ☐ Stored over 90 days (additional fee)
- ☐ Returned to customer

F1000

The Earth Technology Corporation
Analytical Laboratories
5702 Bolsa Ave.
Huntington Beach, Ca. 92649
(714) 892-2565 FAX (714) 890-4032

Chain of Custody Record

Lab job no.: ______
Date ______
Page ______ of ______

Client: ARI - Berkeley
Address: ______
Project Name / Number: PG&E / 690262
Contract / Purchase Order / Quote: ______

Project Manager: Clancy Tenley
Telephone No.: 415-540-6954
Fax. No.: 415-540-7496
Samplers: (Signature) Beate Neuenhofer

Laboratory Sample Number	Field Sample Number	Location	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	No. of Containers	601	602	TPH Diesel	Oil & Grease (Hydrocarbons)/4	Total Dissolved Solids			Remarks
	~~OW-4-1~~		~~04/18~~		~~Water~~	~~VOA vial~~	~~3°C~~	~~HCl~~	~~1~~		~~✓~~						Valid
	OW-3-1		↓		↓	↓	↓	–	1	✓							
	OW-3-1							HCl	1		✓						
	OW-3-2							–	1	✓							
	OW-3-2							HCl	1		✓						
	OW-1-1							–	1	✓							
	OW-1-1							HCl	1		✓						
	OW-5-1							–	1	✓							
	OW-5-1							HCl	1		✓						
	OW-5-1					Jar / qt.		H_2SO_4	1				✓				
	OW-5-1					Jar / qt.		–	1			✓					
	OW-3-1		↓		↓	Jar / qt.	↓	–	1					✓			

Relinquished by:
Signature: Beate Neuenhofer
Printed: BEATE NEUENHOFER
Company: ARI - Berkeley
Reason: lab analysis
Date: 04/18
Time: 4 pm

Received by:
Signature: ______
Printed: ______
Company: ______
Reason: ______

Relinquished by:
Signature: ______
Printed: ______
Company: ______
Reason: ______
Date: ______
Time: ______

Received by:
Signature: ______
Printed: ______
Company: ______
Reason: ______

Method of Shipment: Fed Ex
Shipment No. ______
Special Instructions: ______

Comments: ______

After analysis, samples are to be:
- ☐ Disposed of (additional fee)
- ☐ Stored (90 days max)
- ☐ Stored over 90 days (additional fee)
- ☐ Returned to customer

F1000

AQUA RESOURCES, INC.

SHIPMENT NO.: 1

CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

DATE 05/20/91

PROJECT NAME: PG&E

PROJECT NO.: 90262.

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
SB-16-1	2-2½	Soil	Drive	Brass Tube	3°C	✓	③ ④
SB-16-2	4-4½	″	″	″	″	″	③ ④
SB-16-3	7-7½	″	″	″	″	″	①,②,③,[redacted],⑥,⑦
SB-13-1	2-2½	″	″	″	″	″	③ ④
SB-13-2	5-5½	″	″	″	″	″	③,⑥,⑦
SB-13-3	7-7½	″	″	″	″	″	③,④
SB-19-1	1-2½?	″	cuttings	″	″	″	③,④
SB-19-2	5-5½	″	Drive	″	″	″	③ ④
SB-19-3	7-7½	″	″	″	″	″	③ ⑥ ⑦
SB-20-1	[redacted]	2½-3	″	″	″	″	③,④
SB-20-2	4-4½	″	″	″	″	″	①,②,③,[redacted],④
SB-20-3	7-7½	″	″	″	″	″	③,④
SB-21-1	2-2½	″	″	″	″	″	③,④
SB-21-2	5-5½	″	″	″	″	″	~~Oil & Grease~~ ①,②,③,④
SB-21-3	7-7½	″	″	″	″	″	~~Oil & Grease~~ ②,③,④
SB-22-1	~~2-2½~~	3¾-4¼	″	″	″	″	③,④
SB-22-2	~~5-5½~~	[redacted]5-5½	″	″	″	″	~~Oil & Grease~~ ②,③,④
SB-22-3	7-7½	″	″	″	″	″	~~Pb~~ ①,②,③,④
SB-15-1	2-2½	″	″	″	″	″	③,④
SB-15-2	[redacted]½	″	″	″	″	″	③④

Total Number of Samples Shipped: 21 | Sampler's Signature: Beate Neuenhofer

Relinquished By: Signature: Beate Neuenhofer; Printed Name: BEATE NEUENHOFER; Company: ARI; Reason: ~~Analyses at~~ CET	Received By: Signature: [signature]; Printed Name: JOHN GUYETTE; Company: CET	Date: 5/20/91; Time: 17:25
Relinquished By: Signature: ; Printed Name: ; Company: ; Reason:	Received By: Signature: ; Printed Name: ; Company:	Date: / /; Time:

REMARKS:

① 8010/8020

② TPH-Diesel (8015mod./3550)

③ Petroleum Hydrocarbon Oil & Grease (SMWW 5520 F/3550)

④ Pb-TTLC; samples may require STLC analysis, but hold until TTLC results are in

⑤ Pb-STLC (hold until results of TTLC are in))

~~Special Shipment / Handling / Storage Requirements:~~

⑥ CCR Title 26 Metals

⑦ PCBs (8080)

* ② and ③ for SB-21-2, SB-21-3, SB-22-2, and SB-22-3 → 24 hour turnaround

For all other analyses check with Clancy Tenley prior to testing! (540-6954)

AQUA RESOURCES, INC.

SHIPMENT NO.: 1

CHAIN OF CUSTODY RECORD

PAGE 2 OF 2

DATE 05/20/91

PROJECT NAME: _____

PROJECT NO.: _____

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
SB-15-3	7-7½	Soil	Drive	Brass Tube	3°C	—	③ ④

Total Number of Samples Shipped: 1

Sampler's Signature: Beate Nequenhofer

Relinquished By: Signature: Beate Nequenhofer Printed Name: BEATE NEQUENHOFER Company: ARI Reason: Analyses CHT	Received By: Signature: [signature] Printed Name: JOHN GUYETTE Company: C.T.	Date: 05/20/91 Time: 5:25 pm
Relinquished By: Signature: _____ Printed Name: _____ Company: _____ Reason: _____	Received By: Signature: _____ Printed Name: _____ Company: _____	Date: / / Time:

REMARKS:

See Page 1

Special Shipment / Handling / Storage Requirements:

AQUA RESOURCES, INC.

SHIPMENT NO.: _____

CHAIN OF CUSTODY RECORD

PAGE 1 OF 2

DATE 05/23/91

PROJECT NAME: PG&E

PROJECT NO.: 90262.1

Sample Number	Location	Type of Sample: Material	Type of Sample: Method	Type of Container	Type of Preservation: Temp	Type of Preservation: Chemical	Analysis Required
SB-9-1	1-1½'	Soil	Drive	Brass Tube	3°C	—	①②③④⑤⑥
SB-9-2	5-5½'						③
SB-9-3	7-7½'						③
SB-8-1	0-½'						③④
SB-8-2	3-3½'						①②③④
SB-8-3	5-5½'						③
SB-8-4	8-8½'						③
SB-10-1	2½-3'						③④
SB-10-2	5-5½'						③ add
SB-10-3	8-8½'						③
SB-6-1	3-3½'						①②③④⑤⑥
SB-6-2	4½-5'						③
SB-6-3	7½-8'						③
SB-6-4	9-9½'						③
SB-5-1	2¾-3¼'						③④
SB-5-2	5-5½'						③ *
SB-5-3	8-8½						③
SB-7-1	½-1'						③④
SB-7-2	6-6½'	▽	▽	▽	▽	▽	③

add

Total Number of Samples Shipped: 21 | Sampler's Signature: Beate Neuenhofer

Relinquished By: Signature: Beate Neuenhofer Printed Name: BEATE NEUENHOFER Company: ARI Reason: analyses at C+T	Received By: Signature: Nancy Lehr Printed Name: _____ Company: _____	Date: 5/23 91 Time: _____
Relinquished By: Signature: _____ Printed Name: _____ Company: _____ Reason: _____	Received By: Signature: _____ Printed Name: _____ Company: _____	Date: / / Time: _____

REMARKS:

① 8010/8020
② TPH - Diesel (8015 mod. 3550)
③ Petroleum Hydrocarbon Oil & Grease (SMWW 5520 F/3550)
④ Lead TTLC
⑤ Metals (CCR Title 26)
⑥ PCBs (8080)

* tube is not full

Special Shipment / Handling / Storage Requirements:

Hold ④ and ⑤ for further Pb-STLC analysis; ARI will notify C+T when Pb-TTLC results are in.

Questions? → call Clancy Tenley at 540-6954

AQUA RESOURCES, INC.

SHIPMENT NO.: _____

CHAIN OF CUSTODY RECORD

PAGE 2 OF _____

DATE 05/23/91

PROJECT NAME: P&E

PROJECT NO.: 90262.1

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required
		Material	Method		Temp	Chemical	
SB-7-3	2-8 1/2	Soil	Drive	Brass Tube	3°C	—	3
SB-7-1a	1-1 1/2	"	Disturbed	Brass Tube	"	—	3

Total Number of Samples Shipped:

Sampler's Signature: Beate Neuenhofer

Relinquished By:
Signature: Beate Neuenhofer
Printed Name: BEATE NEUENHOFER
Company: ARI
Reason: analyses of C+T

Received By:
Signature: Nancy Wilson
Printed Name:
Company:

Date: 5/23/91
Time:

Relinquished By:
Signature:
Printed Name:
Company:
Reason:

Received By:
Signature:
Printed Name:
Company:

Date: / /
Time:

REMARKS:

Special Shipment / Handling / Storage Requirements: