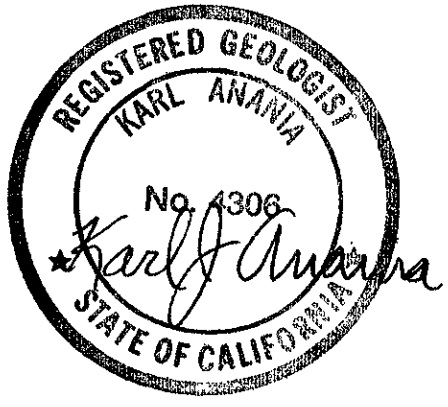
ANANIA GEOLOGIC ENGINEERING

RESULTS OF THE OFF SITE INVESTIGATION AT THE CARNATION DAIRY FACILITY LOCATED AT 1310 14TH STREET IN OAKLAND, CALIFORNIA

AGE PROJECT NO. 004-88-059

JANUARY 17, 1990



AGE 11330 SUNRISE PARK DR., SUITE C • RANCHO CORDOVA, CA 95742
P.O. BOX 161148 • SACRAMENTO, CA 95816 • PHONE (916) 631-0154 FAX (916) 631-0528

TABLE OF CONTENTS

AGE
11330 SUNRISE PARK DR., SUITE C • RANCHO CORDOVA, CA 95742
P.O. BOX 161148 • SACRAMENTO, CA 95816 • PHONE (916) 631-0154 FAX (916) 631-0528

FIGURE

TABLES

APPENDICES

AGE 11330 SUNRISE PARK DR., SUITE C • RANCHO CORDOVA, CA 95742
P.O. BOX 161148 • SACRAMENTO, CA 95816 • PHONE (916) 631-0154 FAX (916) 631-0528

RESULTS OF THE OFF SITE INVESTIGATION
AT THE CARNATION DAIRY FACILITY
LOCATED AT 1310 14TH STREET
IN OAKLAND, CALIFORNIA

JANUARY 17, 1990

AGE PROJECT NO. 004-88-059

EXECUTIVE SUMMARY

Anania Geologic Engineering installed five off-site monitoring wells north of the Carnation Oakland Dairy Facility in August 1989. Mr. Howard Shmuckler, Carnation's Corporate Counsel, authorized the investigation to determine if free floating product or dissolved contaminants had migrated off the Facility and to define the northern boundary of the on-site plume associated with the former underground fuel tanks. The wells were drilled on the City of Oakland's property in 16th Street after the appropriate permits had been obtained. City requirements restricted the wells to within the curblines of the street. Only five of the six proposed wells were installed due to underground utilities and obstacles.

Soil samples and three rounds of monthly groundwater samples were collected and analyzed for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), total lead, oil and grease, and polychlorinated biphenols (PCBs). The analyses were performed by laboratories certified by the California Department of Health Services for the respective analyses. The groundwater samples were collected monthly for the first quarter as approved by the lead agency, the Alameda County Health Department. Samples were collected in September, October and November 1989.

Results from the investigation indicate that the free floating product has not migrated off the Facility into 16th Street. Dissolved hydrocarbon constituents on the order of less than 13 parts per million were reported for samples from MW-OS-26, the well north of the largest bay in the former maintenance shop. Lower concentrations in the range of 30 parts per billion of BTEX were detected in samples from MW-OS-25, the well located on the south side of 16th Street near Cypress Street. Analytical results from the two wells on the north side of 16th Street did not have dissolved hydrocarbon constituents and indicate the contaminant

AGE 11330 SUNRISE PARK DR., SUITE C • RANCHO CORDOVA, CA 95742
P.O. BOX 161148 • SACRAMENTO, CA 95816 • PHONE (916) 631-0154 FAX (916) 631-0528

plume has not migrated across the street. Varying concentrations of BTEX were reported in all five of the wells in the October sampling event. However, PG&E was repairing a natural gas leak as close as 17 feet from the monitoring wells the day the samples were collected. Based on the lack of detection of BTEX in most of the groundwater samples from the September and November sampling rounds, the natural gas leak appears to have impacted the October samples. Soil contamination appears to be limited to the area around MW-OS-26.

The groundwater extraction wells operating on the Facility should capture the affected groundwater around MW-OS-26 and MW-OS-25. The water will be treated in the on-site carbon adsorption treatment system and discharged to the sanitary sewer under the East Bay Municipal Utilities District discharge permit. The off-site water levels will be monitored during pumping. Continued quarterly monitoring with analyses for TPH, BTEX and total lead should continue for the next three quarters as a minimum. In addition, soil samples obtained by hand auguring will be collected adjacent to MW-OS-26 and MW-OS-27. The samples will be analyzed for TPH as gasoline, BTEX, and PCBs since the holding times from the original samples were exceeded at the laboratory.

AGE 11330 SUNRISE PARK DR., SUITE C • RANCHO CORDOVA, CA 95742
P.O. BOX 161148 • SACRAMENTO, CA 95816 • PHONE (916) 631-0154 FAX (916) 631-0528

RESULTS OF THE OFF SITE INVESTIGATION AT THE CARNATION DAIRY FACILITY LOCATED AT 1310 14TH STREET IN OAKLAND, CALIFORNIA

JANUARY 17, 1990

AGE PROJECT NO. 004-88-059

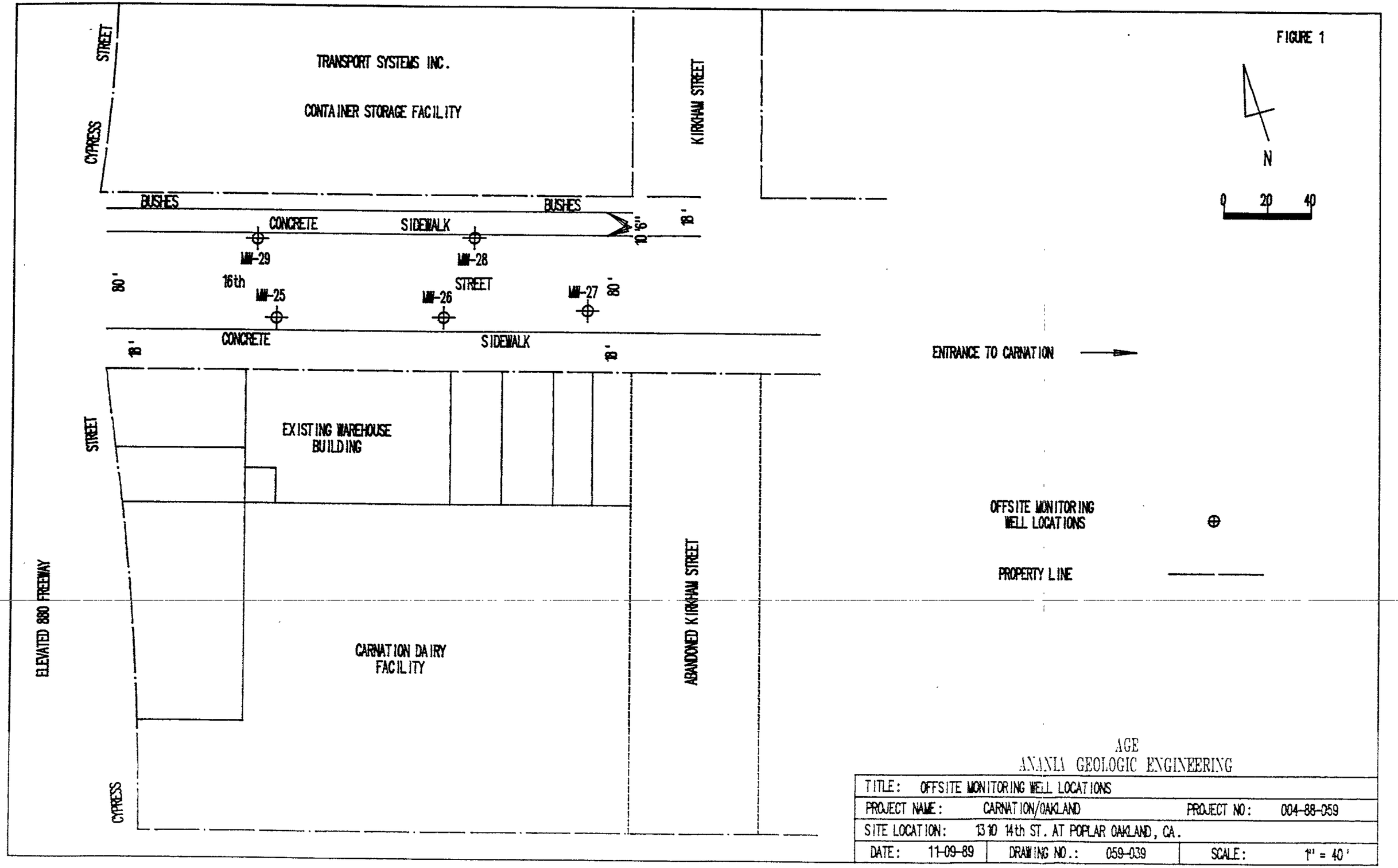
1.0 INTRODUCTION

Mr. Howard Shmuckler, Carnation's Corporate Counsel authorized Anania Geologic Engineering (AGE) to extend the site investigation associated with the former underground fuel tanks to the north of the Carnation property. The additional investigation was required to define the northern boundary of the groundwater contamination plume and to determine if the free floating product plume had migrated off site. The scope of work consisted of drilling and installing five monitoring wells, collecting soil and groundwater samples and analyzing the samples for hydrocarbon constituents. Field operations on this project were not initiated until AGE was issued an encroachment permit from the City of Oakland. Ms. Katherine Chesick of the Alameda County Health Department, the lead agency, approved the scope of work for the off site investigation. This report includes the results from the initial soil sampling and three rounds of groundwater sampling conducted in September, October and November 1989.

2.0 DRILLING AND SOIL SAMPLING

Five monitoring wells were installed north of the western half of the Carnation Dairy Oakland Facility in 16th Street. All of the wells were drilled in the street on City property after obtaining encroachment and street obstruction permits. The layout of the monitoring wells are shown on Figure 1. MW-OS-25 and MW-OS-26 are located along the southern curbline of 16th Street nearest to the Carnation property. MW-OS-27 is near the middle of the east bound lane and MW-OS-28 and MW-OS-29 are located on the north curbline of 16th Street.

FIGURE 1



AGE
ANANIA GEOLOGIC ENGINEERING

TITLE: OFFSITE MONITORING WELL LOCATIONS			
PROJECT NAME: CARNATION/OAKLAND		PROJECT NO:	004-88-059
SITE LOCATION: 1310 14th ST. AT POPLAR OAKLAND, CA.			
DATE: 11-09-89	DRAWING NO.: 059-039	SCALE:	1" = 40'

The wells were drilled to define the northern border of the product plume present on the Facility. Until the off site investigation was performed, there was no clear definition of the northern edge of the plume. Due to underground utility obstructions, only five of the six proposed monitoring wells could be drilled. The first six feet of each monitoring well were hand augered to clear underground utilities, to take TLV readings, and to log the stratigraphy.

The monitoring wells were drilled using a Mobil B-53 continuous flight hollow stem auger drill rig. After cutting through the asphaltic concrete in the street, the pavement base course was examined for hydrocarbon staining to help determine the age and possible source and sequence of contamination. The base rock was clean in every case. Due to heaving sands, the borings were advanced to a depth of 10 feet and sampled at various intervals. The auger was then withdrawn from the hole and a plug was placed in the bit and drilling continued to a total depth of 25 feet. This procedure is standard accepted practice in heaving or saturated sands.

Soil samples were collected by advancing a Modified California Sampler lined with three brass sample tubes into the undisturbed soil. Blow counts for each six-inch interval were recorded on the boring logs. Soil samples were collected for chemical analyses and logging of the soils. At least two samples were collected from each boring above groundwater for chemical analyses. The deeper sample was collected as close to the groundwater surface as possible. The ends of the bottom tube were sealed with aluminum foil, tight plastic end caps and tape. The soil samples were immediately placed in the refrigerator on site. At the end of the day the samples were transported in a cooler with blue ice under Chain of Custody procedures to a California state certified analytical laboratory for analyses. Requested analyses for the soil samples were total petroleum hydrocarbons (TPH) as gasoline and diesel, benzene, toluene, ethylbenzene and xylene (BTEX), oil and grease and polychlorinated biphenols (PCBs) using methods modified 8015, 8020, 413.2, 503D and 8080. Curtis and Tompkins in Berkeley, Precision Analytical in Richmond and Chemwest in Sacramento were the analyzing laboratories. The boring logs are in Appendix A. Copies of the Chain of Custody forms and analytical reports for the soil samples are located in Appendix B.

3.0 MONITORING WELL INSTALLATION AND GROUNDWATER SAMPLING

The five borings were converted to four-inch monitoring wells varying in depth from 22.5 to 27 feet. All of the wells were constructed with 15 feet of 0.020 slotted PVC screen and a bottom

cap. The top of the well was completed with blank casing from the top of the screen to the ground surface. The 2/16 sand filter pack was poured between the PVC casing and the auger to a height of at least 1 foot above the well screen. A one foot thick bentonite seal was placed above the sand. Distilled water was used to hydrate the bentonite to set the seal. The remainder of the annular space was filled with a bentonite-cement mix.

A flush mounted well box was installed at each well and finished to allow water to drain away from the well. A locking monitoring cap was placed on the top of the casing. The concrete seals were allowed to set for at least 48 hours prior to well development. The wells were developed by removing a minimum of ten well volumes with a bailer. Well construction details are shown on the logs in Appendix A. The well locations and elevations were later surveyed by a California licensed surveyor.

After development, the wells were allowed to equilibrate for a minimum of 24 hours prior to the initial sampling event. Groundwater samples were collected monthly for three months using the same sampling protocol for each round. The first sampling event was performed on September 13 through 15. Subsequent sampling rounds were conducted on October 13 and 16 and November 15 and 16, 1989. It was noted that during the second sampling event in October, a PG&E crew was working on the south side 16th Street to repair a natural gas leak. At the time some of the groundwater samples were collected, the PG&E work area was only 17 feet east of MW-OS-27 and 57 feet east of MW-OS-26. With respect to the October 17th earthquake, the first two rounds of groundwater samples were collected prior to the event and the most recent samples were collected a month after it.

For each sampling round, a dedicated disposable bailer was utilized to sample each well. The bailer was lowered into the well to collect a water sample from the groundwater interface to observe if there was floating product or a hydrocarbon sheen on the surface. After checking the surface, the groundwater elevation was measured. The wells were then purged a minimum of three well volumes before the water samples were obtained. The samples were collected in appropriate containers provided by the analyzing laboratory. The sample containers were labelled with a sample tag indicating the sample number, project number, date, time, sample location and sampler. The water samples were placed in the refrigerator on site and later transported to the analytical laboratory in a cooler with blue ice under Chain of Custody. The samples were analyzed for TPH as gasoline and diesel, BTEX, oil and grease, lead, pesticides and PCBs by methods modified 8015, 8020, 503A, 503E, 6010, and 8080 respectively.

4.0 SOIL ANALYTICAL RESULTS

The analytical results from the soil samples are compiled on Table 1. The soil samples were collected at various depths below ground surface. All soil samples were obtained from above the groundwater surface. TPH as gasoline and diesel were not detected in the soil samples from any of the monitoring wells except MW-OS-26. Benzene, ethylbenzene and xylene concentrations were reported below the detection limits for all of the samples collected from MW-OS-25 and MW-OS-27 through MW-OS-29. Toluene was detected in low concentrations in MW-OS-28 between three and six feet and in MW-OS-29 between 9.5 and 10 feet. The highest reported lead levels of 40 and 29 mg/kg were detected at three feet in MW-OS-28 and 9.5 feet in MW-OS-29 respectively.

Contamination in MW-OS-26 appears greatest between 7.5 to 10.5 feet below ground surface. TPH as gasoline was reported as 1110 to 1170 mg/kg and TPH as diesel ranged from 110 to 70 mg/kg. BTEX were detected in all of the samples at the above depths as well. Oil and grease concentrations ranging from 80 to 945 mg/kg were detected in samples collected from MW-OS-26 at depths between 7.5 and 11 feet. Copies of the analytical reports and Chain of Custody forms for the soil samples are located in Appendix B.

5.0 GROUNDWATER ANALYTICAL RESULTS

Clayton Environmental Consultants performed the analyses for the initial sampling conducted in September. The results are compiled on Table 2. The analytical results indicate that although there is no floating product, there are dissolved constituents in MW-OS-26 and trace amounts in MW-OS-25 and MW-OS-27. MW-OS-26 samples had reported concentrations of 590 and 6000 µg/l (parts per billion, ppb) TPH as diesel and gasoline respectively, 1400 ppb benzene, 1300 ppb toluene, 110 ppb ethylbenzene, 1100 ppb xylenes and 1000 ppb oil and grease. MW-OS-25 and MW-OS-27 samples were reported with TPH as diesel concentrations of 80 and 100 µg/l respectively. Benzene and toluene concentrations in the sample from MW-OS-25 were also reported as 14 and 0.4 µg/l respectively. Results from MW-OS-28 and MW-OS-29 were reported as not detected for all analyzed constituents. Copies of the analytical reports and Chain of Custody forms for the September samples are in Appendix C.

Table 3 summarizes the analytical results and detection limits for the October groundwater sampling. Curtis and Tompkins in Berkeley performed the analyses. MW-OS-26 had reported concentrations of 1900 ppb of TPH as gasoline, 870 ppb benzene, 440 ppb toluene, 12 ppb ethylbenzene, and 120 ppb xylenes. TPH as diesel was

Table 1: Off Site Soil Analytical Results

Sample	Location	Depth	TPH Gasoline	TPH Diesel	Oil & Grease	Total Hydrocrabons	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Lead	PCBs
Detection Limit		Feet	10 mg/kg	10 mg/kg	20 mg/kg	20 mg/kg	0.03 mg/kg	0.03 mg/kg	0.03 mg/kg	0.03 mg/kg	1.1 mg/kg	0.2 mg/kg
2089	MW-OS-25	2.5-3	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
2090	MW-OS-25	3.5-4	ND	ND	25	25	ND	ND	ND	ND	NA	ND
2091	MW-OS-25	5-5.5	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
2092	MW-OS-25	7-7.5	ND	ND	55	55	ND	ND	ND	ND	NA	ND
Detection Limit					50 mg/kg	25 mg/kg	0.05 mg/kg	0.1 mg/kg	0.2 mg/kg	0.1 mg/kg	1.1 mg/kg	20 mg/kg
2093	MW-OS-25	7.5-8	BRL	BRL	240	29	BRL	BRL	BRL	BRL	NA	BRL
Detection Limit			10 mg/kg	10 mg/kg	20 mg/kg	20 mg/kg	0.03 mg/kg	0.03 mg/kg	0.03 mg/kg	0.03 mg/kg	1.1 mg/kg	0.2 mg/kg
2094	MW-OS-25	9-9.5	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
2095	MW-OS-25	11.5-12	ND	ND	20	20	ND	ND	ND	ND	NA	ND
2096	MW-OS-25	13-13.5	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
2097	MW-OS-26	2-2.5	ND	ND	ND	NA	ND	ND	ND	ND	3.2	ND
2098	MW-OS-26	3-3.5	ND	ND	ND	NA	ND	ND	ND	ND	4.7	ND
2099	MW-OS-26	4-4.5	ND	ND	ND	NA	ND	ND	ND	ND	6.6	ND
2100	MW-OS-26	5-5.5	ND	ND	ND	NA	ND	ND	ND	ND	8.0	ND
2101	MW-OS-26	6-6.5	ND	ND	ND	NA	ND	ND	ND	ND	10.0	ND
2103	MW-OS-26	7.5-8	1110	110	945	NA	5.8	39	13	70	9.3	ND
2104	MW-OS-26	10-10.5	1170	70	80	NA	7.8	25	6	30	8.9	ND
2109	MW-OS-26	10.5-11	19	ND	260	NA	1.7	1.8	0.6	4.8	NA	ND
1172	MW-OS-27	6-6.5	ND	ND	80	NA	ND	ND	ND	ND	8.2	ND
1173	MW-OS-27	8.5-9	ND	ND	65	NA	ND	ND	ND	ND	9.3	ND
Detection Limit			1 mg/kg	10 mg/kg	100 mg/kg		0.01 mg/kg	0.01 mg/kg	0.01 mg/kg	0.02 mg/kg	5 mg/kg	0.01 mg/kg
1176	MW-OS-28	3-3.5	ND	ND	ND	NA	ND	0.014	ND	ND	29	ND
1177	MW-OS-28	4.5-5	ND	ND	ND	NA	ND	0.021	ND	ND	10	ND
1178	MW-OS-28	5.5-6	ND	ND	ND	NA	ND	0.017	ND	ND	9.6	NA
1179	MW-OS-28	7-7.5	ND	ND	ND	NA	ND	ND	ND	ND	16	NA
1180	MW-OS-28	9-9.5	ND	ND	ND	NA	ND	ND	ND	ND	6.6	NA
1277	MW-OS-29	9.5-10	ND	ND	ND	NA	ND	0.14	ND	ND	40	NA

ND - Not Detected
NA - Not Analyzed
TPH - Total Petroleum Hydrocarbons
BRL - Below Reporting Limit

Table 2: September Off Site Groundwater Sampling
Analytical Results

	MW-OS-25			MW-OS-26			MW-OS-27			MS-OS-28			MW-OS-29		
	Sample #	Results µg/l	Detection Limit µg/l	Sample #	Results µg/l	Detection Limit µg/l	Sample #	Results µg/l	Detection Limit µg/l	Sample #	Results µg/l	Detection Limit µg/l	Sample #	Results µg/l	Detection Limit µg/l
TPH Diesel	1190	80	50	1196	590	50	1202	100	50	1208	ND	50	1214	ND	50
TPH Gasoline	1189	ND	50	1195	6000	3000	1201	ND	50	1207	ND	50	1213	ND	50
Benzene	1189	14	0.4	1195	1400	20	1201	ND	0.4	1207	ND	0.4	1213	ND	0.4
Toluene	1189	0.4	0.3	1195	1300	20	1201	ND	0.3	1207	ND	0.3	1213	ND	0.3
Ethylbenzene	1189	ND	0.3	1195	110	6	1201	ND	0.3	1207	ND	0.3	1213	ND	0.3
Xylenes	1189	ND	0.7	1195	1100	20	1201	ND	0.7	1207	ND	0.7	1213	ND	0.7
Oil & Grease	1194	ND	1000	1200	1000	1000	1206	ND	1000	1212	ND	1000	1219	ND	1000
Lead		NA		1199	ND	50	1205	ND	50	1211	ND	50	1217	ND	50
Pesticides*	1192	ND	0.1	1198	ND	0.1	1204	ND	0.1	1210	ND	0.1	1216	ND	0.1
PCBs	1192	ND	1	1198	ND	1	1204	ND	1	1210	ND	1	1216	ND	1

ND - Not Detected
NA - Not Analyzed

*Detection Limit for chlordane and toxaphene were 0.5 and 5 µg/l respectively

Table 3: October Off Site Groundwater Sampling Analytical Results

Sample Number:	MW-OS-25 3485		MW-OS-26 3481		MW-OS-27 3482		MS-OS-28 3483		MW-OS-29 3484	
	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l
TPH Diesel	ND	50	ND	50	51	50	ND	50	65	50
TPH Gasoline	82	50	1900	50	ND	50	58	50	ND	50
Benzene	29	1.0	870	1.0	12	1.0	8	1.0	2.3	1.0
Toluene	4.7	1.0	440	1.0	14	1.0	14	1.0	4.7	1.0
Ethylbenzene	ND	1.0	12	1.0	ND	1.0	1	1.0	ND	1.0
Xylenes	1.2	1.0	120	1.0	6	1.0	8	1.0	1.2	1.0
Oil & Grease	ND	2000	ND	2000	ND	2000	ND	2000	ND	2000
Lead	ND	50	ND	50	ND	50	ND	50	ND	50
PCBs	ND	0.05	ND	0.05	ND	0.05	ND	0.05	ND	0.05

ND - Not Detected
NA - Not Analyzed

detected in MW-OS-27 at a level of 51 ppb. BTEX were also detected at relatively low levels in almost all of the samples from the remaining four wells. Benzene concentrations ranged from a high of 29 ppb in MW-OS-25 to a low of 2.3 ppb in MW-OS-29. This sample set was collected the day PG&E was repairing a natural gas leak as discussed previously in Section 3.0. A copy of the laboratory reports and Chain of Custody forms for the October samples are located in Appendix D.

The third monthly groundwater samples from the off site wells were collected in the middle of November and were analyzed by Curtis and Tompkins in Berkeley. The results are summarized on Table 4. Concentrations in MW-OS-26 were the highest reported among the five wells. Analyses indicated 12 ppm of TPH as gasoline, 4.2 ppm benzene, 3 ppm toluene, 840 ppb xylenes and 230 ppb oil and grease. Benzene was detected in only MW-OS-25 at a level of 30 ppb. Toluene was detected in very low concentrations in MW-OS-25 and MW-OS-27. Oil and grease were the only analyzed constituents detected in both MW-OS-28 and MW-OS-29. Appendix E contains copies of the analytical reports and Chain of Custody forms for the November sampling.

6.0 CONCLUSIONS

The installation of the five off-site monitoring wells has clearly shown that the free floating product plume does not extend to 16th Street. Analytical results do show that dissolved hydrocarbon constituents in the groundwater extend beyond the northern property boundary of the Facility. Therefore, it will be necessary to capture off-site groundwater during on-site groundwater remediation at the Facility.

The greatest impact associated with the underground fuel leak appears to be the impact to the groundwater in the form of dissolved constituents in the area of MW-OS-26. Hydrocarbon constituents are present in the groundwater at MW-OS-26 in the range of less than 13 parts per million. Benzene concentrations detected on the order of 30 parts per billion or less in the groundwater at MW-OS-25 indicates a much smaller degree of contamination in this area. Excluding the October sampling, results from MW-OS-27 were non-detect for hydrocarbon constituents except for 100 ppb of TPH as diesel and 3.1 ppb of toluene. The results from groundwater samples from MW-OS-28 and MW-OS-29 indicate that groundwater contamination from the underground fuel tank release at the Facility has not migrated across 16th Street and adversely impacted the groundwater. The presence of hydrocarbon constituents in all five of the wells in only the October sampling event suggests that the natural gas leak

Table 4: November Off Site Groundwater Sampling Analytical Results

Sample Number:	MW-OS-25 12101		MW-OS-26 12102		MW-OS-27 12103		MS-OS-28 12104		MW-OS-29 12105	
	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l	Results µg/l	Detection Limit µg/l
TPH Diesel	ND	500	ND	500	ND	500	ND	500	ND	500
TPH Gasoline	ND	50	12,000	5,000	ND	50	ND	50	ND	50
Benzene	30	1	4,200	100	ND	1	ND	1	ND	1
Toluene	2.1	1	3,000	100	3.1	1	ND	1	ND	1
Ethylbenzene	ND	1	ND	100	ND	1	ND	1	ND	1
Xylenes	ND	1	840	100	ND	1	ND	1	ND	1
Oil & Grease	ND	20	230	20	100	20	50	20	150	20
Lead	ND	50	ND	50	ND	50	ND	50	ND	50
PCBs	ND	500	ND	500	ND	500	ND	500	ND	500

ND - Not Detected

influenced the sampling event and are not necessarily representative of the groundwater.

Contamination in the soil appears to be limited to the area around MW-OS-26 based on elevated concentrations of TPH as diesel and gasoline, oil and grease, BTEX and lead. All of these constituents are consistent with detected contaminant constituents from the on-site plume. Since the contaminated soil samples are at depths below 7.0 feet, it is likely that the contaminants may have been transported by the migration of contaminated groundwater from an on-site source. Seasonal groundwater fluctuations can reach to within 7.0 feet of the ground surface during wet seasons.

Soil samples from MW-OS-25 and MW-OS-27 through MW-OS-29 indicate some contamination from oil and grease, toluene and lead. However, the concentrations are low and do not appear to be associated with the on-site contamination. Sixteenth Street has been used as a main thoroughfare for over 50 years and has been exposed to numerous hydrocarbon contaminants before it was paved. In all likelihood, the contamination is the result of long term, continuous exposure to truck and automobile traffic.

7.0 RECOMMENDATIONS

The groundwater in the vicinity immediately north of the Facility will be captured by extraction wells located in the maintenance shop building. The water will be treated during the operation of the carbon adsorption treatment system and discharged to the sanitary sewer under the discharge permit issued by the East Bay Municipal Utilities District. AGE recommends periodically monitoring the groundwater levels in the off-site wells when the on-site extraction pumps are operating to determine the influence in the offsite wells. The groundwater in the off-site wells should be continued to be sampled quarterly and analyzed for TPH and BTEX for the next three quarters as a minimum. Analytical results should be reviewed and evaluated to determine the effects of the groundwater extraction system and to monitor migration of the dissolved contaminant plume, should it occur.

Additional soil samples will be collected at MW-OS-26 and MW-OS-27 by hand augering adjacent to the monitoring wells. The samples will be analyzed for TPH as gasoline and diesel and PCBs at both locations. Samples from MW-OS-27 will also be analyzed for BTEX since the holding times for the original samples were exceeded. The results will be reviewed to evaluate the extent and degree of contamination in the soil. The samples will be collected following proper protocol, under Chain of Custody, and submitted to a certified laboratory for analyses. The results will be transmitted

to the Alameda County Health Department and the San Francisco Bay Regional Water Quality Control Board.

8.0 REMARKS AND SIGNATURES

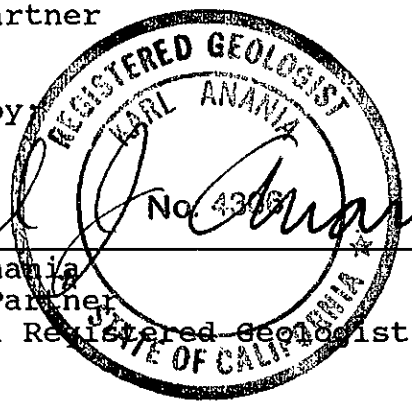
This report was prepared in accordance with current industry standards and practice. The work described herein has been and will be performed under the supervision of a California Registered Geologist and California licensed Civil Engineer.

Prepared by:

Mary L. Scruggs
General Partner

1/17/90
Date

Approved by:



Karl J. Anania
Managing Partner
California Registered Geologist No. 4306

1-17-90
Date

APPENDIX A

BORING LOGS

DATE STARTED: 8/23/89

DATE COMPLETED: 8/23/89

TIME STARTED: 10:25

TIME COMPLETED:

DRILLING EQUIPMENT: Hollow Stem Auger

SURFACE CONDITIONS: Asphaltic Concrete

SURFACE ELEVATION: 13.25

COORDINATES: N 2,694.8 E 3,150.6

GROUNDWATER CONDITIONS: Free Groundwater Encountered at 14 feet during drilling

DRILLING CONTRACTOR: Accubore

BORING DIAMETER: 10 inches

CASING DIAMETER: 4 inches

LOGGED BY: Jim Wallace

SLOT SIZE: 0.020 inch

BORING DEPTH: 22.5 feet

CASING DEPTH: 22.5 feet

FILTER PACK: #2/16 sand

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
								Asphaltic Concrete
								Portland Cement Concrete
		400						Aggregate Baserock
	2089	750				2	SM	
		80						SILTY SAND(SM) Dark Gray, dry to moist, medium dense,
	2090	220				4		
Hydrocarbon Odor		240						
		100					SC	
	2091	45						CLAYEY SAND(SC) Dark Gray to Black, (diesel staining), wet, medium dense
		95				6	SM	
			4					SILTY SAND(SM) Dark Gray, dry to moist, medium dense
No Hydrocarbon Odor	2092	95	5					
	2093		7			8		color change to Light Gray
			5					
			7					color change to Mottled Red Brown
	2094	180	13			10		
			5					
			5					
	2095	160	8			12		grades moist, with trace clay
No Hydrocarbon Odor								
			5					
			5					
	2096	48	9			14		Free Groundwater Encountered at 14 feet during drilling
						16		

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS25

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
						20		
						22		
								Boring Terminated at 22.5 feet on 8-23-89
						24		
						26		
						28		
						30		
						32		
						34		
						36		
						38		
						40		
						42		

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS25

DATE STARTED: 8/24/89

DATE COMPLETED: 8/24/89

TIME STARTED:

TIME COMPLETED:

DRILLING EQUIPMENT: Hollow Stem Auger

SURFACE CONDITIONS: Asphaltic Concrete

SURFACE ELEVATION: 13.55

COORDINATES: N 2,676.8 E 3,206.4

GROUNDWATER CONDITIONS: Free Groundwater Encountered at 17 feet during drilling

DRILLING CONTRACTOR: Accubore

BORING DIAMETER: 10 inches

CASING DIAMETER: 4 inches

LOGGED BY: Robyn McKinney

SLOT SIZE: 0.02 inch

BORING DEPTH: 25.0 feet

CASING DEPTH: 25 feet

FILTER PACK: #2/16 sand

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
								Asphaltic Concrete
		75					SM	Portland Cement Concrete
	2097	100				2		Aggregate Baserock, does not appear to be stained
		110						
	2098	110						
		110						
	2099	130				4		Silty SAND(SM) Dark Gray to Black, dry to moist, medium dense, color change to Black
Hydrocarbon Odor		230						
	2100	150						color change to Light Gray
Slight Hydrocarbon Odor		200						grades moist
	2101	180				6		color change to Green Gray, grades with some clay
Hydrocarbon Odor								
			5					color change to Green Gray, slightly moist
			7					
	2103	5500	12			8		
Hydrocarbon Odor								
			3					
Hydrocarbon Odor	2109		12					color change to Red, grades moist
	2104	500	10			10		
Pulled auger to ream with plug								
						12		
						14		grades with increasing clay content
		600						
						16		
		600				▽		Free Water Encountered at 17 feet during drilling

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS26

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
						20		
						22		
						24		
								Boring Terminated at 25 feet on 8-24-89
						26		
						28		
						30		
						32		
						34		
						36		
						38		
						40		
						42		

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS26

DATE STARTED: 8/28/89

DATE COMPLETED: 8/28/89

TIME STARTED:

TIME COMPLETED:

DRILLING EQUIPMENT: Hollow Stem Auger

DRILLING CONTRACTOR: Accubore

BORING DIAMETER: 10 inches

CASING DIAMETER: 4 inch

LOGGED BY: Robyn McKinney

SURFACE CONDITIONS: Asphaltic Concrete

SURFACE ELEVATION: 14.33

COORDINATES: N 2,666.4 E 3,271.2

GROUNDWATER CONDITIONS: Free Groundwater Encountered at 14 feet during drilling

SLOT SIZE: .020 inch

BORING DEPTH: 24.5 feet

CASING DEPTH: 24 feet

FILTER PACK: #2/16 sand

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
								Asphaltic Concrete
							SM	SILTY SAND(SM) Gray, dry-to-moist, medium dense with some clay
			7			2		
			10			4		
	1172	400	15			6		
						8		
			7					
			9					grades with increasing sand, color change to Gray-Brown
	1173	200	20			10		
						12		color change to Red-Brown, grades wet, grades with increasing clay content
TLV reading 70ppm at well head						14		
						16		

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS27

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
No Hydrocarbon Odor						20 22 24		color change to brown
						26 28 30 32 34 36 38 40 42		Boring Terminated at 24 1/2 feet on 8-28-89

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS27

Sheet 2 of 2

DATE STARTED: 8/29/89

DATE COMPLETED: 8/29/89

TIME STARTED:

TIME COMPLETED:

DRILLING EQUIPMENT: Hollow Stem Auger

SURFACE CONDITIONS: Asphaltic Concrete

SURFACE ELEVATION: 13.90

COORDINATES: N 2,704.7 E 3,220.1

GROUNDWATER CONDITIONS: Free Groundwater Encountered at 14 feet during drilling

DRILLING CONTRACTOR: Accubore

BORING DIAMETER: 10 inches

CASING DIAMETER: 4 inch

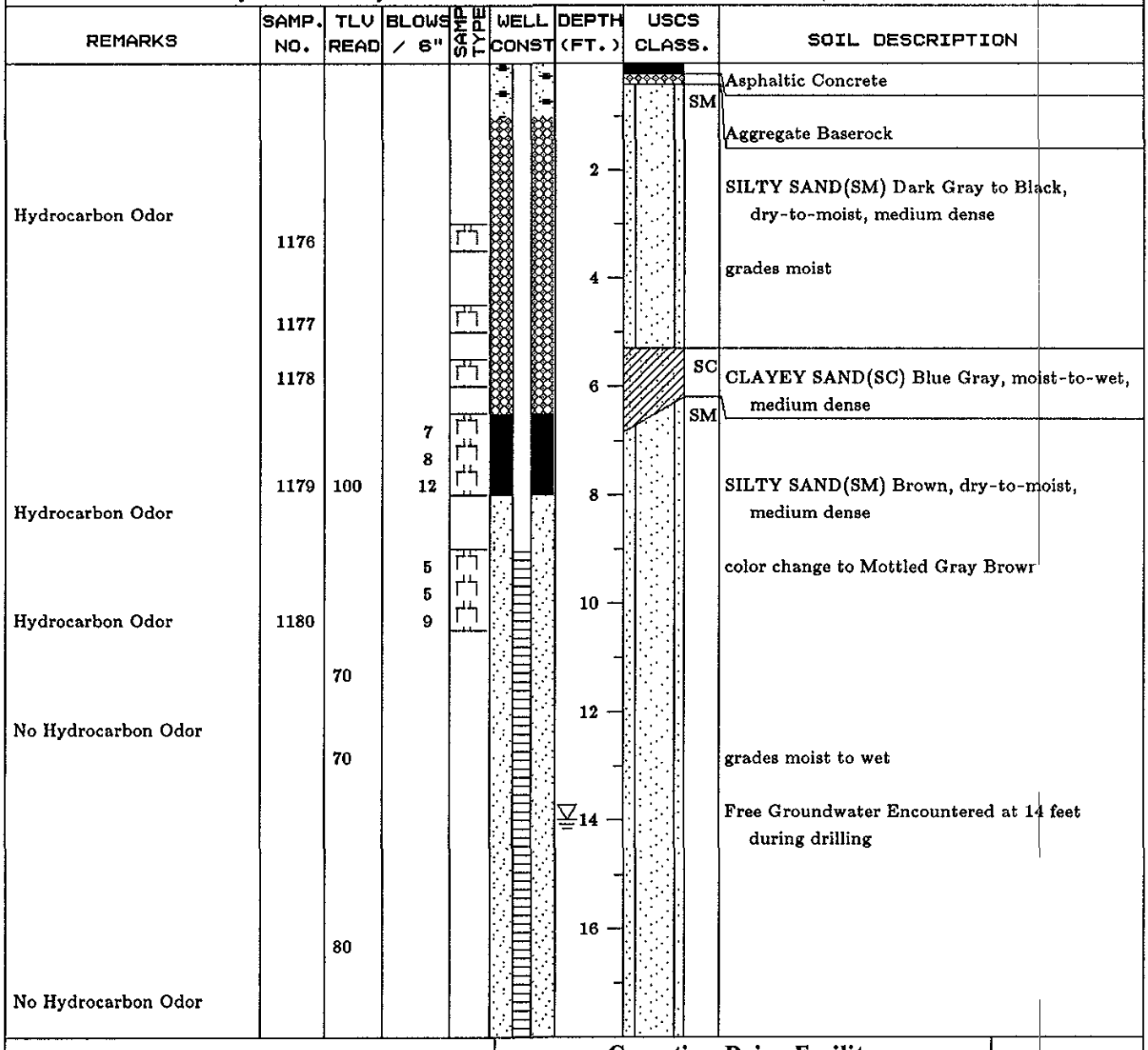
LOGGED BY: Robyn McKinney

SLOT SIZE: 0.02 inch

BORING DEPTH: 27.0 feet

CASING DEPTH: 27 feet

FILTER PACK: #2/16 Sand



AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS28

Sheet 1 of 2

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
No Hydrocarbon Odor						20 22 24 26		
						28 30 32 34 36 38 40 42		Boring Terminated at 27 feet on 8-29-89

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS28

Sheet 2 of 2

DATE STARTED: 8/29/89

DATE COMPLETED: 8/30/89

TIME STARTED:

TIME COMPLETED:

DRILLING EQUIPMENT: Hollow Stem Auger

SURFACE CONDITIONS: Asphaltic Concrete

SURFACE ELEVATION: 13.38

COORDINATES: N 2,729.2 E 3,146.2

GROUNDWATER CONDITIONS: Free Groundwater Encountered at 12 feet during drilling

DRILLING CONTRACTOR: Accubore

BORING DIAMETER: 10 inches

CASING DIAMETER: 4 inches

LOGGED BY: J R and R Mc

SLOT SIZE: 0.02 inch

BORING DEPTH: 25.0 feet

CASING DEPTH: 25 feet

FILTER PACK: #2/16 Sand

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
								Asphaltic Concrete
							SM	Aggregate Baserock
						2		SILTY SAND(SM) Dark Brown, dry-to-moist, medium dense
Abandoned 4" clay pipe						4		
						6		
							SC	clayey SAND(SM) lense between 6 1/2 and 7 feet
							SM	
		60				8		
			7					
			7			10		
	1277		12					
						12		Free Groundwater Encountered at 12 feet during drilling
No Hydrocarbon Odor								grades moist, medium dense with trace clay
						14		
								grades wet
						16		

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS29

REMARKS	SAMP. NO.	TLV READ	BLOWS / 6"	SAMP TYPE	WELL CONST	DEPTH (FT.)	USCS CLASS.	SOIL DESCRIPTION
		90				20 22 24		Boring Terminated at 25 feet on 8-30-89
						26 28 30 32 34 36 38 40 42		

AGE

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059

Carnation Dairy Facility
1310 14th St., Oakland, Ca.

LOG OF MW-OS29

Sheet 2 of 2

APPENDIX B

SOIL ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED AUG 30 1989

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/24/89
Analyzed: 08/24/89
Reported: 08/25/89
Job No. #: 71029

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 08/24/89

Total Petroleum Hydrocarbon Analysis
By Modified Method 8015
mg/kg

Lab ID	Client ID	Diesel	Gasoline	MDL
71029-1	#2089	ND<10	ND<10	10
71029-2	#2090	ND<10	ND<10	10
71029-3	#2091	ND<10	ND<10	10
71029-4	#2092	ND<10	ND<10	10
71029-5	#2094	ND<10	ND<10	10
71029-6	#2095	ND<10	ND<10	10
71029-7	#2096	ND<10	ND<10	10

QA/QC: Spike Recovery for Diesel: 113%
Spike Recovery for Gasoline: 92%

MDL: Method detection limit: Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED AUG 3 0 1989

CERTIFICATE OF ANALYSIS

State License No. 211

Received: 08/24/89
Analyzed: 08/24/89
Reported: 08/28/89
Job No #: 71029

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 08/24/89

Aromatic Volatile Hydrocarbon Analysis:
EPA Method 8020
mg/kg

Lab ID	Client ID	Benzene	Toluene	MDL
71029-1	#2089	ND<0.03	ND<0.03	0.03
71029-2	#2090	ND<0.03	ND<0.03	0.03
71029-3	#2091	ND<0.03	ND<0.03	0.03
71029-4	#2092	ND<0.03	ND<0.03	0.03
71029-5	#2094	ND<0.03	ND<0.03	0.03
71029-6	#2095	ND<0.03	ND<0.03	0.03
71029-7	#2096	ND<0.03	ND<0.03	0.03

Lab ID	Client ID	Ethylbenzene	Xylene	MDL
71029-1	#2089	ND<0.03	ND<0.03	0.03
71029-2	#2090	ND<0.03	ND<0.03	0.03
71029-3	#2091	ND<0.03	ND<0.03	0.03
71029-4	#2092	ND<0.03	ND<0.03	0.03
71029-5	#2094	ND<0.03	ND<0.03	0.03
71029-6	#2095	ND<0.03	ND<0.03	0.03
71029-7	#2096	ND<0.03	ND<0.03	0.03

QA/QC: Spike Recovery for Benzene: 94%
Spike Recovery for Ethylbenzene: 103%
Spike Recovery for O-Xylene: 103%

Jaime Chow
Laboratory Director

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED AUG 30 1989

CERTIFICATE OF ANALYSIS

State License No. 211

Received: 08/24/89
Analyzed: 08/24/89
Reported: 08/28/89
Job No #: 71029

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil

Hydrocarbons Analysis: Standard Methods 16th Edition 503E
Oil & Grease Analysis: By Standard Method 16th Edition 503D
mg/kg

Lab ID	Client ID	Oil & Grease	Total Hydrocarbons
71029-1	#2089	ND<20	ND<20
71029-2	#2090	25	25
71029-3	#2091	ND<20	ND<20
71029-4	#2092	55	55
71029-5	#2094	ND<20	ND<20
71029-6	#2095	20	20
71029-7	#2096	ND<20	ND<20

QA/QC: Spike Recovery for Oil & Grease: 86%

MDL: Method detection limit; Compound below this level would not be detected.

Detection Limit for Oil & Grease: 20

Jaime Chow
Laboratory Director

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED AUG 3 0 1989

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/24/89
Analyzed: 08/24/89
Reported: 08/27/89
Job No. #: 71029

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-093
Matrix: Soil
Extracted: 08/24/89

Polychlorinated Biphenyls
EPA Method 8080
mg/kg

Lab ID	Client ID	Results	MDL
71029-1	#2089	ND<0.2	0.2
71029-2	#2090	ND<0.2	0.2
71029-3	#2091	ND<0.2	0.2
71029-4	#2092	ND<0.2	0.2
71029-5	#2094	ND<0.2	0.2
71029-6	#2095	ND<0.2	0.2
71029-7	#2096	ND<0.2	0.2

QA/QC: Spike Recovery 100 %

MDL: Method detection limit: Compound below this level would not be detected.

Jaime Chow
Laboratory Director

ANANIA GEOLOGIC ENGINEERING

AGE Nº 1582

PROJECT NO.	LAB REPORT NO.
004-88-059	

P.O. NO.	SAMPLERS: (signature)
—	Jim WALLACE

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	ANALYSES REQUESTED: Modified 8015 TPH Gas-Diesel	8020 (BTEX)	[redacted] 8.23.89	[redacted] 8.23.89	Oil & Grease 503 D.E. Soil	[redacted] 8.23.89	8080 PCB	REMARKS
	8.23.89	1250	2089	1		X		X	X			X		X	CHARGE PCB WORK TO PROJECT 004-88-093
	8.23.89	1300	2090	1		X		X	X			X		X	"
	8.23.89	1310	2091	1		X		X	X			X		X	"
	8.23.89	1337	2092	1		X		X	X			X			
	8.23.89	1349	2094	1		X		X	X			X			
	8.23.89	1400	2095	1		X		X	X			X			
	8.23.89	1412	2096	1		X		X	X			X			

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Jim Wallace	8.23.89 1632	James Berry
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
James Berry	8.24.89 0825	Raj Pandher
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: 24 Hr. TAT ON ALL SAMPLES.

SEND RESULTS TO: JIM WALLACE

ENVIRONMENTAL AGE ENERGY MINERALS
ANANIA GEOLOGIC ENGINEERING
11330 Sunrise Park Dr., Suite C
Rancho Cordova, CA 95742
PHONE NO. (916) 451-0821
916-631-0154

CHAIN OF CUSTODY

White- AGE Yellow- LAB Copy [redacted]- F[redacted]

CHEMWEST
ANALYTICAL LABORATORIES, INC.

September 11, 1989

Anania Geologic Engineering
11330 Sunrise Park Dr. #C
Rancho Coardova, CA 95742

Attention: Mr. Jim Wallace

Subject: Report of Data - Case Number 4490

Dear Mr. Wallace:

The technical staff at CHEMWEST is pleased to provide our report for the analyses you requested: PCB's - EPA Method 8080; BTEX - EPA Method 602; TPH EXTN/GC-FID - LUFT Field Manual; TPH by IR - EPA Method 418.1; and Oil and Grease by Gravimetric - EPA Method 413.1.

One soil sample for Project Number 004-88-059 was received August 25, 1989 in good condition. Results of the analyses along with the analytical methodology and appropriate reporting limits are presented on the following page(s).

Thank you for choosing CHEMWEST Laboratories. Should you have questions concerning this data report or the analytical methods employed, please do not hesitate to contact your project manager. We hope that you will consider CHEMWEST Laboratories for your future analytical support and service requirements.

Sincerely,

Robert T. Hart
Data Control Manager

and

Kirk Pocan
Project Manager

KP:ds

cc: Joel Bird, President
File

ANALYTICAL METHODOLOGY

BTEX (Benzene, Toluene, Ethyl Benzene, and Xylenes) by Purge & Trap and GC-PID

WATER - Method 602 or 8020

A 5 ml sample volume, or 5 ml of a suitable dilution, is purged on a suitable purge and trap system with helium. The purged sample is analyzed on a Gas Chromatograph equipped with a Photoionization Detector (PID). A packed column is used to separate the compounds.

SOIL - Method 8020

A 10 gram, or other appropriate aliquot of soil, is weighed into a clean VOA vial. Soils received in brass core tubes are sampled by discarding 2-5 centimeters of soil from each end of the tubes (this is done to reduce the possibility of analyzing a portion of soil that has been exposed to sampling technique contamination). Equal aliquots of soil are then removed from each end of the tube and combined in the VOA vial. Soil in jars or bags is aliquoted using a similar technique, which discards exposed sample surfaces. A 10 ml, or other appropriate volume of methanol, is added to the soil and the soil is shaken with the solvent. 100 ul of the extract, or a reduced aliquot or volume of a suitable dilution, is injected into 5 ml of laboratory blank water and analyzed by the same technique used for water samples.

ANALYTICAL METHODOLOGY

Total Petroleum Hydrocarbons (TPH) Extractables by GC-FID

Extraction Procedure:

WATER - Luft Field Manual

A 1 liter sample is poured into a 2 liter separatory funnel. 3x100 ml extractions with methylene chloride (2 minute shake outs) are completed. The methylene chloride is decanted off and concentrated to a 5 ml final volume.

SOIL - Luft Field Manual

A 30 gram, or other appropriate aliquot of soil, is mixed with 10 grams of washed sodium sulfate. 100 mls of methylene chloride is added to the soil and placed on a mechanical shaker for 1 hour. The liquid is decanted off and the process is repeated with an additional 50 ml of methylene chloride. The combined solvent extracts are filtered through sodium sulfate and the extract is concentrated to a 5 ml final volume.

GC ANALYSIS -

An appropriate volume of the sample extract is injected into a Gas Chromatograph equipped with a Flame Ionization Detector (FID), a split/ splitless capillary injector (operated in the splitless mode), and a fused silica capillary column. The TPH fraction is quantitated as gasoline and/or #2 diesel fuel (and/or different petroleum hydrocarbon fuel types if requested, such as JP-4 jet fuel) based on relative retention times and examination of the elution profile. The TPH fraction quantitation is based on chromatographic peak areas against a multipoint standard curve.

CHEMWEST ANALYTICAL LABORATORIES
ORGANOCHLORINE PESTICIDES & PCBs

Client I.D.: 2093
Date Extracted : 08/28/89
Date(s) Analyzed: 08/31/89

CHEMWEST I.D.: 4490
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Arochlor 1016	BRL	10
Arochlor 1221	BRL	10
Arochlor 1232	BRL	10
Arochlor 1242	BRL	10
Arochlor 1248	BRL	10
Arochlor 1254	BRL	20
Arochlor 1260	BRL	20

Surrogate	% Recovery	Acceptance Window
Dibutylchlorendate	49%	24-150%

BRL: Below Reporting Limit.
RL: Reporting Limit.

Approved by: _____

REV4:1.89

CHEMWEST ANALYTICAL LABORATORIES
BENZENE, TOLUENE, ETHYL BENZENE, XYLENES

Client I.D.: 2093
Date Extracted : 08/28/89
Date(s) Analyzed: 08/29/89

CHEMWEST I.D.: 4490-1
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	BRL	0.05
Toluene	BRL	0.1
Ethyl Benzene	BRL	0.2
Total-Xylenes (1)	BRL	0.1

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	76%	50-150%

BRL: Below Reporting Limit.
RL: Reporting Limit.

(1): Total of P-, M-, and O- Xylenes.

Approved by: KP

REV3.1.89

CHEMWEST ANALYTICAL LABORATORIES
TOTAL PETROLEUM HYDROCARBONS - EXTRACTABLE

Date Extracted : 08/28/89
Date(s) Analyzed: 08/31/89

Case : 4490
Matrix: Soil

Reporting Units: mg/Kg

Client ID	CHEMWEST ID	Gasoline Result	Gasoline RL	Diesel Result	Diesel RL	Other Hydrocarbon Mixture Result	Other Hydrocarbon Mixture RL
2093	4490-1	BRL	10	BRL	10	BRL	10

BRL: Below Reporting Limit.
RL: Reporting Limit.

Approved by: JS

REV3:1.89

CHEMWEST ANALYTICAL LABORATORIES
OIL & GREASE - GRAVIMETRIC

Date Extracted: 08/28/89
Date(s) Analyzed: 08/29/89

Case : 4490
Matrix: Soil

Client ID	CHEMWEST ID	Amount Detected (mg/Kg)
2093	4490-1	240

The reporting limit for Oil & Grease - Gravimetric is 50 mg/Kg.

BRL: Below Reporting Limit.

Approved by: ____

REV3:1.89

CHEMWEST ANALYTICAL LABORATORIES
TPH by IR

Date Extracted: 08/28/89
Date(s) Analyzed: 08/29/89

Case : 4490
Matrix: Soil

Client ID	CHEMWEST ID	Amount Detected (mg/Kg)
2093	4490-1	29

The reporting limit for TPH by IR is 25 mg/Kg.

BRL: Below Reporting Limit.

Approved by: _____

REV3:1.89

CHEM WEST ANALYTICAL LABORATORIES, INC.
600 West North Market Blvd.
Sacramento, California 95834
(916) 923-0840 FAX (916) 923-1938

CLIENT

Order No. 4490
Date Rec'd. 8:25:89 @ 16:06
Compl. Date
Section K. Pocan

CLIENT: Ananla Geologic Engineering
11330 Sunrise Park Dr. #C
Rancho Cordova, CA 95742

Project Name:
Project No. 004-88-059
P.O. NO.
Contact Jim Wallace
Phone (916) 631-0154

ANALYSIS: One soil sample recd under chain of custody in a 6 inch metal core tube (1) to be analyzed for TPH Gas and Diesel; BTEX (EPA Method 8020), oil and Grease 503 DtE soil; and PCBs.

*5 day T/A

RUSH

Sample Id	Date	Time	Analysis	Matrix	Container
4490 2093	8:23:89	1337	TPH; BTEX; Oil & Grease PBCs, TPH IR	Soil	1-6 in. Metal Tube

Per Jim Wallace on 8/29/89 @ 12:19 analysis should be TPH Ex. IR & FID instead of TPH Gas & Diesel

M.T.

12
ICC KERRI CHAPIN

OTC

SAMPLE WILL BE HELD 30 DAYS UNLESS LONGER TIME IS ARRANGED

CW 4490

AGE 1585

ANANIA GEOLOGIC ENGINEERING

PROJECT NO.	LAB REPORT NO.
004-88-059	
P.O. NO.	SAMPLERS: (signature)
—	JIM WALLACE

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	ANALYSES: Modified 8015 TPH Gas & Diesel	8020 BTEX	Oil & Grease 503 D&E Soil	8080 PCB				REMARKS
	8-23-89	1337	2093	1		X		X	X	X	X				CHARGE PCB WORK TO PROJECT 004-88-093

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
[signature]	8-23-89 1633	James Perry
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
James Perry	8-25-89	KERRI CHAPIN
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: ~~24 HOUR TAT~~

5 DAY TAT

SEND RESULTS TO: JIM WALLACE

ATTN: ENVIRONMENTAL AGE ENERGY MINERALS

ANANIA GEOLOGIC ENGINEERING
11330 Sunrise Park Dr., Suite C
Rancho Cordova, CA 95742
PHONE NO. ~~(916) 451-0921~~ 916-631-0154

CHAIN OF CUSTODY

White - AGE Yellow - LAB Pink

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED SEP 29 1989

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/25/89
Analyzed: 09/18/89
Reported: 09/21/89
Job No. #: 71033

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 08/25/89

Total Petroleum Hydrocarbons Analysis
DHS Extraction Method (LUFT)
mg/kg

Lab ID	Client ID	Diesel	Gasoline	MDL
71033-1	#2097	ND<10	ND<10	10
71033-2	#2098	ND<10	ND<10	10
71033-3	#2099	ND<10	ND<10	10
71033-4	#2100	ND<10	ND<10	10
71033-5	#2101	ND<10	ND<10	10
71033-6	#2103	110	1110	100
71033-7	#2104	70	1170	*
71033-8	#2102	ND<10	ND<10	10

QA/QC: Spike Recovery for Diesel: 115%
Spike Recovery for Gasoline: 110%

MDL: Method detection limit: Compound below this level would not be detected.

* Detection limit for Diesel = 10, Gasoline = 100

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED SEP 29 1989

CERTIFICATE OF ANALYSIS

State License No. 211

Received: 08/25/89
Analyzed: 08/28/89
Reported: 09/21/89
Job No #: 71033

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 08/28/89

Aromatic Volatile Hydrocarbon Analysis:
EPA Method 8020
mg/kg

Lab ID	Client ID	Benzene	Toluene	MDL
71033-1	#2097	ND<0.03	ND<0.03	0.03
71033-2	#2098	ND<0.03	ND<0.03	0.03
71033-3	#2099	ND<0.03	ND<0.03	0.03
71033-4	#2100	ND<0.03	ND<0.03	0.03

Lab ID	Client ID	Ethylbenzene	Xylenes	MDL
71033-1	#2097	ND<0.03	ND<0.03	0.03
71033-2	#2098	ND<0.03	ND<0.03	0.03
71033-3	#2099	ND<0.03	ND<0.03	0.03
71033-4	#2100	ND<0.03	ND<0.03	0.03

QA/QC: Spike Recovery for Toluene: 88%
Spike Recovery for Ethylbenzene: 92%
Spike Recovery for O-Xylene: 94%

MDL: Method detection limit; Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED SEP 29 1989

Anania Geological Engineering
Job No: 71033

Project: #004-88-059
Matrix: Soil
Extracted: 08/28/89

Aromatic Volatile Hydrocarbon Analysis:
EPA Method 8020
mg/kg

Lab ID	Client ID	Benzene	Toluene	MDL
71033-5	#2101	ND<0.03	ND<0.030	0.03
71033-6	#2103	5.8	39	0.80
71033-7	#2104	7.8	25	0.80
71033-8	#2102	ND<0.03	0.04	0.03

Lab ID	Client ID	Ethylbenzene	Xylenes	MDL
71033-5	#2101	ND<0.03	ND<0.03	0.03
71033-6	#2103	13	70	0.80
71033-7	#2104	6	30	0.80
71033-8	#2102	ND<0.03	ND<0.09	0.03

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED SEP 2 9 1989

CERTIFICATE OF ANALYSIS

State License No. 211

Received: 08/25/89
Analyzed: 09/20/89
Reported: 09/21/89
Job No #: 71033

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Digested: 08/29/89

Total Lead Analysis; By EPA 6010:
Prep Method 3050
mg/kg

Lab ID	Client ID	Total Lead	MDL
71033-1	#2097	3.20	1.1
71033-2	#2098	4.70	1.1
71033-3	#2099	6.60	1.1
71033-4	#2100	8.00	1.1
71033-5	#2101	10.00	1.1
71033-6	#2103	9.30	1.1
71033-7	#2104	8.90	1.1
71033-8	#2102	6.80	1.1

QA/QC: Spike Recovery for Lead: 80%

MDL: Method detection limit; Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED SEP 29 1989

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/25/89
Analyzed: 08/25/89
Reported: 09/21/89
Job No. #: 71033

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 08/25/89

Oil & Grease Analysis
EPA Method 9071
mg/kg

Lab ID	Client ID	Oil & Grease	MDL
71033-1	#2097	ND<20	20
71033-2	#2098	ND<20	20
71033-3	#2099	ND<20	20
71033-4	#2100	ND<20	20
71033-5	#2101	ND<20	20
71033-6	#2103	945	20
71033-7	#2104	80	20
71033-8	#2102	185	20

QA/QC: Spike Recovery: 93%
Spike Recovery: 91%

MDL: Method detection limit: Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED SEP 29 1989

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/25/89
Analyzed: 09/19/89
Reported: 09/21/89
Job No. #: 71033

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-093
Matrix: Soil
Extracted: 09/19/89

Polychlorinated Biphenyls
EPA Method 8080
mg/kg

Lab ID	Client ID	Results	MDL
71033-1	#2097	ND<0.2	0.2
71033-2	#2098	ND<0.2	0.2
71033-3	#2099	ND<0.2	0.2
71033-4	#2100	ND<0.2	0.2
71033-5	#2101	ND<0.2	0.2
71033-6	#2103	ND<0.2	0.2
71033-7	#2104	ND<0.2	0.2
71033-8	#2102	ND<0.2	0.2

QA/QC: Spike Recovery: 91.7%

MDL: Method detection limit: Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

ANANIA GEOLOGIC ENGINEERING

AGE Nº 1576

PROJECT NO.	LAB REPORT NO.
004-88-059	
P.O. NO.	SAMPLERS: (signature)
	Robyn McKinney

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	8080 PCB	8015 Mod Gas / BTEX J	8020 BTEX	Total Oil & Grease	Total Lead EPA 6010			REMARKS
	8/24/89	08:59	2097	1		X			X	X	X	X			
	8/24/89	09:10	2098	1		X		X	X	X	X	X			CHARGE PCB TESTING TO ACCOUNT 004-88-093 89 JP 1.17.90
	8/24/89	09:15	2099	1		X		X	X	X	X	X			"
	8/24/89	0928	2100	1		X			X	X	X	X			
	8/24/89	0937	2101	1		X			X	X	X	X			
	8/24/89	1429	2103	1		X			X	X	X	X			
	8/24/89	1453	2104	1		X		X	X	X	X	X			reference 2109
	8/24/89	1130	2102	1		X		X	X	X	X	X			MWOS-ABAN
															TRANSPORTED TO LAB IN CHEST W/ BLUE ICE

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Robyn McKinney	8/24/89 1817	James Perry
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
James Perry	8:20A 8:25P	
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS:

1 week turnaround time

SEND RESULTS TO: JIM WALLACE

ATTN: ENVIRONMENTAL AGE ENERGY MINERALS

ANANIA GEOLOGIC ENGINEERING
11330 Sunrise Park Dr., Suite C
Rancho Cordova, CA 95742
PHONE NO. (916) 451-0921

CHAIN OF CUSTODY

White- AGE Yellow- LAB Copy Pink- File

916-631-0154

RECEIVED SEP 14 1989

CHEMWEST
ANALYTICAL LABORATORIES, INC.

September 12, 1989

Anania Geologic Engineering
11330 Sunrise Park Dr. #C
Rancho Coardova, CA 95742

Attention: Mr. Jim Wallace

Subject: Report of Data - Case Number 4489

Dear Mr. Wallace:

The technical staff at CHEMWEST is pleased to provide our report for the analyses you requested: PCB's - EPA Method 8080; BTEX - EPA Method 602; TPH EXTN/GC-FID - LUFT Field Manual; TPH by IR - EPA Method 418.1; and Oil and Grease by Gravimetric - EPA Method 413.1.

One soil sample for Project Number 004-88-059 was received August 25, 1989 in good condition. Results of the analyses along with the analytical methodology and appropriate reporting limits are presented on the following page(s).

Thank you for choosing CHEMWEST Laboratories. Should you have questions concerning this data report or the analytical methods employed, please do not hesitate to contact your project manager. We hope that you will consider CHEMWEST Laboratories for your future analytical support and service requirements.

Sincerely,

Robert T. Hart
Data Control Manager

and

Kirk Pocan
Project Manager

KP:ds

cc: Joel Bird, President
File

ANALYTICAL METHODOLOGY

BTEX (Benzene, Toluene, Ethyl Benzene, and Xylenes) by Purge & Trap and GC-PID

WATER - Method 602 or 8020

A 5 ml sample volume, or 5 ml of a suitable dilution, is purged on a suitable purge and trap system with helium. The purged sample is analyzed on a Gas Chromatograph equipped with a Photoionization Detector (PID). A packed column is used to separate the compounds.

SOIL - Method 8020

A 10 gram, or other appropriate aliquot of soil, is weighed into a clean VOA vial. Soils received in brass core tubes are sampled by discarding 2-5 centimeters of soil from each end of the tubes (this is done to reduce the possibility of analyzing a portion of soil that has been exposed to sampling technique contamination). Equal aliquots of soil are then removed from each end of the tube and combined in the VOA vial. Soil in jars or bags is aliquoted using a similar technique, which discards exposed sample surfaces. A 10 ml, or other appropriate volume of methanol, is added to the soil and the soil is shaken with the solvent. 100 ul of the extract, or a reduced aliquot or volume of a suitable dilution, is injected into 5 ml of laboratory blank water and analyzed by the same technique used for water samples.

RECEIVED SEP 1 4 1989

ANALYTICAL METHODOLOGY

Total Petroleum Hydrocarbons (TPH) Extractables by GC-FID

Extraction Procedure:

WATER - Luft Field Manual

A 1 liter sample is poured into a 2 liter separatory funnel. 3x100 ml extractions with methylene chloride (2 minute shake outs) are completed. The methylene chloride is decanted off and concentrated to a 5 ml final volume.

SOIL - Luft Field Manual

A 30 gram, or other appropriate aliquot of soil, is mixed with 10 grams of washed sodium sulfate. 100 mls of methylene chloride is added to the soil and placed on a mechanical shaker for 1 hour. The liquid is decanted off and the process is repeated with an additional 50 ml of methylene chloride. The combined solvent extracts are filtered through sodium sulfate and the extract is concentrated to a 5 ml final volume.

GC ANALYSIS -

An appropriate volume of the sample extract is injected into a Gas Chromatograph equipped with a Flame Ionization Detector (FID), a split/ splitless capillary injector (operated in the splitless mode), and a fused silica capillary column. The TPH fraction is quantitated as gasoline and/or #2 diesel fuel (and/or different petroleum hydrocarbon fuel types if requested, such as JP-4 jet fuel) based on relative retention times and examination of the elution profile. The TPH fraction quantitation is based on chromatographic peak areas against a multipoint standard curve.

RECEIVED SEP 1 4 1989

CHEMWEST ANALYTICAL LABORATORIES
BENZENE, TOLUENE, ETHYL BENZENE, XYLENES

Client I.D.: 2109
Date Extracted : 08/28/89
Date(s) Analyzed: 08/29/89

CHEMWEST I.D.: 4489-1
Matrix : Soil

Compound	Amount Detected (mg/Kg)	RL (mg/Kg)
Benzene	1.7	0.05
Toluene	1.8	0.1
Ethyl Benzene	0.6	0.2
Total-Xylenes (1)	4.8	0.1

Surrogate	% Recovery	Acceptance Window
Bromofluorobenzene	90%	50-150%

BRL: Below Reporting Limit.
RL: Reporting Limit.

(1): Total of P-, M-, and O- Xylenes.

Approved by: YP

REV3.1.89

RECEIVED SEP 1 4 1989

CHEMWEST ANALYTICAL LABORATORIES
TOTAL PETROLEUM HYDROCARBONS - EXTRACTABLE

Date Extracted : 08/28/89
Date(s) Analyzed: 08/31/89

Case : 4489
Matrix: Soil

Reporting Units: mg/Kg

Client ID	CHEMWEST ID	Gasoline Result	Gasoline RL	Diesel Result	Diesel RL	Other Hydrocarbon Mixture Result	Other Hydrocarbon Mixture RL
2109	4489-1	19	10	BRL	10	BRL	10

BRL: Below Reporting Limit.
RL: Reporting Limit.

Approved by: JC

REV3:1.89

RECEIVED SEP 14 1989

CHEMWEST ANALYTICAL LABORATORIES
OIL & GREASE - GRAVIMETRIC

Date Extracted: 08/28/89
Date(s) Analyzed: 08/29/89

Case : 4489
Matrix: Soil

Client ID	CHEMWEST ID	Amount Detected (mg/Kg)
2109	4489-1	260

The reporting limit for Oil & Grease - Gravimetric is 50 mg/Kg.

BRL: Below Reporting Limit.

Approved by: JP

REV3:1.89

RECEIVED SEP 14 1989

CHEMWEST ANALYTICAL LABORATORIES
ORGANOCHLORINE PESTICIDES & PCBs

Client I.D.: 2109
Date Extracted : 08/28/89
Date(s) Analyzed: 08/31/89

CHEMWEST I.D.: 4489
Matrix : Soil

Compound	Amount Detected (ug/Kg)	RL (ug/Kg)
Arochlor 1016	BRL	10
Arochlor 1221	BRL	10
Arochlor 1232	BRL	10
Arochlor 1242	BRL	10
Arochlor 1248	BRL	10
Arochlor 1254	BRL	20
Arochlor 1260	BRL	20

Surrogate	% Recovery	Acceptance Window
Dibutylchlorendate	63%	24-150%

BRL: Below Reporting Limit.
RL: Reporting Limit.

Approved by: _____

REV4:1.89

CHEM WEST ANALYTICAL LABORATORIES, INC.
600 West North Market Blvd.
Sacramento, California 95834
(916) 923-0840 FAX (916) 923-1938

RECEIVED SEP 14 1989

CLIENT

Order No. 4489
Date Rec'd 8-25-89 @16:06
Compl. Date
Section K. Pocan

CLIENT: Anahia Geologic Engineering
11330 Sunrise Park Dr. #C
Rancho Cordova, CA 95742

Project Name:
Project No. 004-88-059
P.O. NO.
Contact Jim Wallace
Phone (916) 451-0921

ANALYSIS: one Soil Sample recd under Chain Of Custody in a 6inch Metal core TUbe to be analyzed for TPH Gas and Diesel; BTEX (EPA Method 8020); PCBs by EPA Method 8080. Total oil and grease.

*5 Day Turn around

RUSH

Sample Id	Date	Time	Analysis	Matrix	Container
4489 2109	8-24-89	1463	TPH; BTEX, PCBs	Soil	1-6inch Metal TUbe

Per Jim Wallace on 8/28/89 @ 12:19 analysis should be TPH (EXTN/GC-FID instead of TPH Gas and Diesel

M.T.

nz

cc KERRI CHAPIN

OTC

SAMPLE WILL BE HELD 30 DAYS UNLESS LONGER TIME IS ARRANGED

CW 4489

AGE № 1062

ANANIA GEOLOGIC ENGINEERING

PROJECT NO. 004-88-059 | LAB REPORT NO.

P.O. NO. | SAMPLERS: (signature) Robyn McKinney

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	8015 Mod. Diesel	8020 BTEX	Total Oil + Grease	8080 PCB				REMARKS
	8/24/89 JP	1453	2109	1		X		X	X	X	X				reference 2104
															CHARGE PCB WORK
															TO PROJECT 004-88-093
															TRANSPORTED IN CHEST W/ BLUE ICE.

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Robyn McKinney	8/24/89 1817	James Perry
RELINQUISHED BY: (signature) James Perry	DATE/TIME 8-25-89 1606	RECEIVED BY: (signature) KERRI CHAPIN
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: 2 week TAT 5 DAY

SEND RESULTS TO: JIM WALLACE
ATTN: ANANIA GEOLOGIC ENGINEERING
11330 Sunrise Park Dr. Suite C
RANCHO CORDOVA, CA 95742
PHONE NO. (916) 451-0921

CHAIN OF CUSTODY

White - AGE Yellow - LAB Copy P[illegible] Fil[illegible]

RECEIVED SEP 2 3 1989

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/28/89
Analyzed: 09/12/89
Reported: 09/13/89
Job No. #: 71044

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 09/11/89

Total Petroleum Hydrocarbons Analysis
DHS Extraction Method (LUFT)
mg/kg

Lab ID	Client ID	Diesel	Gasoline	MDL
71044-1	#1172	ND<10	ND<10	10
71044-2	#1173	ND<10	ND<10	10

QA/QC: Spike Recovery for Diesel: 92%
Spike Recovery for Gasoline: 98%

MDL: Method detection limit: Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

RECEIVED SEP 2 3 1989

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

State License No. 211

Received: 08/28/89
Analyzed: 09/18/89
Reported: 09/21/89
Job No #: 71044

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 08/28/89

Aromatic Volatile Hydrocarbon Analysis:
EPA Method 8020
mg/kg

Lab ID:	71044-1	71044-2	
Client ID:	#1172	#1173	
ANALYSIS:			
			MDL
Benzene	ND<0.03	ND<0.03	0.03
Chlorobenzene	ND<0.03	ND<0.03	0.03
1,2-Dichlorobenzene	ND<0.03	ND<0.03	0.03
1,3-Dichlorobenzene	ND<0.03	ND<0.03	0.03
1,4-Dichlorobenzene	ND<0.03	ND<0.03	0.03
Ethylbenzene	ND<0.03	ND<0.03	0.03
Toluene	ND<0.03	ND<0.03	0.03
Xylenes	ND<0.03	ND<0.03	0.03

QA/QC: Spike Recovery for Benzene: 85%
Spike Recovery for Chlorobenzene: 88%
Spike Recovery for Ethylbenzene: 101%

MDL: Method detection limit; Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

OUTSTANDING QUALITY AND SERVICE
CALIFORNIA STATE CERTIFIED LABORATORY

RECEIVED SEP 2 3 1989

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

State License No. 211

Received: 08/28/89
Analyzed: 09/20/89
Reported: 09/21/89
Job No #: 71044

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Digested: 09/12/89

Total Lead Analysis; By EPA 6010:
Prep Method 3050
mg/kg

Lab ID	Client ID	Total Lead	MDL
71044-1	#1172	8.2	1.1
71044-2	#1173	9.3	1.1

QA/QC: Spike Recovery for Lead: 72%

MDL: Method detection limit; Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

RECEIVED SEP 2 3 1989

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/28/89
Analyzed: 09/11/89
Reported: 09/21/89
Job No. #: 71044

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 09/08/89

Oil & Grease Analysis
EPA Method 9071
mg/kg

Lab ID	Client ID	Oil & Grease	MDL
71044-1	#1172	80	20
71044-2	#1173	65	20

QA/QC: Spike Recovery: 75%

MDL: Method detection limit: Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

RECEIVED SEP 2 3 1989

Precision Analytical Laboratory, Inc.
4136 LAKESIDE DRIVE, RICHMOND, CA 94806 PHONE (415) 222-3002 FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 08/28/89
Analyzed: 09/19/89
Reported: 09/21/89
Job No. #: 71044

Attn: Jim Wallace
Anania Geological Engineering
11330 Sunrise Park Drive, Suite C
Rancho Cordova, CA. 95742

Project: #004-88-059
Matrix: Soil
Extracted: 09/19/89

Polychlorinated Biphenyls
EPA Method 8080
mg/kg

Lab ID	Client ID	Results	MDL
71044-1	#1172	ND<0.2	0.2
71044-2	#1173	ND<0.2	0.2

QA/QC: Spike Recovery: 92%

MDL: Method detection limit: Compound below this level would not be detected.

Jaime Chow
Laboratory Director

Michael O'Brien
QA/QC Officer

ANANIA GEOLOGIC ENGINEERING

AGE № 1454

PROJECT NO.	LAB REPORT NO.	NO. OF CONTAINERS	SAMPLE TYPE			ANALYSES							
004-88-059			SOIL		WATER	Gas + Diesel 8015 Mod	8020 BTEX	8020 PCB's	Total Lead	Total Oil + Grease			
P.O. NO.	SAMPLERS: (signature) Robyn McKinney		COMP	GRAB									
LAB LOG NO.	DATE	TIME	SAMPLE I.D.										REMARKS
	8/28/89	1027 TAT ~~1142~~	1172	1		X		✓	✓	✓	✓	✓	
	8/28/89	1044 TAT ~~1173~~	1173	1		X		✓	✓	✓	✓	✓	

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Robyn McKinney	8/28 1600	Michael C Hill
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Michael C Hill	8-28/1635	Darcy Young
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS:

Reg TAT

SEND RESULTS TO:

ATTN: Jim Wallace
~~MS. MARY SCRUGGS~~
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542
PHONE NO. [redacted]
(916) 631-0154

CHAIN OF CUSTODY

White-AGE Yellow-LAB Copy Pink-File

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

Anania Geological Eng.
11330 Sunrise Park Dr. Ste. C
Rancho Cordova, CA 95742

09/15/89

Attn: K. Anania

Re: Project: Anania Geological Eng.
AEMC Lab Reference No.: L3708 Job No.: 793708
Date Samples Received: 08/30/89
No. Samples Received: 10 Water samples
6 Soil samples

These samples were received by AEMC in a chilled state, intact, and accompanied by chain-of-custody documentation.

The above referenced samples were analyzed as follows:

No. of Samples	Analysis
16	TPH gas & diesel
11	BTXE
12	PCBs
16	Lead
5	Volatile Organics
5	Semi-volatile Organics
11	Oil & Grease

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

Michael Gray — for GH

George Hampton
Laboratory Director

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

ANALYSIS REPORT: Total Petroleum Hydrocarbons/BTXE

CLIENT: Anania Geological Eng.
11330 Sunrise Park Dr., Ste. C
Rancho Cordova, CA 95742

P.O/Contract No.:
Contact: K. Anania
Phone:

Project: 004-88-59
Date Samples Received: 8/30/89
Date Analysis Completed: 9/13/89

AEMC Contact: M. Jaeger
Job No.: 793708
SMR Log No.: 1138

Matrix: Soil
Sample Location:

AEMC I.D.: L3708

Sample I.D. Client	AEMC	TPH as Diesel (Recovery)	TPH as Gasoline (Recovery)
Batch 4387 M Spike	L3708-MS	83%	--
Batch 4387 M Spike D	L3708-MSD	85%	--
Batch 4386 M Spike	L3708-MS	--	104%
Batch 4386 M Spike D	L3708-MSD	--	71%
REPORTING LIMIT*		10	10

*Unless otherwise indicated in parentheses

ND = Not Detected at or above indicated Reporting Limit.

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

ANALYSIS REPORT: Total Petroleum Hydrocarbons/BTXE

CLIENT: Anania Geological Eng.
11330 Sunrise Park Dr., Ste. C
Rancho Cordova, CA 95742

P.O/Contract No.:
Contact: K. Anania
Phone:

Project: 004-88-59
Date Samples Received: 8/30/89
Date Analysis Completed: 9/13/89

AEMC Contact: M. Jaeger
Job No.: 793708
SMR Log No.: 1138

Matrix: Soil
Sample Location:

AEMC I.D.: L3708

Sample I.D. Client	Sample I.D. AEMC	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl-benzene (ug/kg)	Xylenes, total (ug/kg)	TPH as Gasoline (mg/kg)	TPH as Diesel (mg/kg)
1176	L3708-11	ND	14	ND	ND	ND	ND
1177	L3708-12	ND	21	ND	ND	ND	ND
1178	L3708-13	ND	17	ND	ND	ND	ND
1179	L3708-14	ND	ND	ND	ND	ND	ND
1180	L3708-15	ND	ND	ND	ND	ND	ND
1277	L3708-16	ND	140	ND	ND	ND	ND
REPORTING LIMIT*		10	10	10	20	1	10

*Unless otherwise indicated in parentheses

ND = Not Detected at or above indicated Reporting Limit.

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

ANALYSIS REPORT: PCBs

CLIENT: Anania Geological Eng.
11330 Sunrise Park Dr., Ste. C
Rancho Cordova, CA 95742

P.O/Contract No.:
Contact: K. Anania
Phone:

Project: 004-88-059
Date Samples Received: 8/30/89
Date Analysis Completed: 9/14/89

AEMC Contact: M. Jaeger
Job No.: 793708
SMR Log No.: 1138

Matrix: Soil
Sample Location:

AEMC I.D.: L3708

AEMC I.D.	Sample I.D.	PCB Content Recovery	Aroclor
L3708-MS	Batch 4427	86%	1260
	M Spike	86%	1242
L3708-MSD	Batch 4427	89%	1260
	M Spike D	86%	1242

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

ANALYSIS REPORT: PCBs

CLIENT: Anania Geological Eng.
11330 Sunrise Park Dr., Ste. C
Rancho Cordova, CA 95742

P.O/Contract No.:
Contact: K. Anania
Phone:

Project: 004-88-059
Date Samples Received: 8/30/89
Date Analysis Completed: 9/14/89

AEMC Contact: M. Jaeger
Job No.: 793708
SMR Log No.: 1138

Matrix: Soil
Sample Location:

AEMC I.D.: L3708

AEMC I.D.	Sample I.D.	PCB Content ug/kg	Reporting Limit ug/kg	Aroclor
L3708-11	1176	ND	10	NA
L3708-12	1177	ND	10	NA

ND = Not Detected at or above indicated Reporting Limit.
NA = Not Applicable

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

ANALYSIS REPORT: Lead, TTLC, EPA Method 7420

CLIENT: Anania Geological Eng.
11330 Sunrise Park Dr., Ste. C
Rancho Cordova, CA 95742

P.O/Contract No.:
Contact: K. Anania
Phone:

Project: 004-88-059
Date Samples Received: 8/30/89
Date Analysis Completed: 9/07/89

AEMC Contact: M. Jaeger
Job No.: 793708
SMR Log No.: 1138

Matrix: Soil
Sample Location:

AEMC I.D.: L3708

AEMC I.D.	Client I.D.	Results (mg/kg)	Reporting Limit (mg/kg)
L3708-11	1176	29	5.0
L3708-12	1177	10	5.0
L3708-13	1178	9.6	5.0
L3708-14	1179	16	5.0
L3708-15	1180	6.6	5.0
L3708-16	1277	40	5.0

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

ANALYSIS REPORT: Lead, TTLC, EPA Method 7420

CLIENT: Anania Geological Eng.
11330 Sunrise Park Dr., Ste. C
Rancho Cordova, CA 95742

P.O/Contract No.:
Contact: K. Anania
Phone:

Project: 004-88-059
Date Samples Received: 8/30/89
Date Analysis Completed: 9/07/89

AEMC Contact: M. Jaeger
Job No.: 793708
SMR Log No.: 1138

Client Sample I.D.: Batch 4415
Sample Location:

AEMC I.D.: L3708
Matrix: Soil

COMPOUND	% Recovery M Spike	% Recovery M Spike D
Pb (Lead)	108%	110%

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.
ANALYTICAL SERVICES

ANALYSIS REPORT: Oil & Grease, EPA Method 9071

CLIENT: Anania Geologic Eng.
11330 Sunrise Park Dr., Ste. C
Rancho Cordova, CA 95742

P.O/Contract No.:
Contact: K. Anania
Phone:

Project: 004-88-059
Date Samples Received: 8/30/89
Date Analysis Completed: 9/07/89

AEMC Contact: M. Jaeger
Job No.: 793708
SMR Log No.: 1138

Matrix: Soil
Sample Location:

AEMC I.D.: L3708

AEMC I.D.	Client I.D.	Results (mg/kg)	Reporting Limit (mg/kg)
L3708-11	1176	ND	100
L3708-12	1177	ND	100
L3708-13	1178	ND	100
L3708-14	1179	ND	100
L3708-15	1180	ND	100
L3708-16	1277	ND	100

ND = Not Detected at or above indicated Reporting Limit.

ANANIA GEOLOGIC ENGINEERING

AGE № 1455

PROJECT NO.	LAB REPORT NO.	NO. OF CONTAINERS	SAMPLE TYPE			ANALYSES							REMARKS
004-88-059			SOIL COMP	SOIL GRAB	WATER	TPH diesel mod 8015	8020 BTEX	8080 PCB	TCLP Lead	TCLP Chromium			
P.O. NO.	SAMPLERS: (signature) Robyn McKinney												
LAB LOG NO.	DATE	TIME	SAMPLE I.D.										
	8-29-89	0934	1176	1		X		X	X	X	X	X	charge PCB to Job # 004-89-093
	8-29-89	0947	1177	1		X		X	X	X	X	X	"
	8-29-89	1009	1178	1		X		X	X		X	X	
	8-29-89	1054	1179	1		X		X	X		X	X	
	8-29-89	1105	1180	1		X		X	X		X	X	
	8-29-89	1644	1277	1		X		X	X		X	X	

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Robyn McKinney	8/29/89 1720	John Russell
RELINQUISHED BY: (signature) John Russell 8/30/89	DATE/TIME 8/30/89 15:30	RECEIVED BY: (signature) Mike Westdal
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: Standard turn around time

SEND RESULTS TO:
ATTN: Mr. Jim Wallace
~~MS MARY SCRUGGS~~
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542
PHONE NO. ~~(916) 401-8021~~ (916) 631-9154

CHAIN OF CUSTODY

White- AGE Yellow- LAB Copy Pink- File

APPENDIX C

SEPTEMBER 1989 GROUNDWATER ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS

RECEIVED SEP 2 3 1989

Clayton Environmental Consultants, Inc.

P.O. Box 9019 • 1252 Quarry Lane • Pleasanton, CA 94566 • (415) 426-2600

September 22, 1989

Ms. Mary Scruggs
ANANIA GEOLOGIC ENGINEERING
11330 Sunrise Park Drive
Rancho Cordova, CA 95742

Client Ref. No. 004-88-059
Work Order No. 8909125
Client Code No. 77665

Dear Ms. Scruggs:

Attached is our analytical laboratory report for the samples received on September 15, 1989. A copy of the Chain of Custody form acknowledging receipt of these samples is attached.

Please note that any unused portion of the samples will be retained at our facility for approximately 30 days after the date of this report, unless you have requested otherwise.

We appreciate the opportunity to be of assistance to you. If you have any questions, please call Maryann Gambino, Client Services Representative, at (415) 426-2657.

Sincerely,

Ronald H. Peters, CIH
Manager, Laboratory Services

RHP/tb
Attachment

RECEIVED SEP 2 3 1989

EXTRACTABLE PETROLEUM HYDROCARBONS
EPA METHOD 8015/3510

Sample I.D.:	See below	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/21/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125

Lab No.	Sample I.D.	Diesel µg/L	Limit of Detection µg/L
-01C	1190	80	50
-02C	1196	590	50
-03C	1202	100	50
-04C	1208	ND	50
-05B	1214	ND	50
-MB	Method Blank	ND	50

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8080
ORGANOCHLORINE PESTICIDES AND PCBs

Sample I.D.:	1192	**Client:**	ANANIA
Sample Received:	09/15/89	**Client Ref. No.:**	004-88-059
Sample Analyzed:	09/21/89	**Lab Client Code:**	77665
Sample Matrix:	Water	**Lab No.:**	8909125-01F

Compound	Concentration µg/L	Limit of Detection µg/L
alpha-BHC	ND	0.1
gamma-BHC (Lindane)	ND	0.1
beta-BHC	ND	0.1
heptachlor	ND	0.1
delta-BHC	ND	0.1
aldrin	ND	0.1
heptachlor epoxide	ND	0.1
endosulfan I	ND	0.1
4,4'-DDE	ND	0.1
dieldrin	ND	0.1
endrin	ND	0.1
4,4'-DDD	ND	0.1
endosulfan II	ND	0.1
4,4'-DDT	ND	0.1
endrin aldehyde	ND	0.1
endosulfan sulfate	ND	0.1
chlordane	ND	0.5
toxaphene	ND	5
PCB-1016	ND	1
PCB-1221	ND	1
PCB-1232	ND	1
PCB-1242	ND	1
PCB-1248	ND	1
PCB-1254	ND	1
PCB-1260	ND	1

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8080
ORGANOCHLORINE PESTICIDES AND PCBs

Sample I.D.:	1198	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/21/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125-02F

Compound	Concentration µg/L	Limit of Detection µg/L
alpha-BHC	ND	0.1
gamma-BHC (Lindane)	ND	0.1
beta-BHC	ND	0.1
heptachlor	ND	0.1
delta-BHC	ND	0.1
aldrin	ND	0.1
heptachlor epoxide	ND	0.1
endosulfan I	ND	0.1
4,4'-DDE	ND	0.1
dieldrin	ND	0.1
endrin	ND	0.1
4,4'-DDD	ND	0.1
endosulfan II	ND	0.1
4,4'-DDT	ND	0.1
endrin aldehyde	ND	0.1
endosulfan sulfate	ND	0.1
chlordane	ND	0.5
toxaphene	ND	5
PCB-1016	ND	1
PCB-1221	ND	1
PCB-1232	ND	1
PCB-1242	ND	1
PCB-1248	ND	1
PCB-1254	ND	1
PCB-1260	ND	1

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8080
ORGANOCHLORINE PESTICIDES AND PCBs

Sample I.D.:	1204	**Client:**	ANANIA
Sample Received:	09/15/89	**Client Ref. No.:**	004-88-059
Sample Analyzed:	09/21/89	**Lab Client Code:**	77665
Sample Matrix:	Water	**Lab No.:**	8909125-03F

Compound	Concentration µg/L	Limit of Detection µg/L
alpha-BHC	ND	0.1
gamma-BHC (Lindane)	ND	0.1
beta-BHC	ND	0.1
heptachlor	ND	0.1
delta-BHC	ND	0.1
aldrin	ND	0.1
heptachlor epoxide	ND	0.1
endosulfan I	ND	0.1
4,4'-DDE	ND	0.1
dieldrin	ND	0.1
endrin	ND	0.1
4,4'-DDD	ND	0.1
endosulfan II	ND	0.1
4,4'-DDT	ND	0.1
endrin aldehyde	ND	0.1
endosulfan sulfate	ND	0.1
chlordane	ND	0.5
toxaphene	ND	5
PCB-1016	ND	1
PCB-1221	ND	1
PCB-1232	ND	1
PCB-1242	ND	1
PCB-1248	ND	1
PCB-1254	ND	1
PCB-1260	ND	1

ND = Not detected at or above limit of detection

RECEIVED SEP 2 5 1989

EPA METHOD 8080
ORGANOCHLORINE PESTICIDES AND PCBs

Sample I.D.:	1210	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/21/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125-04F

Compound	Concentration µg/L	Limit of Detection µg/L
alpha-BHC	ND	0.1
gamma-BHC (Lindane)	ND	0.1
beta-BHC	ND	0.1
heptachlor	ND	0.1
delta-BHC	ND	0.1
aldrin	ND	0.1
heptachlor epoxide	ND	0.1
endosulfan I	ND	0.1
4,4'-DDE	ND	0.1
dieldrin	ND	0.1
endrin	ND	0.1
4,4'-DDD	ND	0.1
endosulfan II	ND	0.1
4,4'-DDT	ND	0.1
endrin aldehyde	ND	0.1
endosulfan sulfate	ND	0.1
chlordane	ND	0.5
toxaphene	ND	5
PCB-1016	ND	1
PCB-1221	ND	1
PCB-1232	ND	1
PCB-1242	ND	1
PCB-1248	ND	1
PCB-1254	ND	1
PCB-1260	ND	1

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8080
ORGANOCHLORINE PESTICIDES AND PCBs

Sample I.D.:	1216	**Client:**	ANANIA
Sample Received:	09/15/89	**Client Ref. No.:**	004-88-059
Sample Analyzed:	09/21/89	**Lab Client Code:**	77665
Sample Matrix:	Water	**Lab No.:**	8909125-05E

Compound	Concentration µg/L	Limit of Detection µg/L
alpha-BHC	ND	0.1
gamma-BHC (Lindane)	ND	0.1
beta-BHC	ND	0.1
heptachlor	ND	0.1
delta-BHC	ND	0.1
aldrin	ND	0.1
heptachlor epoxide	ND	0.1
endosulfan I	ND	0.1
4,4'-DDE	ND	0.1
dieldrin	ND	0.1
endrin	ND	0.1
4,4'-DDD	ND	0.1
endosulfan II	ND	0.1
4,4'-DDT	ND	0.1
endrin aldehyde	ND	0.1
endosulfan sulfate	ND	0.1
chlordane	ND	0.5
toxaphene	ND	5
PCB-1016	ND	1
PCB-1221	ND	1
PCB-1232	ND	1
PCB-1242	ND	1
PCB-1248	ND	1
PCB-1254	ND	1
PCB-1260	ND	1

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8080
ORGANOCHLORINE PESTICIDES AND PCBs

Sample I.D.:	Method Blank	Client:	ANANIA
Sample Received:		Client Ref. No.:	004-88-059
Sample Analyzed:	09/21/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125-MB

Compound	Concentration µg/L	Limit of Detection µg/L
alpha-BHC	ND	0.1
gamma-BHC (Lindane)	ND	0.1
beta-BHC	ND	0.1
heptachlor	ND	0.1
delta-BHC	ND	0.1
aldrin	ND	0.1
heptachlor epoxide	ND	0.1
endosulfan I	ND	0.1
4,4'-DDE	ND	0.1
dieldrin	ND	0.1
endrin	ND	0.1
4,4'-DDD	ND	0.1
endosulfan II	ND	0.1
4,4'-DDT	ND	0.1
endrin aldehyde	ND	0.1
endosulfan sulfate	ND	0.1
chlordane	ND	0.5
toxaphene	ND	5
PCB-1016	ND	1
PCB-1221	ND	1
PCB-1232	ND	1
PCB-1242	ND	1
PCB-1248	ND	1
PCB-1254	ND	1
PCB-1260	ND	1

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8015/8020
GASOLINE/BTEX

Sample I.D.:	1189	**Client:**	ANANIA
Sample Received:	09/15/89	**Client Ref. No.:**	004-88-059
Sample Analyzed:	09/21/89	**Lab Client Code:**	77665
Sample Matrix:	Water	**Lab No.:**	8909125-01A

Compound	Concentration µg/L (ppb)	Limit of Detection µg/L (ppb)
Benzene	14	0.4
Toluene	0.4	0.3
Ethylbenzene	ND	0.3
Xylenes	ND	0.7
Gasoline	ND	50

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8015/8020
GASOLINE/BTEX

Sample I.D.:	1195	**Client:**	ANANIA
Sample Received:	09/15/89	**Client Ref. No.:**	004-88-059
Sample Analyzed:	09/21/89	**Lab Client Code:**	77665
Sample Matrix:	Water	**Lab No.:**	8909125-02A

Compound	Concentration µg/L (ppb)	Limit of Detection µg/L (ppb)
Benzene	1400	20
Toluene	1300	20
Ethylbenzene	110	6
Xylenes	1100	20
Gasoline	6000	3000

ND = Not detected at or above limit of detection

EPA METHOD 8015/8020
GASOLINE/BTEX

Sample I.D.:	1201	**Client:**	ANANIA
Sample Received:	09/15/89	**Client Ref. No.:**	004-88-059
Sample Analyzed:	09/21/89	**Lab Client Code:**	77665
Sample Matrix:	Water	**Lab No.:**	8909125-03A

Compound	Concentration µg/L (ppb)	Limit of Detection µg/L (ppb)
Benzene	ND	0.4
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Xylenes	ND	0.7
Gasoline	ND	50

ND = Not detected at or above limit of detection

RECEIVED Sep 2 3 1989

EPA METHOD 8015/8020
GASOLINE/BTEX

Sample I.D.:	1207	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/21/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125-04A

Compound	Concentration µg/L (ppb)	Limit of Detection µg/L (ppb)
Benzene	ND	0.4
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Xylenes	ND	0.7
Gasoline	ND	50

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8015/8020
GASOLINE/BTEX

Sample I.D.:	1213	**Client:**	ANANIA
Sample Received:	09/15/89	**Client Ref. No.:**	004-88-059
Sample Analyzed:	09/21/89	**Lab Client Code:**	77665
Sample Matrix:	Water	**Lab No.:**	8909125-05A

Compound	Concentration µg/L (ppb)	Limit of Detection µg/L (ppb)
Benzene	ND	0.4
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Xylenes	ND	0.7
Gasoline	ND	50

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8015/8020
GASOLINE/BTEX

Sample I.D.:	Trip Blank	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/21/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125-06A

Compound	Concentration µg/L (ppb)	Limit of Detection µg/L (ppb)
Benzene	ND	0.4
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Xylenes	ND	0.7
Gasoline	ND	50

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EPA METHOD 8015/8020
GASOLINE/BTEX

Sample I.D.:	Method Blank	Client:	ANANIA
Sample Received:		Client Ref. No.:	004-88-059
Sample Analyzed:	09/21/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125-MB

Compound	Concentration µg/L (ppb)	Limit of Detection µg/L (ppb)
Benzene	ND	0.4
Toluene	ND	0.3
Ethylbenzene	ND	0.3
Xylenes	ND	0.7
Gasoline	ND	50

ND = Not detected at or above limit of detection

RECEIVED SEP 2 3 1989

EXTRACTION LABORATORY ANALYSES

Sample I.D.:	See below	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/20/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125

Batch Sub. No.	Sample Identification	Oil & Grease (mg/L)
-01G	1194	<1
-02H	1200	1
-03H	1206	<1
-04H	1212	<1
-05H	1219	<1
-MB	Method Blank	<1

Limit of detection: 1

Method Reference: Std. Method 503A

< = less than, below limit of detection

EXTRACTION LABORATORY ANALYSES

Sample I.D.:	See below	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/20/89	Lab Client Code:	77665
Sample Matrix:	Water	Lab No.:	8909125

Batch Sub. No.	Sample Identification	Hydrocarbons (mg/L)
-02H	1200	<1
-MB	Method Blank	<1

Limit of detection: 1

Method Reference: Std. Method 503E

< = less than, below limit of detection

INORGANIC LABORATORY ANALYSES

Sample I.D.:	See below	Client:	ANANIA
Sample Received:	09/15/89	Client Ref. No.:	004-88-059
Sample Analyzed:	09/19/89	Lab Client Code:	77665
Sample Matrix:	Soil	Lab No.:	8909125

Batch Sub. No.	Sample Identification	Lead (mg/kg)
-02G	1199	<0.05
-03G	1205	<0.05
-04G	1211	<0.05
-05F	1217	<0.05
-MB	Method Blank	<0.05

Limit of detection: 0.05

Method Reference: EPA 6010

< = less than, below limit of detection

ANANIA GEOLOGIC ENGINEERING

AGE № 146

PROJECT NO.	LAB REPORT NO.	P.O. NO.	SAMPLERS: (signature)
004-88-057			[signature] 1/4/90

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE SOIL COMP	SAMPLE TYPE SOIL GRAB	WATER	TPH (GAS) MOD. 8015	TPH DIESEL MOD. 8015	BETX 8020	PCB 8080	TOTAL LEAD 6010	OIL & GREASE 503 A&E		REMARKS
	9/13/89	1310	1189	2			X	X							Well # MW-OS 25
	〃	1315	1190	1			X		X						
	〃	1320	1191	2			X			X					
	〃	1330	1192	1			X				X				
	~~〃~~	~~1435~~	~~1193~~	~~X~~ 0			~~X~~					~~X~~			~~DID NOT REC.~~
	〃	1440	1194	1			X						X		
	9/14/89	1005	1195	2			X	X							MW-OS 26
	〃	1018	1196	1			X		X						
	〃	1025	1197	2			X			X					one of the samples does not have HCL preservati[ve]
	〃	1030	1198	1			X				X	~~X~~			
	〃	1032	1199	1			X					X			
		1035	1200	1			X						X		

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
[signature]	9/15/89 405	[signature]
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: (5 WK DAY) ONE WEEK TAT

SEND RESULTS TO:

ATTN: MS. MARY SCRUGGS
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542
PHONE NO. ~~(916) 851-8829~~
(916)631-0154

CHAIN OF CUSTODY

White- AGE Yellow – LAB Copy Pink- File

ANANIA GEOLOGIC ENGINEERING

AGE Nº 14E

PROJECT NO.	LAB REPORT NO.
004-88-059	
P.O. NO.	SAMPLERS: (signature) Tokemy-Roberts

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	TPH (GAS) MOD. SOILS	TPH (DIESEL) MOD. SOILS	BETX 8020	PCB 8080	TOTAL LEAD 6010	OIL & GREASE 503 A&E	REMARKS
	9/14/89	1130	1201	2			X	X						MW-05 27
		1132	1202	1			X		X					
		1135	1203	2			X			X				
		1145	1204	1			X				X	X		
		1150	1205	1			X					X		
		1210	1206	1			X						X	
	9/15/89	0910	1207	2			X	X						MW-05 28
		0915	1208	1			X		X	X				
		0920	1209	2			X			X				
		0930	1210	1			X				X			
		0935	1211	1			X					X		
		0950	1212	1			X						X	

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Tokemy-Roberts	9/15/89 1405	Tracy Hall
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: ONE WEEK TAT

SEND RESULTS TO:

ATTN: MS. MARY SCRUGGS
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542
PHONE NO. (916)631-0154

CHAIN OF CUSTODY

White- AGE Yellow- LAB Copy Pink- File

ANANIA GEOLOGIC ENGINEERING

AGE Nº 146

PROJECT NO.	LAB REPORT NO.
004-88-059	
P.O. NO.	SAMPLERS: (signature)
	[signature]

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	ANALYSES: TPH (GAS) MOD. GCLS	TPH DIESEL MOD. 8015	BETX 8020	PCB 8080	TOTAL LEAD	LEAD	OIL & GREASE	503 ARS	EXTRA	REMARKS
	9/15/89	1215	1213	1			X	X									MW-05 29
	9/15/89	1218	1214	1			X		X								
	"	1220	1215	2			X			X							
	"	1225	1216	1			X				X						
	"	1235	1217	1			X					X					
	"	1237	1218	1			X							X			
	"	1240	1219	1			X									X	

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
[signature]	9/15/89 405pm	[signature]
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: ONE WEEK T.A.T.

SEND RESULTS TO:

ATTN: MS. MARY SCRUGGS
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542

PHONE NO. (916)631-0154

CHAIN OF CUSTODY

White - AGE Yellow - LAB Copy Pink - File

APPENDIX D

OCTOBER 1989 GROUNDWATER ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS

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

RECEIVED OCT 28 1989

DATE RECEIVED: 10/13/89
DATE REPORTED: 10/24/89

LAB NUMBER: 18503

CLIENT: ANANIA GEOLOGIC ENGINEERING

REPORT ON: 3 WATER SAMPLES

JOB #: 004-88-059

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18503
CLIENT: ANANIA GEOLOGIC ENGINEERING
JOB NUMBER: 004-88-059

DATE RECEIVED: 10/13/89
DATE ANALYZED: 10/23/89
DATE REPORTED: 10/24/89

Total Volatile Hydrocarbons (TVH) by EPA 8015
Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
18503-1	3481	1,900	870	440	12	120
18503-2	3482	51	12	14	ND(1)	6
18503-3	3483	58	8	14	1	8

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	1
%RECOVERY	78

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18503
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 10/13/89
DATE ANALYZED: 10/20/89
DATE REPORTED: 10/24/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18503-1	3481	ND(0.5)	ND(0.5)	ND(0.5)
18503-2	3482	ND(0.5)	ND(0.5)	ND(0.5)
18503-3	8483	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	7
Spike: % Recovery	98

Curtis & Tompkins, Ltd.

LAB NUMBER: 18503
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 10/13/89
DATE ANALYZED: 10/20/89
DATE REPORTED: 10/24/89

POLYCHLORINATED BIPHENYLS (PCBs)
METHOD: EPA 8080
EXTRACTION METHOD: EPA 3510

LAB ID	CLIENT ID	AROCLOR	CONCENTRATION (ug/L)	MDL (ug/L)
18504-1	3481	---	ND	0.05
18504-2	3482	---	ND	0.05
18504-3	3483	---	ND	0.05

ND = NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN LAST COLUMN.

QA/QC SUMMARY

%RPD	5
%RECOVERY	121

Curtis & Tompkins, Ltd.

LAB NUMBER: 18503
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT # : 004-88-059

DATE RECEIVED: 10/13/89
DATE ANALYZED: 10/19/89
DATE REPORTED: 10/24/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18503-1	3481	ND	mg/L	20
18503-2	3482	ND	mg/L	20
18503-3	3483	ND	mg/L	20

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	92

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18503
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 10/13/89
DATE ANALYZED: 10/16/89
DATE REPORTED: 10/24/89

ANALYSIS: TOTAL LEAD IN AQUEOUS SOLUTIONS
METHOD REFERENCE: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18503-1	3481	ND	mg/L	0.05
18503-2	3482	ND	mg/L	0.05
18503-3	3483	ND	mg/L	0.05

ND = NOT DETECTED.

QA/QC:

RPD, %	<1
RECOVERY, %	102

ANANIA GEOLOGIC ENGINEERING

AGE № 1934

PROJECT NO.	LAB REPORT NO.	NO. OF CONTAINERS	SAMPLE TYPE			ANALYSES							
004-88-059			SOIL		WATER	TPH (Gas) Mod 8015	TPH Diesel Mod 8015	BTEX 8020	PCB 8080	Oil & Grease 503	TOTAL LEAD 6010		
P.O. NO.	SAMPLERS: (signature)		COMP	GRAB									
LAB LOG NO.	DATE	TIME	SAMPLE I.D.										REMARKS
	10/13/89		3481	6		X	X	X	X	X	X	X	
	"		3482	6		X	X	X	X	X	X	X	
	"		3483	6		X	X	X	X	X	X	X	

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
[signature]	10/13/89 1555	[signature]
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS:

Provide copies to Joseph Scruggs at PG&E San Pablo Office

SEND RESULTS TO:

ATTN: MARY SCRUGGS
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542

PHONE NO. (916) 631-0154

CHAIN OF CUSTODY

White - AGE Yellow - LAB Copy Pink - Fi

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

RECEIVED OCT 2 8 1989

DATE RECEIVED: 10/16/89
DATE REPORTED: 10/24/89

LAB NUMBER: 18510

CLIENT: ANANIA GEOLOGIC ENGINEERING

REPORT ON: 2 WATER SAMPLES

JOB #: 004-88-059

RESULTS: SEE ATTACHED

M. E. Printera
QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18510
CLIENT: ANANIA GEOLOGIC ENGINEERING
JOB NUMBER: 004-88-059

DATE RECEIVED: 10/16/89
DATE ANALYZED: 10/19/89
DATE REPORTED: 10/24/89

Total Volatile Hydrocarbons (TVH) by EPA 8015
Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
18510-1	3484	65	2.3	2.4	2.0	2.3
18510-2	3485	82	29	4.7	ND(1)	1.2

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	<1
%RECOVERY	88

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18510
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 10/16/89
DATE ANALYZED: 10/20/89
DATE REPORTED: 10/24/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18510-1	3484	ND(0.5)	ND(0.5)	ND(0.5)
18510-2	3485	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	7
Spike: % Recovery	98

Curtis & Tompkins, Ltd.

LAB NUMBER: 18510
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT # : 004-88-059

DATE RECEIVED: 10/16/89
DATE ANALYZED: 10/19/89
DATE REPORTED: 10/24/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18510-1	3484	ND	mg/L	20
18510-2	3485	ND	mg/L	20

ND = NOT DETECTED

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	91

Curtis & Tompkins, Ltd

LAB NUMBER: 18510
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 10/16/89
DATE ANALYZED: 10/19/89
DATE REPORTED: 10/24/89

POLYCHLORINATED BIPHENYLS (PCBs)
METHOD: EPA 8080
EXTRACTION METHOD: EPA 3510

LAB ID	CLIENT ID	AROCLOR	CONCENTRATION (ug/L)	MDL (ug/L)
18510-1	3484	---	ND	1.0
18510-2	3485	---	ND	1.0

ND = NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN LAST COLUMN.

QA/QC SUMMARY

%RPD	3
%RECOVERY	95

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18510
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 10/16/89
DATE ANALYZED: 10/17/89
DATE REPORTED: 10/24/89

ANALYSIS: TOTAL LEAD
METHOD REFERENCE: EPA 7421

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18510-1	3484	ND	mg/L	0.05
18510-2	3485	ND	mg/L	0.05

ND = NOT DETECTED.

QA/QC:

RPD, %	<1
RECOVERY, %	100

ANANIA GEOLOGIC ENGINEERING

AGE № 1933

PROJECT NO.	LAB REPORT NO.	NO. OF CONTAINERS	SAMPLE TYPE			ANALYSES								
004-88-059			SOIL		WATER	TPH Gas/ Mod. 8015	TPH (Diesel) mod 8015	BTEX (8020)	Total Lead (6010)	PCB (8080)	Oil & Grease 503			
P.O. NO.	SAMPLERS: (signature)		COMP	GRAB										
LAB LOG NO.	DATE	TIME	SAMPLE I.D.											REMARKS
	10/16/89	1127	3484	6			X	X	X	X	X	X	X	
	10/16/89	1215	3485	6			X	X	X	X	X	X	X	

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
	10/16/89 1525	
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS:
Provide copies to Joseph Roberts @ San Pablo Office

SEND RESULTS TO:
ATTN: Mary Scruggs
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542
PHONE NO. (916) 631-0154

CHAIN OF CUSTODY

White - AGE Yellow - LAB Copy - F

CHEMTECH

ANALYTICAL LABORATORIES

RECEIVED OCT 12 1989

DATE: October 12, 1989

CHEMTECH ID: 1050CT

REPORTED TO:

AGE ENGINEERING

11330 Sunrise Park Dr. Suite "C"
Rancho Cordova, CA 95742

INVOICED TO:

SAME

ATTN: MR. JIM WALLACE

The Environmental Service Division of, *CHEMTECH Analytical Laboratories, Inc.*, has completed analyses requested for the project documented below.

PROJECT NAME: NONE

PROJECT NO.: 004-88-059

If you have any question concerning this report please contact *CHEMTECH's* Client Services Division at (916) 635-3962.

Thank You for using the environmental services of *CHEMTECH Analytical Laboratories, Inc.*

Sincerely,

MARK MASINO
Executive Vice President
Environmental Division

pdp/MM

CHEMTECH ANALYTICAL LABORATORIES, INC.

A N A L Y T I C A L D A T A R E S U L T S

LABORATORY FILE CODE: 1050CT

PROJECT NAME: 004-88-059

Received: 10-04-89
Extracted: 10-05-89
Analyzed: 10-06/10-89

Sampled: 10-03-89

ANALYSIS: Benzene, Toluene, E. Benzene, Xylenes (BTEX)
METHOD: 8020

LABORATORY SAMPLE ID:	*SAMPLE DESCRIPTION*	*MATRIX TYPE*	*AMOUNT DETECTED* B	T	E	X
-1	3466	W	34	2.0	ND	39

REPORTING LIMITS: B=0.5 T=1.0 E=1.0 X=2.0
REPORTING UNITS: ug/L,ppb

ANALYSIS: Petroleum Hydrocarbons *METHOD: Modified 8015*

LABORATORY SAMPLE ID:	*SAMPLE DESCRIPTION*	*MATRIX TYPE*	*AMOUNT DETECTED PETROLEUM HYDROCARBONS*
-1	3466	W	ND

NOTE: Analysis did indicate the presents of fuel hydrocarbons in the C-6 to C-12 range, however the TPH results were below the reporting limit for gasoline and diesel fuel.
REPORTING LIMIT: 0.075 mg/L, ppm
gasoline - diesel fuel

ND = NOT DETECTED S = SOIL W = WATER HZ = WASTE

APPROVED BY: M Mann DATE: 10-12-89

3017 KILGORE ROAD #110 • RANCHO CORDOVA CA 95742 PHONE (916) 635-3993 • FAX (916) 635-9331

CHEMTECH ANALYTICAL LABORATORIES, INC.

Q U A L I T Y A S S U R A N C E R E P O R T

The *"Quality Assurance Report"* is an integral part of *CHEMTECH's "Analytical Data Report"*. The *QRA* combines the *industry-standard* QC requirements with *CHEMTECH's routine* and *client specific* QC results which are critical for evaluating the *"Data Results"* for the *CHEMTECH FILE/PROJECT* listed below.

Quality assurance protocols may vary depending upon the analysis, sample matrix and regulatory agencies/project specific requirements. *CHEMTECH* has available, upon request, a technical bulletin which summarizes/defines technical terms and protocols.

Tech Bulletin #989-TRG *"TECHNICAL REFERENCE GUIDE"*

Since *CHEMTECH's* Quality Assurance Reports are *"CUSTOMIZED"* for each project, only the items with an asterisk (*) are contained in this QA/QC report.

CHEMTECH FILE IDENTIFICATION & CLIENT PROJECT NUMBER/SITE CODE

CHEMTECH ID:		*PROJECT ID:*	
1050CT	1053CT	004-88-059	004-89-077-01
1052CT	1054CT	004-89-078-01	004-89-079-01

(**) PETROLEUM & FUEL HYDROCARBONS ANALYSIS

(*) Method Blank Results
(*) Calibration Verification Results
(*) Laboratory Control Sample Results/Control Chart
( ) Surrogate/Peak Indexing Compound Results/Control Chart
( ) Duplicate Sample Results/Control Chart
( ) Spike Sample Results/Control Chart
( ) Modification/Clients Specific QC Results

(**) VOLATILES by GC & GC/MS (8010/20, 601/2, BTEX, 8240/624)

(*) Method Blank Results
(*) Calibration Verification Results
(*) Laboratory Control Sample Results/Control Chart
( ) Surrogate/Recovery Results/Control Chart
( ) Duplicate Sample Results/Control Chart
( ) Spike Sample Results/Control Chart
( ) Modification/Clients Specific QC Results

CHEMTECH ANALYTICAL LABORATORIES, INC.

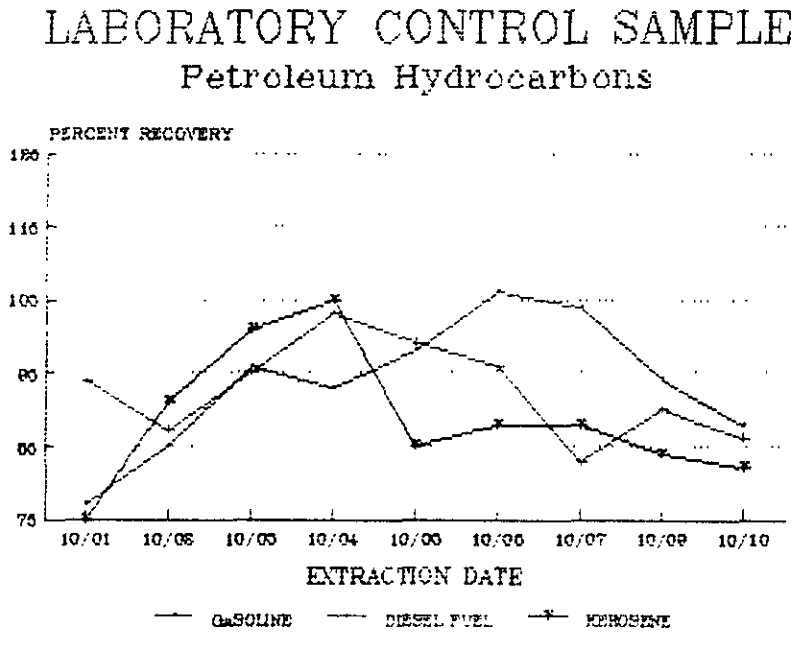
Q U A L I T Y A S S U R A N C E R E P O R T

(**) *PETROLEUM & FUEL HYDROCARBON ANALYSIS*

Method Blank Results: The method blank which was extracted and/or analyzed with the samples received contained *NO DETECTABLE* compounds at or above one-half (50%) of the "Reporting Limit" listed on each analytical data sheet for this method.

Calibration Verification Results: All compounds listed on the analytical data sheets were within the "Control Limits" outlined in the Tech Bulletin #989-TRG.

Laboratory Control Sample (LCS) Results/Control Chart:



Listed on each "Analytical Data Sheet" locate the "Date Extracted" or "Extraction Batch No." and Cross-Reference this point with the % Recovery value. In addition, the graph shows historical data points for the last ten LCS samples analyzed.

CHEMTECH ANALYTICAL LABORATORIES, INC.

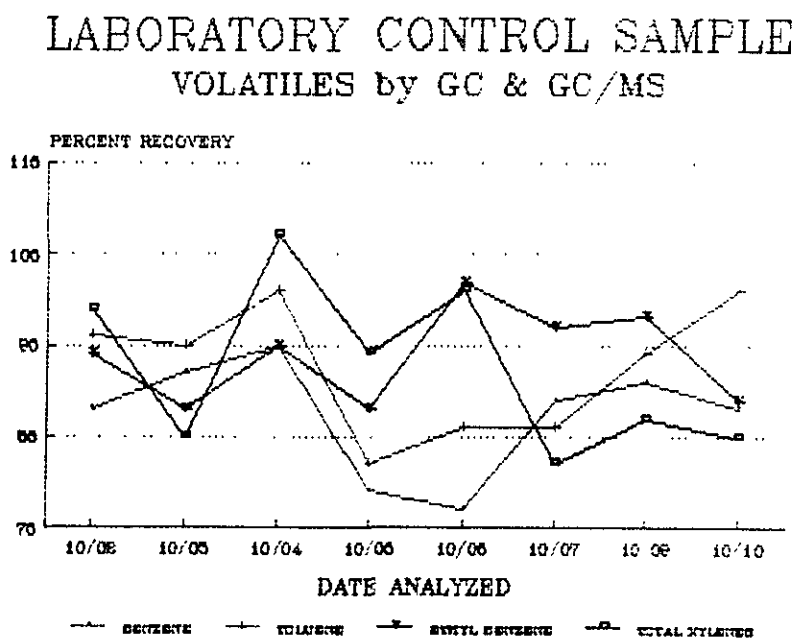
Q U A L I T Y A S S U R A N C E R E P O R T

(**) *VOLATILES by GC & GC/MS (8010/20, 601/2, BTEX, 8240/624)*

Method Blank Results: The method blank which was extracted and/or analyzed with the samples received contained *NO DETECTABLE* compounds at or above one-half (50%) of the "Reporting Limit" listed on each analytical data sheet for this method.

Calibration Verification Results: All compounds listed on the analytical data sheets were within the "Control Limits" outlined in the Tech Bulletin #989-TRG.

Laboratory Control Sample (LCS) Results/Control Chart:



Listed on each "Analytical Data Sheet" locate the "Date Extracted" or "Date Analyzed " and Cross-Reference this point with the % Recovery value. In addition, the graph shows historical data points for the last ten LCS samples analyzed.

M. Moore 10/10/89.

ANANIA GEOLOGIC ENGINEERING

AGE Nº 1496

PROJECT NO.	LAB REPORT NO.
004-88-059	
P.O. NO.	SAMPLERS: (signature) Michael C. Hill

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	ANALYSES: TPH gas + diesel mod 8015	BTEX							REMARKS
	10-3-89	0822	3466	1 LTR			X	X	X							

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
Michael C. Hill	10/3/89/1555	
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
	10-4-89/12:35	
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS:

SEND RESULTS TO:
ATTN: Jim Wallace
ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542
PHONE NO. (916)631-0154

CHAIN OF CUSTODY

White - AGE Yell - LAB Gop - Fi

APPENDIX E

NOVEMBER 1989 GROUNDWATER ANALYTICAL REPORTS AND CHAIN OF CUSTODY FORMS

RECEIVED DEC 07 1989

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

DATE RECEIVED: 11/15/89
DATE REPORTED: 11/27/89

LAB NUMBER: 18712

CLIENT: ANANIA GEOLOGIC ENGINEERING

REPORT ON: 3 WATER SAMPLES

PROJECT #: 004-88-059

RESULTS: SEE ATTACHED

M E. Printer
QA/QC Officer

Laboratory Director

RECEIVED DEC 0 7 1989

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18712
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 11/15/89
DATE ANALYZED: 11/17/89
DATE REPORTED: 11/27/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18712-1	12101	ND(0.5)	ND(0.5)	ND(0.5)
18712-2	12102	ND(0.5)	ND(0.5)	ND(0.5)
18712-3	12103	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	3
Spike: % Recovery	93

Curtis & Tompkins, Ltd

RECEIVED DEC 0 7 1989

LABORATORY NUMBER: 18712
CLIENT: ANANIA GEOLOGIC ENGINEERING
JOB NUMBER: 004-88-059

DATE RECEIVED: 11/15/89
DATE ANALYZED: 11/22/89
DATE REPORTED: 11/27/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	TOTAL XYLENES (ug/L)	ETHYL BENZENE (ug/L)	REPORTING LIMIT * (ug/L)
18712-1	12101	30	2.1	ND	ND	1.0
18712-2	12102	4,200	3,000	840	ND	100.0
18712-3	12103	ND	3.1	ND	ND	1.0

ND = Not Detected.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

%RPD	<1
%RECOVERY	83

RECEIVED DEC 0 7 1989

Curtis & Tompkins, Ltd

LAB NUMBER: 18712
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT # : 004-88-059

DATE RECEIVED: 11/15/89
DATE ANALYZED: 11/22/89
DATE REPORTED: 11/27/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18712-1	12101	ND	mg/L	20
18712-2	12102	230	mg/L	20
18712-3	12103	100	mg/L	20

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	87

RECEIVED DEC 0 7 1989

Curtis & Tompkins, Ltd

LAB NUMBER: 18712
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 11/15/89
DATE ANALYZED: 11/22/89
DATE REPORTED: 11/27/89

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3510

LAB ID	CLIENT ID	AROCLOR	CONCENTRATION (mg/Kg)	MDL (mg/Kg)
18712-1	12101	---	ND	0.5
18712-2	12102	---	ND	0.5
18712-3	12103	---	ND	0.5

ND = NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN LAST COLUMN.

QA/QC SUMMARY

%RPD	10
%RECOVERY	94

RECEIVED DEC 0 7 1989

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18712
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #:004-88-059

DATE RECEIVED: 11/15/89
DATE ANALYZED: 11/20/89
DATE REPORTED: 11/27/89

ANALYSIS: LEAD
PREPARATION METHOD: EPA 3010
METHOD REFERENCE: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18712-1	12101	ND	mg/L	0.05
18712-2	12102	ND	mg/L	0.05
18712-3	12103	ND	mg/L	0.05

ND = NOT DETECTED; LIMIT OF DETECTION IN LAST COLUMN

QA/QC:

RPD, %	<1
RECOVERY, %	101

ANANIA GEOLOGIC ENGINEERING

AGE № 1937

PROJECT NO. 004-88-059

LAB REPORT NO.

P.O. NO.

SAMPLERS: (signature) JOSEPH NETTEY-ROBERTS

LAB LOG NO.	DATE	TIME	SAMPLE I.D.	NO. OF CONTAINERS	SAMPLE TYPE: SOIL COMP	SOIL GRAB	WATER	TPH (GAS) 8015	TPH (DIESEL) 8015	BTEX 602	PCB 8080	Oil & Grease 503 D&E	TOTAL LEAD		REMARKS
	11/15/89	1205	12101	6			X	X	X	X	X	X	X		
	11/15/89	1438	12102	6			X	X	X	X	X	X	X		
	11/15/89	1603	12103	6			X	X	X	X	X	X	X		

RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
J.O. Nettey-Roberts	11/15/89	Scott Ritter
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY: (signature)

REMARKS: Send copies to Attn: Joseph Roberts @ San Pablo Office

5 DAY TAT

SEND RESULTS TO:

ATTN: MARY SCRUGGS

ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542

PHONE NO. ~~(916) 451-8821~~ (916) 631-0154

CHAIN OF CUSTODY

[redacted]te-[redacted] [redacted]llow[redacted]LAB[redacted]py [redacted] Pi[redacted] File

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

RECEIVED DEC - 2 1989

DATE RECEIVED: 11/16/89
DATE REPORTED: 11/30/89

LAB NUMBER: 18730

CLIENT: ANANIA GEOLOGIC ENGINEERING

REPORT ON: 2 WATER SAMPLES

JOB #: 004-88-059

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

RECEIVED DEC - 2 1989

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18730
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 11/16/89
DATE ANALYZED: 11/26/89
DATE REPORTED: 11/30/89

Extractable Petroleum Hydrocarbons in Aqueous Solutions
EPA 8015 (Modified)
Extraction Method: EPA 3510

LAB ID	CLIENT ID	KEROSENE (mg/L)	DIESEL (mg/L)	OTHER (mg/L)
18730-1	12104	ND(0.5)	ND(0.5)	ND(0.5)
18730-2	12105	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

RPD, %	10
Spike: % Recovery	97

RECEIVED DEC - 4 1989

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 18730
CLIENT: ANANIA GEOLOGIC ENGINEERING
JOB NUMBER: 004-88-059

DATE RECEIVED: 11/16/89
DATE ANALYZED: 11/29/89
DATE REPORTED: 11/30/89

Total Volatile Hydrocarbons (TVH) by EPA 8015
Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
18730-1	12104	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)
18730-2	12105	ND(50)	ND(1)	ND(1)	ND(1)	ND(1)

ND = None Detected; Limit of detection is indicated in parentheses.

QA/QC SUMMARY

%RPD	2
%RECOVERY	76

RECEIVED DEC - 2 1989

Curtis & Tompkins Ltd

LAB NUMBER: 18730
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT # : 004-88-059

DATE RECEIVED: 11/16/89
DATE ANALYZED: 11/22/89
DATE REPORTED: 11/30/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18730-1	12104	50	mg/L	20
18730-2	12105	150	mg/L	20

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	87

RECEIVED DEC - 2 1989

Curtis & Tompkins, Ltd

LAB NUMBER: 18730
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 11/16/89
DATE ANALYZED: 11/26/89
DATE REPORTED: 11/30/89

POLYCHLORINATED BIPHENYLS (PCBs)
ANALYSIS METHOD: EPA 8080
EXTRACTION METHOD: EPA 3510; SEPARATORY FUNNEL

LAB ID	CLIENT ID	AROCLOR	CONCENTRATION (mg/L)	MDL (mg/L)
18730-1	12104	---	ND	0.5
18730-2	12105	---	ND	0.5

ND = NONE DETECTED; LIMIT OF DETECTION IS INDICATED IN LAST COLUMN.

QA/QC SUMMARY

%RPD	2
%RECOVERY	122

RECEIVED DEC - 2 1989

Curtis & Tompkins Ltd

LABORATORY NUMBER: 18730
CLIENT: ANANIA GEOLOGIC ENGINEERING
PROJECT #: 004-88-059

DATE RECEIVED: 11/16/89
DATE ANALYZED: 11/20/89
DATE REPORTED: 11/30/89

ANALYSIS: LEAD
PREPARATION METHOD: EPA 3010
METHOD REFERENCE: EPA 7420

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18730-1	12104	ND	mg/L	0.05
18730-2	12105	ND	mg/L	0.05

ND = NOT DETECTED

QA/QC:

RPD, %	<1
RECOVERY, %	100

ANANIA GEOLOGIC ENGINEERING

AGE Nº 1

PROJECT NO.	LAB REPORT NO.	NO. OF CONTAINERS	SAMPLE TYPE			ANALYSES								REMARKS
8004-88-059			SOIL		WATER	TPH (GAS) 8015	TPH (DIESEL) 8015	BTEX (8020)	PCB 1080	OIL & GREASE 503E	TOTAL LEAD			
P.O. NO.	SAMPLERS: (signature) Joseph Nettey-Roberts		COMP	GRAB										
LAB LOG NO. / DATE / TIME / SAMPLE I.D.														
	11/16/89 1320 12104	6			X	X	X	X	X	X	X			
	11/16/89 1435 12105	6			X	X	X	X	X	X	X			

RELINQUISHED BY: (signature) Joseph Nettey-Roberts — DATE/TIME 11/16/89 1645 — RECEIVED BY: (signature) Nancy Wilson 11/16/89 16:45

RELINQUISHED BY: (signature) — DATE/TIME — RECEIVED BY: (signature)

RELINQUISHED BY: (signature) — DATE/TIME — RECEIVED BY: (signature)

REMARKS: Send Copies to AGE San Pablo Office attn. Joseph Roberts

5 DAY TAT

SEND RESULTS TO:

ATTN: Mary Scruggs

ANANIA GEOLOGIC ENGINEERING
11330 SUNRISE PARK DR. SUITE C
RANCHO CORDOVA, CA 95742-6542

PHONE NO. (916) 631-0154

CHAIN OF CUSTODY

White - AGE Yel[illegible] - LA[illegible] Cop[illegible] - F[illegible]