

Woodward-Clyde

Engineering & sciences applied to the earth & its environment

November 13, 1997
941114NA

Ms. Susan Hugo
Hazardous Materials Specialist
Department of Environmental Health
Alameda County Health Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Transmittal of 3rd Quarter 1997 Groundwater Monitoring Results
and Well Construction Report for Extraction Well EW-1 at
the Former Celi's Alliance Gas Station Site, Emeryville, CA

Dear Ms. Hugo:

On behalf of the City of Emeryville Redevelopment Agency, transmitted herewith are the subject site quarterly groundwater monitoring results for the third quarter 1997 and well construction report for extraction well EW-1. This is the first monitoring event of an one-year quarterly groundwater monitoring program. The monitoring activities were performed in accordance with the Closure Workplan (Woodward-Clyde, September 1996), which was submitted to and approved by the Alameda County Department of Environmental Health.

Please feel free to call me at (510) 874-3060 or Mr. Ignacio Dayrit of the City of Emeryville Redevelopment Agency at (510) 596-4356 for questions or comments.

Sincerely,



Xinggang Tong, P.E.
Project Manager



enclosures.

cc: Ignacio Dayrit, City of Emeryville

THIRD QUARTER 1997 GROUNDWATER MONITORING RESULTS

THE FORMER CELI'S
ALLIANCE GAS STATION
AT 4000 SAN PABLO AVENUE
EMERYVILLE, CALIFORNIA

Prepared for

City of Emeryville Redevelopment Agency
2200 Powell Street, 12th Floor
Emeryville, California 94608

November 13, 1997

Woodward-Clyde 

Woodward-Clyde Consultants
500 12th Street, Suite 200
Oakland, CA 94607-4014
(510) 893-3600
Project 941114NA

**THIRD QUARTER 1997 GROUNDWATER MONITORING RESULTS
THE FORMER CELI'S ALLIANCE GAS STATION
4000 SAN PABLO AVENUE,
EMERYVILLE, CALIFORNIA**

Groundwater samples were collected from the on-site monitoring well EW-1 and the off-site, downgradient monitoring well LF-4 on September 26, 1997. Samples were delivered to American Environmental Network (AEN) Pleasant Hill Laboratory for the analysis of Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-g), diesel (TPH-d), and motor oil (TPH-mo); Benzene, Toluene, Ethylbenzene, & Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE); polyaromatic hydrocarbons (PAHs); and total lead. Results are summarized in Table 1. Concentrations of motor oil, MTBE and total lead were below their respective laboratory reporting limits for both wells and naphthalene was the only PAH detected. Water samples from EW-1 exhibited significant detectable levels of TPH-g (110 mg/l), TPH-d (180 mg/l), benzene (2.8 mg/l), toluene (4.9 mg/l), ethylbenzene (3.1 mg/l) and total xylenes (12 mg/l). Since the start of weekly groundwater pumping from EW-1 on September 12, 1997, a sheen has been observed several times in the extracted groundwater. Concentrations of petroleum hydrocarbons in LF-4 were significantly lower in this round sampling than in the January 1994 sampling. BTEX concentrations had approximately 30-fold reduction from January 1994 to September 1997. These results suggest that natural attenuation, including intrinsic bioremediation, is reducing the contaminant mass of the plume.

Woodward-Clyde retained Environmental Sampling Services to perform field sampling activities. Prior to purging, depth from the top of well casing to water surface was measured using a Solinst electronic water level meter. Each of the two wells were then purged by manually bailing out 8 gallons (approximately 5 well casing volumes) of groundwater using a disposable PVC bailer. Temperature, pH, and conductivity of the purged water were monitored during the well purging. Well monitoring data sheet is included with this report. After the water level recovered to about 80% of the static water level and water parameters stabilized, a new disposable bailer was gently lowered into a well approximately half its length past the air-water interface. The bailer was retrieved and the water was promptly transferred to appropriate sample containers supplied by the laboratory. Sample containers were promptly capped, labeled, placed in an ice-cooled container, and delivered to the AEN Pleasant Hill Laboratory in the same day the samples were collected.

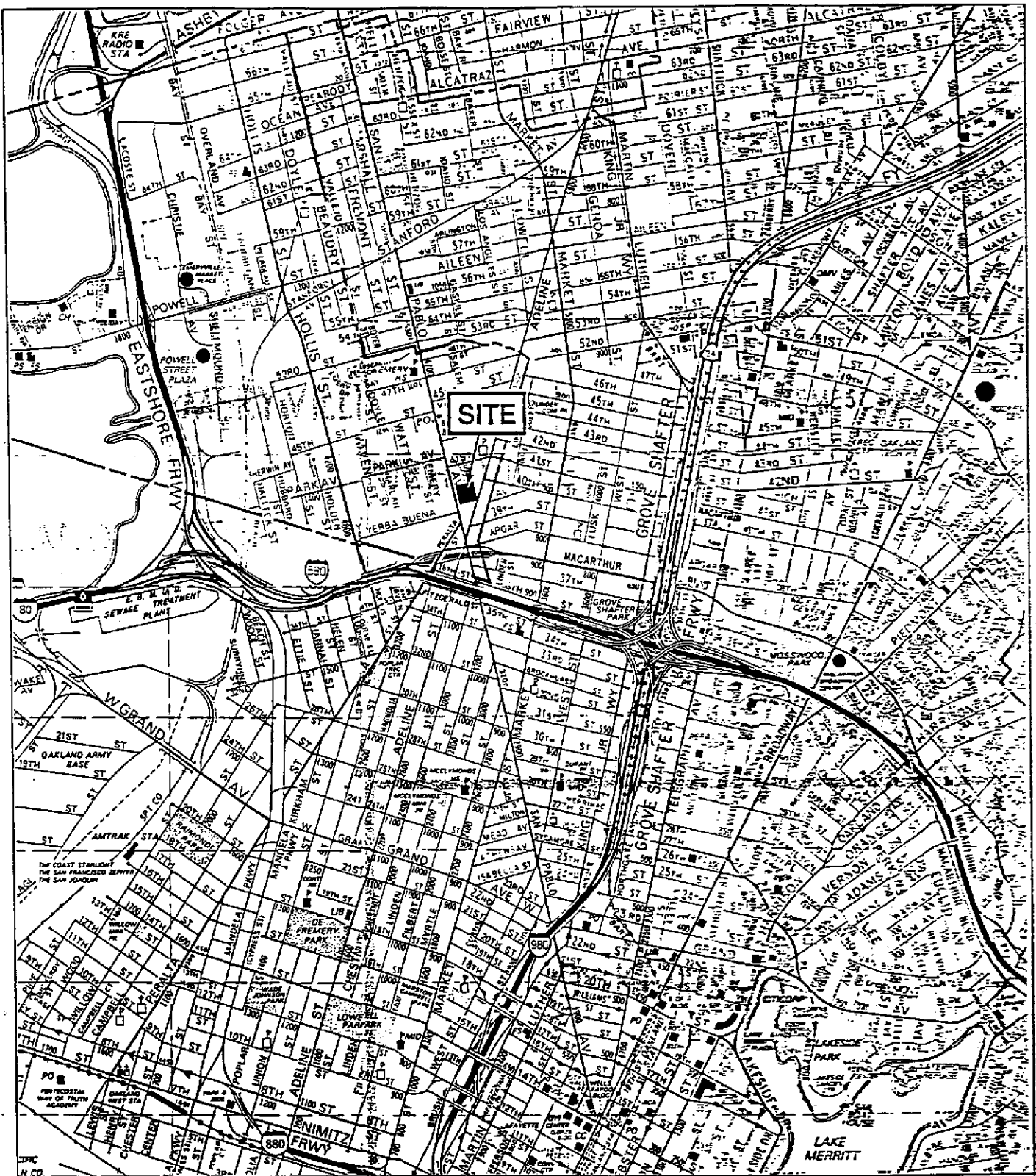
The water level in well MW-2 was also measured for the purpose of estimating groundwater flow direction in the area. Well MW-2 was installed by Levine-Fricke for monitoring other contamination not related to this site. Elevations of the three wells were surveyed by PLS Surveys, Inc. of Oakland on July 10, 1997. Groundwater elevations are summarized in Table 1 and are shown on Figure 2. The water level was at about 8 feet below ground surface on September 26, 1997. Based on the measured groundwater elevations, the groundwater flow direction is generally toward the west and southwest under a hydraulic gradient of approximately 0.0077 ft/ft.

The purged water was placed in a 4,900-gallon storage tank and left on site for future disposal. Weekly extracted groundwater from EW-1 is also stored in the same tank. The weekly groundwater pumping activities will continue through December 5, 1997.

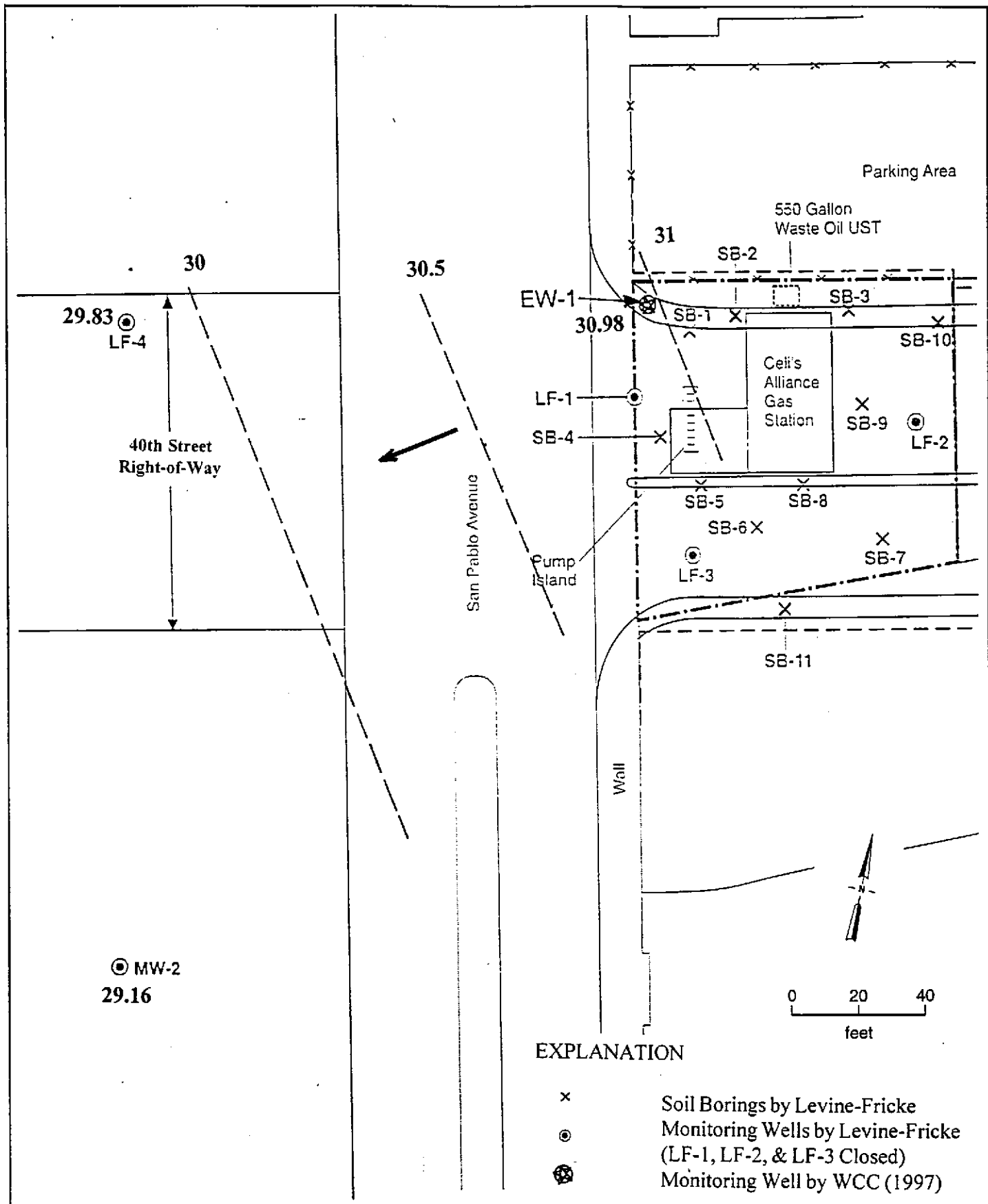
TABLE 1
GROUNDWATER MONITORING DATA
THE FORMER CELLI'S ALLIANCE GAS STATION SITE
4000 SAN PABLO AVE., EMERYVILLE, CA

Sample ID	Date Sampled	Water level		TPH as gasoline (mg/l)	TPH as diesel (mg/l)	TPH as motor oil (mg/l)	TRPH (mg/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)	Total Lead (ug/l)	PAHs (ug/l)
		TOC (ft)	MSL (ft)											
EW-1	9/26/97	8.06	30.98	110	180	ND (20)	NA	2800	4900	3100	12000	ND (500)	ND (40)	naphthalene = 1,000
LF-4	9/26/97	8.25	29.83	3.2	0.48	ND (0.2)	NA	44	6.6	49	180	ND (5)	ND (40)	naphthalene = 17
LF-4	1/28/94	6.77	31.31	18	1.4	0.16	NA	1000	1900	880	4700	NA	NA	NA
LF-4dup	1/28/94	6.77	31.31	21	2.2	0.21	NA	1100	2000	800	4200	NA	NA	NA
Trip blank	9/26/97			ND (0.05)	NA	NA	NA	ND (0.5)	ND (0.5)	ND (0.5)	ND (2)	ND (5)	NA	NA
MW-2	9/26/97	8.11	29.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LF-1AG	8/7/93	9.40	29.55	100	41	ND (2.5)	11	13000	9400	3100	14000	NA	NA	NA
LF-2AG	8/7/93	7.97	32.28	13	0.095	ND (0.5)	ND (5)	2400	2900	500	2000	NA	NA	NA
LF-3AG	8/7/93	8.90	30.45	11	0.78	ND (0.25)	ND (5)	1500	170	2900	5100	NA	NA	NA
GWEB1	1/28/94	NA	NA	ND (0.05)	0.081	ND (0.05)	NA	ND (0.5)	0.57	ND (0.5)	2.6	NA	NA	NA

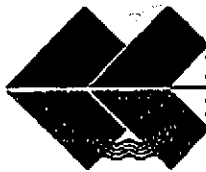
Notes: NA - not analyzed; ND - not detected at or above the detection limit given in parentheses.
 TOC - water level measured to top of well casing; MSL - mean sea level.
 TPH gas, diesel, and motor oil are quantified by modified EPA Method 8015.
 Benzene, toluene, ethylbenzene, xylenes, and MTBE are quantified by EPA Method 8020.
 TRPH - total recoverable petroleum hydrocarbons quantified by Standard Method 5520 E&F.
 Lead - quantified by EPA Method 3010/6010.
 PAHs - polyaromatic hydrocarbons quantified by EPA Method 3520/8270.



Project No. 941114NA	40th Street UST Woodward-Clyde Consultants	SITE LOCATION MAP CELI'S ALLIANCE GAS STATION SITE	Figure 1
-------------------------	--	---	---------------------------



Project No. 94114NA	40th Street Right-of-Way (Former Celis Gas Station)	SHALLOW GROUNDWATER ELEVATIONS AND FLOW DIRECTION September 26, 1997	Figure 2
Woodward-Clyde Consultants			



**Environmental
Sampling Services**

WELL SAMPLE LOG SHEET Well Identification: LF-4 Date: 9/26/97

Project Name: 40th St. JST Client Project Number: 941114NA

Well Description: 4" 5" 6" 8" Well Type: PVC Stainless Steel

Is well secured? YES / NO Type of lock / lock number: Master Lock

Observations/Comments: 15/16" wrench to open well cover

Purge Method: Teflon Disposable Bailer Centrifugal pump GRUNDFOS Redi-flow pump Other: _____

Pump lines: NEW/CLEANED/DEDICATED Bailer lines: NEW / CLEANED

Method of cleaning pump: Alconox Liquidnox Tap Water DI Rinse Other: _____

Method of cleaning bailer: Alconox Liquidnox Tap Water DI Rinse Other: _____

Sampling Method: Teflon Disp. Tef. bailer Disp. PVC bailer Redi-Flow 2 pump Other: _____

pH Meter Serial Number: 330089 Specific Conductance Meter Serial Number: 9640203AS

Date(s) Calibrated: 9/26/97 @ 09:00 @ 7:10 Specific Conductance Meter: _____ @ 100 umhos/cm @ _____ °C

Method to measure water level: Solinst ES341 Specific Conductance Meter: _____ @ 1000 umhos/cm @ _____ °C

Water Level at Start (DTW): 8.25 Water Level Prior to Sampling: 8.39

TD = 18.16 - 8.25 (DTW) x "k" = 1.6 gallons/casing volume x 3 = 4.8 gallons for 3 casing volumes

"k" = 0.163 (2" well) "k" = 0.653 (4" well) "k" = 1.02 (5" well) "k" = 1.46 (6" well) "k" = 2.61 (8" well)

FIELD WATER QUALITY PARAMETERS

Date	Time	Discharge (gallons)	pH	Temp. (°C)	Specific Conductance (ms (uS))	Turbidity (NTU's)	Color	Comments
9/26/97	09:57	1	7.47	21.8	765	High	8100 Gray	light silt on water
	10:03	2	7.28	21.3	742	"	"	"
	10:06	3	7.16	21.0	726	"	"	"
	10:09	4	7.08	21.0	733	"	"	"
	10:12	5	6.88	20.8	719	Moderate	lt olive gray	"
	10:15	6	6.97	20.9	721	"	"	"
	10:18	7	6.93	20.9	720	"	"	"
	10:21	8	6.95	21.0	736	"	"	"
9/26/97	10:32	Aft. Sampl	6.98	20.7	727	Moderate	lt olive gray	light silt on water

Total Discharge: 8 gallons Casing Volumes Removed: 5

Method of disposal of discharged water: 5000 gallon Poly tank onsite

Date/Time sampled: 9/26/97 @ 10:25 Analysis: 3 vials w/ HCL (TPH, DTEX & MTBE) 2 1 Liter Ambers (TPH Diesel) 2 1 Liter Ambers (PAH/8270) 1 500ml poly w/ HNO3 (Pb)

Comments: _____

QA/QC: _____ @ _____ as Eq. Blank Duplicate MS/MSD Split

Sampled By: S. Penner, J. Lee

Environmental Sampling Services
6680 Alhambra Ave. Martinez, CA 94553
Tel/Fax: (510) 372-8108



WEEKLY GROUNDWATER PUMPING RECORD

Site Location: 4000 San Pablo Avenue (former Celis Alliance Fuel Station)

Emeryville, California

Well ID: EW-1 Top of the well casing is at 39.04 ft MSL

Date: 9/26/97 Pumping starts at: 08:52 ended at: 12:55

Volume of groundwater extracted: 149.70 end of pumping test; 1521 gallons after draw + breakdown.

Operator's Signature: *[Signature]*

Before the start of pumping:

Water Level (ft)	Product	Electrical
Depth to MSL	thickness pH	Conductivity Turbidity
top of casing	(ft)	
8.06	NONE	

Notes:

Collected groundwater samples during this pumping event. Oil layer evident during collection of samples.

At the end of pumping:

Water Level (ft)	Product	Electrical
Depth to MSL	thickness pH	Conductivity Turbidity
top of casing	(ft)	
13:52 20.50	0.20	

Notes:

MW-2 8.11 @ 08:00
 LF-4 8.25, TD = 17.80 + 3.6 = 10.16 @ 08:15

American Environmental Network

Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 11134

PAGE 1

WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, STE. 100
OAKLAND, CA 94607

ATTN: XINGGANG TONG
CLIENT PROJ. ID: 941114NA
CLIENT PROJ. NAME: 40TH ST UST

REPORT DATE: 10/22/97

DATE(S) SAMPLED: 09/26/97

DATE RECEIVED: 09/26/97

AEN WORK ORDER: 9709374


PROJECT SUMMARY:

On September 26, 1997, this laboratory received 3 water sample(s).

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

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

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


Larry Klein
Laboratory Director

WOODWARD-CLYDE CONSULTANTS

SAMPLE ID: EW-1
 AEN LAB NO: 9709374-01
 AEN WORK ORDER: 9709374
 CLIENT PROJ. ID: 941114NA

DATE SAMPLED: 09/26/97
 DATE RECEIVED: 09/26/97
 REPORT DATE: 10/22/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	2,800 *	50	ug/L	10/09/97
Toluene	108-88-3	4,900 *	50	ug/L	10/09/97
Ethylbenzene	100-41-4	3,100 *	50	ug/L	10/09/97
Xylenes, Total	1330-20-7	12,000 *	200	ug/L	10/09/97
Purgeable HCs as Gasoline	5030/GCFID	110 *	5	mg/L	10/09/97
Methyl t-Butyl Ether	1634-04-4	ND	500	ug/L	10/09/97
#Extraction for TPH	EPA 3510	-		Extrn Date	09/29/97
TPH as Diesel	GC-FID	180 *	5	mg/L	09/30/97
TPH as Oil	GC-FID	ND	20	mg/L	09/30/97
#Digestion, Metals by ICP	EPA 3010	-		Prep Date	09/30/97
Lead	EPA 6010	ND	0.04	mg/L	10/02/97
#Extraction for PNAs	EPA 3520	-		Extrn Date	09/29/97
PNAs by EPA 8270	EPA 8270				
Acenaphthene	83-32-9	ND	200	ug/L	10/03/97
Acenaphthylene	208-96-8	ND	200	ug/L	10/03/97
Anthracene	120-12-7	ND	200	ug/L	10/03/97
Benzo(a)anthracene	56-55-3	ND	200	ug/L	10/03/97
Benzo(b)fluoranthene	205-99-2	ND	200	ug/L	10/03/97
Benzo(k)fluoranthene	207-08-9	ND	200	ug/L	10/03/97
Benzo(g,h,i)perylene	191-24-2	ND	200	ug/L	10/03/97
Benzo(a)pyrene	50-32-8	ND	200	ug/L	10/03/97
Chrysene	218-01-9	ND	200	ug/L	10/03/97
Dibenzo(a,h)anthracene	53-70-3	ND	200	ug/L	10/03/97
Fluoranthene	206-44-0	ND	200	ug/L	10/03/97
Fluorene	86-73-7	ND	200	ug/L	10/03/97
Indeno(1,2,3-cd)pyrene	193-39-5	ND	200	ug/L	10/03/97
Naphthalene	91-20-3	1,000 *	200	ug/L	10/03/97
Phenanthrene	85-01-8	ND	200	ug/L	10/03/97
Pyrene	129-00-0	ND	200	ug/L	10/03/97

WOODWARD-CLYDE CONSULTANTS

SAMPLE ID: EW-1
AEN LAB NO: 9709374-01
AEN WORK ORDER: 9709374
CLIENT PROJ. ID: 941114NA

DATE SAMPLED: 09/26/97
DATE RECEIVED: 09/26/97
REPORT DATE: 10/22/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
---------	-----------------	--------	--------------------	-------	------------------

RLs elevated for diesel due to high levels of target compounds. Sample run at dilution. RLs elevated for gas/BTEX due to hydrocarbon interference.

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

WOODWARD-CLYDE CONSULTANTS

SAMPLE ID: LF-4
 AEN LAB NO: 9709374-02
 AEN WORK ORDER: 9709374
 CLIENT PROJ. ID: 941114NA

DATE SAMPLED: 09/26/97
 DATE RECEIVED: 09/26/97
 REPORT DATE: 10/22/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	44 *	0.5	ug/L	10/09/97
Toluene	108-88-3	6.6 *	0.5	ug/L	10/09/97
Ethylbenzene	100-41-4	49 *	0.5	ug/L	10/09/97
Xylenes, Total	1330-20-7	180 *	2	ug/L	10/09/97
Purgeable HCs as Gasoline	5030/GCFID	3.2 *	0.05	mg/L	10/09/97
Methyl t-Butyl Ether	1634-04-4	ND	5	ug/L	10/09/97
#Extraction for TPH	EPA 3510	-		Extrn Date	09/29/97
TPH as Diesel	GC-FID	0.48 *	0.05	mg/L	09/30/97
TPH as Oil	GC-FID	ND	0.2	mg/L	09/30/97
#Digestion, Metals by ICP	EPA 3010	-		Prep Date	09/30/97
Lead	EPA 6010	ND	0.04	mg/L	10/02/97
#Extraction for PNAs	EPA 3520	-		Extrn Date	09/29/97
PNAs by EPA 8270	EPA 8270				
Acenaphthene	83-32-9	ND	10	ug/L	10/03/97
Acenaphthylene	208-96-8	ND	10	ug/L	10/03/97
Anthracene	120-12-7	ND	10	ug/L	10/03/97
Benzo(a)anthracene	56-55-3	ND	10	ug/L	10/03/97
Benzo(b)fluoranthene	205-99-2	ND	10	ug/L	10/03/97
Benzo(k)fluoranthene	207-08-9	ND	10	ug/L	10/03/97
Benzo(g,h,i)perylene	191-24-2	ND	10	ug/L	10/03/97
Benzo(a)pyrene	50-32-8	ND	10	ug/L	10/03/97
Chrysene	218-01-9	ND	10	ug/L	10/03/97
Dibenzo(a,h)anthracene	53-70-3	ND	10	ug/L	10/03/97
Fluoranthene	206-44-0	ND	10	ug/L	10/03/97
Fluorene	86-73-7	ND	10	ug/L	10/03/97
Indeno(1,2,3-cd)pyrene	193-39-5	ND	10	ug/L	10/03/97
Naphthalene	91-20-3	17 *	10	ug/L	10/03/97
Phenanthrene	85-01-8	ND	10	ug/L	10/03/97
Pyrene	129-00-0	ND	10	ug/L	10/03/97

ND = Not detected at or above the reporting limit

* = Value at or above reporting limit

WOODWARD-CLYDE CONSULTANTS

SAMPLE ID: TRIP BLANK
AEN LAB NO: 9709374-03
AEN WORK ORDER: 9709374
CLIENT PROJ. ID: 941114NA

DATE SAMPLED: 09/26/97
DATE RECEIVED: 09/26/97
REPORT DATE: 10/22/97

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
BTEX & Gasoline HCs	EPA 8020				
Benzene	71-43-2	ND	0.5	ug/L	10/10/97
Toluene	108-88-3	ND	0.5	ug/L	10/10/97
Ethylbenzene	100-41-4	ND	0.5	ug/L	10/10/97
Xylenes, Total	1330-20-7	ND	2	ug/L	10/10/97
Purgeable HCs as Gasoline	5030/GCFID	ND	0.05	mg/L	10/10/97
Methyl t-Butyl Ether	1634-04-4	ND	5	ug/L	10/10/97

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

AEN (CALIFORNIA)
QUALITY CONTROL REPORT

AEN JOB NUMBER: 9709374
CLIENT PROJECT ID: 941114NA

Quality Control and Project Summary

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

Definitions

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

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

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

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

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

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

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

D: Surrogates diluted out.

I: Interference.

!: Indicates result outside of established laboratory QC limits.

WORK ORDER: 9709374

QUALITY CONTROL REPORT

PAGE QR-3

ANALYSIS: PNAs by EPA 8270

MATRIX: Water

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank
 INSTRUMENT: HP-5890 for Semi-volatiles
 UNITS: ug/L
 METHOD:

LAB ID: BLNK 0929
 PREPARED: 09/29/97
 ANALYZED: 10/02/97

INSTR RUN: GCMS10\970929080000/15/
 BATCH ID: BNAW092997
 DILUTION: 1.00

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		
Nitrobenzene-d5 (surr)	88.0			100	88.0	58	109		
2-Fluorobiphenyl (surr)	99.6			100	99.6	62	133		
Terphenyl-d14 (surr)	108			100	108	59	135		
Acenaphthene	ND								
Pyrene	ND								
Acenaphthylene	ND								
Anthracene	ND								
Benzo(a)anthracene	ND								
Benzo(b)fluoranthene	ND								
Benzo(k)fluoranthene	ND								
Benzo(g,h,i)perylene	ND								
Benzo(a)pyrene	ND								
Chrysene	ND								
Dibenzo(a,h)anthracene	ND								
Fluoranthene	ND								
Fluorene	ND								
Indeno(1,2,3-cd)pyrene	ND								
Naphthalene	ND								
Phenanthrene	ND								

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Laboratory Control Spike
 INSTRUMENT: HP-5890 for Semi-volatiles
 UNITS: ug/L
 METHOD:

LAB ID: LCD 0929
 PREPARED: 09/29/97
 ANALYZED: 10/02/97

INSTR RUN: GCMS10\970929080000/17/15
 BATCH ID: BNAW092997
 DILUTION: 1.000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		
Nitrobenzene-d5 (surr)	82.0	88.0		100	82.0	58	109		
2-Fluorobiphenyl (surr)	96.5	99.6		100	96.5	62	133		
Terphenyl-d14 (surr)	110	108		100	110	59	135		
Acenaphthene	99.0	ND		100	99.0	58	139		
Pyrene	130	ND		100	130	40	130		

SAMPLE TYPE: Laboratory Control Spike
 INSTRUMENT: HP-5890 for Semi-volatiles
 UNITS: ug/L
 METHOD:

LAB ID: LCS 0929
 PREPARED: 09/29/97
 ANALYZED: 10/02/97

INSTR RUN: GCMS10\970929080000/16/15
 BATCH ID: BNAW092997
 DILUTION: 1.000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		
Nitrobenzene-d5 (surr)	90.0	88.0		100	90.0	58	109		
2-Fluorobiphenyl (surr)	104	99.6		100	104	62	133		
Terphenyl-d14 (surr)	114	108		100	114	59	135		
Acenaphthene	98.2	ND		100	98.2	58	139		
Pyrene	123	ND		100	123	40	130		

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Laboratory Control Sample Duplicate
 INSTRUMENT: HP-5890 for Semi-volatiles
 UNITS: ug/L
 METHOD:

LAB ID: LCR 0929
 PREPARED: 09/29/97
 ANALYZED: 10/02/97

INSTR RUN: GCMS10\970929080000/18/16
 BATCH ID: BNAW092997
 DILUTION: 1.000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		
Nitrobenzene-d5 (surr)	82.0	90.0		100	82.0	58	109		
2-Fluorobiphenyl (surr)	96.5	104		100	96.5	62	133		
Terphenyl-d14 (surr)	110	114		100	110	59	135		

WORK ORDER: 9709374

QUALITY CONTROL REPORT

PAGE QR-4

ANALYSIS: PNAs by EPA 8270

MATRIX: Water

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Laboratory Control Sample Duplicate
 INSTRUMENT: HP-5890 for Semi-volatiles
 UNITS: ug/L
 METHOD:

LAB ID: LCR 0929
 PREPARED: 09/29/97
 ANALYZED: 10/02/97

INSTR RUN: GCMS10\970929080000/18/16
 BATCH ID: BNAW092997
 DILUTION: 1.000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		
Acenaphthene	99.0	98.2		100				0.811	30
Pyrene	130	123		100				5.53	30
Acenaphthylene	ND	ND						0	
Anthracene	ND	ND						0	
Benzo(a)anthracene	ND	ND						0	
Benzo(b)fluoranthene	ND	ND						0	
Benzo(k)fluoranthene	ND	ND						0	
Benzo(g,h,i)perylene	ND	ND						0	
Benzo(a)pyrene	ND	ND						0	
Chrysene	ND	ND						0	
Dibenzo(a,h)anthracene	ND	ND						0	
Fluoranthene	ND	ND						0	
Fluorene	ND	ND						0	
Indeno(1,2,3-cd)pyrene	ND	ND						0	
Naphthalene	ND	ND						0	
Phenanthrene	ND	ND						0	

SAMPLE SURROGATES

SAMPLE TYPE: Sample-Client
 INSTRUMENT: HP-5890 for Semi-volatiles
 UNITS: ug/L
 METHOD:

LAB ID: 9709374-01F
 PREPARED: 09/29/97
 ANALYZED: 10/03/97

INSTR RUN: GCMS10\970929080000/14/
 BATCH ID: BNAW092997
 DILUTION: 20.00

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		
Nitrobenzene-d5 (surr)	106			100	106			58	109
2-Fluorobiphenyl (surr)	102			100	102			62	133
Terphenyl-d14 (surr)	109			100	109			59	135

SAMPLE TYPE: Sample-Client
 INSTRUMENT: HP-5890 for Semi-volatiles
 UNITS: ug/L
 METHOD:

LAB ID: 9709374-02F
 PREPARED: 09/29/97
 ANALYZED: 10/03/97

INSTR RUN: GCMS10\970929080000/13/
 BATCH ID: BNAW092997
 DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		
Nitrobenzene-d5 (surr)	84.4			100	84.4			58	109
2-Fluorobiphenyl (surr)	90.6			100	90.6			62	133
Terphenyl-d14 (surr)	107			100	107			59	135

ANALYSIS: TPH as Diesel

MATRIX: Water

METHOD BLANK SAMPLES

SAMPLE TYPE: Blank-Method/Media blank		LAB ID: BLNK-0929-1		INSTR RUN: GC C\970929000000/1/				
INSTRUMENT: HP 5890		PREPARED: 09/29/97		BATCH ID: DSCW092997-1				
UNITS: mg/L		ANALYZED: 10/02/97		DILUTION: 1.000000				
METHOD:								
ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)	RPD (%)	RPD LIMIT (%)
Diesel	ND		0.05			LOW HIGH		
Motor Oil	ND		0.2					
n-Pentacosane (surr)	88.2			100	88.2	65 125		

LABORATORY CONTROL SAMPLES

SAMPLE TYPE: Laboratory Control Spike		LAB ID: LCDW-0929-1		INSTR RUN: GC C\970929000000/3/1				
INSTRUMENT: HP 5890		PREPARED: 09/29/97		BATCH ID: DSCW092997-1				
UNITS: mg/L		ANALYZED: 10/02/97		DILUTION: 1.000000				
METHOD:								
ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)	RPD (%)	RPD LIMIT (%)
Diesel	1.60	ND	0.05	2.00	80.0	LOW HIGH		
n-Pentacosane (surr)	80.4	88.2		100	80.4	65 125		

SAMPLE TYPE: Laboratory Control Spike		LAB ID: LCSW-0929-1		INSTR RUN: GC C\970929000000/2/1				
INSTRUMENT: HP 5890		PREPARED: 09/29/97		BATCH ID: DSCW092997-1				
UNITS: mg/L		ANALYZED: 10/02/97		DILUTION: 1.000000				
METHOD:								
ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)	RPD (%)	RPD LIMIT (%)
Diesel	1.75	ND	0.05	2.00	87.5	LOW HIGH		
n-Pentacosane (surr)	87.9	88.2		100	87.9	65 125		

LABORATORY CONTROL DUPLICATES

SAMPLE TYPE: Laboratory Control Sample Duplicate		LAB ID: LCRW-0929-1		INSTR RUN: GC C\970929000000/4/2				
INSTRUMENT: HP 5890		PREPARED: 09/29/97		BATCH ID: DSCW092997-1				
UNITS: mg/L		ANALYZED: 10/02/97		DILUTION: 1.000000				
METHOD:								
ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)	RPD (%)	RPD LIMIT (%)
Diesel	1.60	1.75	0.05	2030		LOW HIGH	8.96	15
Motor Oil	ND	ND	0.2	200			0	
n-Pentacosane (surr)	80.4	87.9			88.2	65 125		

SAMPLE SURROGATES

SAMPLE TYPE: Sample-Client		LAB ID: 9709374-01D		INSTR RUN: GC C\970929000000/11/				
INSTRUMENT: HP 5890		PREPARED: 09/29/97		BATCH ID: DSCW092997-1				
UNITS: mg/L		ANALYZED: 09/30/97		DILUTION: 1.000000				
METHOD:								
ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)	RPD (%)	RPD LIMIT (%)
n-Pentacosane (surr)	D			100	0	65 125		

due to dilute surr

SAMPLE TYPE: Sample-Client		LAB ID: 9709374-02D		INSTR RUN: GC C\970929000000/12/				
INSTRUMENT: HP 5890		PREPARED: 09/29/97		BATCH ID: DSCW092997-1				
UNITS: mg/L		ANALYZED: 09/30/97		DILUTION: 1.000000				
METHOD:								
ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)	RPD (%)	RPD LIMIT (%)
n-Pentacosane (surr)	109.3			100	109	65 125		

WORK ORDER: 9709374

QUALITY CONTROL REPORT

ANALYSIS: TPH as Diesel

MATRIX: Water

SAMPLE SURROGATES

SAMPLE TYPE: Sample-Client
INSTRUMENT: HP 5890
UNITS: mg/L
METHOD:

LAB ID: 9709374-02D
PREPARED: 09/29/97
ANALYZED: 09/30/97

INSTR RUN: GC C\970929000000/12/
BATCH ID: DSLW092997-1
DILUTION: 1.000000

ANALYTE	RESULT	REF RESULT	REPORTING LIMIT	SPIKE VALUE	RECOVERY (%)	REC LIMITS (%)		RPD (%)	RPD LIMIT (%)
						LOW	HIGH		

QUALITY CONTROL DATA

METHOD: EPA 8020, 5030 GCFID

AEN JOB NO: 9709374
 INSTRUMENT: F
 MATRIX: WATER

Surrogate Standard Recovery Summary

Date Analyzed	Client Id.	Lab Id.	Percent Recovery Fluorobenzene
10/09/97	EW-1	01	95
10/09/97	LF-4	02	98
10/09/97	TRIP BLANK	03	94

QC Limits: 70-130

DATE ANALYZED: 10/09/97
 SAMPLE SPIKED: LCS
 INSTRUMENT: F

Laboratory Control Sample Recovery

Analyte	Spike Added (ug/L)	Percent Recovery	RPD	QC Limits	
				Percent Recovery	RPD
Benzene	100	88	4	70-130	20
Toluene	100	92	5	70-130	20
Ethylbenzene	100	92	5	70-130	20
Total Xylenes	300	86	7	70-130	20

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

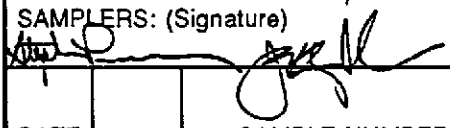
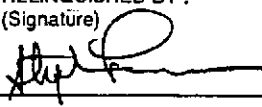
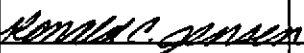
*** END OF REPORT ***

4709374

Woodward-Clyde Consultants

500 12th Street, Suite 100, Oakland, CA 94607-4014
(510) 893-3600

Chain of Custody Record

PROJECT NO. 4061st JST 9411/UNA Emeryville			ANALYSES								REMARKS (Sample preservation, handling procedures, etc.)		
SAMPLERS: (Signature) 			Sample Matrix (Soil, Water, Air)	EPA Method	EPA Method	EPA Method	EPA Method	TPH Gas, BTEX & MTBE	TPH Diesel & Motor Oil	Lead (6010)		EPA 8270 PAHs only	Number of Containers
DATE	TIME	SAMPLE NUMBER											
9/26/97	10:57	EW-1	W				X	X	X	X		8	Questions/Results to Xinggang Teng (510) 874-3060 7 day Turnaround
9/26/97	10:25	LF-4	W				X	X	X	X		8	
9/26/97	0800	Trip Blank	W				X					2	
											TOTAL NUMBER OF CONTAINERS	18	
RELINQUISHED BY: (Signature) 			DATE/TIME: 9/26/97 1420	RECEIVED BY: (Signature) 			RELINQUISHED BY: (Signature)			DATE/TIME	RECEIVED BY: (Signature)		
METHOD OF SHIPMENT: Delivered				SHIPPED BY: (Signature)			COURIER: (Signature)			RECEIVED FOR LAB BY: (Signature)		DATE/TIME	

WELL CONSTRUCTION REPORT FOR WELL EW-1

THE FORMER CELI'S
ALLIANCE GAS STATION
AT 4000 SAN PABLO AVENUE
EMERYVILLE, CALIFORNIA

Prepared for

City of Emeryville Redevelopment Agency
2200 Powell Street, 12th Floor
Emeryville, California 94608

November 13, 1997

Woodward-Clyde 

Woodward-Clyde Consultants
500 12th Street, Suite 200
Oakland, CA 94607-4014
(510) 893-3600
Project 941114NA

**WELL CONSTRUCTION REPORT FOR WELL EW-1
THE FORMER CELI'S ALLIANCE GAS STATION
4000 SAN PABLO AVENUE
EMERYVILLE, CALIFORNIA**

WELL LOCATION

The groundwater extraction well EW-1 was installed on the pedestrian sidewalk approximately 25 feet north of the former well LF-1 (Figure 2) on March 24, 1997. The location is exactly as proposed in the Closure Workplan (Woodward-Clyde, September 1996).

WELL INSTALLATION

Prior to drilling, a project-specific health and safety plan was prepared, which was followed during field work. The drilling location was marked and Underground Services Alert were contacted on March 18, 1997. Cruz Brothers Locators of Milpitas, California, a private utility locator, was also retained to provide underground utility clearance in the drilling location. A drilling permit was obtained from the Alameda County Zone 7 Water Agency before drilling began at the site.

Gregg Drilling & Testing of Martinez performed the drilling under the supervision of a Woodward-Clyde California-registered Geologist. The borehole was drilled using a truck-mounted drilling rig equipped with 10-inch outside diameter hollow-stem augers. The borehole was advanced to 21 feet below ground surface (bgs). Soil samples were collected at 5, 6, 9, 15, and 19 feet bgs by driving a stainless steel tube lined split-spoon sampler ahead of the auger into undisturbed soil. During collection, soil samples were screened using a hand-held organic vapor analyzer equipped with a photo ionization detector (PID). Lithologic descriptions and PID measurements were recorded in a boring log, which is included in this report.

Undisturbed soil samples collected at 6, 9, and 15 feet bgs were individually sealed with Teflon™ sheeting and plastic end caps, labeled, placed in an ice-cooled container, and transported to Intertek Testing Services (ITS) of San Jose for chemical analyses under chain-of-custody. Samples were analyzed for TPH gasoline, diesel, and motor oil by EPA Method 8015 (modified), BTEX and MTBE by EPA Method 8020, polyaromatic hydrocarbons (PAHs) by EPA Method 8270, and total lead by EPA Method 6010A.

The borehole was completed as a groundwater monitoring/extraction well EW-1. The well was constructed of 4-inch diameter schedule 40 polyvinyl chloride (PVC) piping with flush-threaded ends. The procedure for well installation was as follows:

- Four-inch-diameter Schedule 40 PVC casing and 0.02-inch slot size PVC screen was installed through the hollow-stem auger. The bottom of the pipe was capped with a threaded end cap. The well was screened from 6 to 21 feet bgs.
- Lonestar #3 sand pack was placed by a tremie method as the augers were removed from the bottom of the well to 5 feet bgs. The sand pack thickness was measured continuously to ensure a solid pack with no bridging.
- Approximately two feet of bentonite pellets was placed on the top of the sand pack and hydrated with tap water to form a seal above the sand pack.
- Neat cement grout was placed from the top of the bentonite seal to the ground surface.
- The well was completed at grade, with a watertight locking well cap and a traffic-rated box.

The well was surveyed by PLS Surveys, Inc. of Oakland on July 11, 1997. The top of the well casing has an elevation of 39.04 feet mean sea level (MSL).

DECONTAMINATION PROCEDURES

Down-hole drilling equipment such as augers and well development equipment was decontaminated using a pressure steam cleaner with potable water before beginning drilling, between each drilling/sampling location, and before leaving the site. Split-spoon samplers, brass tube liners, oil-water interface probe/water level indicators and re-useable bailers were decontaminated before use by washing/scrubbing in an Alconox™ solution and rinsing with potable water followed by rinsing with deionized water. A decontamination pad was constructed to contain the runoff water from steam cleaning. The decontamination water and drill cuttings were contained in 55-gallon drums and disposed of off-site by Americlean under manifests.

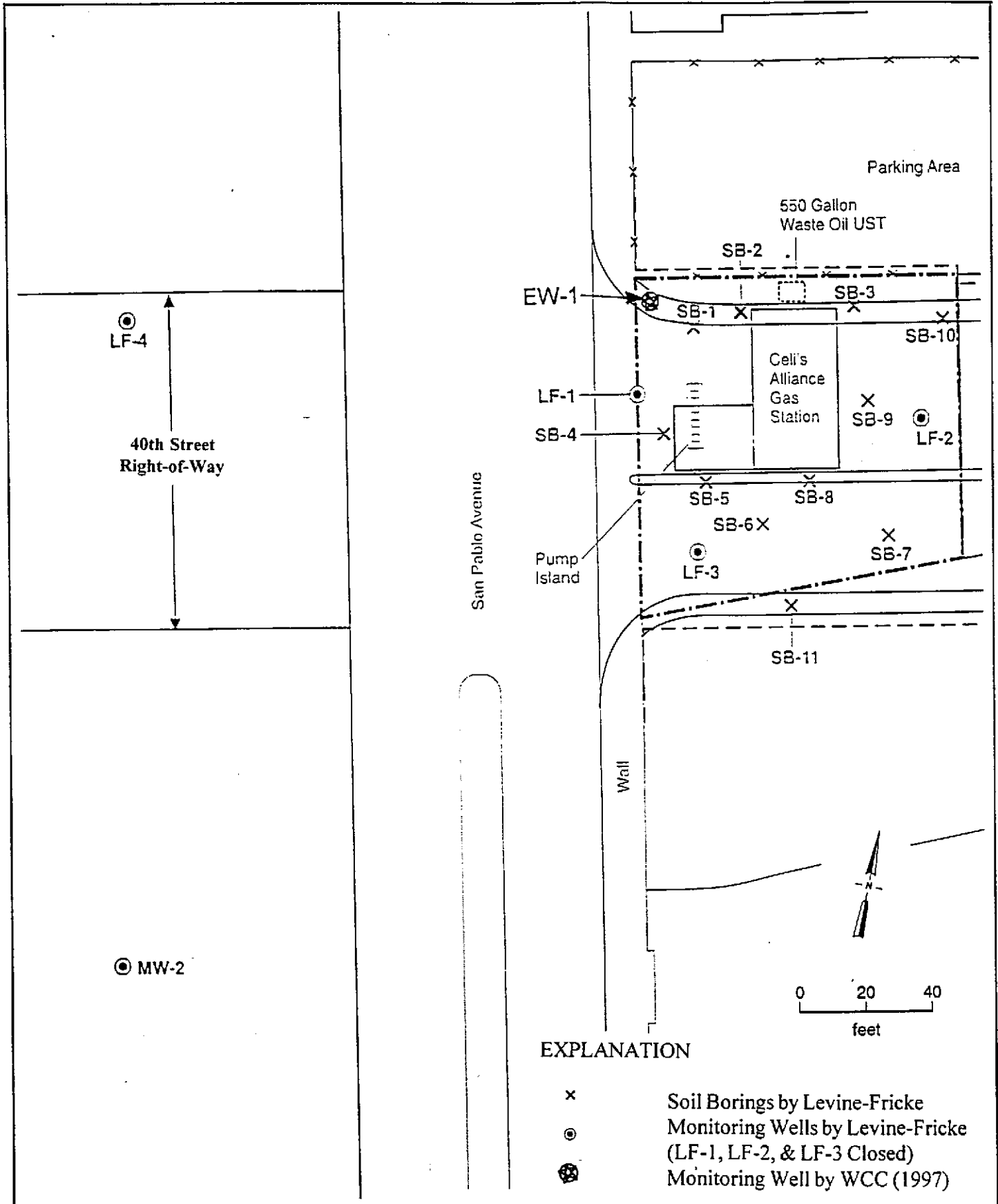
SOIL ANALYTICAL RESULTS

Soil analytical results are summarized in Table 1. Laboratory reports are included at the end of this document. Concentrations of motor oil and MTBE were below their respective laboratory reporting limits for all samples analyzed. The 9-foot soil sample had the highest TPH-g and TPH-d concentrations at 260 and 660 mg/kg, respectively. The 15-foot sample had the highest benzene concentration (900 ug/kg). Two PAH species were detected at the 9-foot sample only: 2-methylnaphthalene at 2.1 mg/kg and phenanthrene at 1.4 mg/kg. Lead concentrations are within typical background levels in this area.

TABLE 1
WELL EW-1 CHEMICAL DATA
THE FORMER CELLI'S ALLIANCE GAS STATION SITE
4000 SAN PABLO AVE., EMERYVILLE, CA

Sample ID	Date Sampled	Sampling Depth (ft bgs)	TPH as gasoline (mg/kg)	TPH as diesel (mg/kg)	TPH as motor oil (mg/kg)	Benzene (ug/kg)	Toluene (ug/kg)	Ethyl Benzene (ug/kg)	Total Xylenes (ug/kg)	MTBE (ug/kg)	Total Lead (mg/kg)	PAHs (mg/kg)
EW-1-6	3/24/97	6	27	210	ND (20)	ND (25)	ND (25)	550	36	ND (25)	7.5	ND (0.33)
EW-1-9	3/24/97	9	260	660	ND (100)	ND (250)	ND (250)	ND (250)	ND (250)	ND (250)	5.7	2-methylnaphthalene = 2.1 phenanthrene = 1.4
EW-1-15	3/24/97	15	210	68	ND (10)	900	3400	4800	23000	ND (500)	3.8	ND (0.33)

Notes: ND - not detected at or above the detection limit given in parentheses.
 TPH gas, diesel, and motor oil are quantified by modified EPA Method 8015.
 Benzene, toluene, ethylbenzene, xylenes, and MTBE are quantified by EPA Method 8020.
 TRPH - total recoverable petroleum hydrocarbons quantified by Standard Method 5520 E&F.
 Lead - quantified by EPA Method 3050A/6010A.
 PAHs - polyaromatic hydrocarbons quantified by EPA Method 3520/8270.



EXPLANATION

- x Soil Borings by Levine-Fricke
- ⊙ Monitoring Wells by Levine-Fricke (LF-1, LF-2, & LF-3 Closed)
- ⊗ Monitoring Well by WCC (1997)

Project No. 94114NA	40th Street Right-of-Way (Former Celis Gas Station)	SOIL BORING AND MONITORING WELL LOCATIONS EMERYVILLE, CALIFORNIA	Figure 2
Woodward-Clyde Consultants			

Project: 40th Street UST, Emeryville, CA
 Project Number: 94114NA
 Location: Northeast corner of San Pablo Ave. and 40th St.

Log of Well EW-1

Date(s) Drilled	3/24/97	Total Depth Drilled (feet)	21.0	Top of Casing Elevation (feet)		Groundwater Level (feet)	First ∇ 13.8	Completion ∇ 8.8	12 Hours ∇
Logged by	W. Dittman	Checked by		Diameter of Hole (inches)	10	Diameter of Well (inches)	4	Number of Samples	Disturbed 4 Undisturbed 4
Drilling Company	Gregg Drilling			Drilling Method	Hollow Stem Auger		Drill Rig Type	Mobile B61	
Sampler Type	2" cal mod			Drill Bit Size	10"		Type of Well Casing	4" PVC Sch. 40	
Screen Perforation	0.020" Slotted 6-20ft			Type of Sand Pack	#3 Lonestar Sand 5-21ft				
Type of Seals	Neat Cement 1 to 4 ft.; Bentonite Pellets 4 to 5 ft.								
Comments									

Depth, feet	Elevation, feet	SAMPLES			USCS Classification	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	HNU (ppm)	REMARKS
		Recovery	Sample	Blows/foot						
0						8" Concrete slab over 1 ft. of clayey fill w/ rubble			Photo Ionization Detector readings in air in parts per million	
						CLAY (CH) Stiff; damp; very dark brown (10YR - 2/2); high plasticity				
5		X		16		SILTY CLAY (CL) Medium stiff; damp; very dark gray (10YR - 3/1); med. to high plasticity; color change to dark greenish-gray (10Y - 3/1)			PID = 536 Strong product odor @ 6.5'	
		X		20		greenish-gray (10GY - 5/1); trace to some fine gravel to 3/8"; trace coarse sand			PID = 464	
10						yellowish-brown (10YR - 5/4) mottled w/ med. gray; trace fine to coarse sand to 1/4"; patches of reddish sand			PID = 144	
		X		34						
15						SANDY CLAY (CL) Soft; moist to wet; olive gray (5Y - 4/2); low to med. plasticity; fine to coarse sand; trace fine gravel to 3/8"			PID = 11.0	
		X		15						
20						TD @ 21 FT.				
25										



Intertek Testing Services Environmental Laboratories

MR. XINGGANG TONG
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9703215
Date Received : 03/25/97
Project ID : 941114NA
Purchase Order: N/A

The following samples were received at Inchcape for analysis :

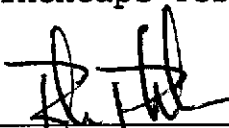
ANAMETRIX ID	CLIENT SAMPLE ID
9703215- 1	EW-1-6
9703215- 2	EW-1-9
9703215- 3	EW-1-15

This report is organized in sections according to the specific Inchcape laboratory group which performed the analysis(es) and generated the data.

The results contained within this report relate to only the sample(s) tested. Additionally, these data should be considered in their entirety and Inchcape cannot be responsible for the detachment, separation, or otherwise partial use of this report.

Inchcape is certified by the California Department of Health Services (DHS) to perform environmental testing under Certificate Number 1234.

If you have any further questions or comments on this report, please call your project manager as soon as possible. Thank you for using Inchcape Testing Services.



Project Manager

04/10/97

Date

This report consists of 38 pages.



Intertek Testing Services Environmental Laboratories

GC/MS REPORT DESCRIPTION

Method Deviation

For the 25 mL purge analysis of water samples by Method 8260A, the minimum acceptable response factor for the calibration check compound, 1,1,2,2-tetrachloroethane, has been changed from 0.300 to 0.100. If data quality objectives do not permit this deviation, it should be addressed prior to sample submission.

Organic Analysis Data Sheets (OADS)

OADS forms contain tabulated results for target compounds. The OADS are grouped by method and within each method, organized sequentially in order of increasing ITS ID Number.

Tentatively Identified Compounds (TICs)

TIC forms contain tabulated results for non-target compounds detected by GC/MS. TICs must be requested at the time samples are submitted to ITS. If TICs are requested but not found, then TIC forms will not be included with the report.

Surrogate Recovery Summary (SRS)

SRS forms contain quality control data. They will list surrogate percent recoveries for all samples and any method blanks. Any recovery outside the established limits will be flagged with an "*" and the total number outside the limits will be listed in the column labeled "Total Out."

Matrix Spike Recovery Form (MSR)

MSR forms contain quality control data. They summarize percent recovery and relative percent difference (RPD) information for matrix spikes and matrix spike duplicates. This information is a statement of both accuracy and precision. Any percent recovery or RPD outside established limits will be flagged with an "*" and the total number outside the limits will be listed at the bottom of the page. Not all reports will contain an MSR form.

Qualifiers

ITS uses several data qualifiers (Q) in its report forms. These qualifiers give additional information on the compounds reported. They should help a data reviewer to verify the integrity of the analytical results. The following is a list of qualifiers and their meanings:

- U - Indicates that the compound was analyzed for, but was not detected at or above the specified reporting limit.
- B - Indicates that the compound was detected in the associated method blank.
- J - Indicates that the compound was detected at an amount below the specified reporting limit. Consequently, the amount should be considered an estimated value.
- E - Indicates that the amount reported exceeded the linear range of the instrument calibration.
- D - Indicates that the compound was detected in an analysis performed at a secondary dilution.
- A - Indicates that the tentatively identified compound is a suspected aldol condensation product. This is common in EPA Method 8270 analyses.

Absence of a qualifier indicates that the compound was detected at a concentration at or above the specified reporting limit.

REPORTING CONVENTIONS

Due to a size limitation in our data processing step, only the first eight (8) characters of your project ID and sample ID will be printed on the report form. However, the report cover letter and report summary pages display up to twenty (20) characters of your project and sample IDs.

Amounts reported are gross values, i.e., not corrected for method blank contamination.

Intertek Testing Services NA Inc.

1961 Concourse Drive, Suite E San Jose, CA 95131

Telephone (408) 432-8192 Fax (408) 432-8198

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. XINGGANG TONG
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9703215
Date Received : 03/25/97
Project ID : 941114NA
Purchase Order: N/A
Department : GCMS
Sub-Department: GCMS

SAMPLE INFORMATION:

INCHCAPE SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9703215- 1	EW-1-6	SOIL	03/24/97	8270
9703215- 2	EW-1-9	SOIL	03/24/97	8270

CASE NARRATIVE

S.D.G. No. N/A

WORKORDER No. 9703215

QUALITY CONTROL PROBLEMS:

Semivolatiles

- All holding times have been met for the analyses reported in this section.
- No QA/QC problems were encountered.

M. Hosse
Sia Hosseinian
Organic Group Director

4-7-97
Date

ORGANIC ANALYSIS DATA SHEET -- EPA METHOD 8270B
 INCHCAPE TESTING SERVICES - ANAMETRIX LABORATORIES
 (408) 432-8192

Project ID : 941114NA
 Sample ID : EW-1-6
 Matrix : SOIL
 Date Sampled : 03/24/97
 Date Extracted : 03/27/97
 Amount Extracted : 30.0 g
 Date Analyzed : 04/03/97
 Instrument ID : msd3.i
 Volume of Final Extract: 1 ml

Anamatrix ID : 9703215-01
 Lab File ID : AA153
 % Moisture : _____
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS NO.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
91-20-3	Naphthalene	330	ND	U
91-57-6	2-Methylnaphthalene	330	ND	U
91-58-7	2-Chloronaphthalene	330	ND	U
208-96-8	Acenaphthylene	330	ND	U
83-32-9	Acenaphthene	330	ND	U
86-73-7	Fluorene	330	ND	U
85-01-8	Phenanthrene	330	ND	U
120-12-7	Anthracene	330	ND	U
206-44-0	Fluoranthene	330	ND	U
129-00-0	Pyrene	330	ND	U
56-55-3	Benzo (a) anthracene	330	ND	U
218-01-9	Chrysene	330	ND	U
205-99-2	Benzo (b) Fluoranthene	330	ND	U
207-08-9	Benzo (k) fluoranthene	330	ND	U
50-32-8	Benzo (a) pyrene	330	ND	U
193-39-5	Indeno (1,2,3-cd) pyrene	330	ND	U
53-70-3	Dibenz (a,h) anthracene	330	ND	U
191-24-2	Benzo (g,h,i) perylene	330	ND	U

ORGANIC ANALYSIS DATA SHEET -- EPA METHOD 8270B
 INCHCAPE TESTING SERVICES - ANAMETRIX LABORATORIES
 (408) 432-8192

Project ID : 941114NA
 Sample ID : EW-1-9
 Matrix : SOIL
 Date Sampled : 03/24/97
 Date Extracted : 03/27/97
 Amount Extracted : 30.0 g
 Date Analyzed : 04/03/97
 Instrument ID : msd3.i
 Volume of Final Extract: 1 ml

Anamatrix ID : 9703215-02
 Lab File ID : AA154
 % Moisture : _____
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS NO.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
91-20-3	Naphthalene	330	ND	U
91-57-6	2-Methylnaphthalene	330	2100	U
91-58-7	2-Chloronaphthalene	330	ND	U
208-96-8	Acenaphthylene	330	ND	U
83-32-9	Acenaphthene	330	ND	U
86-73-7	Fluorene	330	ND	U
85-01-8	Phenanthrene	330	1400	U
120-12-7	Anthracene	330	ND	U
206-44-0	Fluoranthene	330	ND	U
129-00-0	Pyrene	330	ND	U
56-55-3	Benzo (a) anthracene	330	ND	U
218-01-9	Chrysene	330	ND	U
205-99-2	Benzo (b) fluoranthene	330	ND	U
207-08-9	Benzo (k) fluoranthene	330	ND	U
50-32-8	Benzo (a) pyrene	330	ND	U
193-39-5	Indeno (1,2,3-cd) pyrene	330	ND	U
53-70-3	Dibenz (a,h) anthracene	330	ND	U
191-24-2	Benzo (g,h,i) perylene	330	ND	U

ORGANIC ANALYSIS DATA SHEET -- EPA METHOD 8270B
 INCHCAPE TESTING SERVICES - ANAMETRIX LABORATORIES
 (408)432-8192

Project ID : 941114NA
 Sample ID : SBLK27
 Matrix : SOIL
 Date Sampled :
 Date Extracted : 03/27/97
 Amount Extracted : 30.0 g
 Date Analyzed : 03/31/97
 Instrument ID : msd3.i
 Volume of Final Extract: 1 ml

Anamatrix ID : BM27H1B1
 Lab File ID : AA083

% Moisture : _____
 Dilution Factor : 1.0
 Conc. Units : ug/Kg

CAS NO.	COMPOUND NAME	REPORTING LIMIT	AMOUNT DETECTED	Q
91-20-3	Naphthalene	330	ND	U
91-57-6	2-Methylnaphthalene	330	ND	U
91-58-7	2-Chloronaphthalene	330	ND	U
208-96-8	Acenaphthylene	330	ND	U
83-32-9	Acenaphthene	330	ND	U
86-73-7	Fluorene	330	ND	U
85-01-8	Phenanthrene	330	ND	U
120-12-7	Anthracene	330	ND	U
206-44-0	Fluoranthene	330	ND	U
129-00-0	Pyrene	330	ND	U
56-55-3	Benzo (a) anthracene	330	ND	U
218-01-9	Chrysene	330	ND	U
205-99-2	Benzo (b) fluoranthene	330	ND	U
207-08-9	Benzo (k) fluoranthene	330	ND	U
50-32-8	Benzo (a) pyrene	330	ND	U
193-39-5	Indeno (1,2,3-cd) pyrene	330	ND	U
53-70-3	Dibenz (a, h) anthracene	330	ND	U
191-24-2	Benzo (g, h, i) perylene	330	ND	U

SURROGATE RECOVERY SUMMARY -- EPA METHOD 8270B
 INCHCAPE TESTING SERVICES - ANAMETRIX LABORATORIES
 (408)432-8192

Project ID : 941114NA
 Matrix : SOIL

Anamatrix ID : 9703215
 Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	S7 #	S8 #	TOT OUT
01	SBLK27	81	80	84	85	84	88			0
02	SBLK27LCS	78	80	84	85	83	91			0
03	SBLK27LCSD	77	82	83	84	83	87			0
04	EW-1-6	62	71	63	66	66	83			0
05	EW-1-9	85	80	64	74	73	65			0
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

QC LIMITS

- S1 (NBZ) = Nitrobenzene-d5 (23-120)
- S2 (FBP) = 2-Fluorobiphenyl (30-115)
- S3 (TPH) = Terphenyl-d14 (18-137)
- S4 (PHL) = Phenol-d5 (24-113)
- S5 (2FP) = 2-Fluorophenol (25-121)
- S6 (TBP) = 2,4,6-Tribromophenol (19-122)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogate diluted out

LAB CONTROL SAMPLE FORM -- EPA METHOD 8270B
 INCHCAPE TESTING SERVICES - ANAMETRIX LABORATORIES
 (408) 432-8192

Project ID : 941114NA
 Sample ID : SBLK27
 Matrix : SOIL
 Date Sampled :
 Date Extracted : 03/27/97
 Prep. Batch ID : hdm27x41
 Date Analyzed : 03/31/97
 Instrument ID : msd3.i

Lab File ID : AA084/AA085

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
Acenaphthene	1700	0.00	1500	88	40- 97
Pyrene	1700	0.00	1500	88	42-112

COMPOUND	SPIKE ADDED (ug/Kg)	LCSD CONCENTRATION (ug/Kg)	LCSD % REC #	% RPD #	QC LIMITS RPD	REC.
Acenaphthene	1700	1600	94	6	30	40- 97
Pyrene	1700	1400	82	7	30	42-112

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

RPD: 0 out of 2 outside limits
 Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. XINGGANG TONG
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9703215
Date Received : 03/25/97
Project ID : 941114NA
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

INCHCAPE SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9703215- 1	EW-1-6	SOIL	03/24/97	TPHd
9703215- 2	EW-1-9	SOIL	03/24/97	TPHd
9703215- 3	EW-1-15	SOIL	03/24/97	TPHd
9703215- 1	EW-1-6	SOIL	03/24/97	TPHgBTEX
9703215- 2	EW-1-9	SOIL	03/24/97	TPHgBTEX
9703215- 3	EW-1-15	SOIL	03/24/97	TPHgBTEX

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. XINGGANG TONG
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9703215
Date Received : 03/25/97
Project ID : 941114NA
Purchase Order: N/A
Department : GC
Sub-Department: tph

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.
- The concentration reported as diesel for sample EW-1-15 is due to the presence of a combination of diesel, a lighter petroleum product and discrete peaks not indicative of diesel fuel.
- Due to the high background level of diesel present in EW-1-91, the diesel spike recoveries were outside QC limits. The LCS/LCSD recoveries were within QC limits.
- For the GASBTEX analysis, the surrogate was diluted out in samples EW-1-9 and EW-1-15.
- The difference between the responses for the primary and the confirmation columns was greater than 25% for BTEX in sample EW-1-15 and Xylenes in sample EW-1-6. The lower value from the confirmation column has been reported.

M. Horne 4/10/97
Department Supervisor Date

[Signature] 04/10/97
Chemist Date

**TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES**

(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9703215-01	Client Project ID:	941114NA
Matrix:	SOIL	Client Sample ID:	EW-1-6
Date Sampled:	3/24/97	Instrument ID:	HP12
Date Analyzed:	4/3/97	Surrogate Recovery:	120%
Date Released:	4/7/97	Concentration Units:	mg/Kg

<u>COMPOUND</u>	<u>Dilution Factor</u>	<u>Reporting Limit</u>	<u>Amount Found</u>
MtBE	50	0.025	ND
Benzene	50	0.025	ND
Toluene	50	0.025	ND
Ethylbenzene	50	0.025	0.55
Total Xylenes	50	0.025	0.036
Gasoline	50	2.5	27

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as MtBE, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Reporting limits are determined by dividing the dilution factor by 10 to generate an RLMF (reporting limit multiplication factor) which is then multiplied by the reporting limit for an undiluted sample. RLMFs of less than one are rounded up to one.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 53-147%.

**TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES**

(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9703215-02	Client Project ID:	941114NA
Matrix:	SOIL	Client Sample ID:	EW-1-9
Date Sampled:	3/24/97	Instrument ID:	HP12
Date Analyzed:	3/28/97	Surrogate Recovery:	0%
Date Released:	4/7/97	Concentration Units:	mg/Kg

<u>COMPOUND</u>	<u>Dilution Factor</u>	<u>Reporting Limit</u>	<u>Amount Found</u>
MtBE	500	0.25	ND
Benzene	500	0.25	ND
Toluene	500	0.25	ND
Ethylbenzene	500	0.25	ND
Total Xylenes	500	0.25	ND
Gasoline	500	25	260

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as MtBE, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Reporting limits are determined by dividing the dilution factor by 10 to generate an RLMF (reporting limit multiplication factor) which is then multiplied by the reporting limit for an undiluted sample. RLMFs of less than one are rounded up to one.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	9703215-03	Client Project ID:	941114NA
Matrix:	SOIL	Client Sample ID:	EW-1-15
Date Sampled:	3/24/97	Instrument ID:	HP12
Date Analyzed:	3/28/97	Surrogate Recovery:	0%
Date Released:	4/7/97	Concentration Units:	mg/Kg

<u>COMPOUND</u>	<u>Dilution</u> <u>Factor</u>	<u>Reporting</u> <u>Limit</u>	<u>Amount</u> <u>Found</u>
MtBE	1000	0.5	ND
Benzene	1000	0.5	0.9
Toluene	1000	0.5	3.4
Ethylbenzene	1000	0.5	4.8
Total Xylenes	1000	0.5	23
Gasoline	1000	50	210

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as MtBE, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Reporting limits are determined by dividing the dilution factor by 10 to generate an RLMF (reporting limit multiplication factor) which is then multiplied by the reporting limit for an undiluted sample. RLMFs of less than one are rounded up to one.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	BM2701E1	Client Project ID:	941114NA
Matrix:	SOIL	Client Sample ID:	SAND BLANK
Date Sampled:	N/A	Instrument ID:	HP12
Date Analyzed:	3/27/97	Surrogate Recovery:	93%
Date Released:	4/7/97	Concentration Units:	mg/Kg

<u>COMPOUND</u>	<u>Dilution Factor</u>	<u>Reporting Limit</u>	<u>Amount Found</u>
MtBE	1	0.005	ND
Benzene	1	0.005	ND
Toluene	1	0.005	ND
Ethylbenzene	1	0.005	ND
Total Xylenes	1	0.005	ND
Gasoline	1	0.5	ND

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as MtBE, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Reporting limits are determined by dividing the dilution factor by 10 to generate an RLMF (reporting limit multiplication factor) which is then multiplied by the reporting limit for an undiluted sample. RLMFs of less than one are rounded up to one.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 53-147%.

**TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES**

(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	BM2703E1	Client Project ID:	941114NA
Matrix:	SOIL	Client Sample ID:	MEOH BLANK
Date Sampled:	N/A	Instrument ID:	HP12
Date Analyzed:	3/27/97	Surrogate Recovery:	94%
Date Released:	4/7/97	Concentration Units:	mg/Kg

<u>COMPOUND</u>	<u>Dilution Factor</u>	<u>Reporting Limit</u>	<u>Amount Found</u>
MtBE	50	0.025	ND
Benzene	50	0.025	ND
Toluene	50	0.025	ND
Ethylbenzene	50	0.025	ND
Total Xylenes	50	0.025	ND
Gasoline	50	2.5	ND

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as MtBE, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Reporting limits are determined by dividing the dilution factor by 10 to generate an RLMF (reporting limit multiplication factor) which is then multiplied by the reporting limit for an undiluted sample. RLMFs of less than one are rounded up to one.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

DATA SUMMARY FORM

Laboratory ID:	BA0302E3	Client Project ID:	941114NA
Matrix:	SOIL	Client Sample ID:	MEOH BLANK
Date Sampled:	N/A	Instrument ID:	HP12
Date Analyzed:	4/3/97	Surrogate Recovery:	94%
Date Released:	4/7/97	Concentration Units:	mg/Kg

<u>COMPOUND</u>	<u>Dilution</u> <u>Factor</u>	<u>Reporting</u> <u>Limit</u>	<u>Amount</u> <u>Found</u>
MtBE	50	0.025	ND
Benzene	50	0.025	ND
Toluene	50	0.025	ND
Ethylbenzene	50	0.025	ND
Total Xylenes	50	0.025	ND
Gasoline	50	2.5	ND

ND: Not detected at or above the reporting limit for the method.

TPHg: Total Petroleum Hydrocarbons as gasoline is determined by GC/FID (modified EPA Method 8015) following sample purge and trap by EPA Method 5030

BTEX: BTEX as MtBE, Benzene, Toluene, Ethylbenzene, and Total Xylenes is determined by GC/PID (modified EPA Method 8021) following sample purge and trap by EPA Method 5030.

Reporting limits are determined by dividing the dilution factor by 10 to generate an RLMF (reporting limit multiplication factor) which is then multiplied by the reporting limit for an undiluted sample. RLMFs of less than one are rounded up to one.

Surrogate recovery quality control limits for p-Bromofluorobenzene are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

MATRIX SPIKE RECOVERY REPORT

Client Project ID: 961114NA	Laboratory ID: 9703214-03
Client Sample ID: MW-1-16	Date Released: 4/7/97
Date Sampled: 3/24/97	Instrument ID: HP12
Date Analyzed: 3/27/97	Matrix: SOIL
	Concentration Units: mg/Kg

<u>COMPOUND NAME</u>	<u>SPIKE AMT</u>	<u>SAMPLE CONC</u>	<u>MS CONC</u>	<u>% REC MS</u>	<u>MSD CONC</u>	<u>%REC MSD</u>	<u>RPD</u>
MtBE	0.020	0	0.022	110%	0.019	95%	15%
Benzene	0.020	0	0.021	105%	0.018	90%	15%
Toluene	0.020	0	0.022	110%	0.018	90%	16%
Ethylbenzene	0.020	0	0.022	110%	0.019	95%	15%
Total Xylenes	0.020	0	0.025	125%	0.019	95%	27%
p-Bromofluorobenzene				96%		92%	

Quality control limits for MS/MSD recovery are 50-150% for MtBE, 45-139% for benzene, 51-138% for toluene, 48-146% for ethylbenzene, and 50-139% for total xylenes.

Quality control limits for RPD(relative percent difference) are +/- 30%.

Quality control limits for p-Bromofluorobenzene recovery are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
INCHCAPE TESTING SERVICES/ENVIRONMENTAL LABORATORIES
(408) 432-8192

MATRIX SPIKE RECOVERY REPORT

Client Project ID: 961114NA	Laboratory ID: 9703214-03
Client Sample ID: MW-1-16	Date Released: 4/7/97
Date Sampled: 3/24/97	Instrument ID: HP12
Date Analyzed: 3/27/97	Matrix: SOIL
	Concentration Units: mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>SAMPLE</u> <u>CONC</u>	<u>MS</u> <u>CONC</u>	<u>% REC</u> <u>MS</u>	<u>MSD</u> <u>CONC</u>	<u>%REC</u> <u>MSD</u>	<u>RPD</u>
Gasoline	0.8	0	0.67	84%	0.60	75%	-11%
p-Bromofluorobenzene				79%		71%	

Quality control limits for MS/MSD recovery are 48-149%

Quality control limits for RPD(relative percent difference) are +/- 30%.

Quality control limits for p-Bromofluorobenzene recovery are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
INCHCAPE TESTING SERVICES/ENVIRONMENTAL LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	941114NA	Laboratory ID:	MM2702E1
Matrix:	SOIL	Date Released:	4/7/97
Date Analyzed:	3/27/97	Instrument ID:	HP12
		Concentration Units:	mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>LCS</u> <u>CONC</u>	<u>%REC</u> <u>LCS</u>
Gasoline	0.40	0.37	93%
p-Bromofluorobenzene			91%

Quality control limits for LCS recovery are 58-130%.

Quality control limits for p-Bromofluorobenzene recovery are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID: 941114NA	Laboratory ID: NM2702E1
Matrix: SOIL	Date Released: 4/7/97
Date Analyzed: 3/27/97	Instrument ID: HP12
	Concentration Units: mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>LCS</u> <u>CONC</u>	<u>%REC</u> <u>LCS</u>
MtBE	0.010	0.0094	94%
Benzene	0.010	0.0093	93%
Toluene	0.010	0.0093	93%
Ethylbenzene	0.010	0.0098	98%
Total Xylenes	0.010	0.0103	103%
 p-Bromofluorobenzene			 94%

Quality control limits for LCS recovery are 50-150% for MtBE, 52-133% for benzene, 57-136% for toluene, 56-139% for ethylbenzene, and 56-141% for total xylenes.

Quality control limits for p-Bromofluorobenzene recovery are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	941114NA	Laboratory ID:	NM2703E1
Matrix:	SOIL	Date Released:	4/7/97
Date Analyzed:	3/27/97	Instrument ID:	HP12
		Concentration Units:	mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>LCS</u> <u>CONC</u>	<u>%REC</u> <u>LCS</u>
MtBE	0.050	0.046	92%
Benzene	0.050	0.045	90%
Toluene	0.050	0.045	90%
Ethylbenzene	0.050	0.048	96%
Total Xylenes	0.050	0.050	100%
p-Bromofluorobenzene			94%

Quality control limits for LCS recovery are 50-150% for MtBE, 52-133% for benzene, 57-136% for toluene, 56-139% for ethylbenzene, and 56-141% for total xylenes.

Quality control limits for p-Bromofluorobenzene recovery are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
INCHCAPE TESTING SERVICES/ENVIRONMENTAL LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	941114NA	Laboratory ID:	MA0302E1
Matrix:	SOIL	Date Released:	4/7/97
Date Analyzed:	4/3/97	Instrument ID:	HP12
		Concentration Units:	mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>LCS</u> <u>CONC</u>	<u>%REC</u> <u>LCS</u>
Gasoline	20	17	85%
p-Bromofluorobenzene			92%

Quality control limits for LCS recovery are 58-130%.

Quality control limits for p-Bromofluorobenzene recovery are 53-147%.

TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	941114NA	Laboratory ID:	NA0402E1
Matrix:	SOIL	Date Released:	4/7/97
Date Analyzed:	4/3/97	Instrument ID:	HP12
		Concentration Units:	mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>LCS</u> <u>CONC</u>	<u>%REC</u> <u>LCS</u>
MtBE	0.050	0.056	112%
Benzene	0.050	0.045	90%
Toluene	0.050	0.054	108%
Ethylbenzene	0.050	0.056	112%
Total Xylenes	0.050	0.062	124%
 p-Bromofluorobenzene			 95%

Quality control limits for LCS recovery are 50-150% for MtBE, 52-133% for benzene, 57-136% for toluene, 56-139% for ethylbenzene, and 56-141% for total xylenes.

Quality control limits for p-Bromofluorobenzene recovery are 53-147%.

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. XINGGANG TONG
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9703215
Date Received : 03/25/97
Project ID : 941114NA
Purchase Order: N/A
Department : GC
Sub-Department: TPH

SAMPLE INFORMATION:

INCHCAPE SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9703215- 1	EW-1-6	SOIL	03/24/97	TPHd
9703215- 2	EW-1-9	SOIL	03/24/97	TPHd
9703215- 3	EW-1-15	SOIL	03/24/97	TPHd
9703215- 1	EW-1-6	SOIL	03/24/97	TPHgBTEX
9703215- 2	EW-1-9	SOIL	03/24/97	TPHgBTEX
9703215- 3	EW-1-15	SOIL	03/24/97	TPHgBTEX

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
 (408) 432-8192

DATA SUMMARY FORM

Laboratory Workorder	9703215	Client Project ID:	941114NA
Matrix:	SOIL	Date Released:	3/31/97
Date Extracted:	3/27/97	Concentration Units:	mg/Kg
Instrument ID:	HP23		

<u>Laboratory ID</u>	<u>Client ID</u>	<u>Date Sampled</u>	<u>Date Analyzed</u>	<u>Dilution Factor</u>	<u>Reporting Limit</u>	<u>Amount Found</u>	<u>Surrogate Recovery</u>
9703215-01	EW-1-6	3/24/97	3/28/97	2	20	210	90%
9703215-02	EW-1-9	3/24/97	3/28/97	10	100	660	83%
9703215-03	EW-1-15	3/24/97	3/28/97	1	10	68	107%
BM27H1F9	Method Blank	N/A	3/28/97	1	10	ND	100%

ND: Not detected at or above the reporting limit for the method.
 TPHd: Total Petroleum Hydrocarbons as C10-C28 is determined by GC/FID (modified EPA Method 8015) following sample extraction by EPA Method 3550.
 Surrogate recovery quality control limits for o-terphenyl are 75-117%.
 All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS MOTOR OIL
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

DATA SUMMARY FORM

Laboratory Workorder	9703215	Client Project ID:	941114NA
Matrix:	SOIL	Date Released:	3/31/97
Date Extracted:	3/27/97	Concentration Units:	mg/Kg
Instrument ID:	HP23		

<u>Laboratory ID</u>	<u>Client ID</u>	<u>Date Sampled</u>	<u>Date Analyzed</u>	<u>Dilution Factor</u>	<u>Reporting Limit</u>	<u>Amount Found</u>	<u>Surrogate Recovery</u>
9703215-01	EW-1-6	3/24/97	3/28/97	2	20	ND	90%
9703215-02	EW-1-9	3/24/97	3/28/97	10	100	ND	83%
9703215-03	EW-1-15	3/24/97	3/28/97	1	10	ND	107%
BM27H1F9	Method Blank	N/A	3/28/97	1	10	ND	100%

ND: Not detected at or above the reporting limit for the method.
TPHd: Total Petroleum Hydrocarbons as C28-C36 is determined by GC/FID (modified EPA Method 8015) following sample extraction by EPA Method 3550.
Surrogate recovery quality control limits for o-terphenyl are 75-117%.
All testing procedures follow California Department of Health Services approved methods.

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

MATRIX SPIKE RECOVERY REPORT

Client Project ID:	941114NA	Laboratory ID:	9703215-02
Client Sample ID:	EW-1-9	Date Released:	3/31/97
Date Sampled:	3/24/97	Instrument ID:	HP23
Date Extracted:	3/27/97	Matrix:	SOIL
Date Analyzed:	3/28/97	Concentration Units:	mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>SAMPLE</u> <u>CONC</u>	<u>MS</u> <u>CONC</u>	<u>% REC</u> <u>MS</u>	<u>MSD</u> <u>CONC</u>	<u>%REC</u> <u>MSD</u>	<u>RPD</u>
Diesel	62.5	660	1060	640%	850	304%	-22%
o-Terphenyl				105%		107%	

Quality control limits for MS/MSD recovery are 32-143%

Quality control limits for RPD(relative percent difference) are +/- 30%.

Quality control limits for o-terphenyl recovery are 75-117%.

TOTAL PETROLEUM HYDROCARBONS AS DIESEL
INCHCAPE TESTING SERVICES/ ENVIRONMENTAL LABORATORIES
(408) 432-8192

LABORATORY CONTROL SAMPLE REPORT

Client Project ID:	941114NA	Laboratory ID:	M/NM27H1F9
Matrix:	SOIL	Date Released:	3/28/97
Date Extracted:	3/27/97	Instrument ID:	HP23
Date Analyzed:	3/28/97	Concentration Units:	mg/Kg

<u>COMPOUND</u> <u>NAME</u>	<u>SPIKE</u> <u>AMT</u>	<u>LCS</u> <u>CONC</u>	<u>% REC</u> <u>LCS</u>	<u>LCSD</u> <u>CONC</u>	<u>%REC</u> <u>LCSD</u>	<u>RPD</u>
Diesel	62.5	59.8	96%	62.7	100%	5%
o-Terphenyl			101%		100%	

Quality control limits for LCS/LCSD recovery are 58-118%.

Quality control limits for RPD(relative percent difference) are +/- 30%.

Quality control limits for o-terphenyl recovery are 75-117%.

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. XINGGANG TONG
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9703215
Date Received : 03/25/97
Project ID : 941114NA
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

SAMPLE INFORMATION:

INCHCAPE SAMPLE ID	CLIENT SAMPLE ID	MATRIX	DATE SAMPLED	METHOD
9703215- 1	EW-1-6	SOIL	03/24/97	6010
9703215- 2	EW-1-9	SOIL	03/24/97	6010
9703215- 3	EW-1-15	SOIL	03/24/97	6010

REPORT SUMMARY
INCHCAPE, INC. (408)432-8192

MR. XINGGANG TONG
WOODWARD-CLYDE CONSULTANTS
500 12TH STREET, SUITE 100
OAKLAND, CA 94607-4014

Workorder # : 9703215
Date Received : 03/25/97
Project ID : 941114NA
Purchase Order: N/A
Department : METALS
Sub-Department: METALS

QA/QC SUMMARY :

- All holding times have been met for the analyses reported in this section.

Mona Kamel for 04/06/97
Department Supervisor Date

Tracy Pham 4/7/97
Chemist Date

**INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
DATA REPORT**

Analyte-Method: **Lead-6010A**
Client Project Number: **941114NA**
Matrix - Units: **SOIL - mg/Kg**

SDG #: **N/A**
Prep. Batch: **16138**
Analyst: *TP*
Supervisor: *AVH*

ITS-SJ Sample ID	Client Sample ID	Prep. Method	Instr. ID	Date Sampled	Date Prepared	Date Analyzed	D.F.	Reporting Limit	Results	Q
9703215-01	EW-1-6	3050A	ICP3	03/24/97	03/27/97	03/31/97	1	0.30	7.5	
9703215-02	EW-1-9	3050A	ICP3	03/24/97	03/27/97	03/31/97	1	0.30	5.7	
9703215-03	EW-1-15	3050A	ICP3	03/24/97	03/27/97	03/31/97	1	0.30	3.8	

COMMENTS:

**INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
METHOD BLANK REPORT**

ITS-SJ Sample ID: **BM277SA**
Client Sample ID: **N/A**
ITS-SJ WO #: **9703215**
Client Project Number: **941114NA**
Matrix: **SOIL**

SDG #: **N/A**
Prep. Batch: **16138**
Analyst: *TP*
Supervisor: *[Signature]*

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Reporting Limit	Results	Q
Lead	3050A	6010A	ICP3	03/27/97	03/31/97	1	mg/Kg	0.30	ND	

COMMENTS:

INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
MATRIX SPIKE REPORT

ITS-SJ Sample ID: 9703216-02MS,MD
Client Sample ID: **BATCH QC**
Client Proj. Number: 941114NA
Matrix: **SOIL**
Associated W.O#: 9703215

SDG #: N/A
Analyst: *TP*
Supervisor: *Mh*

Analyte	Prep. Batch	Analyt. Method	Instr. I.D.	Date Prepared	Date Analyzed	Units	Spike Amt.	Sample Conc.	Matrix Spike Conc.	% Rec.	Matrix Sp. Dup. Conc.	% Rec.	RPD	Q
Lead	16138	6010A	ICP3	03/27/97	03/31/97	mg/Kg	50.0	8.3	54.7	92.8	58.0	99.4	5.9	

COMMENTS:

**INCHCAPE TESTING SERVICES
SAN JOSE LABORATORIES
(408) 432-8192
LABORATORY CONTROL SAMPLE REPORT**

ITS-SJ Sample ID: LM277SA
 Client Sample ID: N/A
 ITS-SJ WO #: 9703215
 Client Project Number: 941114NA
 Matrix: SOIL

SDG #: N/A
 Prep. Batch: 16138
 Analyst: *TD*
 Supervisor: *AM*

Analyte	Prep. Method	Analytical Method	Instr. ID	Date Prepared	Date Analyzed	Dil. Factor	Units	Spike Amount	LCS Results	% Recovery	Q
Lead	3050A	6010A	ICP3	03/27/97	03/31/97	1	mg/Kg	50.0	51.3	103	

COMMENTS:

SAMPLE RECEIVING CHECKLIST

Workorder Number: 9703215	Client Project ID: 941114NA	Quote Number:
<i>Cooler</i>		
Shipping documentation present? If YES, enter Carrier and Airbill #:	YES	NO <u>N/A</u>
Custody Seal on the outside of cooler? Condition: Intact <input type="checkbox"/> Broken <input type="checkbox"/>	YES	NO <u>N/A</u>
Temperature of sample(s) within range? List temperatures of cooler(s): 5°	<u>YES</u>	NO N/A
Note: If all samples taken within previous 4 hr, circle N/A and place in sample storage area as soon as possible.	IR	Temp Blank <u>905-215</u>
<i>Samples</i>		
Chain of custody seal present for each container? Condition: Intact <input type="checkbox"/> Broken <input type="checkbox"/>	YES	NO <u>N/A</u>
Samples arrived within holding time?	<u>YES</u>	NO N/A
Samples in proper containers for methods requested? Condition of containers: Intact <input checked="" type="checkbox"/> Broken <input type="checkbox"/>	<u>YES</u>	NO
If NO, were samples transferred to proper container(s)? Yes <input type="checkbox"/> No <input type="checkbox"/>		
VOA containers received with zero headspace or bubbles < 6 mm?	YES	NO <u>N/A</u>
Container labels complete? (ID, date, time, preservative)	<u>YES</u>	NO <u>N/A</u>
Samples properly preserved? If NO, was the preservative added at time of receipt? Yes <input type="checkbox"/> No <input type="checkbox"/>	YES	NO <u>N/A</u>
pH check of samples required at time of receipt? (volatiles checked at analysis) If YES, pH checked and recorded by:	YES	<u>NO</u>
Sufficient amount of sample received for methods requested? If NO, has the client or PM been notified? Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>YES</u>	NO
Field blanks received with sample batch?	YES	NO <u>N/A</u>
Trip blanks received with sample batch?	YES	NO <u>N/A</u>
<i>Chain of Custody</i>		
Chain of custody form received with samples?	<u>YES</u>	NO
Has it been filled out completely and in ink?	<u>YES</u>	NO
Sample IDs on chain of custody form agree with labels?	<u>YES</u>	NO
Number of containers on chain agree with number received?	<u>YES</u>	NO
Analysis methods specified?	<u>YES</u>	NO
Sampling date and time indicated?	<u>YES</u>	NO
Proper signatures of sampler, courier and custodian in appropriate spaces? With time and date? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>YES</u>	NO
Turnaround time? Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/>		

Any NO responses and/or any BROKEN that was checked must be detailed in a Corrective Action Form.

Sample Custodian: P. Plunk Date: 3-25-97 Project Manager: [Signature] Date: 03/27/97

