REPORT OF QUARTERLY GROUND-WATER MONITORING

ALAMEDA COUNTY ALCOPARK FACILITY 165 13TH STREET OAKLAND, CALIFORNIA

Prepared For:

Mr. Jim De Vos Alameda County General Services Agency 4400 MacArthur Boulevard Oakland, California 94619

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Project No. 6-90-5042

November 5, 1991

This report has been prepared by Environmental Science & Engineering, Inc. for the exclusive use of Alameda County General Health Services as it pertains to their site located at 165 13th Street, Oakland, Alameda County, California. Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other geologists and engineers practicing in this field. No other warranty, expressed or implied, is made as to professional advice in this report.

REPORT PREPARED BY:

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UNDER THE PRIMARY REVIEW OF:

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Senior Hydrogeologist

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1.0 INTRODUCTION

This report presents the results of the August, 1991 ground-water monitoring activities performed by Environmental Science & Engineering, Inc. (ESE) at the Alameda County ALCOPARK facility. The ALCOPARK facility (site) is located at 165 13th Street, Oakland, California (Figure 1 - Location Map). The site is an Alameda County fueling station located northwest of the ALCOPARK parking and vehicle maintenance structure operated by Alameda County at the corner of 13th and Jackson Streets, Oakland, California. The fueling station facility's layout, illustrated in Figure 2 - Site Plan, consists of a single pump island for dispensing leaded and unleaded gasoline, and two 10,000 gallon underground storage tanks.

This quarterly ground-water monitoring report contains documentation of ESE's field activities and analytical results for ground-water samples collected on August 27, 1991 and a discussion of the results. The report also includes recommendations for site activities to be conducted in the fourth quarter of 1991.

1.1 Scope of Work

- Measure the depth to water in monitoring wells MW-1, MW-4 and MW-5;
- Collect ground-water samples from monitoring wells MW-1, MW-4 and MW-5;
- Analyze the ground-water samples for Total Petroleum Hydrocarbons as Gasoline (TPH-G), Total Petroleum Hydrocarbons as Diesel (TPH-D) and the aromatic compounds Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX); and
- Review the field data and prepare a technical report of the investigation.

2.0 BACKGROUND

During a fuel line integrity test performed by Scott Company of Oakland on January 24, 1989, a leak was found in the vapor recovery line below the unleaded gasoline dispenser. Hunter/Gregg, Inc. (Hunter), now ESE, completed a hand auger boring directly below where the piping leak was found. Soil samples obtained from the boring showed elevated levels of Total Petroleum Hydrocarbons (TPH) and BTEX. Alameda County General Services Agency (ACGSA) authorized Hunter (now ESE) to perform a Phase I site characterization to assess the lateral and vertical extent of the petroleum hydrocarbons in the soil and ground water on site. This site characterization was performed in March 1989, and the results were presented in a report dated May 1989.

For the Phase I Site Characterization, Hunter drilled and sampled five soil borings, and installed three ground-water monitoring wells and two vapor monitoring wells in those borings. Analysis of soil and ground-water samples from that phase of the investigation showed nondetectable concentrations of TPH, and elevated concentrations of BTEX in soil and ground water. Only Benzene was above the State of California drinking water action levels, with concentrations of 21 ug/L (micrograms per liter or parts per billion) in MW-1, 13 ug/L in MW-4, and nondetectable in MW-5. Soil and ground-water analysis results for the initial hand auger sampling, and site characterization investigation are presented in Hunter's Phase I Site Characterization report (Hunter, 1989). In the conclusion of that report, ESE recommended quarterly monitoring of ground water, and no further action concerning the soil at the site.

Since the completion of the Phase I Site Investigation ESE has conducted ground-water monitoring at the site on a quarterly basis.

3.0 GROUND-WATER MONITORING

On August 27, 1991, ESE performed quarterly ground-water monitoring at the site. ESE obtained depth to water information, and purged and sampled three on-site ground-water monitoring wells. The objective of the ground-water level survey is to estimate the direction and magnitude of the ground-water flow at the site. The objective of the sampling program is to monitor the extent and magnitude of hydrocarbon constituents, if any, in the on-site ground water.

Depth to water measurements collected prior to ground-water sampling on August 27, 1991 appeared to be inaccurate when compared to historic ground-water measurements at that site. Additional depth to ground-water measurements were collected at the site on October 22, 1991.

Ground-water samples were collected from monitoring wells MW-1, MW-4 and MW-5 on August 27, 1991. Ground-water sampling data forms are included as Appendix A. The samples were collected from the wells subsequent to the removal of a minimum of three well-casing volumes of ground water from each well. The wells were purged using either a Poly-Vinyl-Chloride (PVC) positive displacement hand pump or a new disposable polyethylene bailer. The hand pumps were cleaned prior to use in each well using an Alconox soap and tap water solution followed by a tap water rinse. The temperature, conductivity and pH of the ground water removed from each well during the purging process was monitored periodically for stabilization to ensure the collection of samples representative of the aquifer surrounding each well. The ground-water samples were collected from each well using a new disposable polyethylene bailer lowered into the well using new nylon cord. The ground water was decanted from the bailers into appropriately preserved 40 milliliter and one liter amberglass bottles. The sample bottles were immediately labeled and placed on ice and under chain of custody form for transport to Curtis and Tompkins Analytical Laboratory, Limited (C&T) of Berkeley, California, a State-Certified laboratory.

A duplicate sample was collected from monitoring well MW-5 for Quality Assurance/Quality Control (QA/QC) purposes. The duplicate sample provides a check on ESE sample collection and laboratory sample handling procedures. A laboratory supplied trip blank, consisting of deionized water, was placed in the cooler with the ground-water samples transported to the laboratory, also for QA/QC purposes. The trip blank is to ensure that no transfer of volatile compounds occurred between samples on the trip to the laboratory.

The purged ground water and the cleaning solutions were contained in Department of Transportation (DOT) approved 55-gallon drums and stored on site pending laboratory analysis and proper disposal.

4.0 RESULTS

4.1 Ground-Water Flow

The average depth to ground water at the site on October 22, 1991 was about 21.5-feet below ground surface. Ground-water elevations are presented on Table 1. Ground-water elevations were calculated utilizing the depth to water measurements and the surveyed top of casing elevations. The estimated direction of ground-water flow beneath the site on October 22, 1991 was towards the southwest at a gradient of about 0.013 foot per foot (Figure 3 - Ground-Water Elevations, October 22, 1991).

4.2 Ground-Water Sample Analysis

The ground-water sample from wells MW-1 and MW-5 and the duplicate sample were analyzed for TPH-G and BTEX. The ground-water sample from well MW-4 was analyzed for TPH-D, TPH-G and BTEX. The trip blank was only analyzed for BTEX (the volatile compounds). TPH-D, TPH-G and the BTEX analyses were performed by Modified EPA Method 8015, EPA Method 8015 and EPA Method 8020, respectively. The laboratory analytical results are presented on Table 2. The laboratory analytical reports are presented as Appendix B.

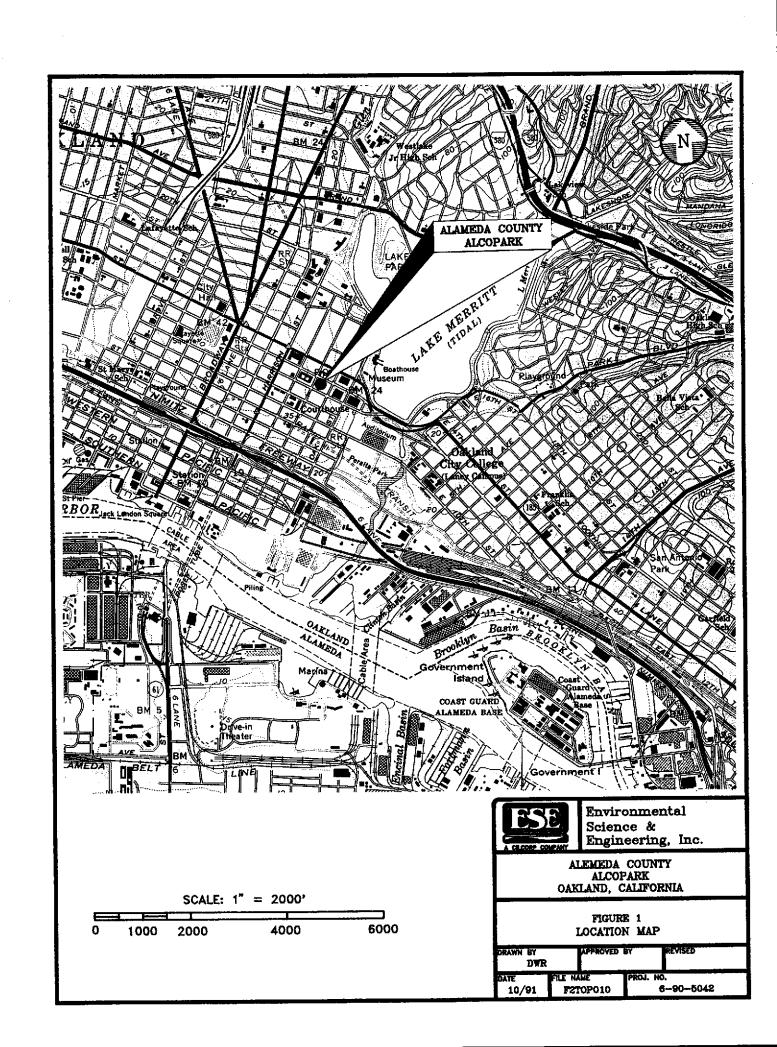
TPH-D was not detected in the ground-water sample from well MW-4. TPH-D was detected in the ground-water sample from well MW-1 at a concentration of 8,300 ug/L. TPH-G was not detected in ground-water samples from wells MW-4 and MW-5. Benzene was detected in the ground-water samples from wells MW-1, MW-4 and MW-5 at concentrations of 370 ug/L, 87 ug/L and 20 ug/L, respectively. BTEX were not detected in the trip blank.

4.3 Trends

Table 3 - Ground-Water Trends, lists concentrations of petroleum hydrocarbons detected in ground-water samples and relative ground-water elevations for the wells at the site. Due to fluctuations over time (since March 1989) in the ground-water flow direction and concentrations of TPH-G, TPH-D and BTEX in ground-water samples from the wells no trends can be identified. The ground-water flow direction fluctuates, as observed during site monitoring, from a northerly flow direction to a southeasterly flow direction. The cause of the fluctuations of the direction of ground-water flow is unknown. However, these fluctuations may account for the fluctuations in concentrations of petroleum hydrocarbons observed in ground-water samples from the on site monitoring wells.

5.0 RECOMMENDATIONS

- Based on the fluctuating concentrations of TPH-G, TPH-D and BTEX in the groundwater monitoring wells and the fluctuating ground-water flow direction over the past year, ESE recommends continued quarterly ground-water monitoring at the site.
- Because ESE detected TPH-G and BTEX in ground-water samples from well MW-4, an up- to crossgradient monitoring well, with respect to ground-water flow and the underground storage tanks at the site, ESE recommends conducting a file search to determine if there are any known sites in the vicinity of the ALCOPARK site that have or have had, underground storage tanks, unauthorized releases, or environmental site assessment work performed.
- Should the elevated concentrations of Benzene persist in the ground water at the site, and no upgradient contributing source be identified, then additional site characterization work may be necessary to determine the extent of the Benzene and other petroleum hydrocarbons in the soil and ground-water at the site.



13th STREET SIDEWALK **PLANTERS** 2-10,000 GALLON **TANKS** JACKSON STREET ∫MW-1 • SIDEWALK **м**₩-5 MW-4 • **PARKING PUMP STRUCTURE** ISLAND : SCALE 20 FEET Environmental **LEGEND** Science & Engineering, Inc. ALAMEDA COUNTY ALCOPARK OAKLAND, CA SOIL BORING GROUND-WATER MONITORING WELL FIGURE 2 SITE PLAN VADOSE MONITORING WELL DWR UNDERGROUND PIPING

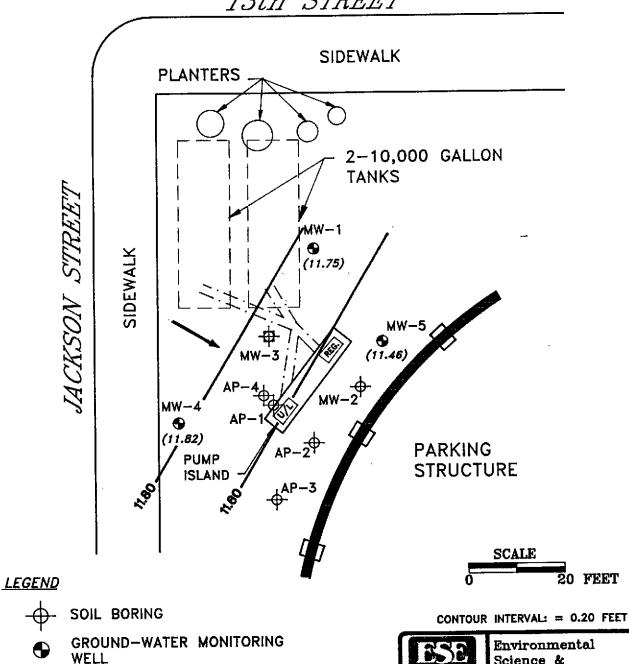
6-90-5042

F2SP10

5/91



13th STREET



VADOSE MONITORING WELL

UNDERGROUND PIPING

(11.75) GROUND-WATER ELEVATION (ft)

-1180 - GROUND-WATER CONTOUR (ft)

► APPROXIMATE GROUND-WATER FLOW DIRECTION



Science & Engineering, Inc.

ALAMEDA COUNTY **ALCOPARK** OAKLAND, CA

FIGURE 2 GROUND-WATER ELEVATIONS OCTOBER 22, 1991

DRAWN BY	APPROVED	BY	REVISED
DATE 10/91	FILE NAME 2GWOCT10	PROJ. NO.	-90-5042

TABLE 1
GROUND-WATER ELEVATIONS
ALAMEDA COUNTY, ALCOPARK SITE

Well Number	Reference Elevation (Feet)	Depth to Ground Water (Feet)	Ground-Wate Elevation (Feet)	
MW-1	33.00	21.25	11.75	
MW-4	33.63	21.81	11.82	
MW-5	33.01	21.55	11.46	

Notes:

Depth to ground water measured by Environmental Science & Engineering, Inc., on October 22, 1991.

TABLE 2

ANALYTICAL RESULTS: GROUND WATER

ALAMEDA COUNTY, ALCOPARK SITE

Well Number	Date Sampled	TPH-G (ug/L)	TPH-D (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
MW-1	8/27/91	8,300		370	64	<40	120
MW-4	8/27/91	< 50	<50	87	1.2	0.8	0.8
MW-5 MW-5D	8/27/91 8/27/91	<50 <50	•	20 16	<0.5 <0.5	0.5 <0.5	<0.5 <0.5
TRIP	8/27/91			< 0.5	< 0.5	< 0.5	< 0.5

Notes:

TPH-G = Total Petroleum Hydrocarbons as Gasoline

TPH-D = Total Petroleum Hydrocarbons as Diesel

ug/L = Micrograms per liter or parts per billion

-- = Not analyzed

< = Less than listed detection limit

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TABLE 3

GROUND-WATER TRENDS
ALAMEDA COUNTY, ALCOPARK SITE

			Well MW	'-1			
	March 1989	J uly 1990	October 1990	January 1991	April 1991	August 1991	
GW-Elevation (ft)	12.2	12.3	12.1	11.9	11.8	11.8	
TPH-G (ug/L)	ND	1500	1200	270	230	8,300	
TPH-D (ug/L)							
Benzene (ug/L)	21	200	ND	23	ND	370	
Ethylbenzene (ug/L)	0.4	ND	2.2	ND	ND	64	
Toluene (ug/L)	3.9	45	7.3	1.5	ND	ND	
Total Xylenes (ug/L)	4.5	53	46	3.1	ND	120	
			Well MW	<i>1-</i> 4			
GW-Elevation (ft)	12.4	12.5	12.2	12.0	13.0	11.8	
TPH-G (ug/L)					170	ND	
TPH-D (ug/L)	ND	ND	ND	ND	130	ND	
Benzene (ug/L)	13	0.8	120	230	12	87	
Ethylbenzene (ug/L)	1.0	ND	1.1	1.2	ND	1.2	
Toluene (ug/L)	1.4	ND	1.2	2.8	ND	0.8	
Total Xylenes (ug/L)	ND	ND	0.9	2.0	2.3	0.8	

TABLE 3 (Continued)

	''		Well MW	-5			
	March 1989	July 1990	October 1990	January 1991	April 1991	August 1991	
GW-Elevation (ft)	12,2	12.4	12.1	11.9	12.3	11.5	
TPH (ug/L)	ND	670	120	120	ND	ND	
TPH-D (ug/L)							
Benzene (ug/L)	ND	0.8	13	3.2	ND	20	
Ethylbenzene (ug/L)	ND	ND	ND	ND	ND	ND	
Toluene (ug/L)	ND	ND	ND	ND	ND	0.5	
Total Xylenes (ug/L)	ND	ND	ND	ND	ND	ND	

Notes:

GW-Elevation = Elevation of Ground Water in feet relative to a common datum

TPH-G = Total Petroleum Hydrocarbons as Gasoline TPH-D = Total Petroleum Hydrocarbons as Diesel

ft = Feet

ug/L = Micrograms per Liter or parts per billion (ppb)
ND = Not Detected at laboratory method detection limit

= Not analyzed for listed compound

APPENDIX A GROUND-WATER SAMPLING DATA FORMS

	·		
	URGING AND SA		0/ /
Date: 9/27 Project Num	ber: <u>6-90-52</u>	YZ Project Na	ame: HICOPAIK
Well Number: MW1 Boring	Diameter:	Casing Dia	ameter: 4
Column of Fluid in Well	Volume	e to be Removed	
depth to product $-$	CO 11	per ft Annular : umn of water	Space =
depth to water 2/01	<u>ZS</u> volu	me of annular sper ft of casing	
total depth of well 33 .	colu	umn of water ume of casing	X
column of product Q	tota	al volume per of vol to re	=
column of water 1208	25 tota	al vol to remove	1 :
method of measuring fluid	Well Sa	under.	
method of purging well	and pump	/ 	rate
method of decon	ux 1 Wa	K5	
Physical appearance of wat	,	• • • • • • • • • • • • • • • • • • • •	
Initial	Brownich for	1100 , 100 , 100	<u>) </u>
During	· · ·	/-/-	
Final			
Field Analysis <u>Initia</u>	a <u>l</u>	During	Final
time $\#$ is	/		12:03
conductivity 6.0	60 4.67	4.76	5.01
pH <u>\\(\frac{\(\frac{1}{3}\)}{3}\)</u>	<u> 7.4</u>	2 7.67	6091
temperature 65.	65-0	<u>646</u>	164.40
method of measuremen	t		
Total volume purged 257	iaΩ. Coπ	ments	
Sample Number MW1	Amount	of Sample	
Signed/Sampler	Marso		Date \$ 779/
Signed/Reviewer			Date

WELL PURGING AND SAMPLING DATA Date: 8/27 Project Number: 6-90-5042 Project Name: H Well Number: MW4 Boring Diameter: Casing Diameter: Volume to be Removed Column of Fluid in Well gal per ft Annular Space = depth to product column of water volume of annular space depth to water gal per ft of casing total depth of well 35.05 column of water volume of casing column of product _____ total volume number of vol to remove total vol to remove =6.5-25 och column of water method of measuring fluid ____ rate method of purging well. method of decon ____ Physical appearance of water (clarity, color, particulates, odor) Initial Mudy, Brown, Kes NO During ____ Final ____ <u>Final</u> During Initial Field Analysis time conductivity Hq temperature method of measurement Total volume purged 10cm Comments _ Amount of Sample _____ Sample Number 🛲 Signed/Sampler_

Signed/Reviewer _

WELL PURGING AND SAMPLING DATA	01
Date: 1/27 Project Number: 6-90-8042 Project Name	:Hkopark
Well Number: MW-5 Boring Diameter: Casing Diame	eter: H
	<u> </u>
Column of Fluid in Well Volume to be Removed	
depth to product gal per ft Annular Spa	
column of water	X
depth to water 2/15 volume of annular space	
qal per it or casing	
total depth of well 32/85 column of water	x
volume of casing	=
column of product total volume	=
column of water 3.7 total vol to remove	= 27gal
method of measuring fluid	
method of purging well Hurd Jump ra	ate
method of decon HONOX & Water	
metrica of accom	
Physical appearance of water (clarity, color, particulate	es, odor)
Initial Cloudy Brown NO 10/18	
During	
Final	
Field Analysis <u>Initial</u> <u>During</u>	Final
time 12:20 12:23 12:26	12:29
conductivity 4.99 5.26 5.2	5.21
pH 7-3 6.77 6.61	6056
temperature 64.5° 65.1°	65.10
method of measurement	
Total volume purged SOGAL Comments	
MILE	
Sample Number Mu-5 Amount of Sample	.
Signed/Sampler Description D	ate 8/27/9/
Signed/ReviewerD	ate

APPENDIX B

LABORATORY ANALYTICAL REPORTS: GROUND-WATER SAMPLES



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 08/27/91 DATE REPORTED: 09/04/91

LABORATORY NUMBER: 104983

CLIENT: ENVIRONMENTAL SCIËNCE & ËNGINEERING

PROJECT ID: 6-90-5042

LOCATION: ALAMEDA - ALCO PARK

RESULTS: SEE ATTACHED

QA/QC Approval

Final Apple

Berkeley Wilmington

Los Angeles



LABORATORY NUMBER: 104983

DATE RECEIVED: 08/27/91

CLIENT: ENVIRONMENTAL SCIENCE & ENGINEERING

DATE ANALYZED: 09/03/91

PROJECT ID: 6-90-5042

DATE REPORTED: 09/04/91

LOCATION: ALAMEDA - ALCO PARK

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions TVH by California DOHS Method/LUFT Manual October 1989 BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
104983-1	MW-1	8,300		64	ND(40)	120
104983-2	MW-4	ND(50)		1.3	0.8	0.8
104983-3	MW-5	ND(50)		ND(0.5)	0.5	ND(0.5)
104983-4	DUP	ND(50)		ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	106



LABORATORY NUMBER: 104983

DATE RECEIVED: 08/27/91

CLIENT: ENVIRONMENTAL SCIENCE & ENGINEERING

DATE ANALYZED: 08/31/91

PROJECT ID: 6-90-5042

DATE REPORTED: 09/04/91

LOCATION: ALAMEDA - ALCO PARK

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

LAB ID CLIENT ID	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	REPORTING LIMIT *
	. •	(ug/L)	· -	-	
104983-5 TRIP	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %

RECOVERY, %

106



LABORATORY NUMBER: 104983

CLIENT: ENVIRONMENTAL SCIENCE & ENGINEERING

PROJECT ID: 6-90-5042

LOCATION: ALAMEDA - ALCO PARK

DATE RECEIVED: 08/27/91
DATE EXTRACTED: 08/28/91
DATE ANALYZED: 09/02,03/91

DATE REPORTED: 09/04/91

Extractable Petroleum Hydrocarbons in Aqueous Solutions California DOHS Method LUFT Manual October 1989

LAB ID	CLIENT	1D	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
104983-2	MW-4		ND	ND	5 0

ND = Not detected at or above reporting limit.

*Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %
RECOVERY, %
94

- TUTB

DATE \$\\ \frac{7}{9}\ \tage \ \ OF \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	CHAIN OF CUSTODY RECORD	Environmental
PROJECT NAME Alcopork	ANALYSES TO BE PERFORMED MATRIX	Science &
ADDRESS Cokland	N C	Engineering, Inc.
ADDINGOS CO AARTIG		A GILCORP Company (415) 685-4053 90 Nelson Avenue
PROJECT NO. 6-90-5042.		oncord, CA 94520 Fax (415) 685-5323
SAMPLED BY Paul Marsden		PBA (413) tito 2010
LAB NAME Curtis & Tompkins	OF ERS	REMARKS (CONTAINER, SIZE, ETC.)
SAMPLE # DATE TIME LOCATION	1 1./\1 1/\11V	(CONTAINER, STAE, FIG.,
MW-1 8/27 Dakland	16ter 3 3	Vas.
2 My 1/	1 4 3	los & Sitter.
2 1/10-7		1.600-8
3 1/10-3 11 Do		1/oc.3.
1/02		Von 8
S INIP		
RELINQUISHED BY: (signature)	RECEIVED: (Signature)	OTAL NUMBER OF CONTAINERS
1.10 John	Manual BETT 16:02 REPORT RESULTS TO	SPECIAL SHIPMENT : REQUIREMENTS
2. ////	Matt Monick Mikl	Curtis & Tompkins
3.		Curtis & Tompkins Courier
4.	- C.	SAMPLE RECEIPT
5.	ndling, analyses, storage, etc.):	CHAIN OF CUSTODY SEALS
INSTRUCTIONS TO LABORATORY (Has		REC'D GOOD CONDIN/COLD
Not wish (5 day)	(Trip sample is not preserved)	CONFORMS TO RECORD
VOALS PRESERVED WITH THE	1111 JOHN POR PIE	