EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

EA West
41 Lafayette Circle
Lafayette, CA 94549
(510) 283-7077

LETTER OF TRANSMITTAL

DATE 9/23/92 JOB NO.

ATTENTION Pamela Evans

RE: Closure of oil-Water Separator ARCO Facility 608

TO Alameda County Dept. of Environmental Health
80 Swan Way Room 200
Oakland, CA 94621

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			Report on closure of oil-water separator ARCO Facility 608, San Lorenzo

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit ____ copies for approval

☑ For your use ☐ Approved as noted ☐ Submit ____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return ____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Copies of this report have been sent to:
Mr Kyle Christie, ARCO
Mr Mori Williams, ARCO

COPY TO _____ SIGNED Brian Thomas

EA 0110 4/11/88

If enclosures are not as noted, kindly notify us at once.

REPORT OF OIL-WATER SEPARATOR/CLARIFIER INVESTIGATION
ARCO FACILITY NO. 0608
17601 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

Prepared for

ARCO Products Company

Prepared by

EA Engineering, Science, and Technology

August 1992
80633.01

80633.01

REPORT OF OIL-WATER SEPARATOR/CLARIFIER INVESTIGATION
ARCO FACILITY NO. 0608
17601 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

Prepared for

ARCO Products Company
2000 Alameda de las Pulgas
San Mateo, California 94403

Prepared by

EA Engineering, Science, and Technology
41 Lafayette Circle
Lafayette, California 94549
(510) 283-7077

Brian Thomas
Geologist

8/21/92
Date

REGISTERED GEOLOGIST
No. 4719
STATE OF CALIFORNIA

Terry R. Winsor, R.G. #4719
Manager, UST Services

20 Aug 92
Date

August 1992

1. INTRODUCTION

At the request of ARCO Products Company (ARCO), EA Engineering, Science, and Technology (EA) oversaw routine closure of the oil-water separator/clarifiers at ARCO Facility No. 0608, located at 17601 Hesperian Boulevard, San Lorenzo, California (Figure 1). This report summarizes the field investigation and the analytical results for concrete and soil samples collected from beneath the sump of the oil-water separator/clarifier.

Oil-water separator/clarifiers are used to separate and clarify industrial waste collected during the operation of the station's automobile repair bays. The industrial wastes may include petroleum hydrocarbons, degreasing compounds, solvents, and engine coolants. On 2 April 1992, Gettler-Ryan Inc. of Hayward, California, under contract to ARCO, closed the oil-water separator/clarifier. EA observed the closure and collected a concrete sample from the bottom of the sump and soil samples from native soils beneath the sump. The work was performed in accordance with ARCO's guidelines and local and state regulations.

2. FIELD INVESTIGATION

Gettler-Ryan Inc., a general and environmental contracting company, closed the oil-water separator/clarifier located inside the building in the vicinity of the service bays (Figure 2). Prior to initiating the work, Gettler-Ryan obtained all necessary permits. The contents of the sump were pumped into 55-gallon drums, and the sludge that could not be removed by pumping was removed by field personnel using shovels and placed in a 55-gallon drum. The oil-water separator/clarifier sump outlet pipe was capped after the liquid and sludge were removed. The sump was cleaned using a high-pressure steam cleaner to remove residual materials. The water from the steam-cleaning that collected in the sump was pumped into drums.

The drums were properly labeled and subsequently transported off the site by H&H Ship Service of San Francisco, a licensed waste hauler. The liquids in the drums were sampled by H&H Ship Service and were disposed of at the H&H Ship Service treatment, storage, and/or disposal (TSD) facility.

After the sump was cleaned, a jackhammer was used to create a hole in the bottom of the sump. A sample of the fractured concrete was collected in brass tubes for laboratory analysis. The remaining concrete debris was removed and placed in drums. Samples of the soil beneath the sump were collected at various depths for possible chemical analysis: using a drive sampler, a soil sample was collected from native soil immediately beneath the concrete; a soil boring was advanced with a hand auger to five feet below the sump, and soil samples were collected.

After the samples were collected, the borehole and the sump were backfilled with fill and soil to several inches below the surface. A concrete cap was placed on top of the backfill to complete the closure of the separator/clarifier.

3. SAMPLING AND ANALYSIS

On 2 April 1992 soil samples were collected using an impact-driven core sampler and 2-inch by 6-inch brass tubes. A hand auger was used to advance a soil boring to about five feet below the sump. Soil sample SB1-0 was collected from soil at the concrete/soil interface, at the bottom of the concrete and the top of the native soil underlying the sump. Samples were then collected from the soil boring at two feet (SB1-2) and five feet (SB1-5). A sample of the concrete (CONC) was also collected in a brass liner. Prior to use, the brass tubes were cleaned with Alconox detergent and water and rinsed with deionized water. The core sampler was cleaned between sample intervals in the same manner as the brass tubes.

The ends of each brass tube were covered with aluminum foil, and plastic caps were placed over the ends of the tube. Each sample was labeled with the site location, depth of the sample, date and time sampled, and the initials of the sampler. The labeled and sealed samples were placed in a ziplock plastic bag and placed in a cooler filled with ice. The samples were stored and transported in the cooler under chain of custody. Chain-of-custody documentation is provided in Appendix A. The samples were delivered to Sequoia Analytical laboratory of Concord, California, a state-certified laboratory.

The concrete sample (CONC) and soil sample SB1-0 were analyzed for Total Recoverable Petroleum Hydrocarbons (TRPH) by EPA Method 418.1 and for volatile organic compounds (VOCs) by EPA Method 8240. In accordance with ARCO protocols, if petroleum hydrocarbons or volatile organic compounds were detected in either the concrete sample or soil sample SB1-0, then that sample was to be reanalyzed for:

- California Assessment Metals (CAM Metals)
- Fish Bioassay (96 hour)
- EPA Method 1010 (Ignitability)
- EPA Method 8080 (PCBs)
- Toxicity Characteristic Leaching Procedures (TCLP) (volatiles, metals, semivolatiles)

Soil samples SB1-2 and SB1-5 were submitted to the laboratory but placed on hold, pending the analytical results for the interface sample (SB1-0). If TRPH or VOCs were detected in SB1-0, then soil sample SB1-2 was to be analyzed for TRPH and VOCs. If TRPH or VOCs were detected in SB1-2, then soil sample SB1-5 was to be analyzed for the same parameters. The purpose of this procedure was to determine the vertical extent of TRPH and VOCs in the soil beneath the sump.

4. SUMMARY OF RESULTS

Soil sample SB1-0 and the concrete sample were analyzed for TRPH and for VOCs; no VOCs were found at concentrations greater than the method detection limits for those compounds in

either the concrete sample or soil sample SB1-0. TRPH was found in both the concrete sample and soil sample at concentrations of 3,000 and 1,000 mg/kg, respectively.

The concrete sample and soil sample SB1-0 were reanalyzed for CAM metals, 96-hour fish bioassay, ignitability, PCBs, and TCLP (VOCs, semivolatiles, and metals) to determine if the samples were hazardous as defined by the Resource Conservation and Recovery Act (RCRA). No constituents at concentrations greater than the regulatory action limits were found in either the concrete sample or soil sample SB1-0, indicating that the samples are non-hazardous.

Because TRPH was detected in soil sample SB1-0, soil sample SB1-2 was taken off hold and analyzed for TRPH and VOCs. The sample contained TRPH at a concentration of 3,300 mg/kg. Table 1 summarizes the analytical results for the soil and concrete samples. The laboratory report for the samples is included in Appendix A.

The drums were transported by H&H Ship Service for disposal at their TSD facility. The sludge and liquids were screened for petroleum hydrocarbons and treated as sludge at the facility. A copy of the waste manifest for the contents of the drums is provided in Appendix B.

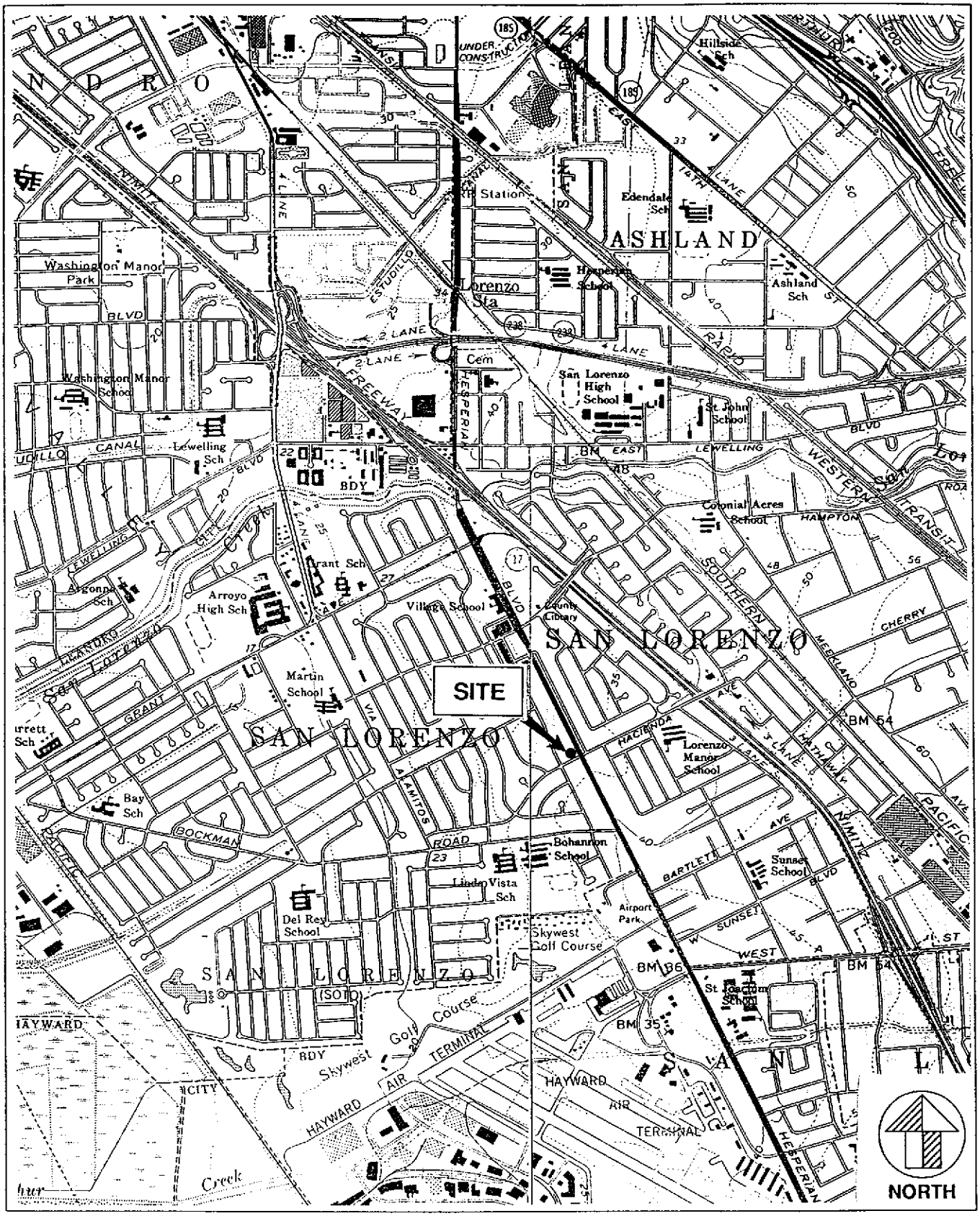
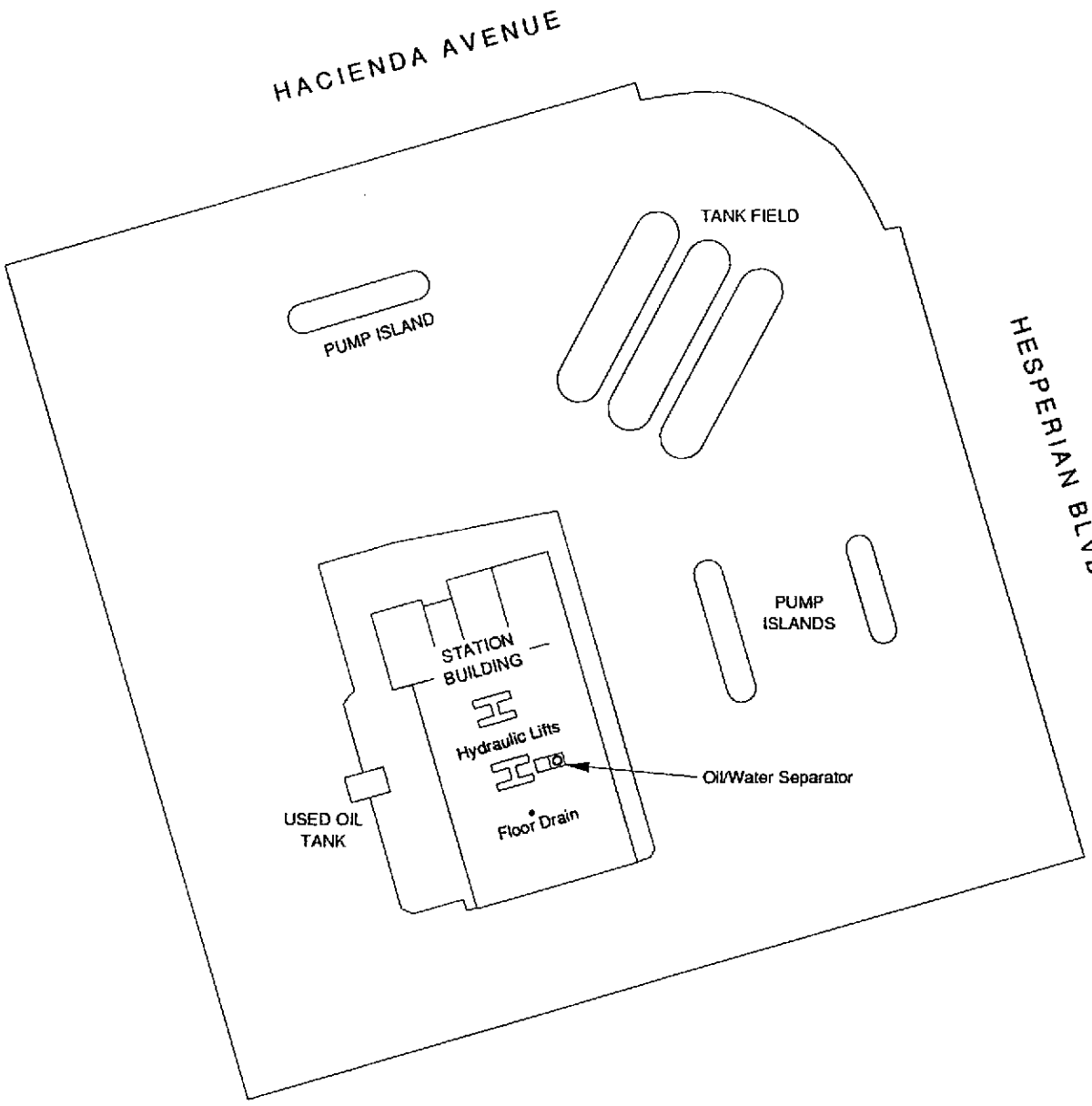


Figure 1. Location and topography, ARCO Facility No. 0608, 17601 Hesperian Blvd., San Leandro, California. (Source: 7.5 Minute Topographic Quadrangle USGS, Hayward/San Leandro, 1959.)

ENVIRONMENTAL SERVICES
Western Division

MDRW/ARCO/TOPO/MAR92



o Soil Boring

Scale: 0 15 30 Feet

Figure 2. Site plan showing oil/water separator, ARCO Facility No. 0608, Hesperian Blvd. & Hacienda Ave., San Lorenzo, California.

Drawn	RK	Date	5/12/92
Reviewed	BT	Date	2/25/97
Rev. 1		Date	
Final		Date	20 Aug 97

MDRW/0608/ROI/MAY'92

TABLE 1 CONCENTRATIONS (ppm) OF ANALYTES IN CONCRETE AND SOIL SAMPLES, ARCO FACILITY NO. 0608, SAN LORENZO, CALIFORNIA, 2 APRIL 1992

Analyte	Concrete Sample	Soil Sample SB1-0	Soil Sample SB1-2
Total Recoverable Petroleum Hydrocarbons	3,000	1,000	3,300
VOCs	ND	ND	ND
TCLP Metals	ND (Non-toxic)	ND (Non-toxic)	NA
TCLP Volatiles	ND (Non-toxic)	ND (Non-toxic)	NA
TCLP Semivolatiles	ND (Non-toxic)	ND (Non-toxic)	NA
PCBs	ND	ND	NA
CAM17 (Metals)	ND (Non-hazardous)	ND (Non-hazardous)	NA
96-hour Waste Bioassay	Non-hazardous	Non-hazardous	NA
Ignitability	>100°C	>100°C	NA

NA Not analyzed.
ND Not detected at concentrations greater than laboratory detection limits.

SEQUOIA ANALYTICAL

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File Brian T.

80433.01-29/R/03/04/92

EA Engineering Science & Tech.	Client Project ID:	Arco #0608/EA-92-2	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Matrix Descript:	Soil	Received:	Mar 27, 1992
Lafayette, CA 94549	Analysis Method:	EPA 418.1 (I.R. with clean-up)	Extracted:	Mar 27, 1992
Attention: Brian Thomas	First Sample #:	203-1223	Analyzed:	Mar 27, 1992
			Reported:	Mar 31, 1992

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/kg (ppm)
203-1223	Conc.	3,000
203-1224	SB1-0	1,000

RECEIVED

APR 03 1992

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
WESTERN REGIONAL OPERATIONS

Detection Limits:	**1.0**

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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EA Engineering Science & Tech.	Client Project ID:	Arco #0608/EA-92-2	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil, Conc.	Received:	Mar 27, 1992
Lafayette, CA 94549	Analysis Method:	EPA 8240	Analyzed:	Mar 30, 1992
Attention: Brian Thomas	Lab Number:	203-1223	Reported:	Mar 31, 1992

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	2,500	N.D.
Benzene	500	N.D.
Bromodichloromethane	500	N.D.
Bromoform	500	N.D.
Bromomethane	500	N.D.
2-Butanone	2,500	N.D.
Carbon disulfide	500	N.D.
Carbon tetrachloride	500	N.D.
Chlorobenzene	500	N.D.
Chloroethane	500	N.D.
2-Chloroethyl vinyl ether	2,500	N.D.
Chloroform	500	N.D.
Chloromethane	500	N.D.
Dibromochloromethane	500	N.D.
1,1-Dichloroethane	500	N.D.
1,2-Dichloroethane	500	N.D.
1,1-Dichloroethene	500	N.D.
cis-1,2-Dichloroethene	500	N.D.
trans-1,2-Dichloroethene	500	N.D.
1,2-Dichloropropane	500	N.D.
cis-1,3-Dichloropropene	500	N.D.
trans-1,3-Dichloropropene	500	N.D.
Ethylbenzene	500	N.D.
2-Hexanone	2,500	N.D.
Methylene chloride	1,300	N.D.
4-Methyl-2-pentanone	2,500	N.D.
Styrene	500	N.D.
1,1,2,2-Tetrachloroethane	500	N.D.
Tetrachloroethene	500	N.D.
Toluene	500	N.D.
1,1,1-Trichloroethane	500	N.D.
1,1,2-Trichloroethane	500	N.D.
Trichloroethene	500	N.D.
Trichlorofluoromethane	500	N.D.
Vinyl acetate	500	N.D.
Vinyl chloride	500	N.D.
Total Xylenes	500	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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EA Engineering Science & Tech.	Client Project ID:	Arco #0608/EA-92-2	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil, SB1-0	Received:	Mar 27, 1992
Lafayette, CA 94549	Analysis Method:	EPA 8240	Analyzed:	Mar 31, 1992
Attention: Brian Thomas	Lab Number:	203-1224	Reported:	Mar 31, 1992

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	5,000	N.D.
Benzene	1,000	N.D.
Bromodichloromethane	1,000	N.D.
Bromoform	1,000	N.D.
Bromomethane	1,000	N.D.
2-Butanone	5,000	N.D.
Carbon disulfide	1,000	N.D.
Carbon tetrachloride	1,000	N.D.
Chlorobenzene	1,000	N.D.
Chloroethane	1,000	N.D.
2-Chloroethyl vinyl ether	5,000	N.D.
Chloroform	1,000	N.D.
Chloromethane	1,000	N.D.
Dibromochloromethane	1,000	N.D.
1,1-Dichloroethane	1,000	N.D.
1,2-Dichloroethane	1,000	N.D.
1,1-Dichloroethene	1,000	N.D.
cis-1,2-Dichloroethene	1,000	N.D.
trans-1,2-Dichloroethene	1,000	N.D.
1,2-Dichloropropane	1,000	N.D.
cis-1,3-Dichloropropene	1,000	N.D.
trans-1,3-Dichloropropene	1,000	N.D.
Ethylbenzene	1,000	N.D.
2-Hexanone	5,000	N.D.
Methylene chloride	2,500	N.D.
4-Methyl-2-pentanone	5,000	N.D.
Styrene	1,000	N.D.
1,1,2,2-Tetrachloroethane	1,000	N.D.
Tetrachloroethene	1,000	N.D.
Toluene	1,000	N.D.
1,1,1-Trichloroethane	1,000	N.D.
1,1,2-Trichloroethane	1,000	N.D.
Trichloroethene	1,000	N.D.
Trichlorofluoromethane	1,000	N.D.
Vinyl acetate	1,000	N.D.
Vinyl chloride	1,000	N.D.
Total Xylenes	1,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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EA Engineering Science & Tech.	Client Project ID:	Arco #0608/EA-92-2	
41-A Lafayette Circle	Method (units):	EPA 8240 (µg/L purged)	Q.C. Sample Dates
Lafayette, CA 94549	Analyst(s):	G. Meyer	
Attention: Brian Thomas	QC Sample #:	Matrix Blank	Analyzed: Mar 24, 1992
			Reported: Mar 31, 1992

QUALITY CONTROL DATA REPORT

Analyte	Sample Conc.	Spike Conc. Added	Conc. Matrix Spike	Matrix Spike % Recovery	Conc. Matrix Spike Duplicate	Matrix Spike Duplicate % Recovery	Relative % Difference
1,1-Dichloro-ethene	N.D.	50	45	90	39	78	14
Trichloroethene	N.D.	50	43	86	39	78	9.8
Benzene	N.D.	50	44	88	39	78	12
Toluene	N.D.	50	45	90	40	80	12
Chlorobenzene	N.D.	50	43	86	39	78	9.8

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Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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EA Engineering Science & Tech.
41-A Lafayette Circle
Lafayette, CA 94549
Attention: Brian Thomas

Client Project ID: Arco #0608/EA-92-2

QC Sample Group: 2031223-1224

Reported: Mar 31, 1992

QUALITY CONTROL DATA REPORT

ANALYTE
Oil & Grease

Method:	EPA 418.1
Analyst:	S.L.
Reporting Units:	mg/Kg
Date Analyzed:	Mar 27, 1992
QC Sample #:	Matrix Blank

Sample Conc.:	10
Spike Conc. Added:	50
Conc. Matrix Spike:	50
Matrix Spike % Recovery:	100
Conc. Matrix Spike Dup.:	46
Matrix Spike Duplicate % Recovery:	92
Relative % Difference:	8.0

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Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 04-92-[illegible]

Chain of Custody

ARCO Facility no. 0608	City (Facility) SAN LORENZO	Project manager (Consultant) BRAIN THOMAS	Laboratory name SEQUOIA
ARCO engineer CHARLES CARMEL	Telephone no. (ARCO) 415 571-2734	Telephone no. (Consultant) 510-283-7077	Fax no. (Consultant) 510 283 3894
Consultant name EA ENGINEERING	Address (Consultant) 41 LAFAYETTE CIRCLE		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	
CONC.		2	~~X~~ ST.		CONCRETE	X		3/26/92	1535					X		X		2031223 AB			
SB1-0		2	X			X			1545					X		X		↓	1224 AB		
SB1-2		2	X			X			1615									HOLD			
SB1-5		2	X			X		↓	1645									HOLD			

Special detection Limit/reporting

Special QA/QC

Remarks
HOLD SAMPLES SB1-2 + SB1-5 UNTIL RESULTS OF SB1-0 HAVE BEEN REVIEWED

Lab number

Turnaround time
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☐

Condition of sample:

Temperature received:

	Date	Time			
Relinquished by sampler	26 Mar 92	1907	Received by		
Relinquished by			Received by		
Relinquished by			Received by laboratory		

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APPC-3292 (2-91)

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20633-01

E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Extract of Soil Sample, CONC	Relogged:	Mar 31, 1992
Lafayette, CA 94549			Extracted:	Apr 3, 1992
Attention: Brian Thomas	Lab Number:	#2031223	Analyzed:	4/3-4/6/92
			Reported:	Apr 16, 1992

SC635.01-132/R/26/03/92

TCLP METALS

Analyte	EPA HW No.	Detection Limit mg/L (ppm)	Chronic Toxicity Reference Level mg/L (ppm)	Regulatory Level mg/L (ppm)	Sample Results mg/L (ppm)
Arsenic	D004	0.0050	0.05	5.0	N.D.
Barium	**D005**	**0.10**	**1**	**100**	**0.69**
Cadmium	D006	0.010	0.01	1.0	N.D.
Chromium	D007	0.010	0.05	5.0	N.D.
Lead	**D008**	**0.0050**	**0.05**	**5.0**	**0.021**
Mercury	D009	0.00020	0.002	0.2	N.D.
Selenium	**D010**	**0.0050**	**0.01**	**1.0**	**0.011**
Silver	D011	0.010	0.05	5.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Extract of Soil Sample, SB1-0	Relogged:	Mar 31, 1992
Lafayette, CA 94549			Extracted:	Apr 3, 1992
Attention: Brian Thomas	Lab Number:	203-1224	Analyzed:	4/3-4/6/92
			Reported:	Apr 16, 1992

TCLP METALS

Analyte	EPA HW No.	Detection Limit mg/L (ppm)	Chronic Toxicity Reference Level mg/L (ppm)	Regulatory Level mg/L (ppm)	Sample Results mg/L (ppm)
Arsenic	**D004**	**0.0050**	**0.05**	**5.0**	**0.0074**
Barium	**D005**	**0.10**	**1**	**100**	**1.1**
Cadmium	D006	0.010	0.01	1.0	N.D.
Chromium	D007	0.010	0.05	5.0	N.D.
Lead	**D008**	**0.0050**	**0.05**	**5.0**	**0.021**
Mercury	D009	0.00020	0.002	0.2	N.D.
Selenium	**D010**	**0.0050**	**0.01**	**1.0**	**0.0096**
Silver	D011	0.010	0.05	5.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

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(510) 686-9600 • FAX (510) 686-9689

E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Extract of Soil Sample, CONC	Relogged:	Mar 31, 1992
Lafayette, CA 94549			Extracted:	Apr 6, 1992
Attention: Brian Thomas	Lab Number:	203-1223	Analyzed:	Apr 9, 1992
			Reported:	Apr 16, 1992

TCLP ORGANICS

Analyte	EPA HW No.	Detection Limit	Regulatory Level	Sample Results
		mg/L (ppm)	mg/L (ppm)	mg/L (ppm)
VOLATILES D.L. Factor: 1				
Benzene	D018	0.020	0.5	N.D.
Carbon tetrachloride	D019	0.020	0.5	N.D.
Chlorobenzene	D021	0.020	100	N.D.
Chloroform	D022	0.020	6	N.D.
1,2-Dichloroethane	D028	0.020	0.5	N.D.
1,1-Dichloroethylene	D029	0.020	0.7	N.D.
Methyl ethyl ketone	D035	0.10	200	N.D.
Tetrachloroethylene	D039	0.020	0.7	N.D.
Trichloroethylene	D040	0.020	0.5	N.D.
Vinyl chloride	D043	0.020	0.2	N.D.
SEMI-VOLATILE D.L. Factor: 1				
o-Cresol	D023	0.0080	200	N.D.
m-, p-Cresol	D024, D025	0.0080	200	N.D.
1,4-Dichlorobenzene	D027	0.0080	7.5	N.D.
2,4-Dinitrotoluene	D030	0.0080	0.13	N.D.
Hexachlorobenzene	D032	0.0080	0.13	N.D.
Hexachloro-1,3-butadiene	D033	0.0080	0.5	N.D.
Hexachloroethane	D034	0.0080	3	N.D.
Nitrobenzene	D036	0.0080	2	N.D.
Pentachlorophenol	D037	0.040	100	N.D.
Pyridine	D038	0.040	5	N.D.
2,4,5-Trichlorophenol	D041	0.040	400	N.D.
2,4,6-Trichlorophenol	D042	0.0080	2	N.D.

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Belinda C. Vega
Laboratory Director

Please Note:
Analytes reported as N.D. were not present above the stated limit of detection. "D.L. Factor" greater than 1.0 indicates that matrix effects and/or other factors required additional sample dilution and a higher dectection limit.

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil	Relogged:	Mar 31, 1992
Lafayette, CA 94549	Analysis for:	Ignitability		
Attention: Brian Thomas	First Sample #:	203-1223	Analyzed:	Apr 3, 1992
			Reported:	Apr 16, 1992

LABORATORY ANALYSIS FOR: Ignitability

Sample Number	Sample Description	Detection Limit mg/kg	Sample Result mg/kg
203-1223	CONC	NA	> 100 C
203-1224	SB1-0	NA	> 100 C

Analytes reported as N.D. were not present above the stated limit of detection.

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Laboratory Director

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil, CONC	Relogged:	Mar 31, 1992
Lafayette, CA 94549	Analysis Method:	EPA 8080	Extracted:	Apr 8, 1992
Attention: Brian Thomas	Lab Number:	203-1223	Analyzed:	Apr 9, 1992
			Reported:	Apr 16, 1992

POLYCHLORINATED BIPHENYLS (EPA 8080)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
PCB 1016	20	N.D.
PCB 1221	80	N.D.
PCB 1232	20	N.D.
PCB 1242	20	N.D.
PCB 1248	20	N.D.
PCB 1254	20	N.D.
PCB 1260	20	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

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Laboratory Director

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil, CONC	Relogged:	Mar 31, 1992
Lafayette, CA 94549			Extracted:	Apr 7, 1992
Attention: Brian Thomas	Lab Number:	203-1223	Reported:	Apr 16, 1992

INORGANIC PERSISTENT AND BIOACCUMULATIVE TOXIC SUBSTANCES

	Soluble Threshold Limit Concentration (Waste Extraction Test)			Total Threshold Limit Concentration		
Analyte	STLC Max. Limit (mg/L)	Detection Limit (mg/L)	Analysis Result (mg/L)	TTLC Max. Limit (mg/kg)	Detection Limit (mg/kg)	Analysis Result (mg/kg)
Antimony	15	0.10	-	500	5.0	N.D.
Arsenic	5.0	0.10	-	500	5.0	1.6
Barium	100	0.10	-	10,000	5.0	85
Beryllium	0.75	0.010	-	75	0.50	4.2
Cadmium	1.0	0.010	-	100	0.50	1.9
Chromium (VI)	5.0	0.0050	-	500	0.050	-
Chromium (III)	560	0.010	-	2,500	0.50	40
Cobalt	80	0.050	-	8,000	2.5	7.8
Copper	25	0.010	-	2,500	0.50	110
Lead	5.0	0.10	0.26	1,000	5.0	83
Mercury	0.20	0.00020	-	20	0.010	0.015
Molybdenum	350	0.050	-	3,500	2.5	27
Nickel	20	0.050	-	2,000	2.5	41
Selenium	1.0	0.10	-	100	5.0	N.D.
Silver	5.0	0.010	-	500	0.50	N.D.
Thallium	7.0	0.10	-	700	5.0	N.D.
Vanadium	24	0.050	-	2,400	2.5	28
Zinc	250	0.010	-	5,000	0.50	110
Asbestos	-	10	-	10,000	100	-
Fluoride	180	0.10	-	18,000	1.0	-

TTLC results are reported as mg/kg of wet weight. Asbestos results are reported as fibers/g.
Analytes reported as N.D. were not present above the stated limit of detection.

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Belinda C. Vega
Laboratory Director

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	
41-A Lafayette Circle	Method (units):	EPA 8240 (µg/L purged)	Q.C. Sample Dates
Lafayette, CA 94549	Analyst(s):	G. Meyer	
Attention: Brian Thomas	QC Sample #:	BLK041392	Analyzed: Apr 13, 1992
			Reported: Apr 16, 1992

QUALITY CONTROL DATA REPORT

Analyte	Sample Conc.	Spike Conc. Added	Conc. Matrix Spike	Matrix Spike % Recovery	Conc. Matrix Spike Duplicate	Matrix Spike Duplicate % Recovery	Relative % Difference
1,1-Dichloro-ethene	N.D.	50	44	88	49	98	11
Trichloroethene	N.D.	50	43	86	45	90	4.5
Benzene	N.D.	50	48	96	47	94	2.1
Toluene	N.D.	50	50	100	49	98	2
Chlorobenzene	N.D.	50	46	92	47	94	2.2

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery:	$\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}}$	x 100
Relative % Difference:	$\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}}$	x 100

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	
41-A Lafayette Circle	Method:	EPA 8270	Q.C. Sample Dates
Lafayette, CA 94549	Analyst(s):	N. Injejikian	Extracted: Apr 1, 1992
Attention: Brian Thomas	QC Sample #:	BLK040192	Analyzed: Apr 8, 1992
			Reported: Apr 16, 1992

QUALITY CONTROL DATA REPORT

Analyte	Sample Conc.	Spike Conc. Added	Conc. Matrix Spike	Matrix Spike % Recovery	Conc. Matrix Spike Duplicate	Matrix Spike Duplicate % Recovery	Relative % Difference
Phenol	N.D.	100	83	83	75	75	10
2-Chlorophenol	N.D.	100	102	102	108	108	5.7
1,4-Dichloro-benzene	N.D.	50	33	66	34	68	3.0
N-Nitroso-Di-N-propylamine	N.D.	50	36	72	40	80	10
1,2,4-Trichloro-benzene	N.D.	50	36	72	36	72	0
4-Chloro-3-Methylphenol	N.D.	100	70	70	67	67	4.4
Acenaphthene	N.D.	50	25	50	20	40	22
4-Nitrophenol	N.D.	100	101	101	99	99	2.0
2,4-Dinitro-toluene	N.D.	50	51	102	51	102	0
Pentachloro-phenol	N.D.	100	113	113	112	112	0.9
Pyrene	N.D.	50	51	102	49	98	4.0

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery: $\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}} \times 100$

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E.A. Engineering
41-A Lafayette Circle
Lafayette, CA 94549
Attention: Brian Thomas

Client Project ID: EA 92-2/ Arco #0608

QC Sample Group: 2031223-4

Reported: Apr 16, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Antimony	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper
Method:	EPA 6010	EPA 6010	EPA 6010	EPA 6010	EPA 6010	EPA 6010	EPA 6010
Analyst:	S. Foster	S. Foster	S. Foster	S. Foster	S. Foster	S. Foster	S. Foster
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Apr 7, 1992	Apr 7, 1992	Apr 7, 1992	Apr 7, 1992	Apr 7, 1992	Apr 7, 1992	Apr 7, 1992
QC Sample #:	204-0090	204-0090	204-0090	204-0090	204-0090	204-0090	204-0090
Sample Conc.:	N.D.	180	4.7	2.5	45	12	38
Spike Conc. Added:	50	50	50	50	50	50	50
Conc. Matrix Spike:	46	220	50	45	89	57	83
Matrix Spike % Recovery:	92	80	91	85	88	90	90
Conc. Matrix Spike Dup.:	48	220	51	46	88	59	85
Matrix Spike Duplicate % Recovery:	96	80	93	87	86	94	94
Relative % Difference:	4.3	0	2	2.2	1.1	3.5	2.4

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

$$\text{\% Recovery:} = \frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$$

$$\text{Relative \% Difference:} = \frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}} \times 100$$

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E.A. Engineering
41-A Lafayette Circle
Lafayette, CA 94549
Attention: Brian Thomas

Client Project ID: EA 92-2/ Arco #0608

QC Sample Group: 2031223-4

Reported: Apr 16, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Molybdenum	Nickel	Silver	Thallium	Vanadium	Zinc	Arsenic
Method:	EPA 6010	EPA 6010	EPA 6010	EPA 7841	EPA 6010	EPA 6010	EPA 7060
Analyst:	S. Foster	S. Foster	S. Foster	S. Foster	S. Foster	S. Foster	S. Foster
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Apr 7, 1992	Apr 7, 1992	Apr 8, 1992	Apr 7, 1992	Apr 7, 1992	Apr 7, 1992	Apr 7, 1992
QC Sample #:	204-0090	204-0090	204-0090	204-0090	204-0090	204-0090	204-0090
Sample Conc.:	37	43	N.D.	N.D.	59	53	N.D.
Spike Conc. Added:	50	50	50	25	50	50	25
Conc. Matrix Spike:	78	85	55	21	102	98	20
Matrix Spike % Recovery:	82	84	110	84	86	90	80
Conc. Matrix Spike Dup.:	79	86	55	23	104	100	20
Matrix Spike Duplicate % Recovery:	84	86	110	92	90	94	80
Relative % Difference:	1.3	1.2	0	9.1	1.9	2.0	0

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Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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E.A. Engineering
41-A Lafayette Circle
Lafayette, CA 94549
Attention: Brian Thomas

Client Project ID: EA 92-2/ Arco #0608

QC Sample Group: 2031223-4

Reported: Apr 16, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Selenium	Lead	Mercury	Chromium VI	TCLP Lead	TCLP Arsenic	TCLP Selenium
Method:	EPA 7740	EPA 7421	EPA 7471	EPA 7196	EPA 239.2	EPA 206.2	EPA 270.2
Analyst:	S. Foster	S. Foster	. Chiaravallot	. Chiaravallot	S. Chin	F. Contreras	F. Contreras
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/L	mg/L
Date Analyzed:	Apr 7, 1992	Apr 7, 1992	Apr 9, 1992	Apr 7, 1992	Apr 3, 1992	Apr 6, 1992	Apr 6, 1992
QC Sample #:	204-0031	204-0090	204-0022	204-0090	204-0094	203-3040	203-3040
Sample Conc.:	N.D.	3.0	N.D.	N.D.	0.06	0.0087	0.0073
Spike Conc. Added:	25	25	0.25	50	1.0	0.50	0.50
Conc. Matrix Spike:	26	30	0.24	39	1.0	0.5	0.44
Matrix Spike % Recovery:	104	108	96	78	94	98	86
Conc. Matrix Spike Dup.:	26	29	0.22	40	1.1	0.48	0.44
Matrix Spike Duplicate % Recovery:	104	104	88	80	100	94	86
Relative % Difference:	0	3.4	8.7	2.5	9.5	4.1	0

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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E.A. Engineering
41-A Lafayette Circle
Lafayette, CA 94549
Attention: Brian Thomas

Client Project ID: EA 92-2/ Arco #0608

QC Sample Group: 2031223-4

Reported: Apr 16, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	TCLP Barium	TCLP Cadmium	TCLP Chromium	TCLP Silver	TCLP Mercury	PCB 1260	PCB 1260
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 245.1	EPA 8080	EPA 8080
Analyst:	M. Mistry	M. Mistry	M. Mistry	M. Mistry	J. Martinez	M.G.	M.G.
Reporting Units:	mg/L	mg/L	mg/L	mg/L	mg/L	ug/Kg	ug/Kg
Date Analyzed:	Apr 6, 1992	Apr 6, 1992	Apr 6, 1992	Apr 6, 1992	Apr 3, 1992	Apr 9, 1992	Apr 9, 1992
QC Sample #:	203-4390	203-4390	203-4390	203-4390	203-0091	BLK040392	BLK040392
Sample Conc.:	0.6	N.D.	0.13	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	10	0.002	125	125
Conc. Matrix Spike:	11	10	9.5	8.2	0.0019	110	110
Matrix Spike % Recovery:	104	100	94	82	95	88	88
Conc. Matrix Spike Dup.:	11	10	9.5	8.2	0.002	120	110
Matrix Spike Duplicate % Recovery:	104	100	94	82	100	96	88
Relative % Difference:	0	0	0	0	5.1	8.7	0

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Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 18, 1992
41-A Lafayette Circle	Sample Descript:	Extract of Soil Sample, SB1-0	Relogged:	Mar 31, 1992
Lafayette, CA 94549			Extracted:	Apr 6, 1992
Attention: Brian Thomas	Lab Number:	203-1224	Analyzed:	Apr 9, 1992
			Reported:	Apr 16, 1992

TCLP ORGANICS

Analyte	EPA HW No.	Detection Limit	Regulatory Level	Sample Results
		mg/L (ppm)	mg/L (ppm)	mg/L (ppm)
VOLATILES D.L. Factor: 1				
Benzene	D018	0.020	0.5	N.D.
Carbon tetrachloride	D019	0.020	0.5	N.D.
Chlorobenzene	D021	0.020	100	N.D.
Chloroform	D022	0.020	6	N.D.
1,2-Dichloroethane	D028	0.020	0.5	N.D.
1,1-Dichloroethylene	D029	0.020	0.7	N.D.
Methyl ethyl ketone	D035	0.10	200	N.D.
Tetrachloroethylene	D039	0.020	0.7	N.D.
Trichloroethylene	D040	0.020	0.5	N.D.
Vinyl chloride	D043	0.020	0.2	N.D.
SEMI-VOLATILE D.L. Factor: 1				
o-Cresol	D023	0.0080	200	N.D.
m-, p-Cresol	D024, D025	0.0080	200	N.D.
1,4-Dichlorobenzene	D027	0.0080	7.5	N.D.
2,4-Dinitrotoluene	D030	0.0080	0.13	N.D.
Hexachlorobenzene	D032	0.0080	0.13	N.D.
Hexachloro-1,3-butadiene	D033	0.0080	0.5	N.D.
Hexachloroethane	D034	0.0080	3	N.D.
Nitrobenzene	D036	0.0080	2	N.D.
Pentachlorophenol	D037	0.040	100	N.D.
Pyridine	D038	0.040	5	N.D.
2,4,5-Trichlorophenol	D041	0.040	400	N.D.
2,4,6-Trichlorophenol	D042	0.0080	2	N.D.

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Belinda C. Vega
Laboratory Director

Please Note:
Analytes reported as N.D. were not present above the stated limit of detection. "D.L. Factor" greater than 1.0 indicates that matrix effects and/or other factors required additional sample dilution and a higher dectection limit.

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E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil, SB1-0	Relogged:	Mar 31, 1992
Lafayette, CA 94549	Analysis Method:	EPA 8080	Extracted:	Apr 8, 1992
Attention: Brian Thomas	Lab Number:	203-1224	Analyzed:	Apr 9, 1992
			Reported:	Apr 16, 1992

POLYCHLORINATED BIPHENYLS (EPA 8080)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
PCB 1016	20	N.D.
PCB 1221	80	N.D.
PCB 1232	20	N.D.
PCB 1242	20	N.D.
PCB 1248	20	N.D.
PCB 1254	20	N.D.
PCB 1260	20	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Laboratory Director

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File
Brian T.

E.A. Engineering	Client Project ID:	EA 92-2/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil, SB1-0	Relogged:	Mar 31, 1992
Lafayette, CA 94549			Extracted:	Apr 7, 1992
Attention: Brian Thomas	Lab Number:	203-1224	Reported:	Apr 16, 1992

SC033.C1-136/R/21/04/92

INORGANIC PERSISTENT AND BIOACCUMULATIVE TOXIC SUBSTANCES

	Soluble Threshold Limit Concentration (Waste Extraction Test)			Total Threshold Limit Concentration		
Analyte	STLC Max. Limit (mg/L)	Detection Limit (mg/L)	Analysis Result (mg/L)	TTLC Max. Limit (mg/kg)	Detection Limit (mg/kg)	Analysis Result (mg/kg)
Antimony	15	0.10	-	500	5.0	N.D.
Arsenic	5.0	0.10	-	500	5.0	2.2
Barium	100	0.10	-	10,000	5.0	170
Beryllium	0.75	0.010	-	75	0.50	4.5
Cadmium	1.0	0.010	-	100	0.50	1.9
Chromium (VI)	5.0	0.0050	-	500	0.050	-
Chromium (III)	560	0.010	-	2,500	0.50	32
Cobalt	80	0.050	-	8,000	2.5	9.4
Copper	25	0.010	-	2,500	0.50	38
Lead	5.0	0.10	-	1,000	5.0	24
Mercury	0.20	0.00020	-	20	0.010	0.025
Molybdenum	350	0.050	-	3,500	2.5	32
Nickel	20	0.050	-	2,000	2.5	34
Selenium	1.0	0.10	-	100	5.0	N.D.
Silver	5.0	0.010	-	500	0.50	N.D.
Thallium	7.0	0.10	-	700	5.0	N.D.
Vanadium	24	0.050	-	2,400	2.5	34
Zinc	250	0.010	-	5,000	0.50	56
Asbestos	-	10	-	10,000	100	-
Fluoride	180	0.10	-	18,000	1.0	-

TTLC results are reported as mg/kg of wet weight. Asbestos results are reported as fibers/g.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Bill C. V

Belinda C. Vega
Laboratory Director

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E.A. Engineering	Client Project ID: EA-92-2/ Arco #0608	Sampled: Mar 26, 1992
41-A Lafayette Circle	Sample Descript: Soil, CONC	Relogged: Mar 31, 1992
Lafayette, CA 94549	Analysis Method: See below	
Attention: Brian Thomas	Lab Number: @2031223	Reported: Apr 16, 1992

STATIC ACUTE HAZARDOUS WASTE BIOASSAY

Static [X]
Cont. Flow [ ]

Screening [ ]
Definitive [X]

Species: Pimephales promelas
Common Name: Fat head minnow
Mean length: 35 mm
Mean weight: 0.53 g
Supplier: Sticklebacks Unlimited
Acclimation Temp.: 19 degrees C

Organisms/Tank: 10
Replicates: 2
Organisms/Conc.: 20
Tank Depth: 13 cm
Tank Volume: 10 L

Dilution Water: Synthetic Softwater

	Alkalinity, mg/L		Hardness, mg/L	
	Initial	Final	Initial	Final
Control	36	37	43	44
100 ppm	44	45	59	60
320 ppm	52	53	63	64
1000 ppm	64	65	79	80

	Initial	24 Hr	48 Hr	72 Hr	96 Hr
DATE	4/3/92	4/4/92	4/5/92	4/6/92	4/7/92

	DO mg/L	C Temp	pH Units	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	Total Dead
Control	8.8	19	7.5	8.7	19	7.5	0	7.8	19	7.2	0	8.6	19	7.1	0	7,2	19	7.2	0	0
100 ppm	7.8	19	7.8	7.6	19	7.7	0	6.6	19	7.3	0	7.0	19	7.2	0	7.1	19	7.1	0	0
180 ppm	7.6	19	8.8	7.4	19	8.6	0	6.8	19	7.5	0	6.9	19	7.2	0	7.0	19	7.1	0	0
320 ppm	8.4	19	9.6	8.3	19	9.4	0	8.2	19	7.5	0	8.0	19	7.4	0	7.6	19	7.2	0	0
560 ppm	8.2	19	9.7	8.0	19	9.6	0	7.3	19	8.9	0	7.3	19	8.0	0	7.4	19	7.8	0	0
1000 ppm	8.1	19	10.1	8.0	19	10.0	0	7.9	19	9.6	0	7.4	19	8.9	0	7.5	19	8.6	0	0

LC-50: > 1000 ppm

LC-50 Calculation Method: Moving average angle

Remarks:

Analyst: D.George

Method Reference: Static Acute Bioassay Procedures for Hazardous Waste Samples, September 1987, California Department of Fish and Game WPCL

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

E.A. Engineering	Client Project ID: EA-92-2/ Arco #0608	Sampled: Mar 26, 1992
41-A Lafayette Circle	Sample Descript: Soil, CONC	Relogged: Mar 31, 1992
Lafayette, CA 94549	Analysis Method: See below	
Attention: Brian Thomas	Lab Number: @203122 (duplicate)	Reported: Apr 16, 1992

STATIC ACUTE HAZARDOUS WASTE BIOASSAY

Static [X]
Cont. Flow [ ]

Screening [ ]
Definitive [X]

Species: Pimephales promelas
Common Name: Fat head minnow
Mean length: 35 mm
Mean weight: 0.53 g
Supplier: Sticklebacks Unlimited
Acclimation Temp.: 19 degrees C

Organisms/Tank: 10
Replicates: 2
Organisms/Conc.: 20
Tank Depth: 13 cm
Tank Volume: 10 L

Dilution Water: Synthetic Softwater

	Alkalinity, mg/L		Hardness, mg/L	
	Initial	Final	Initial	Final
Control	36	37	43	44
100 ppm	43	44	57	58
320 ppm	50	51	60	61
1000 ppm	63	64	77	78

	Initial	24 Hr	48 Hr	72 Hr	96 Hr
DATE	4/3/92	4/4/92	4/5/92	4/6/92	4/7/92

	DO mg/L	C Temp	pH Units	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	Total Dead
Control	8.8	19	7.5	8.7	19	7.5	0	7.8	19	7.2	0	8.6	19	7.1	0	8.2	19	7.2	0	0
100 ppm	7.6	19	8.7	7.4	19	8.5	0	6.6	19	7.6	0	6.8	19	7.3	0	6.7	19	7.2	0	0
180 ppm	7.7	19	9.0	7.5	19	8.8	0	6.8	19	7.6	0	6.7	19	7.4	0	6.7	19	7.2	0	0
320 ppm	7.5	19	9.5	7.3	19	9.3	0	7.0	19	8.5	0	7.1	19	8.0	0	7.0	19	7.4	0	0
560 ppm	7.7	19	9.7	7.6	19	9.6	0	7.7	19	9.1	0	7.4	19	8.4	0	7.1	19	7.9	0	0
1000 ppm	8.2	19	10.2	8.1	19	10.1	0	7.6	19	9.3	0	8.0	19	9.1	0	7.6	19	8.7	0	0

LC-50: > 1000 ppm

LC-50 Calculation Method: Moving average angle

Remarks:

Analyst: D.George

Method Reference: Static Acute Bioassay Procedures for Hazardous Waste Samples, September 1987, California Department of Fish and Game WPCL

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

E.A. Engineering	Client Project ID: EA-92-2/ Arco #0608	Sampled: Mar 26, 1992
41-A Lafayette Circle	Sample Descript: Soil, SB1-0	Relogged: Mar 31, 1992
Lafayette, CA 94549	Analysis Method: See below	
Attention: Brian Thomas	Lab Number: 2031224	Reported: Apr 16, 1992

STATIC ACUTE HAZARDOUS WASTE BIOASSAY

Static [X]
Cont. Flow [ ]

Screening [ ]
Definitive [X]

Species: Pimephales promelas
Common Name: Fat head minnow
Mean length: 35 mm
Mean weight: 0.53 g
Supplier: Sticklebacks Unlimited
Acclimation Temp.: 19 degrees C

Organisms/Tank: 10
Replicates: 2
Organisms/Conc.: 20
Tank Depth: 13 cm
Tank Volume: 10 L

Dilution Water: Synthetic Softwater

	Alkalinity, mg/L		Hardness, mg/L	
	Initial	Final	Initial	Final
Control	36	37	43	44
100 ppm	34	35	49	50
320 ppm	35	36	50	51
1000 ppm	37	38	51	52

	Initial	24 Hr	48 Hr	72 Hr	96 Hr
DATE	4/3/92	4/4/92	4/5/92	4/6/92	4/7/92

	DO mg/L	C Temp	pH Units	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	Total Dead
Control	8.8	19	7.5	8.7	19	7.5	0	7.8	19	7.2	0	8.6	19	7.1	0	8.2	19	7.2	0	0
100 ppm	7.7	19	7.4	7.5	19	7.4	0	7.4	19	7.4	0	7.6	19	7.3	0	7.5	19	7.3	0	0
180 ppm	7.2	19	7.4	7.1	19	7.3	0	7.4	19	7.3	0	7.3	19	7.4	0	7.2	19	7.3	0	0
320 ppm	8.1	19	7.3	7.9	19	7.4	0	7.9	19	7.3	0	8.0	19	7.4	0	7.7	19	7.4	0	0
560 ppm	7.7	19	7.4	7.4	19	7.4	0	7.7	19	7.3	0	7.8	19	7.3	0	7.6	19	7.4	0	0
1000 ppm	7.9	19	7.4	7.8	19	7.3	0	7.3	19	7.3	0	7.4	19	7.4	0	7.2	19	7.3	0	0

LC-50: > 1000 ppm

LC-50 Calculation Method: Moving average angle

Remarks:

Analyst: D. George

Method Reference: Static Acute Bioassay Procedures for Hazardous Waste Samples, September 1987, California Department of Fish and Game WPCL

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

E.A. Engineering	Client Project ID: EA-92-2/ Arco #0608	Sampled: Mar 26, 1992
41-A Lafayette Circle	Sample Descript: Soil, SB1-0	Relogged: Mar 31, 1992
Lafayette, CA 94549	Analysis Method: See below	
Attention: Brian Thomas	Lab Number: 2031224 (duplicate)	Reported: Apr 16, 1992

STATIC ACUTE HAZARDOUS WASTE BIOASSAY

Static [X]
Cont. Flow [ ]

Screening [ ]
Definitive [X]

Species: Pimephales promelas
Common Name: Fat head minnow
Mean length: 35 mm
Mean weight: 0.53 g
Supplier: Sticklebacks Unlimited
Acclimation Temp.: 19 degrees C

Organisms/Tank: 10
Replicates: 2
Organisms/Conc.: 20
Tank Depth: 13 cm
Tank Volume: 10 L

Dilution Water: Synthetic Softwater

	Alkalinity, mg/L		Hardness, mg/L	
	Initial	Final	Initial	Final
Control	36	37	43	44
100 ppm	35	36	50	51
320 ppm	36	37	50	51
1000 ppm	38	39	52	53

	Initial	24 Hr	48 Hr	72 Hr	96 Hr
DATE	4/3/92	4/4/92	4/5/92	4/6/92	4/7/92

	DO mg/L	C Temp	pH Units	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	DO mg/L	C Temp	pH Units	# M Dead	Total Dead
Control	8.8	19	7.5	8.7	19	7.5	0	7.8	19	7.2	0	8.6	19	7.1	0	8.2	19	7.2	0	0
100 ppm	7.4	19	7.2	7.0	19	7.2	0	6.9	19	7.2	0	7.0	19	7.3	0	6.9	19	7.2	0	0
180 ppm	7.9	19	7.2	7.8	19	7.3	0	7.9	19	7.2	0	8.0	19	7.3	0	7.8	19	7.3	0	0
320 ppm	7.3	19	7.2	7.0	19	7.2	0	6.7	19	7.2	0	6.9	19	7.2	0	6.6	19	7.2	0	0
560 ppm	7.7	19	7.3	7.5	19	7.3	0	7.4	19	7.3	0	7.4	19	7.2	0	7.2	19	7.2	0	0
1000 ppm	7.5	19	7.3	7.3	19	7.3	0	7.0	19	7.2	0	7.1	19	7.3	0	7.1	19	7.2	0	0

LC-50: > 1000 ppm

LC-50 Calculation Method: Moving average angle

Remarks:

Analyst: D. George

Method Reference: Static Acute Bioassay Procedures for Hazardous Waste Samples, September 1987, California Department of Fish and Game WPCL

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

@2031223.EEE <4>

ARCO Products Company Division of AtlanticRichfieldCompany — **Task Order No.** [redacted] — **Chain of Custody**

ARCO Facility no. 0608	City (Facility) SAN LORENZO	Project manager (Consultant) BRENT THOMAS	Laboratory name SEQUOIA
ARCO engineer CHARLES CARMEL	Telephone no. (ARCO) 415 571-2431	Telephone no. (Consultant) 510-283-7077	Fax no. (Consultant) 510 283 3894
Consultant name EA ENGINEERING	Address (Consultant) 41 LAFAYETTE CIRCLE		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	
CONC.		2	~~X~~ SI		Comp Grab	X		3/26/92	1535					X		X		12031223 AB			
SB1-0		2	X			X			1545					X		X		↓	1224 AB		
SB1-2		2	X			X			1615									HOLD			
SB1-5		2	X			X		↓	1645									HOLD			

Method of shipment: HAND DELIVERED

Special detection Limit/reporting

Special QA/QC

Remarks: HOLD SAMPLES SB1-2 + SB1-5 UNTIL RESULTS OF SB1-0 HAVE BEEN REVIEWED

Lab number

Turnaround time

- Priority Rush 1 Business Day ☒
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☐

Condition of sample:

Temperature received:

	Date	Time	
Relinquished by sampler	26 Mar 92	1907	Received by
Relinquished by			Received by
Relinquished by			Received by laboratory

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APPC-3292 (2-91)

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

File Brian T.

8633.01

E.A. Engineering	Client Project ID:	EA-92-1/ Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Matrix Descript:	Soil	Relogged:	Apr 28, 1992
Lafayette, CA 94549	Analysis Method:	EPA 418.1 (I.R. with clean-up)	Extracted:	Apr 28, 1992
Attention: Brian Thomas	First Sample #:	204-1171	Analyzed:	Apr 28, 1992
			Reported:	Apr 30, 1992

8633.01-141/R 104/05/92

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/kg (ppm)
204-1171	SB1-2	3,300

RECEIVED

MAY 04 1992

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
WESTERN REGIONAL OPERATIONS

Detection Limits:	10

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

E.A. Engineering	Client Project ID:	EA-92-1 / Arco #0608	Sampled:	Mar 26, 1992
41-A Lafayette Circle	Sample Descript:	Soil	Relogged:	Apr 28, 1992
Lafayette, CA 94549	Analysis Method:	EPA 8240	Analyzed:	Apr 29, 1992
Attention: Brian Thomas	Lab Number:	204-1171	Reported:	Apr 30, 1992

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	5,000	N.D.
Benzene	1,000	N.D.
Bromodichloromethane	1,000	N.D.
Bromoform	1,000	N.D.
Bromomethane	1,000	N.D.
2-Butanone	5,000	N.D.
Carbon disulfide	1,000	N.D.
Carbon tetrachloride	1,000	N.D.
Chlorobenzene	1,000	N.D.
Chloroethane	1,000	N.D.
2-Chloroethyl vinyl ether	5,000	N.D.
Chloroform	1,000	N.D.
Chloromethane	1,000	N.D.
Dibromochloromethane	1,000	N.D.
1,1-Dichloroethane	1,000	N.D.
1,2-Dichloroethane	1,000	N.D.
1,1-Dichloroethene	1,000	N.D.
cis-1,2-Dichloroethene	1,000	N.D.
trans-1,2-Dichloroethene	1,000	N.D.
1,2-Dichloropropane	1,000	N.D.
cis-1,3-Dichloropropene	1,000	N.D.
trans-1,3-Dichloropropene	1,000	N.D.
Ethylbenzene	1,000	N.D.
2-Hexanone	5,000	N.D.
Methylene chloride	2,500	N.D.
4-Methyl-2-pentanone	5,000	N.D.
Styrene	1,000	N.D.
1,1,2,2-Tetrachloroethane	1,000	N.D.
Tetrachloroethene	1,000	N.D.
Toluene	1,000	N.D.
1,1,1-Trichloroethane	1,000	N.D.
1,1,2-Trichloroethane	1,000	N.D.
Trichloroethene	1,000	N.D.
Trichlorofluoromethane	1,000	N.D.
Vinyl acetate	1,000	N.D.
Vinyl chloride	1,000	N.D.
Total Xylenes	1,000	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

E.A. Engineering
41-A Lafayette Circle
Lafayette, CA 94549
Attention: Brian Thomas

Client Project ID: EA-92-1/ Arco #0608

QC Sample Group: 204-1171

Reported: Apr 30, 1992

QUALITY CONTROL DATA REPORT

ANALYTE
Oil & Grease

Method:	EPA 418.1
Analyst:	mg/Kg
Reporting Units:	S.L.
Date Analyzed:	Apr 28, 1992
QC Sample #:	Matrix Blank

Sample Conc.:	N.D.
Spike Conc. Added:	50
Conc. Matrix Spike:	45
Matrix Spike % Recovery:	90
Conc. Matrix Spike Dup.:	45
Matrix Spike Duplicate % Recovery:	90
Relative % Difference:	0.0

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

E.A. Engineering	Client Project ID:	EA-92-1/ Arco #0608	
41-A Lafayette Circle	Method (units):	EPA 8240 (µg/L purged)	Q.C. Sample Dates
Lafayette, CA 94549	Analyst(s):	S.Scott	
Attention: Brian Thomas	QC Sample #:	Matrix Blank	Analyzed: Apr 29, 1992
			Reported: Apr 30, 1992

QUALITY CONTROL DATA REPORT

Analyte	Sample Conc.	Spike Conc. Added	Conc. Matrix Spike	Matrix Spike % Recovery	Conc. Matrix Spike Duplicate	Matrix Spike Duplicate % Recovery	Relative % Difference
1,1-Dichloro-ethene	N.D.	50	41	82	42	84	2.4
Trichloroethene	N.D.	50	38	76	40	80	5.1
Benzene	N.D.	50	40	80	41	82	2.5
Toluene	N.D.	50	41	82	44	88	7.1
Chlorobenzene	N.D.	50	40	80	42	84	4.9

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery: $\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{(\text{Conc. of M.S. + Conc. of M.S.D.}) / 2} \times 100$

ARCO Products Company — Division of AtlanticRichfieldCompany

Task Order No. EA-92-#1 | 94549 | **Chain of Custo**

ARCO Facility no. 0608	City (Facility) SAN LORENZO	Project manager (Consultant) BRIAN THOMAS	Laboratory name SEQUOIA
ARCO engineer CHARLES CARMEL	Telephone no. (ARCO) 415 571-2439	Telephone no. (Consultant) 510 283-7073	Fax no. (Consultant) 510 283-3884
Consultant name EA ENGINEERING	Address (Consultant) 41 LAFAYETTE CIRCLE		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Water	Other	Preservation: Ice	Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
CONC.		2	~~X~~		Comp	X		3/26/92	1535					X		X		2031223AB				
SB1-0		2	X			X			1545					X		X		↓	1224AB			
SB1-2		2	X			X			1615									HOLD	204/17			
SB1-5		2	X			X		↓	1645									HOLD				

Special detection Limit/reporting

Special QA/QC

Method of shipment: HAND DELIVERED

Remarks: HOLD SAMPES SB1-2 + SB1-5 UNTIL RESULTS OF SB1-0 HAVE BEEN REVIEWED

Lab number

Turnaround time

- Priority Rush 1 Business Day ☒
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☐

Condition of sample:		Temperature received:	
Relinquished by sampler	Date 26 Mar 92 Time 1907	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date Time

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

State of California—Health and Welfare Agency

RECEIVED

See instructions on back of page 6.

Department of Health Se[rvices]
Toxic Substances Control Pr[ogram]
Sacramento, Ca[lifornia]

[Pl]ease print or type. Form designed for use on elite (12-pitch typewriter).

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. C,A,L,0,0,0,0,0,0,7,2,1,5	Manifest Document No. 0 0 0 0 1	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ARCO
P. O. Box 5811, San Mateo, CA 94402
4. Generator's Phone (415) 571-2434/571-2428

GETTLER-RYAN INC. GENERAL CONTRACTO[RS]

A. State Manifest Document Number 9150998
B. State Generator's ID H Y H 0 3 6 0 1 5 6 6 0

5. Transporter 1 Company Name: H & H Ship Service Company	6. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8	C. State Transporter's ID: 300924 D. Transporter's Phone: (415) 543-4835
7. Transporter 2 Company Name	8. US EPA ID Number	E. State Transporter's ID F. Transporter's Phone
9. Designated Facility Name and Site Address: H & H Ship Service Company, 220 China Basin Street, San Francisco, CA 94107	10. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8	G. State Facility's ID: C A D 0 0 4 7 7 1 1 6 8 H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. OIL AND WATER NON-RCRA HAZARDOUS WASTE LIQUID	0 0 2	D M	0 0 1 1 0	G	State 133, 22[3] EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL, OIL AND WATER
PROFILE #A1811

K. Handling Codes for Wastes Listed Above
a. 01
b.
c.
d.

15. Special Handling Instructions and Additional Information
JOB #10475
24 Hr. Emergency Contact: H & H #(415) 543-4835
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.
JOB SITE: ARCO STATION, #0608
17601 Hesperian Blvd.
San Lorenzo, California

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classifie[d], packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and futur[e] threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best wast[e] management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year
GODOFRED F. DE LEON	[signature]	0 6 0 2 9

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
ROBERT V. PETRUCCI	Robert V. Petrucci	0 6 0 2 9

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year

GENERATOR / TRANSPORTER / FACILITY

IN CASE OF EMERGENCY OR SPILL CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802 WITHIN CALIFORNIA CALL 1-800-85…

DO NOT WRITE BELOW THIS LINE.

8022A (12/90)
8700—22

Blue: GENERATOR SENDS THIS COPY TO DHS WITHIN 30 DA[YS]
To: P.O. Box 400, Sacramento, CA 95812-0400