

ENVIRONMENTAL
PROTECTION

95 NOV 13 PM 3: 54

Date November 8, 1995

Project 20805-131.02

To:

Mr. Dale Kletke
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harborbay Parkway, Suite 250
Alameda, California 94502-6577

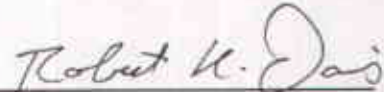
We are enclosing:

Copies	Description
<u>1</u>	<u>Status Letter, Site Characterization,</u> <u>ARCO service station 2111, San Leandro, California</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

For your:	<u> X </u>	Use	Sent by:	<u> </u>	Regular Mail
	<u> </u>	Approval		<u> </u>	Standard Air
	<u> </u>	Review		<u> </u>	Courier
	<u> </u>	Information		<u> X </u>	Other: <u>Cert. Mail</u>

Comments:

The enclosed status letter detailing site characterization activities is being sent to you per the request of ARCO Products Company. Please call if you have questions or comments.



Rob Davis
Staff Geologist

cc: Kevin Graves, RWQCB - SFBR
Michael Whelan, ARCO Products Company
John Young, EMCON
File

ARCO Products Company

Environmental Engineering
2155 South Bascom Avenue, Suite 202
Campbell, California 95008



Date: November 9, 1995

Re: ARCO Station # 2111 • 1156 Davis Street, San Leandro, CA
Status Letter Regarding Site Characterization

" I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached proposal or report are true and correct."

Submitted by:

A handwritten signature in black ink that reads "Michael R. Whelan". The signature is written in a cursive style.

Michael R. Whelan
Environmental Engineer



November 8, 1995
Project 20805-127.001

Mr. Dale Kletke
Alameda County Health Care Services Agency (ACHCSA)
Department of Environmental Health
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

Re: Site characterization, ARCO service station 2111, 1156 Davis Street, San Leandro, California

Dear Mr. Kletke:

EMCON, on behalf of ARCO Products Company (ARCO), is pleased to submit this letter regarding the initial phase of site characterization (Phase A) conducted at ARCO station 2111, 1156 Davis Street, San Leandro, California. The work performed was consistent with the scope of work proposed in EMCON's June 19, 1995, workplan, as verbally modified the week of July 10, 1995, by mutual agreement between EMCON and ACHCSA. Consistent with the agreed-upon modification, soil samples from the stockpile, and soil and groundwater samples from the well nearest the former waste-oil tank location (well MW-3) were not analyzed for volatile organic compounds (VOCs) or selected metals.

Between July 12 and 13, 1995, four exploratory borings (MW-1 through MW-4) were drilled at the project site to assess soil conditions (Figure 1). The borings were drilled to depths between 28.5 to 40 feet below ground surface (BGS) using hollow-stem auger drilling equipment. To assess the groundwater conditions on site, the borings were completed as groundwater monitoring wells using 4-inch-diameter polyvinyl chloride (PVC) casing and screen. Soil and groundwater samples were submitted to a state-certified laboratory and analyzed for total petroleum hydrocarbons as gasoline (TPHG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Soil and groundwater samples collected from well MW-3 were additionally analyzed for total recoverable petroleum hydrocarbon (TRPH) and total petroleum hydrocarbons as diesel (TPHD). Copies of the certified analytical reports and a site plan (Figure 1) showing the well locations are attached. Groundwater analytical results from wells MW-1 through MW-4 are presented in Figure 2.

EMCON is currently evaluating the initial characterization data collected during phase A and is awaiting a response from ACHCSA before proceeding with the next phase (phase B) of investigation. Phase B may include the installation of off-site groundwater



Mr. Dale Kletke
November 8, 1995
Page 2

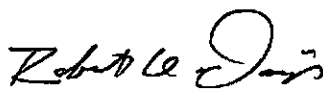
Project 20805-127.001

monitoring, air-sparge, vapor extraction, and additional on-site groundwater monitoring wells.

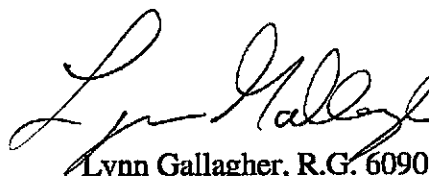
Upon completing the phase B assessment, EMCON will prepare a letter report summarizing the findings of all on- and off-site characterization work.

Sincerely,

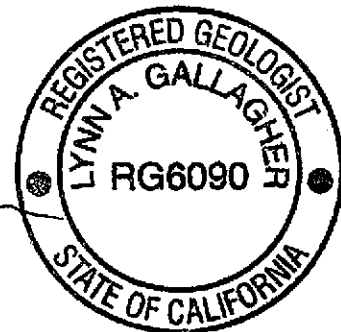
EMCON



Rob Davis
Staff Geologist

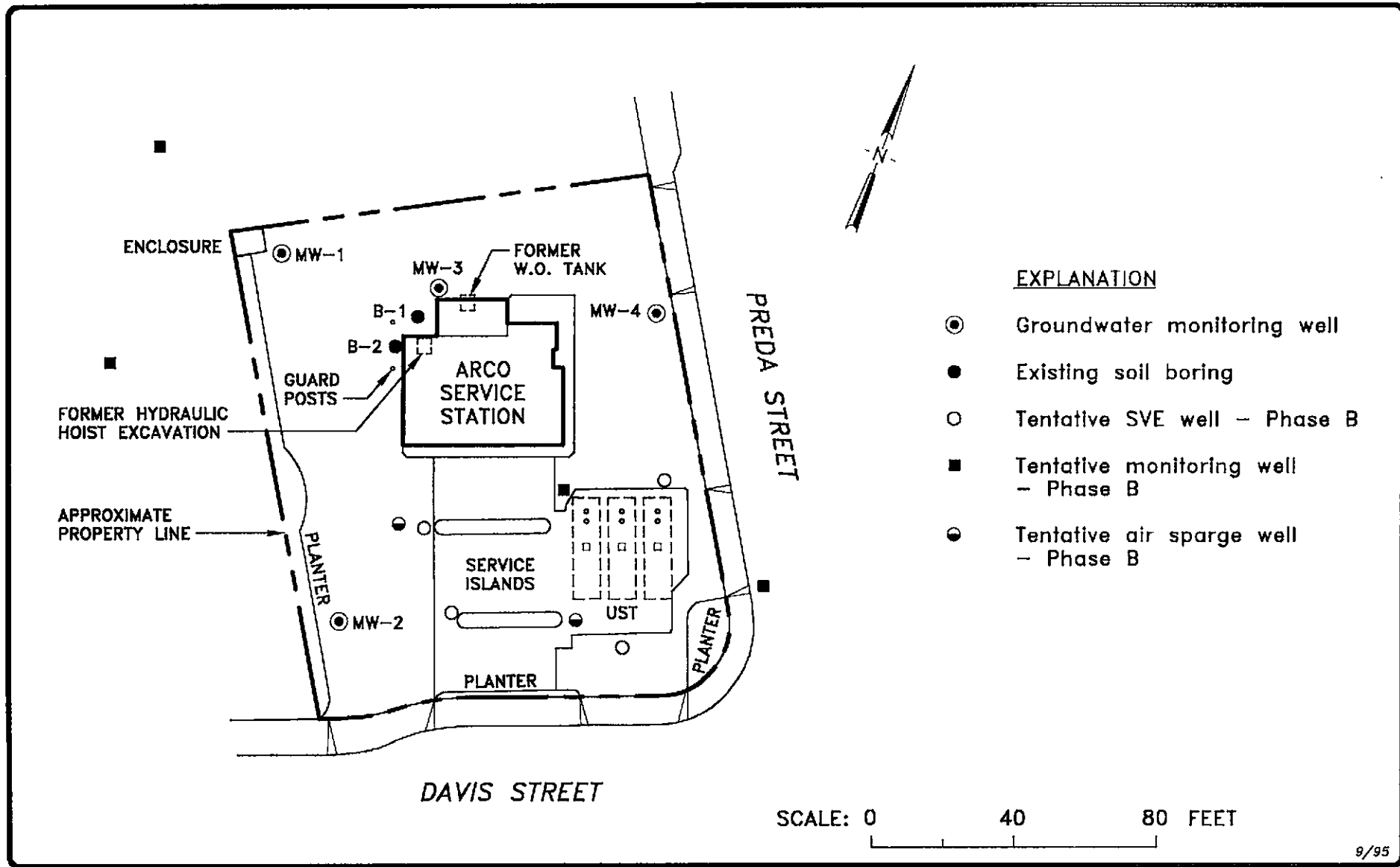


Lynn Gallagher, R.G. 6090
Project Geologist



Attachments: Figure 1 - Site Plan
Figure 2 - Groundwater Data
Certified Analytical Reports

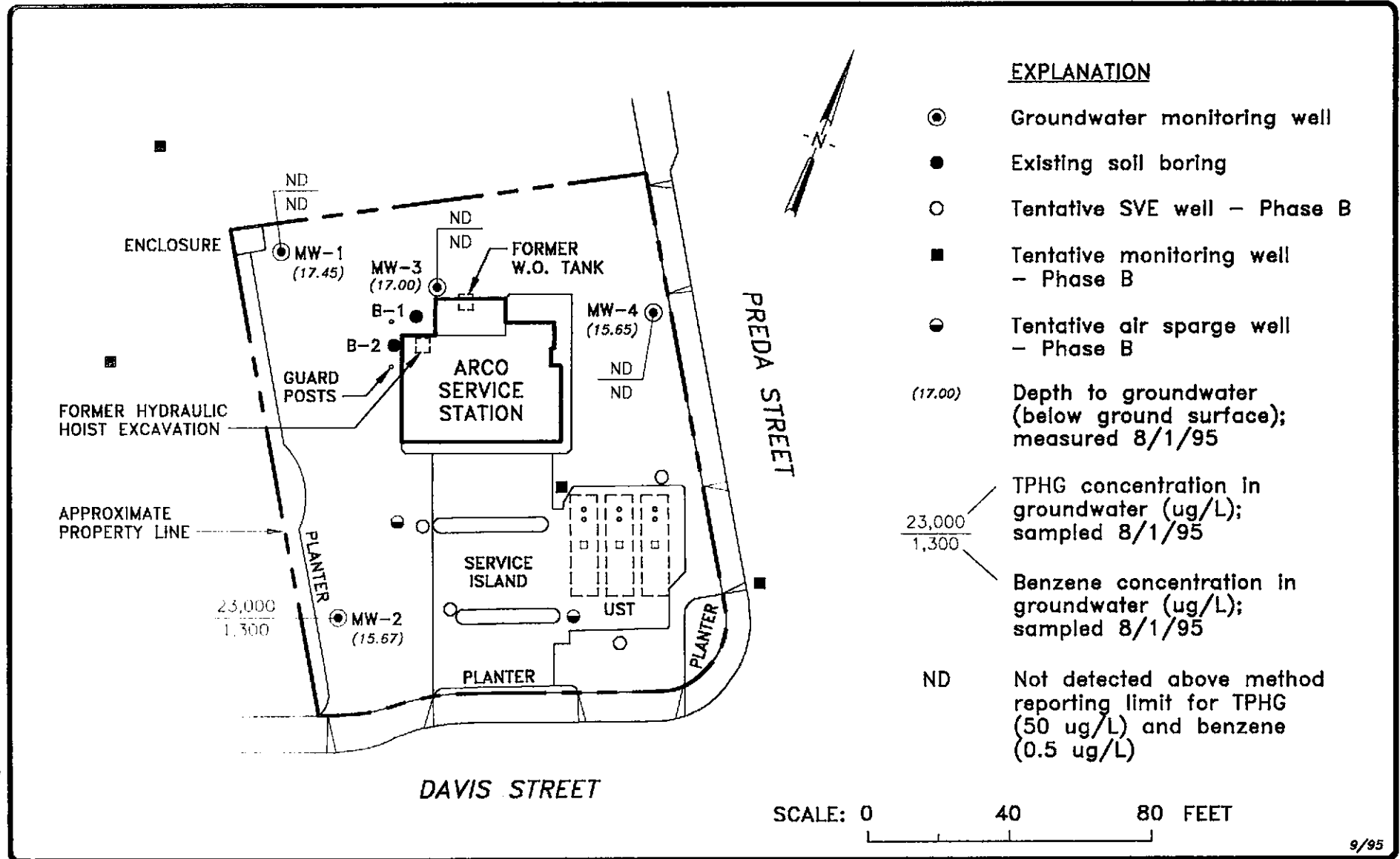
cc: Mike Whelan, ARCO
John Young, EMCON



ARCO PRODUCTS COMPANY
SERVICE STATION NO. 2111, 1156 DAVIS STREET
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE PLAN

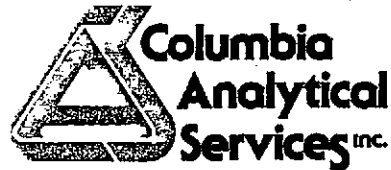
FIGURE
1
PROJECT NO.
805-127.01



ARCO PRODUCTS COMPANY
 SERVICE STATION NO. 2111, 1156 DAVIS STREET
 QUARTERLY GROUNDWATER MONITORING
 SAN LEANDRO, CALIFORNIA

GROUNDWATER CONDITIONS

FIGURE
2
 PROJECT NO.
 805-127.01



August 15, 1995

Service Request No: S950955

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **0805-127.01 / TO# 17075.00 / 2111 San Leandro**

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on August 1, 1995. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned Service Request No. S950955 - to help expedite our service please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 13, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely:

A handwritten signature in black ink, appearing to read "Steven L. Green".

Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read "Annelise J. Bazar".

Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number.	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro
Sample Matrix: Water

Service Request: S950955
Date Collected: 8/1/95
Date Received: 8/1/95
Date Extracted: NA
Date Analyzed: 8/8-11/95

BTEX and TPH as Gasoline
 EPA Methods 5030/8020/California DHS LUFT Method

Analyte:	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes, Total
Units:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Method Reporting Limit:	50	0.5	0.5	0.5	0.5

Sample Name	Lab Code	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes, Total
MW-1 (26)	S950955-001	ND	ND	ND	ND	1.0
MW-2 (26)	S950955-002	23,000	1,300	310	500	3,500
MW-3 (26)	S950955-003	ND	ND	ND	ND	ND
MW-4 (21)	S950955-004	ND	ND	ND	ND	ND
Method Blank	S950808-WB	ND	ND	ND	ND	ND
Method Blank	S950811-WB	ND	ND	ND	ND	ND

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro
Sample Matrix: Water

Service Request: S950955
Date Collected: 8/1/95
Date Received: 8/1/95
Date Extracted: 8/7/95
Date Analyzed: 8/8,15/95

TPH as Diesel
EPA Method 3510/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name	Lab Code	MRL	Result
MW-3 (26)	S950955-003	50	76 *
Method Blank	S950801-WB	50	ND

* This sample contains a higher boiling point hydrocarbon mixture quantified as diesel. The chromatogram does not match the typical diesel fingerprint.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON
Project: ARCO Products Company #2111/#0805-127.01
Sample Matrix: Water

Service Request: L953070
Date Collected: 8/1/95
Date Received: 8/1/95
Date Extracted: 8/4/95
Date Analyzed: 8/4/95

Total Recoverable Petroleum Hydrocarbons (TRPH)
EPA Method 418.1
Units: mg/L (ppm)

Sample Name	Lab Code	MRL	Result
MW-3(26')	L953070-001	0.5	0.6
Method Blank	L953070-MB	0.5	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro
Sample Matrix: Water

Service Request: S950955
Date Collected: 8/1/95
Date Received: 8/1/95
Date Extracted: NA
Date Analyzed: 8/8-11/95

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery α,α,α-Trifluorotoluene
MW-1 (26)	S950955-001	89
MW-2 (26)	S950955-002	93
MW-3 (26)	S950955-003	89
MW-4 (21)	S950955-004	89
MW-1 (26) MS	S950955-001MS	100
MW-1 (26) DMS	S950955-001DMS	103
Method Blank	S950808-WB	92
Method Blank	S950811-WB	91

CAS Acceptance Limits: 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro
Sample Matrix: Water

Service Request: S950955
Date Collected: 8/1/95
Date Received: 8/1/95
Date Extracted: NA
Date Analyzed: 8/8-11/95

Matrix Spike/Duplicate Matrix Spike Summary
 TPH as Gasoline
 EPA Methods 5030/California DHS LUFT Method
 Units: ug/L (ppb)

Sample Name: MW-1 (26)
Lab Code: S950955-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
	Gasoline	250		250	ND	237	238		

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro

Service Request: S950955
Date Analyzed: 8/8/95

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	25.5	102	85-115
Toluene	25	24.5	98	85-115
Ethylbenzene	25	24.7	99	85-115
Xylenes, Total	75	71.2	95	85-115
Gasoline	250	238	95	90-110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro
Sample Matrix: Water

Service Request: S950955
Date Collected: 8/1/95
Date Received: 8/1/95
Date Extracted: 8/7/95
Date Analyzed: 8/8,15/95

Surrogate Recovery Summary
TPH as Diesel
EPA Method 3510/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery p-Terphenyl
MW-3 (26)	S950955-003	109
MS	S950938-005MS	109
DMS	S950938-005DMS	107
Method Blank	S950801-WB	111

CAS Acceptance Limits: 66-123

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro
Sample Matrix: Water

Service Request: S950955
Date Collected: 8/1/95
Date Received: 8/1/95
Date Extracted: 8/7/95
Date Analyzed: 8/8,15/95

Matrix Spike/Duplicate Matrix Spike Summary
 TPH as Diesel
 EPA Method 3510/California DHS LUFT Method
 Units: ug/L (ppb)

Sample Name: Batch QC
Lab Code: S950938-005

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery				Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS	CAS Acceptance Limits		
								MS	DMS	
TPH as Diesel	4,000	4,000	76	4,330	4,805	106	118	-61-141	11	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01 / TO# 17075.00 / 2111 San Leandro

Service Request: S950955
Date Analyzed: 8/8/95

Initial Calibration Verification (ICV) Summary
TPH as Diesel
California DHS LUFT Method
Units: ppm

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
TPH as Diesel	1,000	1,053	105	90-110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #2111/#0805-127.01
LCS Matrix: Water

Service Request: L953070
Date Collected: NA
Date Received: NA
Date Extracted: 8/4/95
Date Analyzed: 8/4/95

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary*
 Total Recoverable Petroleum Hydrocarbons (TRPH)
 EPA Method 418.1
 Units: mg/L (ppm)

Analyte	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	LCS	DLCS	LCS	DLCS	LCS	DLCS		
	TRPH	1.97	1.97	2.00	1.96	102		

* Sample quantity was insufficient to perform matrix spike and matrix spike duplicate. Three separate, replicate one liter samples are required to analyze sample and spikes.

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No. **17075.00**

Chain of Custody

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) John Young	Laboratory name CAS
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 453-7300	Contract number
Consultant name EMCON	Address (Consultant) 1971 Ringwood Ave. San Jose, CA 95131		

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTX/TPH EPA 1602/820/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input checked="" type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/5MS03E	EPA 601/6010	EPA 624/6240	EPA 625/6270	TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals EPA 601/07000 TTL <input type="checkbox"/> STL <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment
			Soil	Water	Other	Ice	Acid														
MW-1(2L)	1	2		X		X	X	8-1-95	1335	X											Sampler will deliver
MW-2(2L)	2	2		X		X	X		1310	X											Lowest Possible
MW-3(2L)	3	6		X		X	X		1410	X	X		X								
MW-4(2L)	4	2		X		X	X		1230	X											Special QA/QC
																					As Normal
																					Remarks
																					2 40ml HCL VOAs
																					MW-3 add:
																					2 Liter glass NP
																					2 Liter glass HCL
																					#CR05-127.01
																					Lab number 1953070
																					595-00955

Condition of sample: Cool - Settled fine sediment in VOAs	Temperature received: Cool
Relinquished by sampler: [Signature]	Date: 8-1-95 Time: 3:35 PM
Relinquished by: [Signature]	Date: _____ Time: _____
Relinquished by: James Brown	Date: 8-1-95 Time: 1700
Received by laboratory: _____	Date: _____ Time: _____



July 27, 1995

FILE COPY

Service Request No. S950902

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: 0805-127.01 / TO#08261.00 / #2111 - San Leandro

Dear Mr. Young:

Attached are the results of the soil sample(s) submitted to our lab on July 14, 1995. For your reference, these analyses have been assigned our service request number S950902.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

A handwritten signature in cursive script, appearing to read "Steve Green", written over the typed name.

Steven L. Green
Project Chemist

A handwritten signature in cursive script, appearing to read "Annelise J. Bazar", written over the typed name.

Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

COLUMBIA ANALYTICAL SERVICES, Inc.

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BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
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CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
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CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
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DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
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GC/MS	Gas Chromatography/Mass Spectrometry
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ICP	Inductively Coupled Plasma atomic emission spectrometry
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LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
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ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
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TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

ACRONLST.DOC 7/14/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

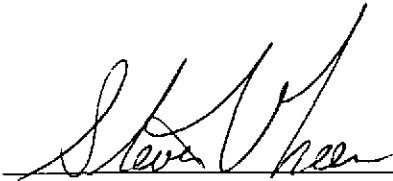
Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/21-24/95

BTEX and TPH as Gasoline
 EPA Methods 5030/8020/California DHS LUFT Method
 As Received Basis

Analyte:	TPH as Gasoline	Benzene	Toluene	Ethyl- benzene	Xylenes, Total
Units:	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)
Method Reporting Limit:	1	0.005	0.005	0.005	0.005

Sample Name	Lab Code	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes, Total
MW-1, 6.5'	S950902-001	ND	ND	ND	ND	ND
MW-1, 11.5'	S950902-002	ND	ND	ND	ND	ND
MW-1, 16.5'	S950902-003	ND	ND	ND	ND	ND
MW-1, 21.5'	S950902-004	ND	ND	ND	ND	ND
MW-1, 26'	S950902-005	ND	ND	ND	ND	ND
MW-2, 6.5'	S950902-006	ND	ND	ND	ND	ND
MW-2, 11.5'	S950902-007	ND	ND	ND	ND	ND
MW-2, 16.5'	S950902-008	2	0.045	ND	0.027	0.045
MW-4, 6.5'	S950902-011	ND	ND	ND	ND	ND
MW-4, 11.5'	S950902-012	ND	ND	ND	ND	ND
MW-4, 16.5'	S950902-013	ND	ND	ND	ND	ND
MW-4, 21.5'	S950902-014	ND	ND	ND	ND	ND
MW-3, 6.5'	S950902-015	ND	ND	ND	ND	ND
MW-3, 11'	S950902-018	ND	ND	ND	ND	ND
MW-3, 14'	S950902-019	ND	ND	ND	ND	ND
MW-3, 17'	S950902-020	ND	ND	ND	ND	ND
MW-3, 19.5'	S950902-021	ND	ND	ND	ND	ND
MW-3, 22.5'	S950902-022	ND	ND	ND	ND	ND
MW-3, 27.5'	S950902-023	ND	ND	ND	ND	ND
MW-3, 36'	S950902-024	ND	ND	ND	ND	ND
MW-3, 40'	S950902-026	ND	ND	ND	ND	ND

Approved By: 

Date: 7/27/95

SABTXGAS/061694

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/21-24/95

BTEX and TPH as Gasoline
 EPA Methods 5030/8020/California DHS LUFT Method
 As Received Basis

Analyte:	TPH as Gasoline	Benzene	Toluene	Ethyl- benzene	Xylenes, Total
Units:	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)
Method Reporting Limit:	1	0.005	0.005	0.005	0.005

Sample Name	Lab Code	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes, Total
Method Blank	S950721-SB1	ND	ND	ND	ND	ND
Method Blank	S950721-SB2	ND	ND	ND	ND	ND
Method Blank	S950724-SB1	ND	ND	ND	ND	ND

Approved By: 

Date: 7/29/95

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/25/95

BTEX and TPH as Gasoline
 EPA Methods 5030/8020/California DHS LUFT Method
 As Received Basis

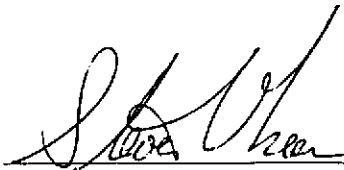
Analyte:	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes, Total
Units:	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)
Method Reporting Limit*:	5	0.05	0.1	0.1	0.1

Sample Name	Lab Code	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes, Total
MW-2, 19'	S950902-009	29	0.26	ND	0.3	1.5
MW-2, 21'	S950902-010	320	<0.5**	<1**	3.4	14
Method Blank	S950725-SB2	ND	ND	ND	ND	ND

* Raised MRL due to high analyte concentration requiring methanol extraction.

** Raised MRL due to high analyte concentration requiring methanol extraction and sample dilution.

Approved By: _____



Date: 7/27/95

5ABTXGAS/061694

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

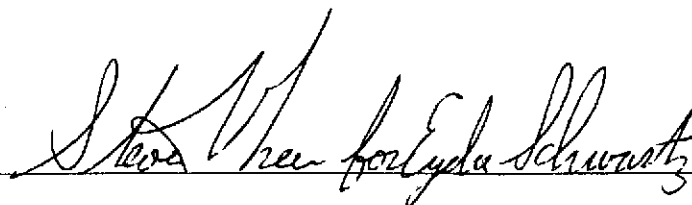
Client: EMCON
Project: ARCO Products Company #2111/#0805-127.01
Sample Matrix: Soil

Service Request: L952926
Date Collected: 7/13/95
Date Received: 7/14/95
Date Extracted: 7/19/95

Total Petroleum Hydrocarbons as Diesel
EPA Method Modified 8015/California DHS LUFT Method
Units: mg/Kg (ppm)

Sample Name	Lab Code	Date Analyzed	MRL	Result
MW-3,6.5'	L952926-001	7/21/95	1	ND
MW-3,11'	L952926-002	7/21/95	1	ND
MW-3,14'	L952926-003	7/21/95	1	ND
MW-3,17'	L952926-004	7/21/95	1	ND
MW-3,19.5'	L952926-005	7/21/95	1	ND
MW-3,22.5'	L952926-006	7/21/95	1	ND
MW-3,27.5'	L952926-007	7/21/95	1	ND
MW-3,36'	L952926-008	7/21/95	1	ND
MW-3,40'	L952926-009	7/21/95	1	ND
Method Blank	L952926-MB	7/21/95	1	ND

Approved By:



Date:

7/27/95

1AMRLB/120594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

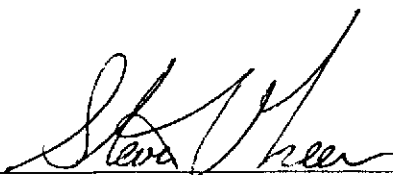
Client: EMCON
Project: ARCO Products Company #2111/#0805-127.01
Sample Matrix: Soil

Service Request: L952926
Date Collected: 7/13/95
Date Received: 7/14/95
Date Extracted: 7/26/95
Date Analyzed: 7/26/95

Total Recoverable Petroleum Hydrocarbons (TRPH)
EPA Method 418.1
Units: mg/Kg (ppm)

Sample Name	Lab Code	MRL	Result
MW-3,6.5'	L952926-001	10	10
MW-3,11'	L952926-002	10	ND
MW-3,14'	L952926-003	10	ND
MW-3,17'	L952926-004	10	ND
MW-3,19.5'	L952926-005	10	ND
MW-3,22.5'	L952926-006	10	ND
MW-3,27.5'	L952926-007	10	ND
MW-3,36'	L952926-008	10	ND
MW-3,40'	L952926-009	10	ND
Method Blank	L952926-MB	10	ND

Approved By:



Date:

7/27/95

1AMRL120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/21-24/95

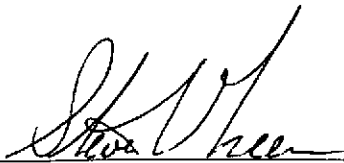
Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery α,α,α -Trifluorotoluene
MW-1, 6.5'	S950902-001	97
MW-1, 11.5'	S950902-002	69
MW-1, 16.5'	S950902-003	92
MW-1, 21.5'	S950902-004	90
MW-1, 26'	S950902-005	89
MW-2, 6.5'	S950902-006	86
MW-2, 11.5'	S950902-007	96
MW-2, 16.5'	S950902-008	110*
MW-4, 6.5'	S950902-011	70
MW-4, 11.5'	S950902-012	85
MW-4, 16.5'	S950902-013	87
MW-4, 21.5'	S950902-014	64
MW-3, 6.5'	S950902-015	74
MW-3, 11'	S950902-018	84
MW-3, 14'	S950902-019	74
MW-3, 17'	S950902-020	60
MW-3, 19.5'	S950902-021	97
MW-3, 22.5'	S950902-022	74
MW-3, 27.5'	S950902-023	90
MW-3, 36'	S950902-024	80
MW-3, 40'	S950902-026	74

CAS Acceptance Limits: 51-137

* The surrogate used for this sample was 4-Bromofluorobenzene.

Approved By:



Date:

7/27/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

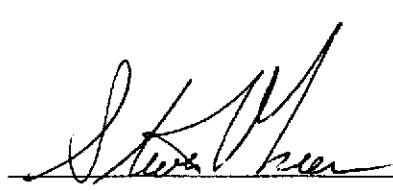
Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/21-24/95

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery
		α,α,α -Trifluorotoluene
MW-1, 6.5' (MS)	S950902-001MS	99
MW-1, 6.5' (DMS)	S950902-001DMS	96
MW-4, 6.5' (MS)	S950902-011MS	57
MW-4, 6.5' (DMS)	S950902-011DMS	84
Method Blank	S950721-SB1	103
Method Blank	S950721-SB2	110
Method Blank	S950724-SB1	103

CAS Acceptance Limits: 51-137

Approved By: 

Date: 7/27/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

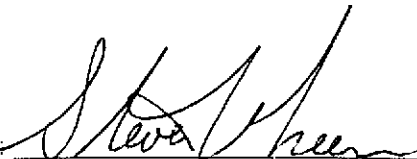
Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/21/95

Matrix Spike/Duplicate Matrix Spike Summary
 BTE
 EPA Methods 5030/8020
 Units: mg/Kg (ppm)
 As Received Basis

Sample Name: MW-1, 6.5'
Lab Code: S950902-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery			
	MS	DMS		MS	DMS	CAS		Relative Percent Difference	
						MS	DMS		Acceptance Limits
Benzene	0.05	0.05	ND	0.0563	0.0581	113	116	57-154	3
Toluene	0.05	0.05	ND	0.0530	0.0550	106	110	60-142	4
Ethylbenzene	0.05	0.05	ND	0.0536	0.0547	107	109	46-150	2

Approved By: 

Date: 7/27/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

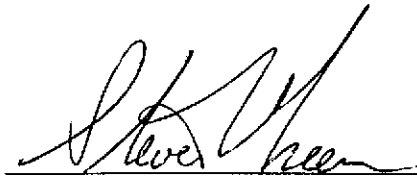
Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/21/95

Matrix Spike/Duplicate Matrix Spike Summary
 BTE
 EPA Methods 5030/8020
 Units: mg/Kg (ppm)
 As Received Basis

Sample Name: MW-4, 6.5'
Lab Code: S950902-011

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
	Benzene	0.05		0.05	ND	0.0611	0.0617		
Toluene	0.05	0.05	ND	0.0584	0.0574	117	115	60-142	2
Ethylbenzene	0.05	0.05	ND	0.0562	0.0563	112	113	46-150	<1

Approved By: 

Date: 7/27/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

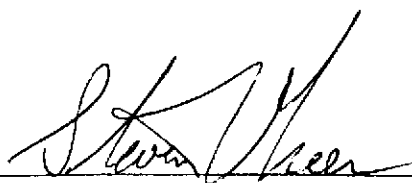
Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro

Service Request: S950902
Date Analyzed: 7/21/95

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppm

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	0.050	0.0552	110	85-115
Toluene	0.050	0.0546	109	85-115
Ethylbenzene	0.050	0.0572	114	85-115
Xylenes, Total	0.15	0.160	107	85-115
Gasoline	1.0	0.979	98	90-110

Approved By:



Date:

7/27/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro
Sample Matrix: Soil

Service Request: S950902
Date Collected: 7/12-13/95
Date Received: 7/14/95
Date Extracted: NA
Date Analyzed: 7/25/95

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery
		α,α,α -Trifluorotoluene
MW-2, 19'	S950902-009	101
MW-2, 21'	S950902-010	101
Method Blank	S950725-SB2	88

CAS Acceptance Limits: 59-115

Approved By:



Date:

7/27/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

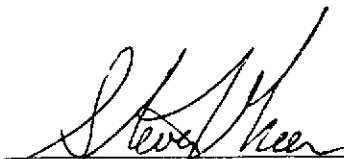
Client: ARCO Products Company
Project: 0805-127.01/TO#08621.00/2111 San Leandro

Service Request: S950902
Date Analyzed: 7/25/95

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppm

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	2.5	2.64	106	85-115
Toluene	2.5	2.52	101	85-115
Ethylbenzene	2.5	2.54	102	85-115
Xylenes, Total	7.5	7.39	99	85-115
Gasoline	25	24.3	97	90-110

Approved By:



Date: 7/27/95

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #2111/#0805-127.01
Sample Matrix: Soil

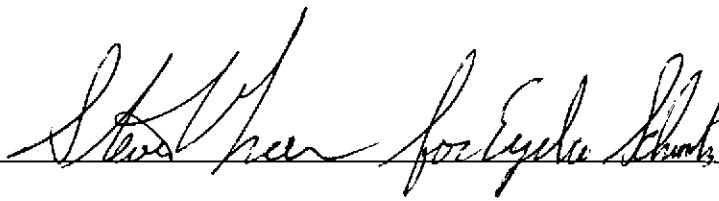
Service Request: L952926
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
Total Petroleum Hydrocarbons as Diesel
EPA Method Modified 8015/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery <i>p</i> -Terphenyl
MW-3,6.5'	L952926-001	*
MW-3,11'	L952926-002	124
MW-3,14'	L952926-003	95
MW-3,17'	L952926-004	84
MW-3,19.5'	L952926-005	72
MW-3,22.5'	L952926-006	108
MW-3,27.5'	L952926-007	94
MW-3,36'	L952926-008	95
MW-3,40'	L952926-009	92
Method Blank	L952926-MB	99
Matrix Spike	L952947-1MS	97
Duplicate Matrix Spike	L952947-1DMS	97

CAS Acceptance Limits: 50-140

* Outside of acceptance limits. Since no target analytes were detected in the sample, it is the opinion of CAS that the quality of the sample data has not been significantly affected by the elevated recovery.

Approved By:  Date: 7/27/95

SUR1/120594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #2111/#0805-127.01
Sample Matrix: Soil

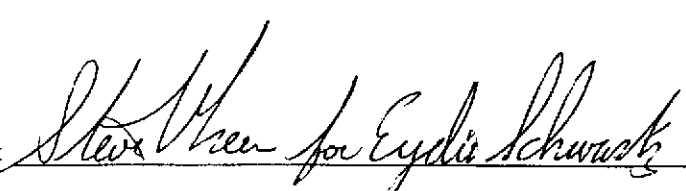
Service Request: L952926
Date Collected: NA
Date Received: NA
Date Extracted: 7/20/95
Date Analyzed: 7/20-21/95

Matrix Spike/Duplicate Matrix Spike Summary
Total Petroleum Hydrocarbons as Diesel
EPA Method Modified 8015/California DHS LUFT Method
Units: mg/Kg (ppm)

Sample Name: Batch QC
Lab Code: L952947-001

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Diesel	200	200	ND	193	176	96	88	41-136	9

Approved By:



Date:

7/27/95

DMS15/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #21111/#0805-127.01
LCS Matrix: Liquid

Service Request: L952926
Date Collected: NA
Date Received: NA
Date Extracted: 7/20/95
Date Analyzed: 7/21/95

Laboratory Control Sample Summary
Hydrocarbon Scan/Fuel Characterization
EPA Method Modified 8015/California DHS LUFT Method
Units: mg/L (ppm)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
TPH as Diesel	200	148	74	70-140

Approved By:
LCS/121594

Steve Allen for Eydie Schwartz Date: *7/27/95*

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
 Project: ARCO Products Company #2111/#0805-127.01
 LCS Matrix: Liquid

Service Request: L952926
 Date Collected: NA
 Date Received: NA
 Date Extracted: 7/26/95
 Date Analyzed: 7/26/95

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary
 Total Recoverable Petroleum Hydrocarbons (TRPH)
 EPA Method 418.1
 Units: mg/L (ppm)

Analyte	True Value		Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	LCS	DLCS	LCS	DLCS	LCS	DLCS		
	TRPH	14.74	14.74	12.32	13.03	84		

Approved By: *Steve M. ... for Eydie Schwandt* Date: 7/27/95

DLCS/032395

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Products Company #2111/#0805-127.01
Sample Matrix: Soil

Service Request: L952926
Date Collected: NA
Date Received: NA
Date Extracted: 7/26/95
Date Analyzed: 7/26/95

Matrix Spike/Duplicate Matrix Spike Summary
Total Recoverable Petroleum Hydrocarbons (TRPH)
EPA Method 418.1
Units: mg/Kg (ppm)

Sample Name: Batch QC
Lab Code: L952984-003

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
TRPH	24.57	24.57	34.72	58.35	53.62	96	77	50-170	8

Approved By: *Steven Chen for Eydla Schwanitz* Date: 7/27/95
DMSIS/120594

07/27/95 16:08 FAX GOLDEN STATE/CAS →→→ CAS SAN JOSE 002/002

ARCO Products Company
Division of AtlanticRichfield Company

Task Order No. **08621.00**

Chain of Custody

ARCO Facility no. 2111	City (Facility) San Leandro	Project manager (Consultant) John Young
ARCO engineer Mike Whelan	Telephone no. (ARCO) (408) 377-8697	Telephone no. (Consultant) (408) 453-7300
Consultant name EMCON	Address (Consultant) 1921 Ringwood Ave. San Jose, CA	
	Telephone no. (Consultant) (408) 437-9526	Fax no. (Consultant) (408) 437-9526

Laboratory name
CAS

Contract number

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX MDEPA 6020	BTEX/TPH EPA 1632/8020/8015	TPH Modified 613 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 18.1 SANJOSE	EPA 601/6010	EPA 624/6240	EPA 625/6270	TCUP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CMI Metals EPA 8210/8000 TLC <input type="checkbox"/> STL <input type="checkbox"/>	Lead Org/DHS Lead EPA 7420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid															
MW-1, 6.5'	1		X			X		7/12/95														
11.5'	2		↓																			
16.5'	3		↓																			
21.5'	4		↓																			
26'	5		↓																			
MW-2, 6.5'	6		X																			
11.5'	7		↓																			
16.5'	8		↓																			
19'	9		↓																			
21'	10		↓																			
MW-4, 6.5'	11		X					7/13/95														
11.5'	12		↓																			
16.5'	13		↓																			
21.5'	14		↓																			

Method of shipment

Special detection
Limit/reporting
TPH-DL 98
MRL-501

Special QAVC

Remarks
EMCON Project #
0805-127.01

L952926

Lab number
S950902

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 Robert K. Davis	Date 7/14/95	Time	Received by Jeanne Brown	Date	Time	Received by laboratory Jeanne Brown	Date 7-17-95
Relinquished by	Date	Time	Received by	Date 7-18-95	Time 0900	Received by laboratory	Date 7-18-95
Relinquished by Jeanne Brown	Date 7-17-95	Time 1630	Received by	Date 7-18-95	Time 0900	Received by laboratory	Date 7-18-95

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

CAS-5: 9 BTEX **CAS-1: TPH-D (50ppm)** **Due 7/28**

ARCO Facility no. 2111 City (Facility) San Leandro Project manager (Consultant) John Young Laboratory name CAS-SJ-
ARCO engineer Mike Whelan Telephone no. (ARCO) (408) 377-8697 Telephone no. (Consultant) (408) 453-7306 Fax no. (Consultant) (408) 437-9526 Contract number
Consultant name EMCON Address (Consultant) 1921 Ringwood Ave

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 8020 EPA 8020	TCLP EPA 1313 EPA 1313	TPH Modified 8015 Gas Diesel 75	Oil and Grease 413.1 413.2	TPH EPA 418 SMS03E	EPA 601/6010	EPA 624/6240	EPA 625/6270	TCLP Metals VOA VOA	CAM Metals EPA 6010/7000 TLCL STLCL	Lead Org./DHS Lead EPA 7420/7421	7420/7421	HOLD	Method of shipment		
			Soil	Water	Other	Ice	Acid																	Special detection Limit/reporting	
MW-3, 6.5'	15		X			X		7/13/95		/	/	/													
, 8'	16																								X
, 9.5'	17																								X
, 11'	18																								
, 14'	19																								
, 17'	20																								
, 17.5'	21																								
, 22.5'	22																								
, 27.5'	23																								
, 36'	24																								
, 36'																									X
, 37.5'	25																								X
, 40'	26		V			V				/	/	/													
STOCKPILE Composite			X			X		7/13/95		/	/	/													

Condition of sample: Temperature received:
Relinquished by sampler Robert A. Day Date 7/14/95 Time 3:50 PM Received by Joanne Brown
Relinquished by Date Time Received by
Relinquished by Joanne Brown Date 7-17-95 Time 1630 Received by laboratory Date Time
Priority Rush 1 Business Day
Rush 2 Business Days
Expedited 5 Business Days
Standard 10 Business Days