



PACIFIC ENVIRONMENTAL GROUP, INC.

STD

FACSIMILE TRANSMITTAL

DATE: February 27, 1998 PROJECT #: 331-008.1B

TO: Amir Sholami FAX: 510-337-9335

Alameda County Health Dept.

FROM: Douglas Andrews

IF YOU HAVE ANY PROBLEMS RECEIVING THIS FACSIMILE, PLEASE CALL (408) 441-7500

SHEETS TO FOLLOW COVER PAGE

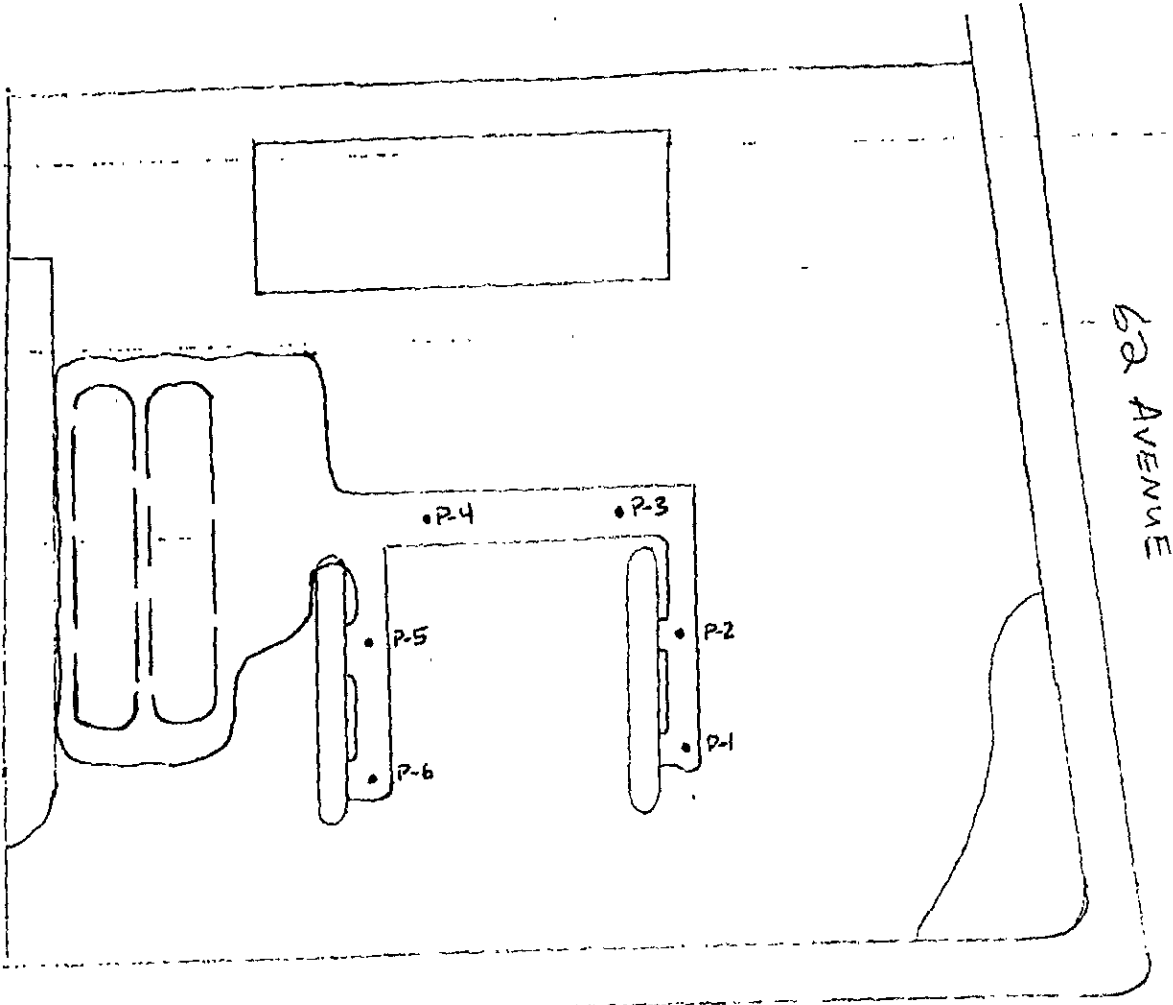
15

COMMENTS:

Presented here are the results of the product line excavation sampling for Thrifty Service Station #63, at 6125 Telegraph Avenue in Oakland.

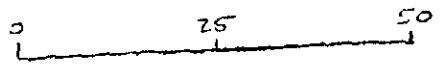
Call if you have any questions  
Doug Andrews

You have received this facsimile from 408-441-9102



TELEGRAPH AVENUE

62 AVENUE



PACIFIC ENVIRONMENTAL GROUP, INC.

Project No:  
331-008.13

Figure No:

Date:

Drawn By: Doug Andrews

Title: PRODUCT LINE SAMPLING - THRIFTY STATION #63

02/24/1998 18:27 4884379356



February 24, 1998

Service Request No.: S9800363

Doug Andrews  
PACIFIC ENVIRONMENTAL GROUP  
2025 Gateway Place, Suite 440  
San Jose, CA 95110

RE: Thrifty Oil Station 63/TO#21792.00/331-008.1B

Dear Mr. Andrews:

The following pages contain analytical results for sample(s) received by the laboratory on February 23, 1998. 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 the Service Request No. listed above. 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 'S. L. Green'.

Steven L. Green  
Project Chemist

A handwritten signature in black ink, appearing to read 'Bernadette I. Green for'.

Greg Anderson  
Regional QA Coordinator

## COLUMBIA ANALYTICAL SERVICES, Inc.

## Acronyms

AZLA	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
DLCB	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
NCA91	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 Wastes, Physical/Chemical Methods, SW-846, 3rd Ed., 1988 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
TTL	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

ACRONYST DOC 7/14/95

**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:**  
**Project:**  
**Sample Matrix:**

ARCO Products Company  
 Thrifty Oil Station 63/TO#21792.00/331-008.1B  
 Soil

**Service Request:** S9800363  
**Date Collected:** 2/23/98  
**Date Received:** 2/23/98

**BTEX, MTBE and TPH as Gasoline**

**Sample Name:** P-1(3)  
**Lab Code:** S9800363-001  
**Test Notes:**

**Units:** mg/Kg (ppm)  
**Basis:** Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
			1	5	2/23/98	2/23/98	49	
TPH as Gasoline	EPA 5030	CA/LUFT		5	2/23/98	2/23/98	0.071	
Benzene	EPA 5030	8020	0.005	5	2/23/98	2/23/98	0.39	
Toluene	EPA 5030	8020	0.005	5	2/23/98	2/23/98	0.44	
Ethylbenzene	EPA 5030	8020	0.005	5	2/23/98	2/23/98	2.6	
Xylenes, Total	EPA 5030	8020	0.005	5	2/23/98	2/23/98	<0.25	CI
Methyl-tert-butyl ether	EPA 5030	8020	0.05					

CI

The MRL was elevated due to high analyte concentration requiring sample dilution.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** ARCO Products Company  
**Project:** Thrifty Oil Station 63/TO#21792.00/331-008.1B  
**Sample Matrix:** Soil

**Service Request:** S9800363  
**Date Collected:** 2/23/98  
**Date Received:** 2/23/98

BTEX, MTBE and TPH as Gasoline

**Sample Name:** P-2(3)  
**Lab Code:** S9800363-002  
**Test Notes:**

**Units:** mg/Kg (ppm)  
**Basis:** Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CALUFT	1	100	2/23/98	2/24/98	1200	
Benzene	EPA 5030	8020	0.005	100	2/23/98	2/24/98	1.7	
Toluene	EPA 5030	8020	0.005	100	2/23/98	2/24/98	24	
Ethylbenzene	EPA 5030	8020	0.005	100	2/23/98	2/24/98	21	
Xylenes, Total	EPA 5030	8020	0.005	100	2/23/98	2/24/98	96	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	100	2/23/98	2/24/98	15	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company  
 Project: Thrifty Oil Station 63/TO#21792 00/331-008.1B  
 Sample Matrix: Soil

Service Request: S9800363  
 Date Collected: 2/23/98  
 Date Received: 2/23/98

BTEX, MTBE and TPH as Gasoline

Sample Name: P-3(3)  
 Lab Code: S9800363-003  
 Test Notes:

Units: mg/Kg (ppm)  
 Basis: Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CALUFT	1	5	2/23/98	2/24/98	<5	C1
Benzene	EPA 5030	8020	0.005	5	2/23/98	2/24/98	0.062	
Toluene	EPA 5030	8020	0.005	5	2/23/98	2/24/98	0.092	
Ethylbenzene	EPA 5030	8020	0.005	5	2/23/98	2/24/98	0.031	
Xylenes, Total	EPA 5030	8020	0.005	5	2/23/98	2/24/98	0.098	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	5	2/23/98	2/24/98	9.4	

C1

The MRL was elevated due to high analyte concentration requiring sample dilution

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** ARCO Products Company  
**Project:** Thrifty Oil Station 63/TCW21792.00/331-008.1B  
**Sample Matrix:** Soil

**Service Request:** 89800363  
**Date Collected:** 2/23/98  
**Date Received:** 2/23/98

BTEX, MTBE and TPH as Gasoline

**Sample Name:** P-4(J)  
**Lab Code:** S9800363-004  
**Test Notes:**

**Units:** mg/Kg (ppm)  
**Basis:** Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CALUFT	1	100	2/23/98	2/24/98	310	
Benzene	EPA 5030	8020	0.005	100	2/23/98	2/24/98	1.6	
Toluene	EPA 5030	8020	0.005	100	2/23/98	2/24/98	25	
Ethylbenzene	EPA 5030	8020	0.005	100	2/23/98	2/24/98	7.4	
Xylenes, Total	EPA 5030	8020	0.005	100	2/23/98	2/24/98	47	
Methyl-tert butyl ether	EPA 5030	8020	0.05	100	2/23/98	2/24/98	26	



**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

Client: ARCO Products Company  
 Project: Thrifty Oil Station 63/TO#21792 00/331-008.1B  
 Sample Matrix: Soil

Service Request: S9800363  
 Date Collected: 2/23/98  
 Date Received: 2/23/98

BTEX, MTBE and TPH as Gasoline

Sample Name: P-5(3)  
 Lab Code: S9800363 005  
 Test Notes:

Units: mg/Kg (ppm)  
 Basis: Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CALUFT	1	50	2/23/98	2/24/98	920	
		8020	0.005	50	2/23/98	2/24/98	6.5	
Benzene	EPA 5030	8020	0.005	50	2/23/98	2/24/98	35	
Toluene	EPA 5030	8020	0.005	50	2/23/98	2/24/98	15	
Ethylbenzene	EPA 5030	8020	0.005	50	2/23/98	2/24/98	78	
Xylenes, Total	EPA 5030	8020	0.05	50	2/23/98	2/24/98	13	
Methyl-tert-butyl ether	EPA 5030							

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** ARCO Products Company  
**Project:** Thrifty Oil Station 63/TO#21792.00/331-008 1B  
**Sample Matrix:** Soil

**Service Request:** S9800363  
**Date Collected:** 2/23/98  
**Date Received:** 2/23/98

BTEX, MTBE and TPH as Gasoline

**Sample Name:** P-6(3)  
**Lab Code:** S9800363-006  
**Test Notes:**

**Units:** mg/Kg (ppm)  
**Basis:** Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CALUFT	1	50	2/23/98	2/24/98	330	
Benzene	EPA 5030	8020	0.005	50	2/23/98	2/24/98	1.9	
Toluene	EPA 5030	8020	0.005	50	2/23/98	2/24/98	5.5	
Ethylbenzene	EPA 5030	8020	0.005	50	2/23/98	2/24/98	8.3	
Xylenes, Total	EPA 5030	8020	0.005	50	2/23/98	2/24/98	38	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	50	2/23/98	2/24/98	<2.5	C1

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

Client: ARCO Products Company  
 Project: Thrifty Oil Station 63/TO#21792.00/331-008 1B  
 Sample Matrix: Soil

Service Request: S9800363  
 Date Collected: NA  
 Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank  
 Lab Code: S980223-SB1  
 Test Notes:

Units: mg/Kg (ppm)  
 Basis: Wet

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CALUFT	1	1	2/23/98	2/23/98	ND	
Benzene	EPA 5030	8020	0.005	1	2/23/98	2/23/98	ND	
Toluene	EPA 5030	8020	0.005	1	2/23/98	2/23/98	ND	
Ethylbenzene	EPA 5030	8020	0.005	1	2/23/98	2/23/98	ND	
Xylenes, Total	EPA 5030	8020	0.005	1	2/23/98	2/23/98	ND	
Methyl-tert-butyl ether	EPA 5030	8020	0.05	1	2/23/98	2/23/98	ND	

APPENDIX A

**COLUMBIA ANALYTICAL SERVICES, INC.**

**QA/QC Report**

**Client:** ARCO Products Company  
**Project:** Purify Oil Station 63/TO#21792.00/331-008.1B  
**Sample Matrix:** Soil

**Service Request:** S9800363  
**Date Collected:** NA  
**Date Received:** NA  
**Date Extracted:** NA  
**Date Analyzed:** NA

**Surrogate Recovery Summary  
 BTEX and TPH as Gasoline**

**Units:** PERCENT  
**Basis:** NA

**Prep Method:** EPA 5030  
**Analysis Method:** 8020 CALUFT

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
P-1(3')	S9800363-001		103	89
P-2(3')	S9800363-002		99	96
P-3(3')	S9800363-003		108	79
P-4(3')	S9800363-004		98	76
P-5(3')	S9800363-005		94	105
P-6(3')	S9800363-006		103	85
LCS	S980223-LCS		100	84
Method Blank	S980223-SB1		100	81

**CAS Acceptance Limits:** 51-137 51-137

**COLUMBIA ANALYTICAL SERVICES, INC.**

**QA/QC Report**

**Client:** ARCO Products Company  
**Project:** Thrifty Oil Station 63/TO#21792.00/331-008 1B  
**LCS Matrix:** Soil

**Service Request:** S9800363  
**Date Collected:** NA  
**Date Received:** NA  
**Date Extracted:** 2/23/98  
**Date Analyzed:** 2/23/98

**Laboratory Control Sample Summary**  
**BTEX and TPH as Gasoline**

**Sample Name:** Lab Control Sample  
**Lab Code:** S980223-LCS  
**Test Notes:**

**Units:** mg/Kg (ppm)  
**Basis:** Wet

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Benzene	EPA 5030	8020	0.5	0.5	100	57-154	
Toluene	EPA 5030	8020	0.5	0.5	100	60-142	
Ethylbenzene	EPA 5030	8020	0.5	0.5	100	46-150	

**COLUMBIA ANALYTICAL SERVICES, INC.**

QA/QC Report

Client: ARCO Products Company  
Project: Thrifty Oil Station 63/TOW#21792.00/331-008.1B

Service Request: S9800363  
Date Analyzed: 2/23/98

Initial Calibration Verification (ICV) Summary  
BTEX, MTBE and TPH as Gasoline

Sample Name: ICV  
Lab Code: ICV1  
Test Notes:

Units: mg/Kg (ppm)  
Basis: Wet

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS	Percent Recovery	Result Notes
					Percent Recovery Acceptance Limits		
TPH as Gasoline	EPA 5030	GA/LUFT	25	26	90-110	104	
Benzene	EPA 5030	8020	2.5	2.5	85-115	100	
Toluene	EPA 5030	8020	2.5	2.5	85-115	100	
Ethylbenzene	EPA 5030	8020	2.5	2.5	85-115	95	
Xylenes, Total	EPA 5030	8020	7.5	7.1	85-115	100	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	2.5	2.5	85-115	100	

