



EMCON Associates

1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

HASLSTAT

94 SEP -6 PM 3:55

Date: August 30, 1994

Project OC75-005.24

To:

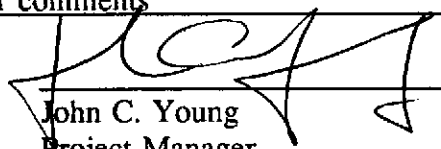
Mr. Scott Seery
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

We are enclosing:

Copies	Description
<u>1</u>	<u>Second Quarter 1994 Groundwater Monitoring Report for ARCO service station 2185</u>
<u>1</u>	<u>John Sullivan Letter</u>

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

Comments: Please call with any questions or comments


John C. Young
Project Manager





EMCON Associates

1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

August 26, 1994

Mr. John Sullivan
17760 Sweetbriar Place
Castro Valley, California 94546

Re: Laboratory analytical results of second quarter 1994 groundwater samples, Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California

Dear Mr. Sullivan:

Enclosed please find copies of laboratory analytical results for groundwater samples collected from wells MW-9 and MW-10, located at Chateau Manor Apartments, 724 Lewelling Boulevard, San Leandro, California. The groundwater samples collected on May 5, 1994, during quarterly sampling of ARCO Station 601, located at 712 Lewelling Boulevard in San Leandro. The laboratory analytical results indicate that concentrations of total petroleum hydrocarbons as gasoline, and the gasoline constituents benzene, toluene, ethylbenzene, and total xylenes were not detected.

If you have any comments please call.

Sincerely,

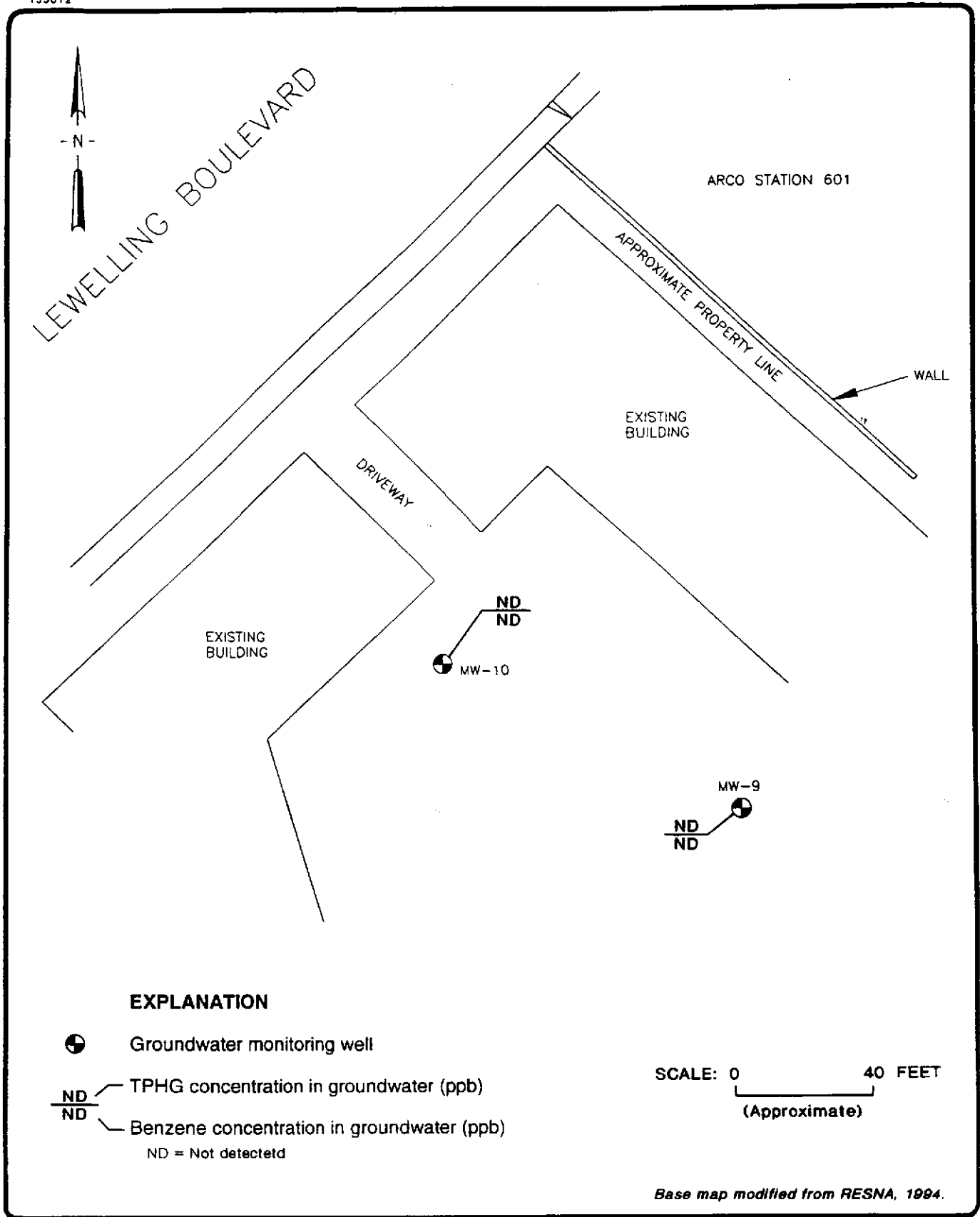
EMCON Associates


John C. Young
Project Manager

Attachment: Figure 1 - Generalized Site Plan
Copy of Laboratory Analytical Results of Groundwater Samples for wells
MW-9 and MW-10

cc: Mike Whelan, ARCO Products Company
John Meck, ARCO Products Company
Gary Grimm, RWQCB
John Jang, RWQCB
Scott Seery, ACHCSA





Emcon
Associates

CHATEAU MANOR APARTMENTS
724 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE PLAN

FIGURE

1

PROJECT NO.
C75-05.24



May 20, 1994

Service Request No. SJ940540

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: ARCO Facility No. 601

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on May 06, 1994. For your reference, these analyses have been assigned our service request number SJ940540.

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.

Carol J Klein
Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Annelise J. Bazar
Regional QA Coordinator

KAM/drif

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MRL	Method Reporting Limit
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 MRL
NR	Not Requested
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
VPH	Volatile Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Service Request: SJ940540

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

Sample Name:	MW-9 (12.4)	MW-10 (9.1)	Method Blank
Lab Code:	SJ940540-14	SJ940540-15	SJ940513-WMB
Date Analyzed:	5/14/94	5/14/94	5/13/94

Analyte	MRL			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

Approved By:

Carol J. Klein

Date: 5-20-94

3522/041594

ARCO Products Company

Division of AtlanticRichfield Company

Task Order No.

IWM-94-5CC

K27855

Chain of Custody

ARCO Facility no.

A 601

City
(Facility)

San Leandro

Project manager
(Consultant)

COM De Bon / Chen Young

ARCO eni

Mike Whelan

Telephone no.

(ARCO) 415 571 2444

Telephone no.

(Consultant) 408/942 8955

Fax no.

(Consultant) 408/942 1499

Consultant name

IWM / KESNA

Address

(Consultant)

950 Ames av. Milp Ca 95035

Laboratory name

Columbia

Contract number

07077

Method of shipment

CAS carrier

Special detection
Limit/reporting

Special QA/QC

Remarks

7/6/94
 on
 7/13/94
 Hold for run
 Oil and grease
 MW-8

Lab number

SJ94 0540

Turnaround time

Priority Rush
1 Business DayRush
2 Business DaysExpedited
5 Business DaysStandard
10 Business Days

Condition of sample:

Relinquished by sampler

Date

5-6-94

Time

9:00 AM

Temperature received:

Received by

Alina Austin

Received by

Huhup

Received by laboratory

Ruth Hegley

Date

5/7/94

Time

0830

Relinquished by

Date

5-6-94

Time

10:20

Relinquished by

John Fumoy CAS/JS

Date

5/6/94

Time

1600

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

APPC-3292 (2-91)



August 26, 1994
Project OC75-005.24

Mr. Michael Whelan
Environmental Engineer
ARCO Products Company
P.O. Box 5811
San Mateo, California 94420

Re: Second quarter 1994 groundwater monitoring program results, ARCO service station 0601, San Leandro, California

Dear Mr. Whelan:

This letter presents the results of the second quarter 1994 groundwater monitoring program at ARCO Products Company (ARCO) service station 0601, 712 Lewelling Boulevard, San Leandro, California (Figure 1).

MONITORING PROGRAM RESULTS

The second quarter 1994 groundwater monitoring event was performed by Integrated Wastestream Management, Inc. (IWM) on May 5, 1994. Wells MW-1 through MW-15 are monitored quarterly. Groundwater samples collected during second quarter monitoring were analyzed for total petroleum hydrocarbons as gasoline (TPHG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). The groundwater sample collected from monitoring well MW-8 was also analyzed for total recoverable petroleum hydrocarbons (TRPH), total petroleum hydrocarbons as diesel (TPHD), halogenated volatile organic compounds, and semi-volatile organic compounds (Table 1). Certified analytical reports, chain-of-custody documentation, and field data sheets are presented in Appendix A. Depths to groundwater and analytical data are presented in Table 1. Figure 2 presents the groundwater elevation data along with TPHG and benzene concentrations from the May 5, 1994 monitoring event.

SITE STATUS UPDATE

This update reports site activities performed during the second quarter of 1994 and the anticipated site activities for the third quarter of 1994.



Mr. Michael Whelan
August 26, 1994
Page 2

Project OC75-005.24

Second Quarter 1994 Activities

- Quarterly groundwater monitoring report for first quarter 1994 prepared and submitted by RESNA Industries Inc.
- IWM performed second quarter 1994 groundwater monitoring event.

Work Anticipated Third Quarter 1994

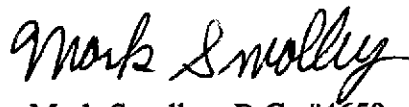
- Prepare and submit quarterly groundwater monitoring report for second quarter 1994.
- Perform quarterly groundwater monitoring for third quarter 1994.

Please call if you have questions.

Sincerely,

EMCON Associates


John C. Young
Project Manager


Mark Smolley, R.G. #4650
Senior Project Geologist



Attachments: Table 1 - Summary of Groundwater Sample Analyses for ARCO
Facility A-601
Figure 1 - Site Location
Figure 2 - Site Plan
Appendix A - Certified Analytical Report, Chain-of-Custody
Documentation and Field Data Sheets

Table 1

Summary of Ground Water Sample Analyses for ARCO Facility A-601, San Leandro, California

WELL NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
DATE SAMPLED	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94
DEPTH TO WATER	8.47	7.51	6.81	7.73	7.18	8.24	9.11	7.46	8.04	8.08	8.55	8.97	8.38	9.49	6.18
SHEEN	HEAVY	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
PRODUCT THICKNESS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPHg	NA	5,600	560,000	1,900	54,000	45,000	ND	2,100	ND	ND	210	ND	ND	ND	ND
BTEX															
BENZENE	NA	390	4,600	510	9,700	14,000	ND	<2.5 #	ND	ND	ND	ND	ND	ND	ND
TOLUENE	NA	140	14,000	78	4,700	<200 #	ND	<2.5 #	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	NA	120	5,300	31	1,000	1,300	ND	8.3	ND	ND	2.5	ND	ND	ND	ND
XYLENES	NA	480	40,000	150	6,400	4,500	ND	<2.5 #	ND	ND	0.6	ND	ND	ND	ND
EPA 418.1															
PETROLEUM HYDROCARBONS	NA	NA	NA	NA	NA	NA	NA	0.7	NA	NA	NA	NA	NA	NA	NA
TPHd															
DIESEL	NA	NA	NA	NA	NA	NA	NA	440 +	NA	NA	NA	NA	NA	NA	NA
EPA 5030/601															
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	0.7	NA	NA	NA	NA	NA	NA	NA
TOTAL METALS															
CADMIUM	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	60	NA	NA	NA	NA	NA	NA	NA
EPA 510/8270															
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	23	NA	NA	NA	NA	NA	NA	NA

FOOTNOTES:

Concentrations reported in ug/L (ppb).

TPHg = Total Purgeable Petroleum Hydrocarbons (USEPA Method 8015 Modified)

BTEX Distinction (USEPA Method 8020)

PCE = Tetrachloroethene (USEPA Method 8010)

+ = The sample contains a lower boiling point hydrocarbon mixture quantitated as diesel.
The chromatogram does not match the typical diesel fingerprint.

DCE = cis-1, 2-Dichloroethene (USEPA Method 8010)

TCE = Trichloroethene (USEPA Method 8010)

ND = Not Detected.

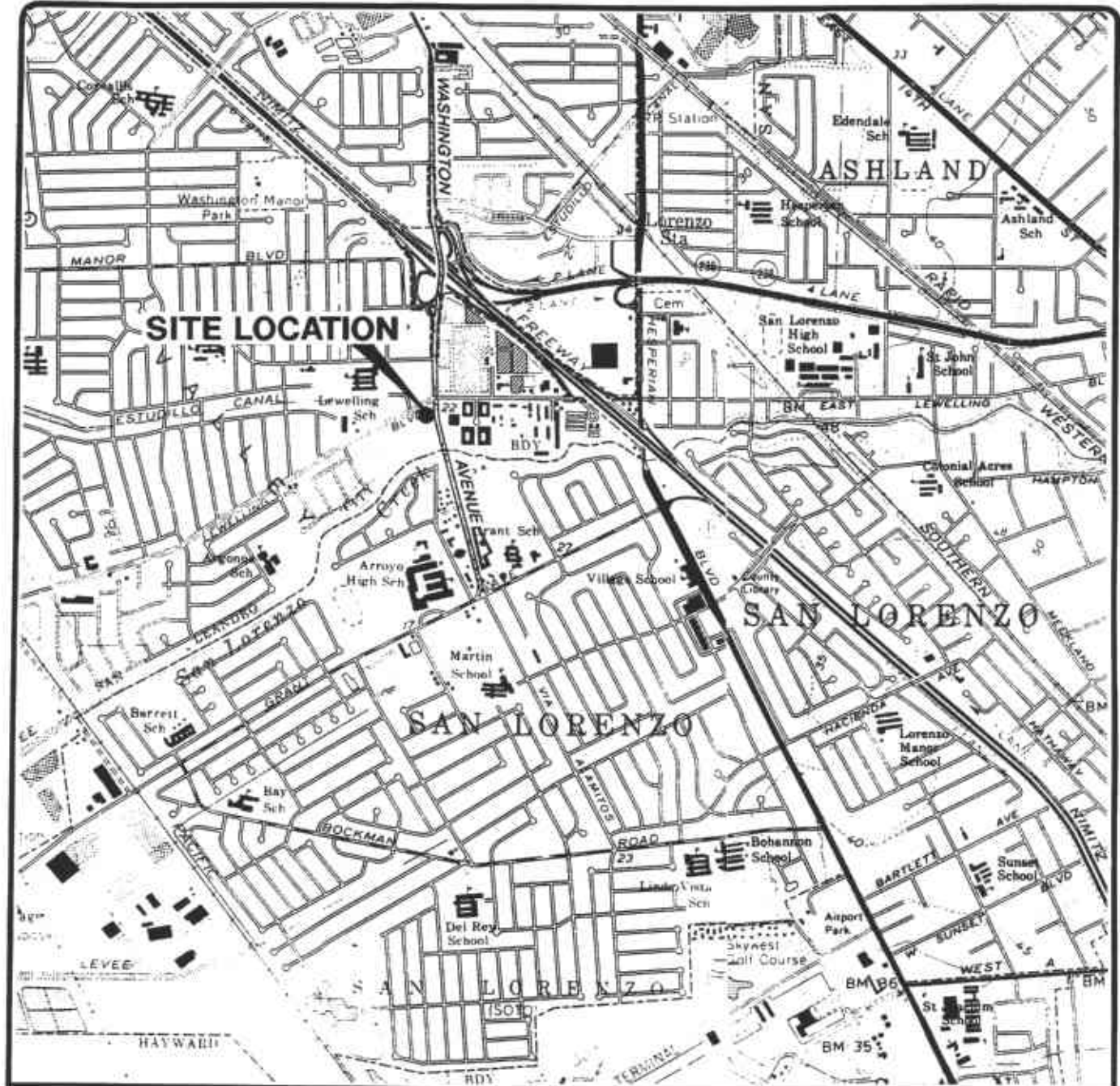
NA = Not applicable.

= Raised MRL due to high analyte concentration requiring dilution.

FP = Floating product.

* = Well inaccessible

** = Not sampled per consultant request.



Base map from USGS 7.5' Quad. Maps:
Hayward and San Leandro, California.
Photorevised 1980.

Scale : 0 2000 4000 Feet



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Associates

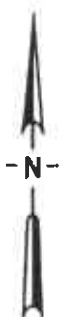
ARCO PRODUCTS COMPANY
SERVICE STATION 601, 712 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE LOCATION

FIGURE

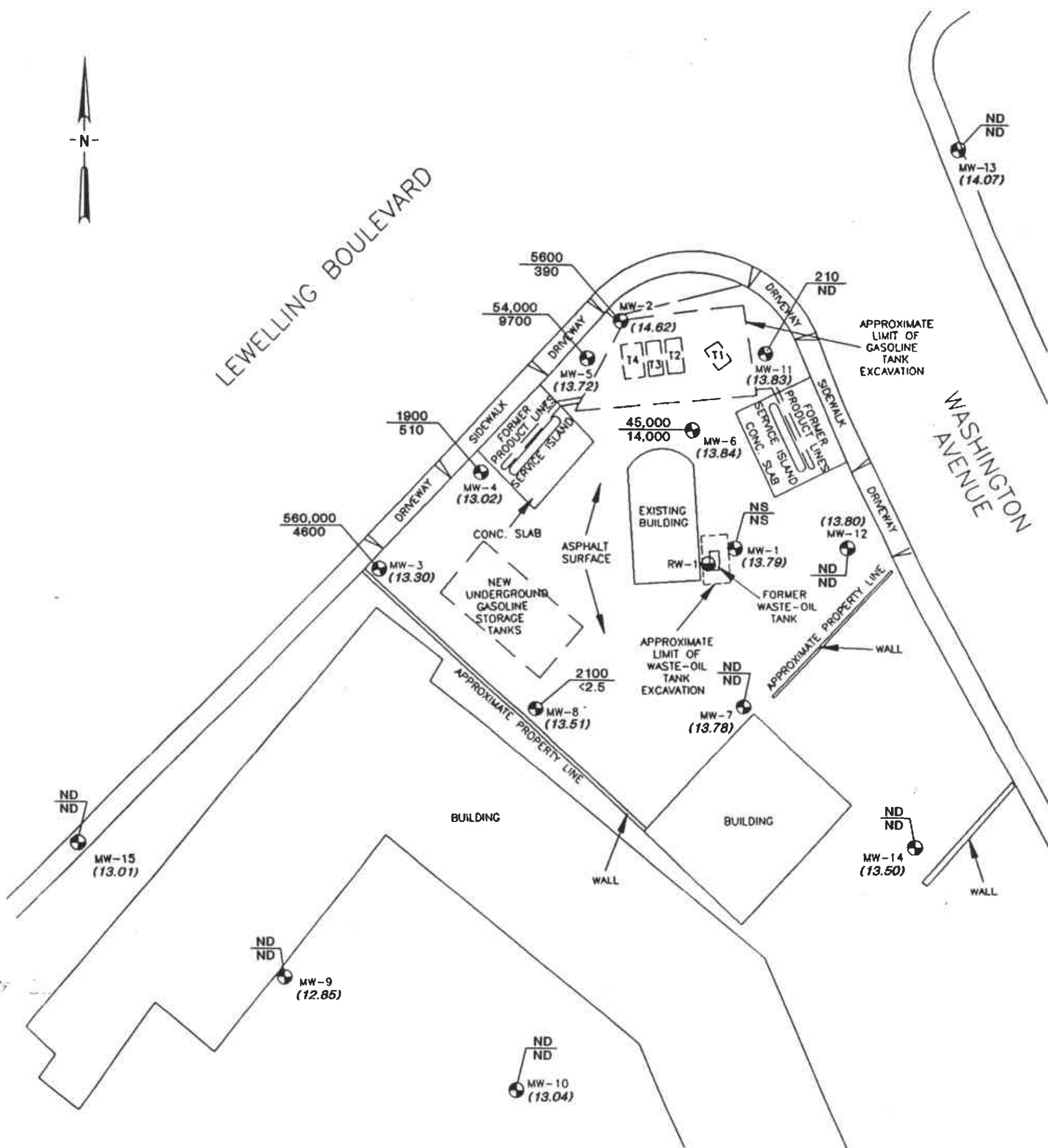
1

PROJECT NO.
C75-05.24



LEWELLING BOULEVARD

WASHINGTON AVENUE



EXPLANATION

- ⊕ Groundwater monitoring well
- ⊖ Recovery well

[] Former underground gasoline storage tank

(13.01) Groundwater elevation (Ft.-MSL); measured 5/5/94

5600 — TPHG concentration in groundwater (ppb)
390 — Benzene concentration in groundwater (ppb)
ND = Not detected
NS = Not sampled

SCALE: 0 40 FEET
(Approximate)

Base map modified from RESNA, 1994.



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Associates

ARCO PRODUCTS COMPANY
SERVICE STATION 801, 712 LEWELLING BLVD.
QUARTERLY GROUNDWATER MONITORING
SAN LEANDRO, CALIFORNIA

SITE PLAN

FIGURE

2

PROJECT NO.
C75-05.24

APPENDIX A

CERTIFIED ANALYTICAL REPORT, CHAIN-OF-CUSTODY DOCUMENTATION AND FIELD DATA SHEETS



May 20, 1994

Service Request No. SJ940540

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: **ARCO Facility No. 601**

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on May 06, 1994. For your reference, these analyses have been assigned our service request number SJ940540.

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.

Carol J. Klein
Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Annelise J. Bazar
Regional QA Coordinator

KAM/drf

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MRL	Method Reporting Limit
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 MRL
NR	Not Requested
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
VPH	Volatile Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.



Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: 5/12/94
Date Analyzed: 5/13/94
Service Request: SJ940540

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

Sample Name	Lab Code	MRL	Result
MW-8 (9.55)	SJ940540-8	0.5	0.7
Method Blank	SJ940512-WMB	0.5	ND

Approved By:

Carol J Klein

Date:

5-20-94

IAMRL_DE/0415094

COLUMBIA ANALYTICAL SERVICES, INC.



Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: 5/13/94
Date Analyzed: 5/17, 18/94
Service Request: SJ940540

TPH as Diesel
EPA Method 3510/California DHS LUFT Method
Units: $\mu\text{g/L}$ (ppb)

Sample Name	Lab Code	MRL	Result
MW-8 (9.55)	SJ940540-8	50	440*
Method Blank	SJ940513-WMB	50	ND

* The sample contains a lower boiling point hydrocarbon mixture quantitated as diesel. The chromatogram does not match the typical diesel fingerprint.

Approved By: _____

Carol J. Klein

Date: 5-20-94

IAMRL_DE/0415094

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Service Request: SJ940540

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

Sample Name:	MW-2 (11.5)	MW-3 (11.5)	MW-4 (8.3)
Lab Code:	SJ940540-2	SJ940540-3	SJ940540-4
Date Analyzed:	5/16/94	5/16/94	5/16/94

Analyte	MRL			
Benzene	0.5	390	4,600	510
Toluene	0.5	140	14,000	78
Ethylbenzene	0.5	120	5,300	31
Total Xylenes	0.5	480	40,000	150
TPH as Gasoline	50	5,600	560,000	1,900

Approved By: _____

Carol J Klein

Date: _____

5-20-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.



Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Service Request: SJ940540

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: $\mu\text{g/L(ppb)}$

Sample Name:	MW-5 (9.6)	MW-6 (8.5)	MW-7 (9.38)
Lab Code:	SJ940540-5	SJ940540-6	SJ940540-7
Date Analyzed:	5/13/94	5/13/94	5/13/94

Analyte	MRL			
Benzene	0.5	9,700	14,000	ND
Toluene	0.5	4,700	<200*	ND
Ethylbenzene	0.5	1,000	1,300	ND
Total Xylenes	0.5	6,400	4,500	ND
TPH as Gasoline	50	54,000	45,000	ND

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

Approved By: _____

Carol J. Klein

Date: 5-20-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Service Request: SJ940540

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

Sample Name:	MW-8 (9.55)	MW-11 (11)	MW-12 (9.70)
Lab Code:	SJ940540-8	SJ940540-9	SJ940540-10
Date Analyzed:	5/13/94	5/13/94	5/13/94

Analyte	MRL			
Benzene	0.5	<2.5*	ND	ND
Toluene	0.5	<2.5*	ND	ND
Ethylbenzene	0.5	8.3	2.5	ND
Total Xylenes	0.5	<2.5*	0.6	ND
TPH as Gasoline	50	2,100	210	ND

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

Approved By: Carol Klein Date: 5-20-94

3S22/041594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Service Request: SJ940540

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

Sample Name:	MW-13 (11.6)	MW-14 (10.10)	MW-15 (7.7)
Lab Code:	SJ940540-11	SJ940540-12	SJ940540-13
Date Analyzed:	5/13/94	5/14/94	5/14/94

Analyte	MRL			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

Approved By: _____

Carol J Klein

Date: 5-20-94

3522/041594

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report



Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Service Request: SJ940540

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: $\mu\text{g/L}$ (ppb)

Sample Name:	MW-9 (12.4)	MW-10 (9.1)	Method Blank
Lab Code:	SJ940540-14	SJ940540-15	SJ940513-WMB
Date Analyzed:	5/14/94	5/14/94	5/13/94

Analyte	MRL			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

Approved By: _____

Carol J. Klein

Date: 5-20-94

3S22/041594

Analytical Report

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Service Request: SJ940540

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

Sample Name: Method Blank
Lab Code: SJ940516-WMB
Date Analyzed: 5/16/94

Analyte	MRL	Result
Benzene	0.5	ND
Toluene	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
TPH as Gasoline	50	ND

Date: 5-20-94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
 Project: ARCO Facility No. 601
 Sample Matrix: Water

Date Collected: 5/5/94
 Date Received: 5/6/94
 Date Extracted: NA
 Service Request: SJ940540

Halogenated Volatile Organic Compounds
 EPA Methods 5030/601
 Units: µg/L (ppb)

Sample Name: MW-8 (9.55) Method Blank
 Lab Code: SJ940540-8 SJ940517-WMB
 Date Analyzed: 5/17/94 5/17/94

Analyte	MRL		
Dichlorodifluoromethane (CFC 12)	1	ND	ND
Chloromethane	1	ND	ND
Vinyl Chloride	0.5	ND	ND
Bromomethane	0.5	ND	ND
Chloroethane	0.5	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND
1,1-Dichloroethene	0.5	ND	ND
Trichlorotrifluoroethane (CFC 113)	0.5	ND	ND
Methylene Chloride	0.5	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND
1,1-Dichloroethane	0.5	0.7	ND
Chloroform	0.5	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND
Carbon Tetrachloride	0.5	ND	ND
1,2-Dichloroethane	0.5	ND	ND
Trichloroethene (TCE)	0.5	ND	ND
1,2-Dichloropropane	0.5	ND	ND
Bromodichloromethane	0.5	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND
Tetrachloroethene (PCE)	0.5	ND	ND
Dibromochloromethane	0.5	ND	ND
Chlorobenzene	0.5	ND	ND
Bromoform	0.5	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND
1,3-Dichlorobenzene	1	ND	ND
1,4-Dichlorobenzene	1	ND	ND
1,2-Dichlorobenzene	1	ND	ND

Approved By:

Carol J. Klein

Date:

5-20-94

3S44/041894

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Date Analyzed: 5/13/94
Service Request: SJ940540

Initial Calibration Verification (ICV) Summary
Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
Units: ppm

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Hydrocarbon Mixture	40	39	98	90-110

Approved By:

Carol J Klein

Date: 5-20-94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report



Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: 5/12/94
Date Analyzed: 5/13/94
Service Request: SJ940540

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

Sample Name: BATCH QC
Lab Code: SJ940518-1

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
						MS	DMS		
Hydrocarbon Mix	8.0	8.0	2.0	10	9.6	100	95	57-127	4

Approved By: Carol J Klein **Date:** 5-20-94

DMSIS/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report



Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: 5/13/94
Date Analyzed: 5/17, 18/94
Service Request: SJ940540

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

Sample Name	Lab Code	Percent Recovery p-Terphenyl
MW-8 (9.55)	SJ940540-8	94
MS	SJ940538-2MS	94
DMS	SJ940538-2DMS	92
Method Blank	SJ940513-WMB	89

CAS Acceptance Limits: 66-123

Approved By: Carol J Klein Date: 5-20-94

SUR1/041594

COLUMBIA ANALYTICAL SERVICES, INC.



QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Date Analyzed: 5/17/94
Service Request: SJ940540

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	500	459	92	90-110

Approved By: Carol J Klein Date: 5-20-94

ICV24/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report



Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: 5/13/94
Date Analyzed: 5/17/94
Service Request: SJ940540

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

Sample Name: BATCH QC
Lab Code: SJ940538-2

Analyte							Percent Recovery			Relative Percent Difference
	Spike Level		Sample Result	Spike Result		CAS Acceptance Limits				
	MS	DMS		MS	DMS	MS	DMS			
Diesel	4.000	4.000	ND	3.880	4.050	97	101	61-141	4	

Approved By: _____

Carol J Klein

Date: 5-20-94

DMSIS/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Date Analyzed: 5/13-16/94
Service Request: SJ940540

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 -Trifluorotolulene
MW-2 (11.5)	SJ940540-2	114
MW-3 (11.5)	SJ940540-3	114*
MW-4 (8.3)	SJ940540-4	111
MW-5 (9.6)	SJ940540-5	106
MW-6 (8.5)	SJ940540-6	106
MW-7 (9.38)	SJ940540-7	109
MW-8 (9.55)	SJ940540-8	110
MW-11 (11)	SJ940540-9	109
MW-12 (9.70)	SJ940540-10	106
MW-13 (11.6)	SJ940540-11	106
MW-14 (10.10)	SJ940540-12	109
MW-15 (7.7)	SJ940540-13	106
MW-9 (12.4)	SJ940540-14	106
MW-10 (9.1)	SJ940540-15	104
MW-7 (9.38) MS	SJ940540-7MD	106
MW-7 (9.38) DMS	SJ940540-7DMS	108
Method Blank	SJ940513-WMB	107
Method Blank	SJ940516-WMB	109

CAS Acceptance Limits: 69-116

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

Approved By: Carol J Klein Date: 5-20-94

SUR1/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Date Analyzed: 5/13/94
Service Request: SJ940540

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	25.2	101	85-115
Toluene	25	25.2	101	85-115
Ethylbenzene	25	25.1	100	85-115
Total Xylenes	75	76.7	102	85-115
TPH as Gasoline	250	262	105	90-110

Approved By: _____

Carol J Klein

Date: 5-20-94

ICV24/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report



Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Date Analyzed: 5/13/94
Service Request: SJ940540

Matrix Spike/Duplicate Matrix Spike Summary

BTE

EPA Methods 5030/8020

Units: µg/L (ppb)

Sample Name: MW-7 (9.38)
Lab Code: SJ940540-7

Analyte	Percent Recovery								
	Spike Level		Sample Result	Spike Result		CAS Acceptance Limits			Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Benzene	25	25	ND	25.1	25.3	100	101	75-135	<1
Toluene	25	25	ND	25.0	25.2	100	101	73-136	<1
Ethylbenzene	25	25	ND	24.7	25.1	99	100	69-142	2

Approved By: _____

Carol Klein

Date: 5-20-94

DMSIS/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Date Analyzed: 5/17/94
Service Request: SJ940540

Surrogate Recovery Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: µg/L (ppb)

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
MW-8 (9.55)	SJ940540-8	97
MS	SJ940547-1MS	96
DMS	SJ940547-1DMS	101
Method Blank	SJ940517-WMB	95

CAS Acceptance Limits: 76-138

Approved By:

Carol Klein

Date: 5-20-94

SUR1/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601

Date Analyzed: 4/19/94
Service Request: SJ940540

Initial Calibration Verification (ICV) Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Chloromethane	100	114	114	D-193
Vinyl Chloride	100	104	104	28-163
Bromomethane	100	76	76	D-144
Chloroethane	100	110	110	46-137
Trichlorofluoromethane (CFC 11)	100	110	110	21-156
1,1-Dichloroethene	100	122	122	28-167
Methylene Chloride	100	116	116	25-162
trans-1,2-Dichloroethene	100	117	117	38-155
1,1-Dichloroethane	100	107	107	47-132
Chloroform	100	107	107	49-133
1,1,1-Trichloroethane (TCA)	100	107	107	41-138
Carbon Tetrachloride	100	102	102	43-143
1,2-Dichloroethane	100	104	104	51-147
Trichloroethene (TCE)	100	109	109	35-146
1,2-Dichloropropane	100	109	109	44-156
Bromodichloromethane	100	103	103	42-172
trans-1,3-Dichloropropene	100	112	112	22-178
cis-1,3-Dichloropropene	100	90	90	22-178
1,1,2-Trichloroethane	100	103	103	39-136
Tetrachloroethene (PCE)	100	107	107	26-162
Dibromochloromethane	100	102	102	24-191
Chlorobenzene	100	115	115	38-150
Bromoform	100	97	97	13-159
1,1,2,2-Tetrachloroethane	100	105	105	8-184
1,3-Dichlorobenzene	100	105	105	7-187
1,4-Dichlorobenzene	100	118	118	42-143
1,2-Dichlorobenzene	100	113	113	D-208

Approved By:

Carol Klein

Date: 5-20-94

ICV41/041594

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO Facility No. 601
Sample Matrix: Water

Date Collected: 5/5/94
Date Received: 5/6/94
Date Extracted: NA
Date Analyzed: 5/17/94
Service Request: SJ940540

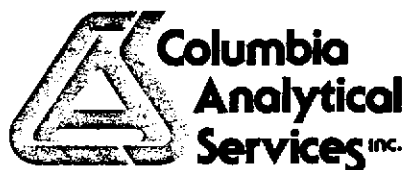
Matrix Spike/Duplicate Matrix Spike Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: µg/L (ppb)

Sample Name: BATCH QC
Lab Code: SJ940547-1

Analyte	Percent Recovery								
	Spike Level		Sample Result	Spike Result		CAS Acceptance Limits			Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
1,1-Dichloroethene	10	10	ND	10.1	9.03	101	90	69-142	11
Trichloroethene	10	10	ND	11.5	11.5	115	115	42-148	<1
Tetrachloroethene	10	10	ND	11.7	11.5	117	115	80-136	2

Approved By: Carol Klein Date: 5-20-94

DMSIS/041594



RECEIVED MAY 23 1994

May 19, 1994

Service Request No.: K942785S

Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: ARCO 601 Project/SJ94-0540

Dear Tom:

Enclosed are the results of the sample(s) submitted to our laboratory on May 7, 1994. For your reference, these analyses have been assigned our service request number K942785S.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (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. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc

A handwritten signature in cursive script, appearing to read "Richard Craven".

Richard Craven
Project Chemist

RAC/sm

Columbia Analytical Services, Inc.

A handwritten signature in cursive script, appearing to read "Kevin DeWhitt".

Kevin DeWhitt
Quality Assurance Coordinator

Page 1 of 13

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
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 MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
Project: Arco 601
Matrix: Water

Date Received: 5/7/94
Work Order No.: K942785S

Total Metals
µg/L (ppb)

Sample Name: MW-8 **Method Blank**
Lab Code: K278501 **K2785MB**

Analyte	EPA Method	MRL		
Cadmium	6010A	3	ND	ND
Chromium	6010A	5	ND	ND
Lead	7421	2	4	ND
Nickel	6010A	20	ND	ND
Zinc	6010A	10	60	ND

Richard Alarcon

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
 Project: ARCO 601
 Sample Matrix: Water

Date Received: 05/07/94
 Date Extracted: 05/10/94
 Date Analyzed: 05/11/94
 Work Order No.: K942785S

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 $\mu\text{g/L}$ (ppb)

Sample Name: MW-8
 Lab Code: K942785-001

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	23	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	ND	Bis(2-ethylhexyl) Phthalate	10	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol*	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

* Quantified as 4-methylphenol.

Approved by

Richard Alarcon

Date

5/15/94

00004

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: IWM
 Project: ARCO 601
 Sample Matrix: Water

Date Received: NA
 Date Extracted: 05/10/94
 Date Analyzed: 05/11/94
 Work Order No.: K942785S

Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 $\mu\text{g/L}$ (ppb)

Sample Name: Method Blank
 Lab Code: K940510-MB

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	ND	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	ND	Bis(2-ethylhexyl) Phthalate	10	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			
Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol*	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

* Quantified as 4-methylphenol.

Approved by

Richard Abram

Date

5/19/94

00005

APPENDIX A
LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: Arco 601
Matrix: Water

Date Received: 5/7/94
Work Order No.: K942785S

Duplicate Summary
Total Metals
µg/L (ppb)

Sample Name: MW-8
Lab Code: K278501

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Cadmium	6010A	3	ND	ND	ND	-
Chromium	6010A	5	ND	ND	ND	-
Lead	7421	2	4	4	4	<1
Nickel	6010A	20	ND	ND	ND	-
Zinc	6010A	10	60	60	60	<1

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: Arco 601
Matrix: Water

Date Received: 5/7/94
Work Order No.: K942785S

Matrix Spike Summary
Total Metals
µg/L (ppb)

Sample Name: MW-8
Lab Code: K278501

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS
						Percent Recovery Acceptance Criteria
Cadmium	3	50	ND	53	106	75-125
Chromium	5	200	ND	197	98	75-125
Lead	2	20	4	26	110	75-125
Nickel	20	500	ND	492	98	75-125
Zinc	10	500	60	525	93	75-125

METMS.W/03-13-92

Approved: _____

Richard Alonzo

Date: 5/19/94

Page No.:

00008

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO 601
Sample Matrix: Water

Date Received: 05/07/94
Date Extracted: 05/10/94
Date Analyzed: 05/11/94
Work Order No.: K942785S

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270

Sample Name	Lab Code	P e r c e n t R e c o v e r y					TPH
		2FP	PHL	TBP	NBZ	FBP	
Method Blank	K940510-MB	52	41	78	71	71	79
Laboratory Control Sample	K942785-LCS	57	43	81	83	82	84
MW-8	K942785-001	49	48	69	75	80	81
MW-8	K942785-001MS	49	47	76	63	71	83
MW-8	K942785-001DMS	61	56	78	75	80	86

EPA Acceptance Criteria	21-100	10-94	10-123	35-114	43-116	33-141
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2FP 2-Fluorophenol
PHL Phenol-D₆
TBP 2,4,6-Tribromophenol
NBZ Nitrobenzene-D₅
FBP 2-Fluorobiphenyl
TPH Terphenyl-D₁₄

Approved by

Richard A. Garrow

Date

5/19/94

00009

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
 Project: ARCO 601
 Sample Matrix: Water

Date Received: 05/07/94
 Date Extracted: 05/10/94
 Date Analyzed: 05/11/94
 Work Order No.: K942785S

Matrix Spike/Duplicate Matrix Spike Summary
 Base Neutral/Acid Semivolatile Organic Compounds
 EPA Methods 3510/8270
 $\mu\text{g/L}$ (ppb)

Sample Name: MW-8
 Lab Code: K942785-001

Percent Recovery

Analyte	Spike Level		Sample Result	Spike Result				EPA Acceptance Criteria	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Phenol	400	400	ND	160	200	40	50	12-89	22
2-Chlorophenol	400	400	ND	200	260	50	65	27-123	26
1,4-Dichlorobenzene	200	200	ND	130	160	65	80	36-97	21
N-Nitrosodi-n-propylamine	200	200	ND	130	150	65	75	41-116	14
1,2,4-Trichlorobenzene	200	200	ND	130	150	65	75	39-98	14
4-Chloro-3-methylphenol	400	400	ND	250	280	62	70	23-97	11
Acenaphthene	200	200	ND	170	180	85	90	46-118	6
4-Nitrophenol	400	400	ND	230	240	58	60	10-80	4
2,4-Dinitrotoluene	200	200	ND	150	150	75	75	24-96	<1
Pentachlorophenol	400	400	ND	280	300	70	75	9-103	7
Pyrene	200	200	ND	150	160	75	80	26-127	6

Approved by

Richard A. Brown

Date

5/19/94

00010

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: IWM
Project: ARCO 601
LCS Matrix: Water

Date Extracted: 05/10/94
Date Analyzed: 05/11/94
Work Order No.: K942785S

Laboratory Control Sample Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
 $\mu\text{g/L}$ (ppb)

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Phenol	100	42	42	5-112
2-Chlorophenol	100	82	82	23-134
1,4-Dichlorobenzene	100	75	75	20-124
N-Nitrosodi-n-propylamine	100	82	82	D-230
1,2,4-Trichlorobenzene	100	70	70	44-142
4-Chloro-3-methylphenol	100	82	82	22-147
Acenaphthene	100	88	88	47-145
4-Nitrophenol	100	39	39	D-132
2,4-Dinitrotoluene	100	74	74	39-139
Pentachlorophenol	100	72	72	14-176
Pyrene	100	82	82	52-115

D Detected; result must be greater than zero.

Approved by Richard Albaum Date 5/19/94

00011

APPENDIX B
CHAIN OF CUSTODY INFORMATION

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No.

IWM-94-5CC

K27855

Chain of Custody

ARCO Facility no. *A 601*

City (Facility) *San Leandro*

Project manager (Consultant)

Tom De Bon / Chen Young

ARCO eny *Mike Whelan*

Telephone no. (ARCO) *415 571 2474*

Telephone no. (Consultant)

408 / 942 8955

Fax no. (Consultant)

408 / 942 1499

Consultant name *IWM / KOSNA*

Address (Consultant)

950 Smed av. Milp Ca 95035

Laboratory name

Columbia

Contract number

07077

Method of shipment

CAS carrier

Special detection Limit/reporting

Special QA/QC

Remarks

*7/6/94
in
7/13/94
Hold for MW-1
oil and grease
MW-8*

Lab number

SJ94-0540

Turnaround time

Priority Rush

1 Business Day ☐

Rush

2 Business Days ☐

Expedited

5 Business Days ☐

Standard

10 Business Days ☒

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 801/802	BTEX/TPH EPA 801/802/803/804	TPH Modified 801/5 Gas 801/5 Diesel 801/5	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 413.1/SM503E	VOCs EPA 801/8010	EPA 821/8240	EPA 825/8270	TCIP Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 801/8010/8011 TLC ☐ STLC ☐	Lead Org./DHS Lead EPA 7230/7231	Total Metals 6010	TPHD
			Soil	Water	Other	Ice	Acid															
FB-1	1	2		✓		✓	✓	<i>5-5-94</i>	<i>951</i>		✓	✓										
<i>1.5</i> MW-2	<i>2</i>	<i>2</i>		✓		✓	✓		<i>1523</i>		✓	✓										
<i>1.6</i> MW-3	<i>3</i>	<i>2</i>		✓		✓	✓		<i>1608</i>		✓	✓										
<i>2.3</i> MW-4	<i>4</i>	<i>2</i>		✓		✓	✓		<i>1507</i>		✓	✓										
<i>7.6</i> MW-5	<i>5</i>	<i>2</i>		✓		✓	✓		<i>1538</i>		✓	✓										
<i>9.5</i> MW-6	<i>6</i>	<i>2</i>		✓		✓	✓		<i>1547</i>		✓	✓										
<i>1.38</i> MW-7	<i>7</i>	<i>2</i>		✓		✓	✓		<i>1320</i>		✓	✓										
<i>5.5</i> MW-8	<i>8</i>	<i>14</i>		✓		✓	✓		<i>1427</i>		✓	✓			✓	✓			✓	✓	✓	
<i>11</i> MW-11	<i>9</i>	<i>2</i>		✓		✓	✓		<i>1402</i>		✓	✓										
<i>7.70</i> MW-12	<i>10</i>	<i>2</i>		✓		✓	✓		<i>1420</i>		✓	✓										
<i>11.6</i> MW-13	<i>11</i>	<i>2</i>		✓		✓	✓		<i>1425 = 1435</i>		✓	✓										
<i>0.10</i> MW-14	<i>12</i>	<i>2</i>		✓		✓	✓		<i>1347</i>		✓	✓										
<i>1.7</i> MW-15	<i>13</i>	<i>2</i>		✓		✓	✓		<i>1240</i>		✓	✓										

Condition of sample: *Good*

Temperature received: *Cool*

Relinquished by sampler

Chia Chah

Date

5-6-94

Time

9:00 AM

Received by

Shia Austin

Relinquished by

Shia Austin

Date

5-6-94

Time

10:20

Received by

Whurp

5-6-94 10:20

Relinquished by

John Fumery CAS/SS

Date

5/6/94

Time

1600

Received by laboratory

Ruth Higley

Date

5/7/94

Time

0830

I NTEGRATED
W ASTESTREAM
M ANAGEMENT, INC.

REC'D JUN 21 1994

May 26, 1994

Mr. John Young
RESNA Industries
3315 Almaden Expressway, Suite 34
San Jose, CA 95118

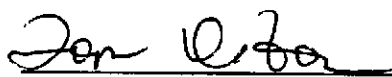
Dear Mr. Young:

Attached are the field data sheets and analytical results for quarterly ground water sampling at ARCO Facility No. A-601 in San Leandro, California. Integrated Wastestream Management measured the depth to water and collected samples from wells at this site on May 5, 1994.

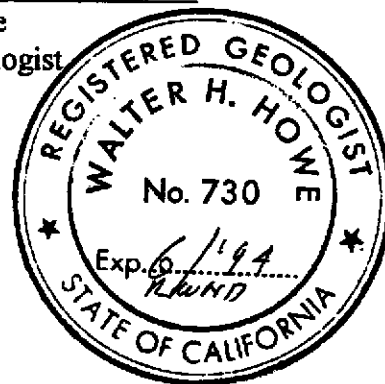
Sampling was carried out in accordance with the protocols described in the "Request for Bid for Quarterly Sampling at ARCO Facilities in Northern California".

Please call us if you have any questions.

Sincerely,
Integrated Wastestream Management


Tom DeLon
Project Manager


Walter H. Howe
Registered Geologist



Summary of Ground Water Sample Analyses for ARCO Facility A-601, San Leandro, California

WELL NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
DATE SAMPLED	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94	5/5/94
DEPTH TO WATER	8.47	7.51	6.81	7.73	7.18	8.24	9.11	7.46	8.04	8.08	8.55	8.97	8.38	9.49	6.18
SHEEN	HEAVY	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
PRODUCT THICKNESS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPHg	NA	5,600	560,000	1,900	54,000	45,000	ND	2,100	ND	ND	210	ND	ND	ND	ND
BTEX															
BENZENE	NA	390	4,600	510	9,700	14,000	ND	<2.5 *	ND	ND	ND	ND	ND	ND	ND
TOLUENE	NA	140	14,000	78	4,700	<200 *	ND	<2.5 *	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	NA	120	5,300	31	1,000	1,300	ND	8.3	ND	ND	2.5	ND	ND	ND	ND
XYLENES	NA	480	40,000	150	6,400	4,500	ND	<2.5 *	ND	ND	0.6	ND	ND	ND	ND
EPA 418.1															
PETROLEUM HYDROCARBONS	NA	NA	NA	NA	NA	NA	NA	0.7	NA	NA	NA	NA	NA	NA	NA
TPHd															
DIESEL	NA	NA	NA	NA	NA	NA	NA	440 +	NA	NA	NA	NA	NA	NA	NA
EPA 5030/601															
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	NA	0.7	NA	NA	NA	NA	NA	NA	NA
TOTAL METALS															
CADMIUM	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	4	NA	NA	NA	NA	NA	NA	NA
NICKEL	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	60	NA	NA	NA	NA	NA	NA	NA
EPA 510/8270															
NAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	23	NA	NA	NA	NA	NA	NA	NA

FOOTNOTES:

Concentrations reported in ug/L (ppb).

TPHg = Total Purgeable Petroleum Hydrocarbons (USEPA Method 8015 Modified)

BTEX Distinction (USEPA Method 8020)

PCE = Tetrachloroethene (USEPA Method 8010)

+ = The sample contains a lower boiling point hydrocarbon mixture quantitated as diesel.
The chromatogram does not match the typical diesel fingerprint.

DCE = cis-1, 2-Dichloroethene (USEPA Method 8010) ~

TCE = Trichloroethene (USEPA Method 8010)

ND = Not Detected.

NA = Not applicable.

= Raised MRL due to high analyte concentration requiring dilution.

FP = Floating product.

* = Well inaccessible

** = Not sampled per consultant request.

FIELD REPORT

Depth To Water / Floating Product Survey

NEW TD's taken on 5-5-94

Site Arrival Time: 9:45

Site Departure Time: 1630

Weather Conditions: Sunny
Clear

DTW: Well Box or Well Casing (circle one)

Project No.:

Location: 712 Seweling Blvd.

Date: May 5, 1994

Client / Station#: Arco 601

Field Technician: Vince / Cisco

Day of Week: Thursday

DTW ORDER	WELL ID	SURFACE SEAL	LID SECURE	GASKET	LOCK	EXPANDING CAP	TOTAL DEPTH (Feet)	FIRST DEPTH TO WATER (Feet)	SECOND DEPTH TO WATER (Feet)	DEPTH TO FLOATING PRODUCT (Feet)	FLOATING PRODUCT THICKNESS (Feet)	SHEEN (Y= YES, N=NO)	COMMENTS	MATERIALS
15	MW-1	OK	Yes	OK	OK	OK	N/A	8.47	8.47			Y	4" heavy sheen observed, product coated disp. Bailer	4" in box
11	MW-2	OK	Yes	OK	OK	OK	12.40	7.51+	7.51+	N/A	N/A	N	4" Total Depth = 12.40	15/16
14	MW-3	OK	Yes	OK	OK	OK	12.00	6.81	6.81	N/A	N/A	N	4"	4" in box
10	MW-4	OK	Yes	OK	OK	OK	8.60	7.73	7.73	N/A	N/A	N	4"	15/16
12	MW-5	OK	Yes	OK	OK	OK	10.40	7.18	7.18	N/A	N/A	N	4"	15/16
13	MW-6	OK	Yes	OK	OK	OK	8.63	8.24+	8.24+	N/A	N/A	N	4"	15/16
4	MW-7	OK	Yes	OK	OK	OK	9.72	9.11	9.11	N/A	N/A	N	4"	15/16
9	MW-8	OK	Yes	OK	OK	OK	10.30	7.46+	7.46+	N/A	N/A	N	4"	15/16
1	MW-9	OK	Yes	OK	OK	OK	16.40	8.04-	8.04-	N/A	N/A	N	4"	15/16
2	MW-10	OK	Yes	OK	OK	OK	19.60	8.08	8.08	N/A	N/A	N	4"	15/16
3	MW-11	OK	Yes	OK	OK	OK	12.00	8.55+	8.55+	N/A	N/A	N	4"	15/16
6	MW-12	OK	Yes	OK	OK	OK	11.90	8.97	8.97	N/A	N/A	N	4"	15/16
7	MW-13	OK	Yes	OK	OK	OK	13.31	8.38	8.38	N/A	N/A	N	4"	15/16
5	MW-14	OK	Yes	OK	OK	OK	13.11	9.49	9.49	N/A	N/A	N	4"	15/16
3	MW-15	OK	Yes	OK	OK	OK	10.45	6.18	6.18	N/A	N/A	N	4"	15/16

WELL ID: MW-14 TD 1311 DTW 949 X 0.40 X 3 = 7.16
Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1333 END (2400 HR): 1343
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1347 DTW: 1010

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1334</u>	<u>1.5</u>	<u>6.85</u>	<u>11.20 (x100)</u>	<u>68.2</u>	<u>clear</u>
<u>1335</u>	<u>2</u>	<u>6.97</u>	<u>1.21</u>	<u>68.2</u>	<u>clear</u>
<u>1343</u>	<u>7</u>	<u>7.17</u>	<u>1.29</u>	<u>67.7</u>	<u>clear</u>

Total purge: 7

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS:

WELL ID: MW-12 TD 1190 DTW 897 X 0.66 X 3 = 5.80
Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1356 END (2400 HR): 1413
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1420 DTW: 970

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1400</u>	<u>1</u>	<u>7.12</u>	<u>1.04</u>	<u>70.0</u>	<u>clear</u>
<u>1405</u>	<u>3</u>	<u>6.88</u>	<u>1.04</u>	<u>69.0</u>	<u>clear</u>
<u>1413</u>	<u>6</u>	<u>6.80</u>	<u>1.08</u>	<u>68.7</u>	<u>clear</u>

Total purge: 6

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS:

WELL ID: MW-13 TD 1331 DTW 838 X 0.17 X 3 = 2.51
Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1424 END (2400 HR): 1431
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1435 DTW: 1160

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1425</u>	<u>.50</u>	<u>6.82</u>	<u>1.08</u>	<u>66.0</u>	<u>clear</u>
<u>1427</u>	<u>1.5</u>	<u>6.79</u>	<u>1.07</u>	<u>66.0</u>	<u>clear</u>
<u>1431</u>	<u>2.5</u>	<u>6.82</u>	<u>1.08</u>	<u>66.3</u>	<u>clear</u>

Total purge: 2.5

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS:

WELL ID: _____ TD _____ DTW _____ X _____ X _____ = _____
Linear Ft. Volume Purge

DATE PURGED: _____ START (2400 HR): _____ END (2400 HR): _____
 DATE SAMPLED: _____ TIME (2400 HR): _____ DTW: _____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge: _____

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS:

PRINT NAME: James A. Morgan SIGNATURE: James A. Morgan

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: _____

GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 3.8 Other: _____

WELL ID: MW 9 TD 1640 DTW 3.04 x 0.17 Gal. x 3 Casing - 4.26 Calculated
Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1156 END (2400 HR): 1158
DATE SAMPLED: 5-5-94 TIME (2400 HR): 1205 DTW: 12.4

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1157</u>	<u>1.5</u>	<u>6.79</u>	<u>0.88</u>	<u>73.0</u>	<u>clear</u>
<u>1157</u>	<u>2.5</u>	<u>6.77</u>	<u>0.89</u>	<u>73.0</u>	<u>clear</u>
<u>1158</u>	<u>5</u>	<u>6.82</u>	<u>0.89</u>	<u>72.8</u>	<u>clear</u>

Total purge: 5

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS:

WELL ID: MW-10 TD 196 DTW 8.08 x 0.17 Gal. x 3 Casing - 5.87 Calculated
Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1213 END (2400 HR): 1215
DATE SAMPLED: 5-5-94 TIME (2400 HR): 1220 DTW: 9.1

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1213</u>	<u>1.5</u>	<u>7.17</u>	<u>0.87</u>	<u>74.3</u>	<u>cloudy</u>
<u>1214</u>	<u>3</u>	<u>7.14</u>	<u>0.89</u>	<u>72.3</u>	<u>cloudy</u>
<u>1215</u>	<u>6</u>	<u>7.07</u>	<u>0.86</u>	<u>71.9</u>	<u>cloudy</u>

Total purge: 6

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS:

WELL ID: MW-15 TD 10.45 DTW 6.18 x 0.17 Gal. x 3 Casing - 2.17 Calculated
Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1228 END (2400 HR): 1235
DATE SAMPLED: 5-5-94 TIME (2400 HR): 1240 DTW: 7.7

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1230</u>	<u>.5</u>	<u>7.22</u>	<u>0.65</u>	<u>68.0</u>	<u>clear</u>
<u>1233</u>	<u>1.5</u>	<u>7.09</u>	<u>0.62</u>	<u>65.4</u>	<u>clear</u>
<u>1235</u>	<u>2.5</u>	<u>7.13</u>	<u>0.61</u>	<u>65.2</u>	<u>clear</u>

Total purge: 2.5

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS:

WELL ID: MW-7 TD 972 DTW 9.11 x 0.66 Gal. x 3 Casing - 1.20 Calculated
Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1303 END (2400 HR): 1307
DATE SAMPLED: 5-5-94 TIME (2400 HR): 1320 DTW: 9.38

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1303</u>	<u>0.3075</u>	<u>9.6</u>	<u>1.20</u>	<u>67.5</u>	<u>clear</u>
<u>1307</u>	<u>0.4025</u>	<u>9.3</u>	<u>1.21</u>	<u>67.3</u>	<u>clear</u>

Total purge: 0.25

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP.: Bailer Disp.

REMARKS: well bailed dry at .025 gallons

PRINT NAME:

Francisco Abungar

SIGNATURE:

Francisco Abungar

CASINO DIAMETER (inches):

2 3 4 6 8 12 Other: _____

GALLON/LINEAR FOOT:

0.17 0.38 0.66 1.5 2.6 5.8 Other: _____

WELL ID: MW-5 TD 10.40 DTW 7.12 X 0.66 X 3 - 6.37
 Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1532 END (2400 HR): 1536
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1538 DTW: 9.6

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1534</u>	<u>1</u>	<u>6.61</u>	<u>1.16</u>	<u>69.5</u>	<u>Clear</u>
<u>1535</u>	<u>2</u>	<u>6.51</u>	<u>1.27</u>	<u>69.4</u>	<u>Clear</u>
<u>1536</u>	<u>3</u>	<u>6.49</u>	<u>1.26</u>	<u>68.6</u>	<u>Clear</u>

Total purge: 3

PURGING EQUIP.: ☒ Centrifugal Pump ☐ Bailer Disp.

SAMPLING EQUIP.: ☐ Bailer Disp.

REMARKS: well pumped dry at 3 gallons

WELL ID: MW-6 TD 8.03 DTW 8.24 X 0.66 X 3 - 8.3
 Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1545 END (2400 HR): 1546
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1547 DTW: 8.3

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1546</u>	<u>25</u>	<u>6.65</u>	<u>1.05</u>	<u>64.9</u>	<u>Clear</u>
<u>1546</u>	<u>25</u>	<u>6.63</u>	<u>1.04</u>	<u>64.8</u>	<u>Clear</u>

Total purge: 25

PURGING EQUIP.: ☐ Centrifugal Pump ☒ Bailer Disp.

SAMPLING EQUIP.: ☐ Bailer Disp.

REMARKS: well bailed dry at 25 gallons

WELL ID: MW-3 TD 12.0 DTW 6.81 X 0.66 X 3 - 10.57
 Linear Ft. Volume Purge

DATE PURGED: 5-5-94 START (2400 HR): 1603 END (2400 HR): 1605
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1603 DTW: 11.5

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1604</u>	<u>2</u>	<u>6.71</u>	<u>1.34</u>	<u>70.6</u>	<u>Clear</u>
<u>1604</u>	<u>5</u>	<u>6.69</u>	<u>1.07</u>	<u>68.9</u>	<u>Clear</u>
<u>1605</u>	<u>6</u>	<u>6.68</u>	<u>1.06</u>	<u>68.2</u>	<u>Clear</u>

Total purge: 4

PURGING EQUIP.: ☒ Centrifugal Pump ☐ Bailer Disp.

SAMPLING EQUIP.: ☐ Bailer Disp.

REMARKS:

WELL ID: _____ TD _____ DTW _____ X _____ X _____ - _____
 Linear Ft. Volume Purge

DATE PURGED: _____ START (2400 HR): _____ END (2400 HR): _____
 DATE SAMPLED: _____ TIME (2400 HR): _____ DTW: _____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)

Total purge: _____

PURGING EQUIP.: ☐ Centrifugal Pump ☐ Bailer Disp.

SAMPLING EQUIP.: ☐ Bailer Disp.

REMARKS: _____

PRINT NAME: _____ SIGNATURE: _____

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: _____
 GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other: _____

PAGE 5 OF 5 DATE: 5-5-94 CLIENT/STATION #: Arco 601 ADDRESS: 712 Sewelling Blvd. San
Sam Diego

WELL ID: MW-11 TD 12.0 DTW 3.55 X 0.60 3 1083
 Linear Ft. Volume Casing - Calculated
 DATE PURGED: 5-5-94 START (2400 HR): 1355 END (2400 HR): 1400
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1402 DTW: 11

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1356</u>	<u>1</u>	<u>7.43</u>	<u>1.26</u>	<u>71.2</u>	<u>clear</u>
<u>1357</u>	<u>3</u>	<u>7.39</u>	<u>1.25</u>	<u>70.6</u>	<u>clear</u>
<u>1400</u>	<u>4.5</u>	<u>7.37</u>	<u>1.24</u>	<u>69.9</u>	<u>clear</u>

 Total purge: 4.5
 PURGING EQUIP.: ☒ Centrifugal Pump ☐ Bailer Disp.
 REMARKS: well pumped dry at 4.5 gallons

WELL ID: MW-8 TD 10.30 DTW 7.46 X 0.60 3 5.62
 Linear Ft. Volume Casing - Calculated
 DATE PURGED: 5-5-94 START (2400 HR): 1417 END (2400 HR): 1420
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1427 DTW: 9.55

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1417</u>	<u>.50</u>	<u>6.71</u>	<u>1.29</u>	<u>70.5</u>	<u>clear</u>
<u>1418</u>	<u>2</u>	<u>6.63</u>	<u>1.03</u>	<u>70.3</u>	<u>clear</u>
<u>1420</u>	<u>3</u>	<u>6.65</u>	<u>1.04</u>	<u>69.8</u>	<u>clear</u>

 Total purge: 3
 PURGING EQUIP.: ☒ Centrifugal Pump ☐ Bailer Disp.
 REMARKS: well pumped dry at 3 gallons

WELL ID: MW-4 TD 8.60 DTW 7.73 X 0.60 3 1.72
 Linear Ft. Volume Casing - Calculated
 DATE PURGED: 5-5-94 START (2400 HR): 1501 END (2400 HR): 1505
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1507 DTW: 8.3

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1502</u>	<u>25</u>	<u>6.27</u>	<u>1.09</u>	<u>68.5</u>	<u>clear</u>
<u>1503</u>	<u>50</u>	<u>6.41</u>	<u>1.08</u>	<u>68.4</u>	<u>clear</u>
<u>1505</u>	<u>75</u>	<u>6.43</u>	<u>1.08</u>	<u>68.4</u>	<u>clear</u>

 Total purge: _____
 PURGING EQUIP.: ☒ Centrifugal Pump ☐ Bailer Disp.
 REMARKS: well bailed dry at 75 gallon

WELL ID: MW-2 TD 12.40 DTW 7.51 X 0.60 3 9.68
 Linear Ft. Volume Casing - Calculated
 DATE PURGED: 5-5-94 START (2400 HR): 1516 END (2400 HR): 1520
 DATE SAMPLED: 5-5-94 TIME (2400 HR): 1523 DTW: 11.5

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
<u>1517</u>	<u>2</u>	<u>6.45</u>	<u>1.15</u>	<u>69.5</u>	<u>clear</u>
<u>1518</u>	<u>6</u>	<u>6.48</u>	<u>1.14</u>	<u>68.6</u>	<u>clear</u>
<u>1520</u>	<u>9</u>	<u>6.50</u>	<u>1.15</u>	<u>68.4</u>	<u>clear</u>

 Total purge: 9
 PURGING EQUIP.: ☒ Centrifugal Pump ☐ Bailer Disp.
 REMARKS: well pumped dry at 9 gallons

PRINT NAME: Vince Valdes

SIGNATURE: Vince Valdes

CASING DIAMETER (inches): 2 3 4 6 8 12 Other: _____
 GALLON/LINEAR FOOT: 0.17 0.38 0.66 1.5 2.6 5.8 Other: _____