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3315 Almaden Expressway, Suite 34
San Jose, CA 95118
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TRANSMITTAL

TO: Mr. Rob Weston
Alameda County Health Care Services
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94612

DATE: July 19, 1993
PROJECT NUMBER: 62019.04
SUBJECT: ARCO Station No. 2162

FROM: John Young

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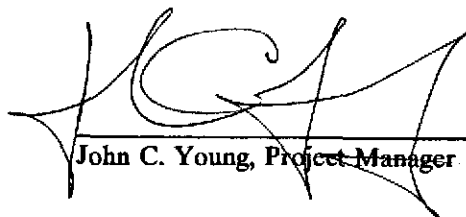
COPIES DATED	DESCRIPTION
1 7/19/93	Final Second Quarter 1993 Groundwater Monitoring Report for ARCO Station No. 2162, 15135 Hesperian Boulevard, San Leandro, California.

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REMARKS:

Copies: 1 to RESNA project file no. 62019.04



John C. Young, Project Manager

3315 Almaden Expressway, Suite 34
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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Second Quarter 1993
at
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

62019.04

July 19, 1993

3315 Almaden Expressway, Suite 34
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July 19, 1993
0628MWHE
62019.04

Mr. Michael Whelan
Environmental Engineer
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Subject: Letter Report on Second Quarter 1993 Groundwater Monitoring at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) prepared this letter report which summarizes the results of the second quarter 1993 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, at the above-referenced site. The objectives of this quarterly groundwater monitoring event are to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of gasoline hydrocarbons in the local groundwater associated with former gasoline underground-storage tanks at the site. Field work and laboratory analyses of groundwater samples during this quarter were performed under the direction of EMCON, and included measuring depths to water, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Field procedures and acquisition of field data were performed under the direction of EMCON; warrant of their field data and evaluation of their field protocols are beyond RESNA's scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analyses data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

ARCO Station 2162 is an operating auto repair and self-service gasoline station located in a residential area on the southwestern corner of the intersection of Hesperian Boulevard and Ruth Court in San Leandro, California. The location of the site is shown on the Site Vicinity Map, Plate 1. The results of previous environmental investigations at the site are presented in the reports listed in the references section. The locations of the groundwater

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

July 19, 1993
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monitoring and vapor extraction wells and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

Depth-to-water (DTW) levels were measured and groundwater was sampled by EMCON field personnel on April 14, 1993. DTW measurements and subjective analysis for product were performed by EMCON on May 19, and June 17, 1993. The results of EMCON's field work at the site, EMCON's Field Reports, are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations for product in the groundwater from MW-1 through MW-4 for this quarter and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. Evidence of ~~product or sheen was not reported on EMCON's Field Reports during this quarter, except in monitoring well MW-4 during purging on April 14, 1993~~ (see Appendix A). EMCON's DTW measurements were used to evaluate groundwater elevations. Due to anomalously low groundwater elevations in April and June, MW-4 was not used to evaluate groundwater gradients or flow directions during those months. The groundwater gradients interpreted from the April, May and June 1993 groundwater monitoring events are shown on Plates 3 through 5, Groundwater Gradient Maps. The interpreted average groundwater gradient and flow direction for this quarter was approximately 0.004 ft/ft to the south-southwest. The groundwater gradient and flow direction are generally consistent with previously evaluated gradient and flow direction at the site.

FP in
mw-4

EMCON's Water Sample Field Data Sheets, Field Reports, and Summary of Groundwater Monitoring Data are included in Appendix A. Purge water generated during purging and sampling of the monitoring wells was transported to Gibson Environmental in Redwood City, California for recycling.

Laboratory Methods and Analyses

Under the direction of EMCON, water samples collected from the wells were analyzed by Columbia Analytical Services, Inc. located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426). The water samples from MW-1 through MW-3 were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using modified Environmental Protection Agency (EPA) Methods 5030/8240 Modified/California Department of Health Services (DHS) leaking underground fuel tank (LUFT) Method. Concentrations of TPHg and benzene in

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ARCO Station 2162, San Leandro, California

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the groundwater are shown on Plate 4, TPHg/Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analysis Reports are included in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples.

Since last quarter, gasoline hydrocarbon concentrations decreased in monitoring wells MW-1 and MW-2, and increased in monitoring wells MW-3 and MW-4.

RESNA recommends that copies of this report be forwarded to:

Mr. John Jang
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

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

Mr. Mike Bakaldin
City of San Leandro Fire Department
Hazardous Materials Division
835 East 14th Street
San Leandro, California 94577

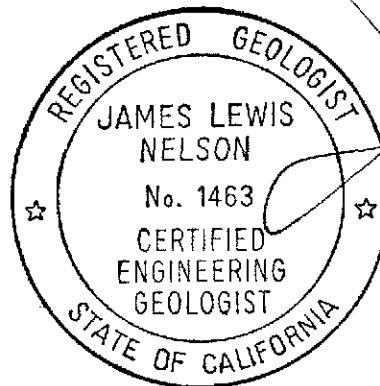
Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

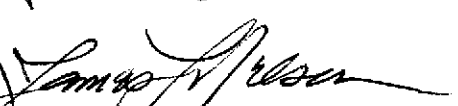
July 19, 1993
62019.04

If you have any questions or comments, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.


Erin McLucas
Staff Geologist




James L. Nelson
Certified Engineering
Geologist No. 1463

Enclosures: References

- Plate 1, Site Vicinity Map
- Plate 2, Generalized Site Plan
- Plate 3, Groundwater Gradient Map, April 14, 1993
- Plate 4, Groundwater Gradient Map, May 19, 1993
- Plate 5, Groundwater Gradient Map, June 17, 1993
- Plate 6, TPHg/Benzene Concentrations in Groundwater, April 14, 1993

Table 1, Cumulative Groundwater Monitoring Data

Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples

Appendix A: EMCON's Field Reports Depth to Water/Floating Product Survey Results, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain-of-Custody, and Water Sample Field Data Sheets.

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

July 19, 1993
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REFERENCES

- Department of Health Services, State of California. October 24, 1990. Summary of Drinking Water Standards.
- Hickenbottom, Kelvin and Muir, Kenneth, June 1988. Geohydrology and Groundwater Quality Overview of the East Bay Plain Area, Alameda County, California. Alameda County Flood Control and Water Conservation District, Report 205 (j).
- Maslonkowski, D.P. 1984. Groundwater in the San Leandro and San Lorenzo Alluvial Cones of the East Bay Plan of Alameda County. Alameda County Flood control and Water Conservation District, California
- RESNA. July 7, 1992. Work Plan for Subsurface Investigation at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.01
- RESNA. September 6, 1992. Site Safety Plan Subsurface Environmental Investigation at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.02
- RESNA. February 4, 1993. Letter Report Quarterly Groundwater Monitoring, Fourth Quarter 1992, at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.04
- RESNA. March 10, 1993. Subsurface Investigation at ARCO 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.02
- RESNA. April 30, 1993. Letter Report Quarterly Groundwater Monitoring, First Quarter 1993, at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.04
- Roux Associates, August 28, 1991. Letter Report - Limited Soil Performance Test, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California, Doc #A101W02.1.1

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

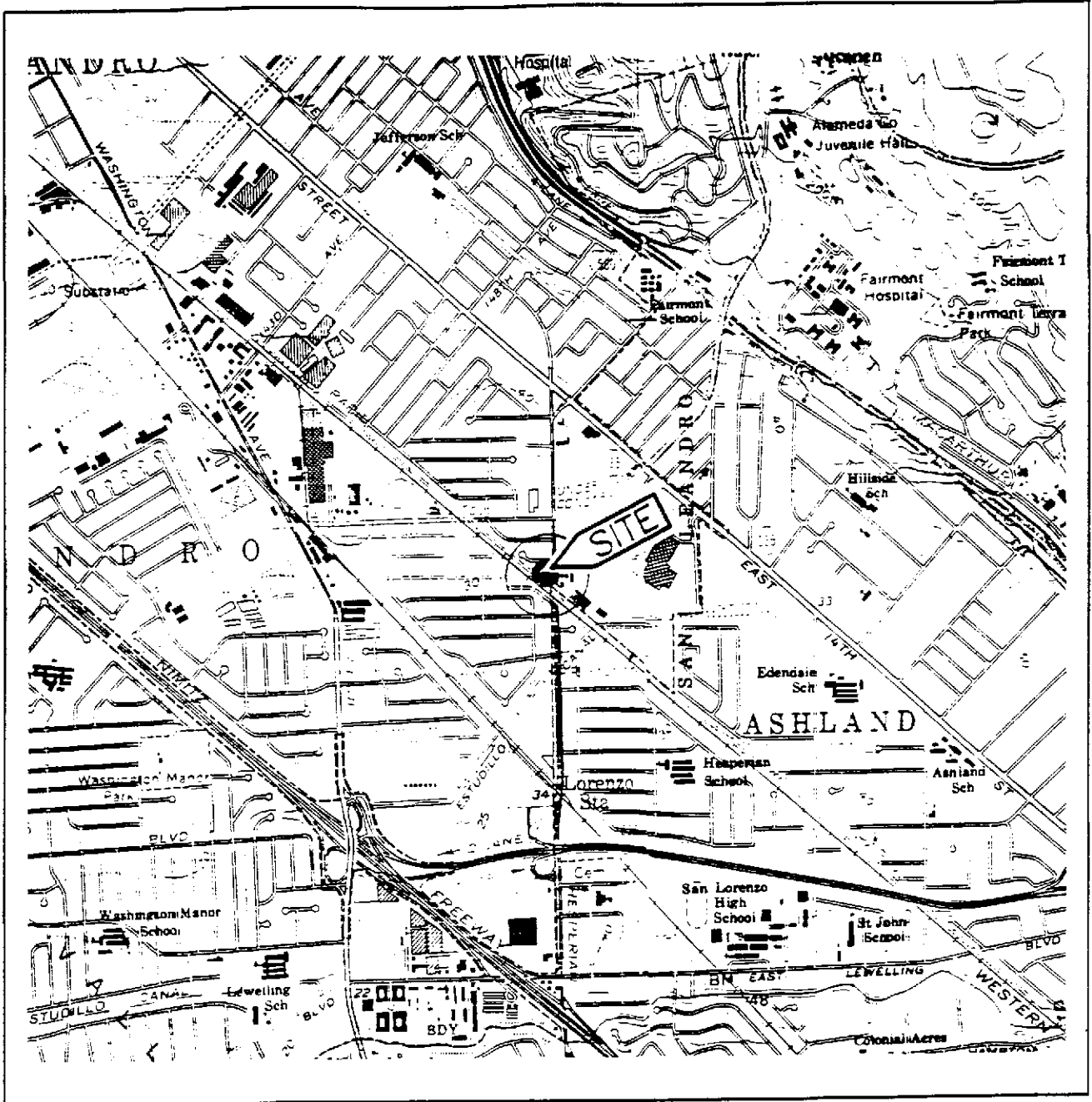
July 19, 1993
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REFERENCES (con't)

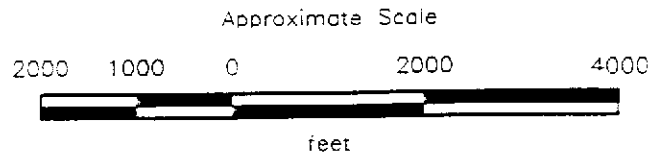
Roux Associates, August 28, 1991. Preliminary Tank Replacement Assessment, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California.
#A101W01.1.5

Roux Associates, August 28, 1991. Letter Report Limited Soil Performance Test, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California.
#A101W02.1.1

Roux Associates, July 7, 1992. Underground Storage Tank Replacement and Soil Sampling, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California.
#A117W01.1.8



Base: U.S. Geological Survey
 7.5-Minute Quadrangles
 San Leandro, Hayward, California
 Photorevised 1980



RESNA
 Working to Restore Nature

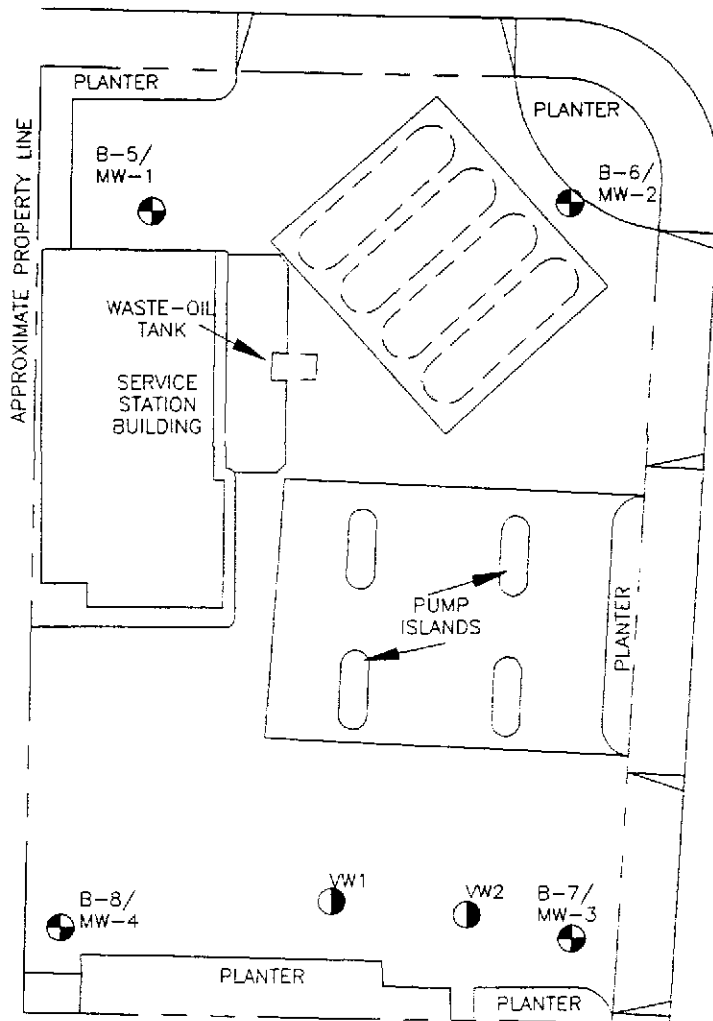
SITE VICINITY MAP
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE

1



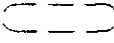
PROJECT 62019.04

RUTH COURT



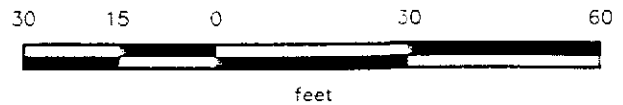
HESPERIAN BOULEVARD

EXPLANATION

- B-8/
MW-4  = Monitoring well RESNA September 1992
- VW2  = Vapor extraction well
(Roux Associates, Inc., 1991)
-  = Existing underground storage tank



Approximate Scale



Source: Modified from site plan provided by Roux Associates, and survey data from John Koch, licensed land surveyor (9/16/92).

RESNA
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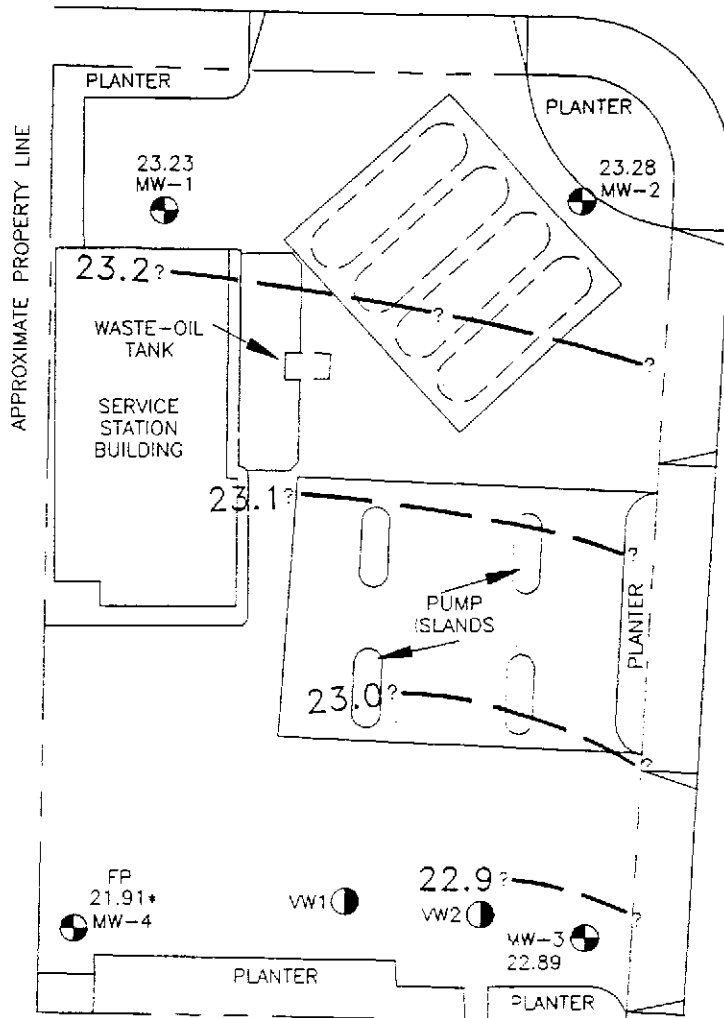
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GENERALIZED SITE PLAN
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE

2

RUTH COURT



APPROXIMATE
DIRECTION OF
GROUNDWATER FLOW
(April 14, 1993)

HESPERIAN BOULEVARD

EXPLANATION

- MW-4 = Monitoring well RESNA September 1992
- VW2 = Vapor extraction well (Roux Associates, Inc., 1991)
- = Existing underground storage tank
- 23.2 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 23.28 = Elevation of groundwater in feet above MSL, April 14, 1993
- FP = Floating product entered well during purge
- * = Elevation anomalously low. Not used in gradient of flow direction evaluation

Approximate Scale



Source: Modified from site plan provided by Roux Associates and survey data from John Koch, licensed land surveyor (9/16/92)

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GROUNDWATER GRADIENT MAP

**ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California**

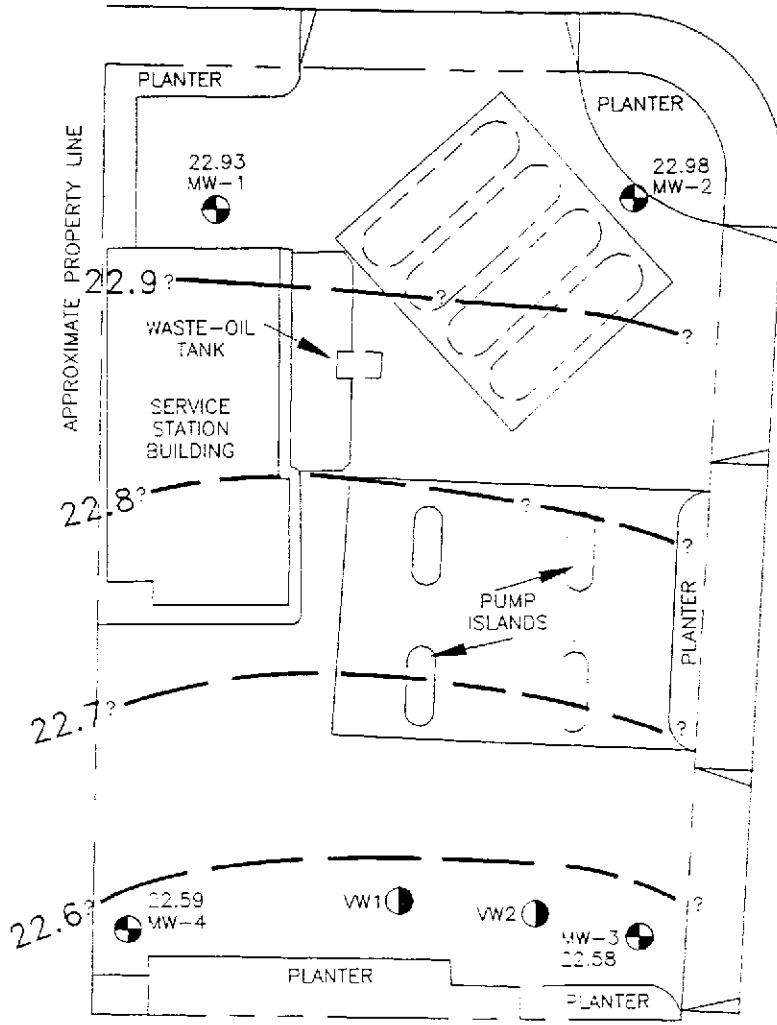
PLATE

3





PROJECT 62019.04

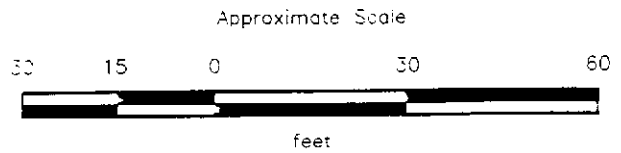
RUTH COURT

APPROXIMATE
DIRECTION OF
GROUNDWATER FLOW
(May 19, 1993)



EXPLANATION

- MW-4  = Monitoring well RESNA September 1992
- VW2  = Vapor extraction well (Roux Associates, Inc., 1991)
-  = Existing underground storage tank
- 22.9  = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 22.98 = Elevation of groundwater in feet above MSL May 19, 1993



Source: Modified from site plan provided by Roux Associates, and survey data from John Koch, licensed land surveyor (9/16/92).

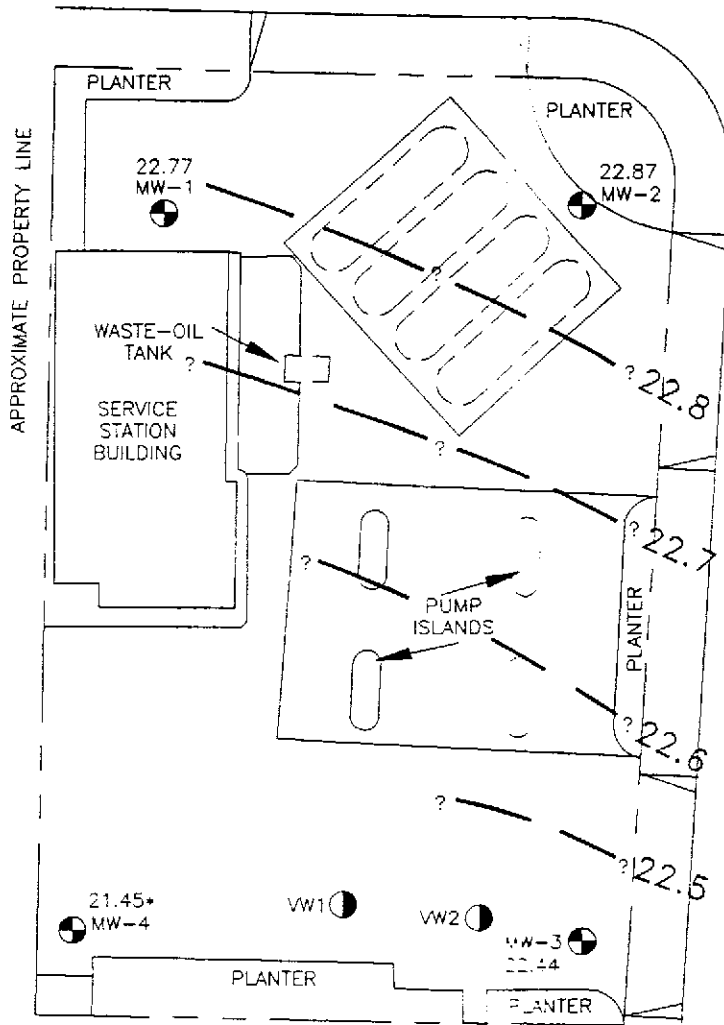


PROJECT 62019.04

GROUNDWATER GRADIENT MAP
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE
4

RUTH COURT



APPROXIMATE
DIRECTION OF
GROUNDWATER FLOW
(June 17, 1993)

HESPERIAN BOULEVARD

EXPLANATION

MW-4 = Monitoring well RESNA September 1992

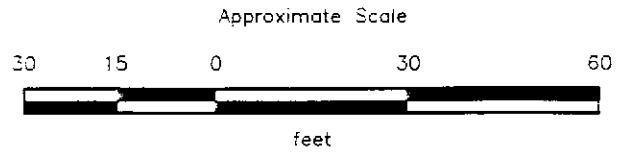
VW2 = Vapor extraction well
(Roux Associates, Inc., 1991)

= Existing underground storage tank

22.8 = Line of equal elevation of groundwater
in feet above mean sea level (MSL)

22.87 = Elevation of groundwater in feet above MSL,
June 17, 1993

* = Elevation anomalously low. Not used in
gradient or flow direction evaluation



Source: Modified from site plan provided by Roux Associates,
and survey data from John Koch, licensed
and surveyor (9/16/92)

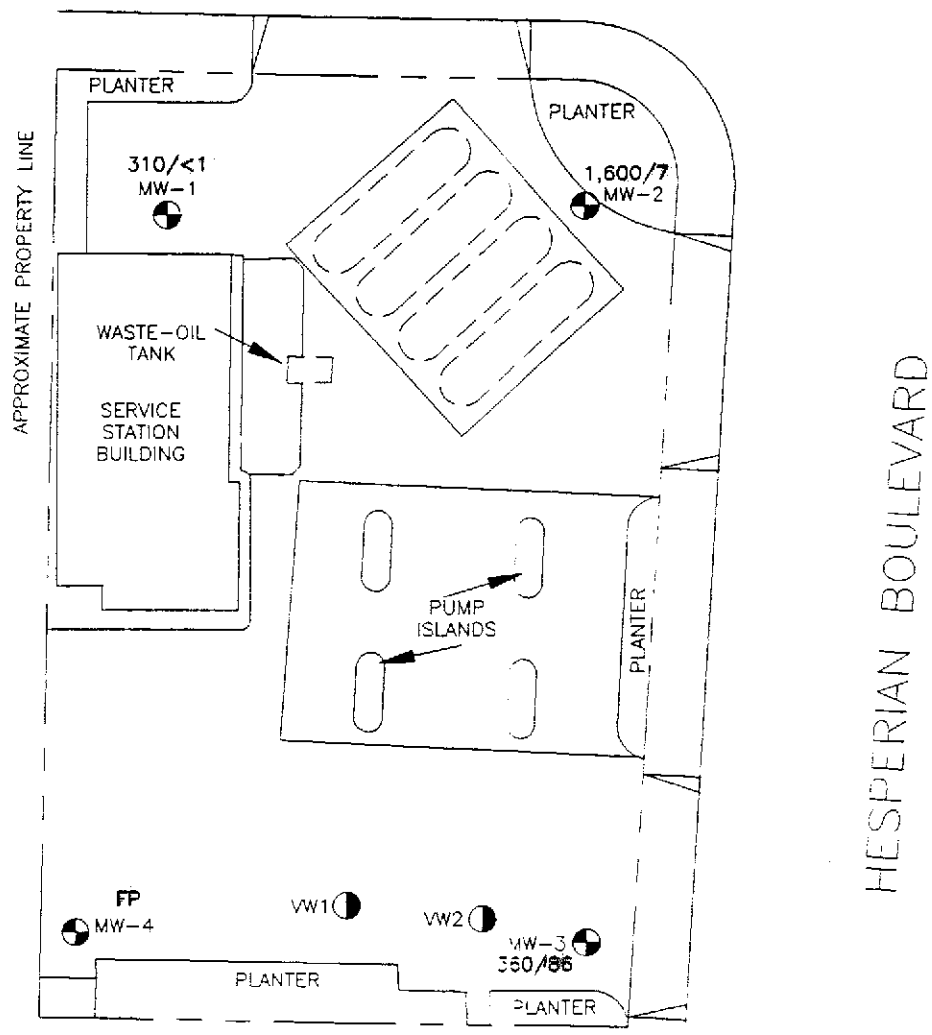


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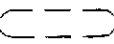
GROUNDWATER GRADIENT MAP
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

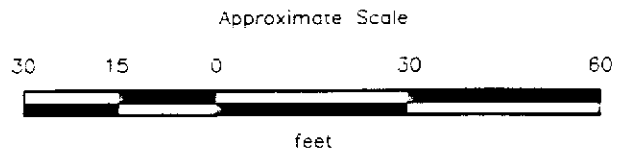
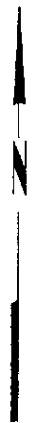
PLATE
5

RUTH COURT



EXPLANATION

- MW-4  = Monitoring well RESNA September 1992
- VW2  = Vapor extraction well (Roux Associates, Inc., 1991)
-  = Existing underground storage tank
- 1,600/7 = Concentration of TPHg/Benzene in groundwater, in parts per billion, April 14, 1993
- FP = Floating product



Source: Modified from site plan provided by Roux Associates. and survey data from John Koch, licensed land surveyor (9/16/92)



TPHg **CONCENTRATIONS**
IN GROUNDWATER
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE
6

PROJECT 62019.04

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

July 19, 1993
62019.04

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

Well Date	Well Elevation	Depth to Water	Water Elevation	Floating Product
<u>MW-1</u>				
09/30/92	31.19	10.68	20.51	None
10/16/92		10.83	20.36	None
01/14/93		7.25	23.94	None
02/24/93		7.23	23.96	None
03/30/93		7.58	23.61	None
04/14/93		7.96	23.23	None
05/19/93		8.26	22.93	None
06/17/93		8.42	22.77	None
<u>MW-2</u>				
09/30/92	30.38	9.74	20.64	None
10/16/92		9.91	20.47	None
01/14/93		6.56	23.82	None
02/24/93		6.67	23.71	None
03/30/93		6.76	23.62	None
04/14/93		7.10	23.28	None
05/19/93		7.40	22.98	None
06/17/93		7.51	22.87	None
<u>MW-3</u>				
09/30/92	30.30	9.93	20.37	None
10/16/92		10.13	20.17	None
01/14/93		6.71	23.59	None
02/24/93		6.82	23.48	None
03/30/93		7.07	23.23	None
04/14/93		7.41	22.89	None
05/19/93		7.72	22.58	None
06/17/93		7.86	22.44	None
<u>MW-4</u>				
09/30/92	30.39	11.15	19.24	None
10/16/92		11.33	19.06	None
01/14/93		7.49	22.90	None
02/24/93		7.57	22.82	None
03/30/93		8.06	22.33	None
04/14/93		8.48	21.91	Product entered during purge
05/19/93		7.80	22.59	None
06/17/93		8.94	21.45	None

All measurements in feet. Well elevation datum is top of casing (TOC) in feet above mean sea level (msl). Survey datum is City of San Leandro = 1973 Adjusted National Geodetic Vertical Datum.

Depth-to-water (DTW) = measured from top of casing.

Water elevation = TOC minus DTW.

Wells surveyed by John Koch, Licensed Surveyor, on 9/16/92.

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

July 19, 1993
62019.04

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

Well Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
<u>MW-1</u>					
09/30/92	1,100	6.2	<0.50	6.9	<0.50
10/16/92	790	3.0	0.8	5.6	2.9
01/14/93	660	1.2	<1*	15	4.6
04/14/93	310	<1*	<1*	<1*	
<u>MW-2</u>					
09/30/92	1,000	9.6	<0.50	45	110
10/16/92	630	8.0	<1.0*	37	64
01/14/93	7,800	33	5	340	920
04/14/93	1,600	7	<5*	220	520
<u>MW-3</u>					
09/30/92	<50	<0.50	<0.50	<0.50	<0.50
10/16/92	<50	<0.50	<0.50	<0.50	<0.50
01/14/93	52	<0.5	<0.5	<0.5	<0.5
04/14/93	360	86	2.1	5.1	4.0
<u>MW-4</u>					
09/30/92	330	81	<0.50	<0.50	<0.50
10/16/92	250	44	<0.5	<0.5	0.7
01/14/93	260	29	0.6	<0.5	1.1
04/14/93		Not sampled - flooding product entered well during pumping			
MCL:	—	1	—	680	1,750
DWAL:	—	—	100	—	—

Results in micrograms per liter (μ/L) = parts per billion (ppb).

TPHg: Total petroleum hydrocarbons as gasoline by EPA method 5030/8020/California DHS LUFT.
BTEX:B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylene isomers; measured by EPA method 5030/8020/California DHS LUFT Method

<: Results reported as less than the detection limit.

*: Raised method reporting limit (MRL) due to high analyte concentration requiring sample dilution.

MCL: State Maximum Contaminant Level (DHS October 1990).

DWAL: State recommended Drinking Water Action Level (DHS October 1990).

APPENDIX A

**EMCON'S FIELD REPORTS
DEPTH TO WATER/FLOATING PRODUCT SURVEY RESULTS,
SUMMARY OF GROUNDWATER MONITORING DATA,
CERTIFIED ANALYTICAL REPORTS WITH CHAIN-OF-CUSTODY,
AND WATER SAMPLE FIELD DATA SHEETS**



EINCON Associates

1938 Juniper Avenue • San Jose, California 95131-2102 • (408) 453-0719 • Fax (408) 453-0452

Date May 4, 1993
Project OG70-055.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

Copies	Description
<u>1</u>	<u>Depth To Water / Floating Product Survey Results</u>
<u>1</u>	<u>Summary of Groundwater Monitoring Data</u>
<u>1</u>	<u>Certified Analytical Reports with Chain-of-Custody</u>
<u>4</u>	<u>Water Sample Field Data Sheets</u>

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the second quarter 1993 monitoring event at ARCO service station 2162, 15135 Hesperian Blvd, San Lorenzo, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:



Robert H. Porter
Robert Porter, Senior Project Engineer.



**FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY**

PROJECT # : OG70-055.01

STATION ADDRESS : 15135 Hesperian Blvd, San Leandrc

DATE : 4-14-92 ← 3.?

ARCO STATION # : 2162

FIELD TECHNICIAN : J. Williams

DAY : WED

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-3	OK	Yes	OK	3257	OK	7.71	7.71	ND	ND	15.0	
2	MW-4	OK	Yes	OK	3259	OK	8.48	8.48	ND*	ND	17.0	Stipene
3	MW-2	OK	Yes	OK	3267	OK	7.10	7.10	ND	ND	16.0	Stipene
4	MW-1	OK	Yes	OK	3257	OK	7.96	7.96	ND	ND	16.0	
												* Product came into well during the purge.

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
 Second Quarter 1993
 ARCO Service Station 2162
 15135 Hesperian Boulevard, San Leandro, California
 micrograms per liter ($\mu\text{g/l}$) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH ¹ as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Total Xylenes (ppb)
MW-1(15)	04/14/93	7.96	ND. ²	310.	<1.	<1.	9.8	<1.
MW-2(15)	04/14/93	7.10	ND.	1,600.	7.	<5.	220.	520.
MW-3(14)	04/14/93	7.41	ND.	360.	86.	2.1	5.1	4.0
MW-4	04/14/93	8.48	FP. ³	FP.	FP.	FP.	FP.	FP.

1. TPH. = Total petroleum hydrocarbons
 2. ND. = Not detected
 3. FP. = Floating product entered the well during purge, no sample taken



April 29, 1993

Service Request No. SJ93-0512

Jim Butera
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: EMCON Project No. 0G70-055.01
ARCO Facility No. 2162

Dear Mr. Butera:

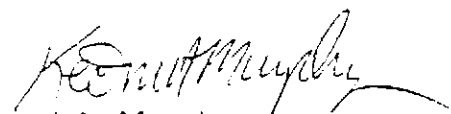
Attached are the results of the water samples submitted to our lab on April 15, 1993. For your reference, these analyses have been assigned our service request number SJ93-0512.

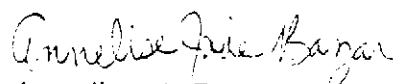
All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.


Keoni A. Murphy
Laboratory Manager


Annelise J. Bazar
Regional QA Coordinator

KAM/ajb

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-055.01
 ARCO Facility No. 2162

Date Received: 04/15/93
 Service Request No.: SJ93-0512
 Sample Matrix: Water

BTEX and TPH as Gasoline
 EPA Methods 5030/8240 Mod./California DHS LUFT Method
 µg/L (ppb)

Sample Name:	<u>MW-1 (15)</u>	<u>MW-2 (15)</u>	<u>MW-3 (14)</u>
Date Analyzed:	04/22/93	04/22/93	04/23/93

<u>Analyte</u>	<u>MRL</u>			
Benzene	0.5	< 1. *	7.	86.
Toluene	0.5	< 1. *	< 5. *	2.1
Ethylbenzene	0.5	9.8	220.	5.1
Total Xylenes	0.5	< 1. *	520.	4.0
TPH as Gasoline	50	310.	1,600.	360.

TPH Total Petroleum Hydrocarbons
 MRL Method Reporting Limit
 ND None Detected at or above the method reporting limit
 * Raised MRL due to high analyte concentration requiring sample dilution.

Approved by:

Kenneth Murphy

Date:

April 29, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-055.01
ARCO Facility No. 2162

Date Received: 04/15/93
Service Request No.: SJ93-0512
Sample Matrix: Water

BTEX and TPH as Gasoline
EPA Methods 5030/8240 Mod./California DHS LUFT Method
µg/L (ppb)

Sample Name: Method Blank Method Blank
Date Analyzed: 04/22/93 04/23/93

<u>Analyte</u>	<u>MRL</u>		
Benzene	0.5	ND	ND
Toluene	0.5	ND	ND
Ethylbenzene	0.5	ND	ND
Total Xylenes	0.5	ND	ND
TPH as Gasoline	50	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by: *Kenneth Murphy*

Date: *April 29, 1993*

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. OG70-055.01
ARCO Facility No. 2162

Date Received: 04/15/93
Service Request No.: SJ93-0512

Initial Calibration Verification
BTEX and TPH as Gasoline
EPA Methods 5030/8240 Mod./DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

Date Analyzed: 04/22/93

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
Benzene	25.	22.8	91.	85-115
Toluene	25.	22.4	90.	85-115
Ethylbenzene	25.	23.3	93.	85-115
Total Xylenes	75.	70.5	94.	85-115
TPH as Gasoline	250.	245.	98.	90-110

TPH Total Petroleum Hydrocarbons

Approved by:

Kenneth Mayberry

Date:

April 29, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-055.01
ARCO Facility No. 2162

Date Received: 04/15/93
Service Request No.: SJ93-0512
Sample Matrix: Water

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

<u>Sample Name</u>	<u>Date Analyzed</u>	<u>Percent Recovery</u> <i>a,a,a</i> -Trifluorotoluene
MW-1 (15)	04/22/93	88.
MW-2 (15)	04/22/93	94.
MW-3 (14)	04/23/93	96.
MS	04/22/93	100.
DMS	04/22/93	101.
Method Blank	04/22/93	90.
Method Blank	04/23/93	87.

CAS Acceptance Criteria 70-130

TPH Total Petroleum Hydrocarbons

Approved by:

K. E. D. Murphy

Date:

April 29, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-055.01
ARCO Facility No. 2162

Date Received: 04/15/93
Service Request No.: SJ93-0512
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline
EPA Methods 5030/California DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

Date Analyzed: 04/22/93

Percent Recovery

<u>Analyte</u>	<u>Spike Level</u>	<u>Sample Result</u>	<u>Spike Result</u>		<u>MS</u> <u>DMS</u>		<u>CAS Acceptance Criteria</u>
			<u>MS</u>	<u>DMS</u>	<u>MS</u>	<u>DMS</u>	
TPH as Gasoline	25,000.	12,400.	36,200.	36,800.	95.	98.	76-130

TPH Total Petroleum Hydrocarbons

Approved by:

Kenneth Murphy

Date:

April 29, 1993

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No. ~~EMCGG-921~~ EMC-93.5

PK J. B. ~~4-14-93~~

Chain of Custody

ARCO Facility no. 2162	City (Facility) San Leandro	Project manager (Consultant) JIM Butera	Laboratory name CAS
ARCO engineer Kyle Christie	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-0719	Contract number 07077
Consultant name EMCON ASSOCIATES	Address (Consultant) 1938 Junction Avenue San Jose		Method of shipment Sampler will deliver
		Fax no. (Consultant) 453-0452	Special detection Limit/reporting Lowest Possible

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas Diesel	Oil and Grease 413.1 413.2	TPH EPA 418.1/SM603E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals VOA	Semi Metals VOA	Cadm Metals EPA 8010/7000 TLCL STLC	Lead Org./DHS Lead EPA 7420/7421
			Soil	Water	Other	Ice	Acid														
MW-1 (14) 1-2		2		X		X	HCl	4-14-93	1631		X										
MW-2 (15) 3-4		2		X		X	HCl	4-14-93	1555		X										
MW-3 (14) 5-6		2		X		X	HCl	4-14-93	1458		X										
MW-4 ()		2		X		X	HCl	NO SAMPLE			X										

Special detection Limit/reporting **Lowest Possible**

Special QA/QC **As Normal**

Remarks **2.40 ml HCl VOA's**

0670-055.01

Condition of sample: UF-	Temperature received: COO
Relinquished by sampler KE Williams	Date 4-15-93 Time 9:30
Relinquished by	Date Time
Relinquished by	Date Time
Relinquished by	Date Time
Received by laboratory [Signature]	Date 4-15-93 Time 9:35

Lab number **5593-0512**

Turnaround time

Priority Rush 1 Business Day

Rush 2 Business Days

Expedited 5 Business Days

Standard 10 Business Days



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-055-01
PURGED BY: J.W. Williams
SAMPLED BY: J.W. Williams

SAMPLE ID: MW-1
CLIENT NAME: ARCO 2162
LOCATION: SAW LEA WPTD

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): 111 VOLUME IN CASING (gal.): 5.25
DEPTH TO WATER (feet): 7.96 CALCULATED PURGE (gal.): 15.75
DEPTH OF WELL (feet): 16.0 ACTUAL PURGE VOL (gal.): 16.0

DATE PURGED: 04-14-93 Start (2400 Hr) 1617 End (2400 Hr) 1625
DATE SAMPLED: 04-14-93 Start (2400 Hr) 1628 End (2400 Hr) 1631

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1620</u>	<u>5.5</u>	<u>7.23</u>	<u>923</u>	<u>62.7</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1623</u>	<u>11</u>	<u>7.19</u>	<u>911</u>	<u>62.1</u>	<u>"</u>	<u>"</u>
<u>1625</u>	<u>16</u>	<u>7.12</u>	<u>911</u>	<u>62.1</u>	<u>"</u>	<u>"</u>

D. O. (ppm): NR ODCR: NR (COBALT 0 - 100) NR (NTU 0 - 200) N

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 4-14-93 Time: 1430 Meter Serial #: _____ Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-3
Signature: [Signature] Reviewed By: [Signature] Page 1 of 4



WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-05501
PURGED BY: J Williams
SAMPLED BY: J Williams

SAMPLE ID: MW-2
CLIENT NAME: ARCO 2167
LOCATION: SAN LEANDRO

TYPE: Ground Water Surface Water Treatment Effluent Other
CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): MSL VOLUME IN CASING (gal.): 5.81
DEPTH TO WATER (feet): 7.10 CALCULATED PURGE (gal.): 17.46
DEPTH OF WELL (feet): 14.0 ACTUAL PURGE VOL. (gal.): 18.0

DATE PURGED: 04-14-93 Start (2400 Hr) 1538 End (2400 Hr) 1552
DATE SAMPLED: 04-14-93 Start (2400 Hr) 1554 End (2400 Hr) 1555

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1542</u>	<u>6</u>	<u>7.01</u>	<u>950</u>	<u>62.2</u>	<u>GREY</u>	<u>HEAVY</u>
<u>1547</u>	<u>12</u>	<u>7.02</u>	<u>972</u>	<u>61.7</u>	<u>"</u>	<u>"</u>
<u>1552</u>	<u>18</u>	<u>7.08</u>	<u>914</u>	<u>61.7</u>	<u>"</u>	<u>"</u>

D. O. (ppm): ND ODOR: STRONG HR HR
(COBALT 0 - 100) (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: OK LOCK #: 2259

REMARKS: SHOWN AFTER PURGING

Meter Calibration: Date: 4-14-93 Time: 1436 Meter Serial #: _____ Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)
Location of previous calibration: MW-3

Signature: J Williams Reviewed By: [Signature] Page 2 of 4



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-055-01

SAMPLE ID: MW-3

PURGED BY: J. Williams

CLIENT NAME: AR102162

SAMPLED BY: J. Williams

LOCATION: SAN LEANDRO

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/VMSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>4.95</u>
DEPTH TO WATER (feet): <u>7.41</u>	CALCULATED PURGE (gal.): <u>14.87</u>
DEPTH OF WELL (feet): <u>15.0</u>	ACTUAL PURGE VOL (gal.): <u>15</u>

DATE PURGED: <u>04-14-93</u>	Start (2400 Hr) <u>1445</u>	End (2400 Hr) <u>1454</u>
DATE SAMPLED: <u>04-14-93</u>	Start (2400 Hr) <u>1456</u>	End (2400 Hr) <u>1458</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1448</u>	<u>5</u>	<u>7.12</u>	<u>893</u>	<u>66.7</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1451</u>	<u>10</u>	<u>7.08</u>	<u>941</u>	<u>65.7</u>	<u>"</u>	<u>"</u>
<u>1454</u>	<u>15</u>	<u>7.03</u>	<u>943</u>	<u>65.3</u>	<u>"</u>	<u>"</u>

D. C. (ppm): NR ODOR: SLIGHT COLOR: NR TURBIDITY: NR
(COBALT 0 - 100) (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): KIP

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> CDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | Other: _____ | Other: _____ | Other: _____ |

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 4-14-93 Time: 1430 Meter Serial #: _____ Temperature °F: 69.9
 (EC 1000 966) (DI _____) (pH 7 7.13 / 7.00) (pH 10 9.94 / 10.00) (pH 4 3.95)
 Location of previous calibration: MW-3

Signature: [Signature] Reviewed By: [Signature] Page 3 of 4



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-055-01

SAMPLE ID: MW-4

PURGED BY: William

CLIENT NAME: ARCO 2167

SAMPLED BY: William

LOCATION: SAV HERNANDO

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 5.56

DEPTH TO WATER (feet): 9.48 CALCULATED PURGE (gal.): 16.69

DEPTH OF WELL (feet): 17 ACTUAL PURGE VOL (gal.): 12.0

DATE PURGED: 04-14-93 Start (2400 Hr) 1515 End (2400 Hr) NA

DATE SAMPLED: 04-14-93 Start (2400 Hr) NA End (2400 Hr) NA

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1517</u>	<u>5</u>	<u>7.00</u>	<u>862</u>	<u>63.5</u>	<u>GREY</u>	<u>HEAVY</u>
<u>12</u>	<u>12</u>	<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u>17</u>	<u>17</u>	<u></u>	<u></u>	<u></u>	<u></u>	<u></u>

NO SAMPLE PRODUCE!

D. O. (ppm): NR ODOR: STRONG NR NR
(COBALT 0 - 100) (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, Xcup-1): NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |

Other: _____ Other: _____

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: NO sample seen at 12.12 ft from

Meter Calibration: Date: 14-14-93 Time: 1430 Meter Serial #: _____ Temperature °F: _____

(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-3

Signature: William Reviewed By: AD Page 4 of 4



EMCON Associates

1938 Junction Avenue • San Jose, California 95131-2112 • (408) 453-0719 • Fax (408) 453-0452

Date June 3, 1993
Project 0G70-055.01

To:
Mr. John Young
RESNA
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

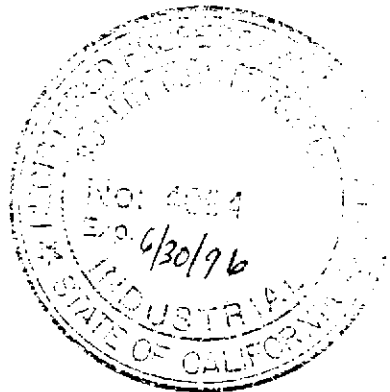
Copies	Description
<u>1</u>	<u>Depth To Water/Floating Product Survey Results</u>
	<u>May 1993 monthly water level survey, ARCO</u>
	<u>2162, 15135 Hesperian Blvd., San Leandro, CA</u>

For your: X Information Sent by: X Mail

Comments:

Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:



Jim Butera JB

Robert Porter
Robert Porter, Senior Project Engineer.



FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-055.01 STATION ADDRESS : 15135 Hesperian Blvd, San Leandro DATE : 5-19-93

ARCO STATION # : 2162 FIELD TECHNICIAN : JBUTERA DAY : WEDNESDAY

D/W Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-1	OK	YES	YES	3259	YES	8.26	8.26	ND	ND	16.0	-
2	MW-3	OK	YES	YES	3259	YES	7.72	7.72	ND	ND	15.0	-
3	MW-2	OK	YES	YES	3259	YES	7.40	7.40	ND	ND	16.0	-
4	MW-4	OK	YES	YES	3259	YES	7.80	7.80	ND	ND	17.2	-

SURVEY POINTS ARE TOP OF WELL CASINGS



Date June 21, 1993
Project OG70-055.01

To:
Mr. John Young
RESNA
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

Copies	Description
<u>1</u>	<u>Depth To Water/Floating Product Survey Results</u>
<u> </u>	<u>June 1993 monthly water level survey, ARCO</u>
<u> </u>	<u>2162, 15135 Hesperian Blvd., San Leandro, CA</u>

For your: X Information Sent by: X Mail

Comments:

Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:



Jim Butera *JB*

Robert Porter
Robert Porter, Senior Project Engineer.



**FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY**

PROJECT # : OG70-055.01

STATION ADDRESS : 15135 Hesperian Blvd, San Leandro

DATE : 6-17-93

ARCO STATION # : 2162

FIELD TECHNICIAN : L. PLATT

DAY : THURSDAY

D/W Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-1	OK	YES	OK	3259	OK	8.42	8.43	ND	ND	16.0	-
2	MW-3	OK	YES	OK	3259	OK	7.86	7.86	ND	ND	15.0	-
3	MW-2	OK	YES	OK	3259	OK	7.51	7.51	ND	ND	16.1	-
4	MW-4	OK	YES	OK	3259	OK	8.94	8.94	ND	ND	17.2	-

SURVEY POINTS ARE TOP OF WELL CASINGS