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## TRANSMITTAL

TO: Mr. Barney Chan  
ACHCSA  
Dept. of Environmental Health  
80 Swan Way, Room 200  
Oakland, California 94621

DATE: March 16, 1993  
PROJECT NUMBER: 69036.04  
SUBJECT: ARCO Station 2035, 1001  
San Pablo, California

FROM: Barbara Sieminski  
TITLE: Asst. Project Geologist

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1	3/16/93	69036.04	Final - Letter Report Quarterly Groundwater Monitoring Fourth Quarter 1992 at ARCO Station 2035, 1001 San Pablo, California.

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REMARKS:

Per ARCO's request (Mr. Michael Whelan) this report has been forwarded to you for your review.

Copies: 1 to RESNA project file no. 69036.04

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LETTER REPORT  
QUARTERLY GROUNDWATER MONITORING  
Fourth Quarter 1992  
at  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California

3/16/93

69036.04

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March 16, 1993  
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Mr. Michael Whelan  
ARCO Products Company  
P.O. Box 5811  
San Mateo, California 94402

Subject: Fourth Quarter 1992 Groundwater Monitoring Report for ARCO Station  
2035, 1001 San Pablo Avenue, Albany, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) prepared this letter report which summarizes the results of the fourth quarter 1992 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 are to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of petroleum hydrocarbons in the local groundwater associated with the former waste-oil tank and former underground gasoline-storage tanks (USTs) at the site. The field work and laboratory analyses of groundwater samples during this quarter were performed under the direction of EMCON and included measuring depths to groundwater, 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; evaluation and warrant of their field data and field protocols is beyond RESNA's scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analytical data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

The operating ARCO Station 2035 is located at the southeastern corner of the intersection of Marin and San Pablo Avenues in Albany, California, as shown on the Site Vicinity Map, Plate 1.

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

The results of previous environmental investigations at the site are summarized in the reports listed in the References section. The locations the groundwater monitoring wells, borings and other pertinent site features are shown on Plate 2, Generalized Site Plan.

### Groundwater Sampling and Gradient Evaluation

Depth-to-water levels (DTW) were measured by EMCON field personnel on October 26, November 23, and December 16, 1992. Quarterly sampling was performed by EMCON field personnel on October 26, 1992. The results of EMCON's field work on the site, including DTW levels and subjective analyses for the presence of product in the groundwater in MW-1 through MW-3, and RW-1, are presented on EMCON's Field Reports. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater for this quarter and previous groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. Floating product was observed and its thickness was estimated in recovery well RW-1 during October (0.04 feet) and December (0.51 feet) monitoring events, and a presence of floating product sheen was noted in this well during November monitoring. Visual evidence of product or sheen was not noted in any other monitoring wells during this quarter. EMCON's DTW levels were used to evaluate the groundwater elevations. Groundwater elevations increased an average of 1½ feet since the last quarter. The DTW level measured in MW-2 on November 26, 1992, appeared to be anomalous and was not used for gradient evaluation. The groundwater gradients and flow directions evaluated for October, November and December 1992 are shown on the Groundwater Gradient Maps, Plates 3 through 5. The interpreted groundwater gradients and flow direction averaged approximately 0.02 ft/ft toward the southwest, which is generally consistent with monitoring data from the last quarter.

Groundwater monitoring wells MW-1 through MW-3 were purged and sampled by EMCON field personnel on October 26, 1992. RW-1 was not sampled due to the presence of floating product. Due to a laboratory error, groundwater from monitoring well MW-3 was not analyzed for semivolatile organic compounds (SVOC) and polychlorinated biphenyls (PCB). Therefore, MW-3 was re-sampled on December 1, 1992. Field data collected during purging and sampling of the onsite wells are summarized in EMCON's Water Sample Field Data Sheets, included in Appendix A. The purge water was removed from the site by a licensed hazardous waste hauler; the Monitoring Well Purge Water Disposal Form is also included in Appendix A.

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

### Laboratory Methods and Results

Under the direction of EMCON, water samples collected from the wells were analyzed by Columbia Analytical Services, Inc. (California Department of Health Services Certification No. 1426) for total petroleum hydrocarbons as gasoline (TPHg) and for benzene, toluene, ethylbenzene, and total xylenes (BTEX) using modified Environmental Protection Agency (EPA) Methods 5030/8020/California DHS LUFT Method. In addition, water samples from groundwater monitoring well MW-3, located next to the former waste-oil tank pit was analyzed for: 1) total petroleum hydrocarbons as diesel (TPHd) using EPA Methods 3510/California DHS LUFT Method; 2) total oil and grease (TOG) using SM 5520C&F; 3) volatile organic compounds (VOC) using EPA Method 624; 4) SVOC using EPA Methods 3510/8270; 5) PCB using EPA Methods 3510/8080. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Water Samples - TPHg and BTEX; and Table 3, Cumulative Results of Laboratory Analyses of Water Samples - TPHd, TOG, VOC, SVOC, PCB, and Metals. TPHg and benzene concentrations are shown on Plate 6, TPHg/Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analytical Reports are included in Appendix A.

The following general trends were noted in reported hydrocarbon concentrations in groundwater from the three monitoring wells since the last quarterly monitoring event: concentrations of TPHg decreased significantly in well MW-1 (from 820 ppb to 190 ppb), and remained nondetectable in MW-2 and MW-3; concentrations of benzene decreased significantly in monitoring well MW-1 (from 350 ppb to 68 ppb) and in MW-3 (from 5.3 ppb to 0.6 ppb), and remained nondetectable in MW-2; concentrations of toluene, ethylbenzene and total xylenes remained at or near nondetectable in MW-1 through MW-3. The thickness of floating product in recovery well RW-1 averaged approximately 0.5 foot during this quarter, which is no change since last quarter.

### Product Removal

The floating product skimmer was inspected and floating product was measured and removed from well RW-1 by RESNA field personnel on October 6 and 21, November 4 and 17, and December 2, 17 and 29, 1992. Quantities of floating product recovered and thickness of floating product during 1992 are presented in Table 4, Approximate Cumulative Product Recovered. The total cumulative recovered product from RW-1 is approximately 22 gallons.

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

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Conclusions

Groundwater at the site has been impacted by petroleum hydrocarbons. The extent of petroleum hydrocarbons in the local groundwater has not been delineated with the exception of western and southern portion of the site (MW-2 and MW-3), where TPHg concentrations were less than 50 ppb. As indicated by Plate 6, TPHg/Benzene Concentrations in Groundwater, the greatest concentrations of petroleum hydrocarbons appear to be present in the location of the former USTs in the northeastern portion of the site, and in the vicinity of RW-1, situated downgradient of the former tanks.

Copies of this report should be forwarded to:

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

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

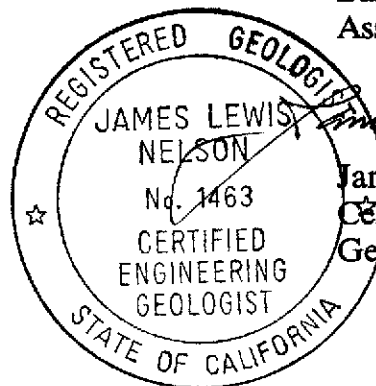
Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

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

Sincerely,  
RESNA Industries Inc.

*Barbara Sieminski*  
Barbara Sieminski  
Assistant Project Geologist



*James L. Nelson*  
James L. Nelson  
Certified Engineering  
Geologist # 1463

Enclosures:

References

Plate 1, Site Vicinity Map  
Plate 2, Generalized Site Plan  
Plate 3, Groundwater Gradient Map, October 26, 1992  
Plate 4, Groundwater Gradient Map, November 23, 1992  
Plate 5, Groundwater Gradient Map, December 16, 1992  
Plate 6, TPHg/Benzene Concentrations in Groundwater, October 26, 1992

Table 1, Cumulative Groundwater Monitoring Data

Table 2, Cumulative Results of Laboratory Analyses of Water Samples -  
TPHg and BTEX

Table 3, Cumulative Results of Laboratory Analyses of Water Samples -  
TPHd, TOG, VOC, SVOC, PCB and Metals

Table 4, Approximate Cumulative Product Recovered

Appendix A: EMCON's Field Report Sheets; Summary of Groundwater  
Monitoring Data, Certified Analytical Reports with Chain-  
of-Custody, and Water Sample Field Data Sheets

Monitoring Well Purge Water Disposal Form

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

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**REFERENCES**

Applied GeoSystems. January 24, 1990. Limited Environmental Site Assessment at ARCO Station 2035. AGS 96036-1.

Department of Health Services, State of California. October 24, 1990. Summary of California Drinking Water Standards.

RESNA/Applied GeoSystems. April 29, 1991. Work Plan for Subsurface Investigations and Remediation at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.02.

RESNA/Applied GeoSystems. April 29, 1991. Addendum One to Work Plan at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.02

RESNA/Applied GeoSystems. June 24, 1991. Site Safety Plan for the ARCO Service Station 2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.03S.

RESNA/Applied GeoSystems. September 11, 1991. Underground Gasoline-Storage Tank Removal and Replacement. AGS 69036.03.

RESNA/Applied GeoSystems. September 24, 1991. Addendum Two to Work Plan at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.02

RESNA March 6, 1992. Subsurface Environmental Investigation and Pump Test at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.02.

RESNA May 4, 1992. Letter Report, Quarterly Groundwater Monitoring First Quarter 1992 at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.04

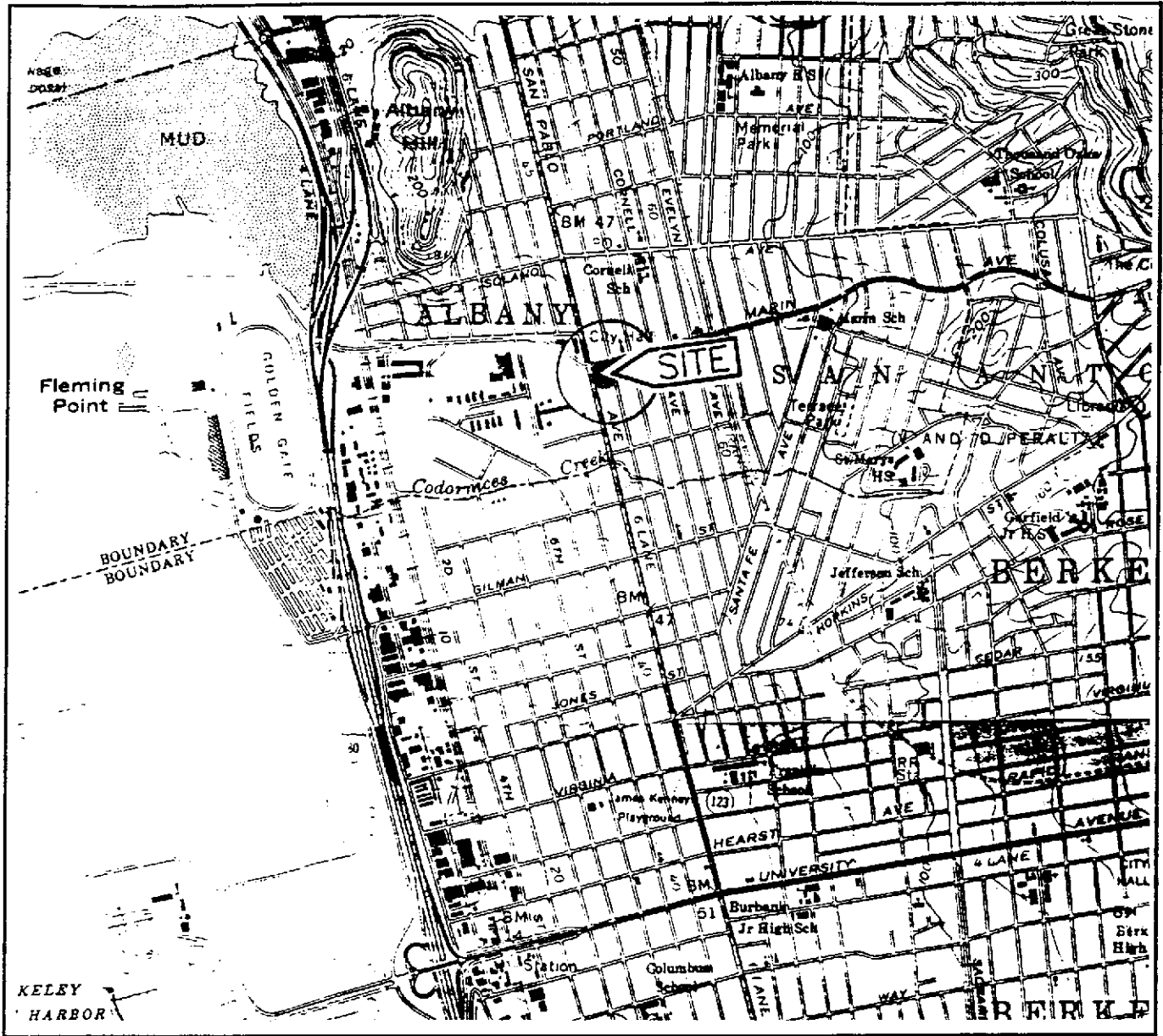
RESNA May 28, 1992. Addendum Three to Work Plan at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. AGS 69036.05

RESNA August 31, 1992. Letter Report, Quarterly Groundwater Monitoring Second Quarter 1992 at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.04

RESNA November 30, 1992. Letter Report, Quarterly Groundwater Monitoring Third Quarter 1992 at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.04

RESNA November 30, 1992. Additional Subsurface Environmental Investigation and Vapor Extraction Test at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.05





Base: U.S. Geological Survey  
 7.5-Minute Quadrangles  
 Richmond/Oakland West, California.  
 Photorevised 1980

**LEGEND**

● = Site Location



Approximate Scale

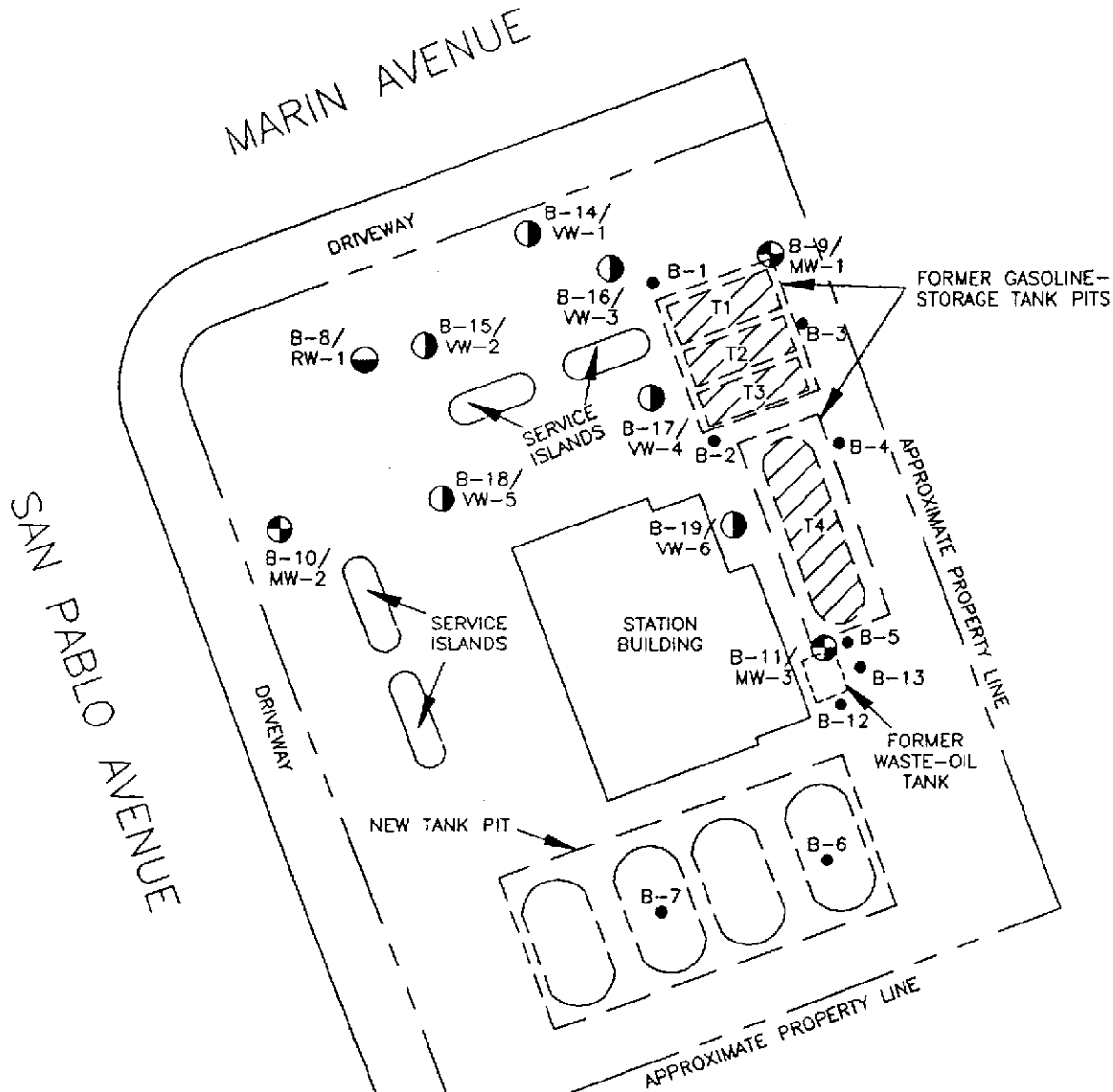


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**SITE VICINITY MAP  
 ARCO Station 2035  
 1001 San Pablo Avenue  
 Albany, California**

**PLATE  
 1**



**EXPLANATION**

- B-19/  
VW-6 ● = Boring/vapor extraction well  
(RESNA, August 1992)
- B-8/  
RW-1 ● = Boring/recovery well  
(Exceltech, October 1991)
- B-11/  
MW-3 ● = Boring/monitoring well  
(Exceltech, October 1991)
- B-13 ● = Soil boring  
(RESNA, August 1989, June 1991, and August 1992)

Approximate Scale



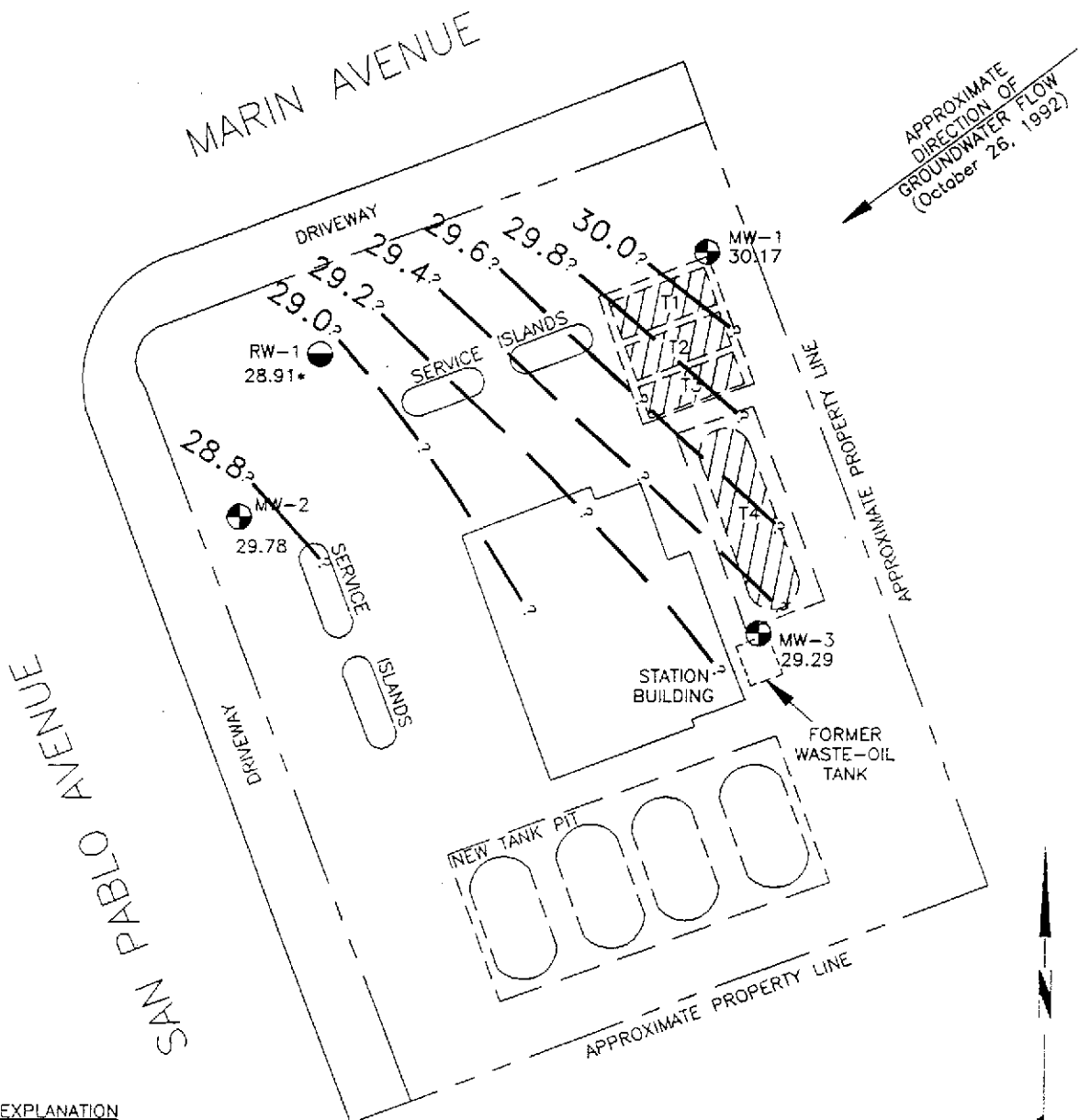
Source: Surveyed by John E. Koch, Land Surveyor.  
Dated October 29, 1991.






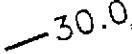
**GENERALIZED SITE PLAN**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

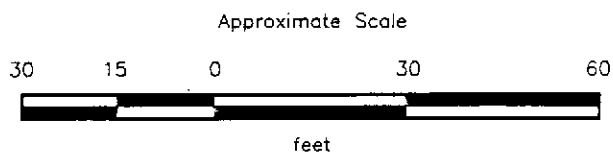
**PLATE**  
**2**

**PROJECT 69036.04**



**EXPLANATION**

- RW-1  = Recovery well (Exceltech, October 1991)
- MW-3  = Monitoring well (Exceltech, October 1991)
-  = Former underground gasoline tank pits
-  30.0 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 30.17 = Elevation of groundwater in feet above MSL, October 26, 1992
- \* = Floating product



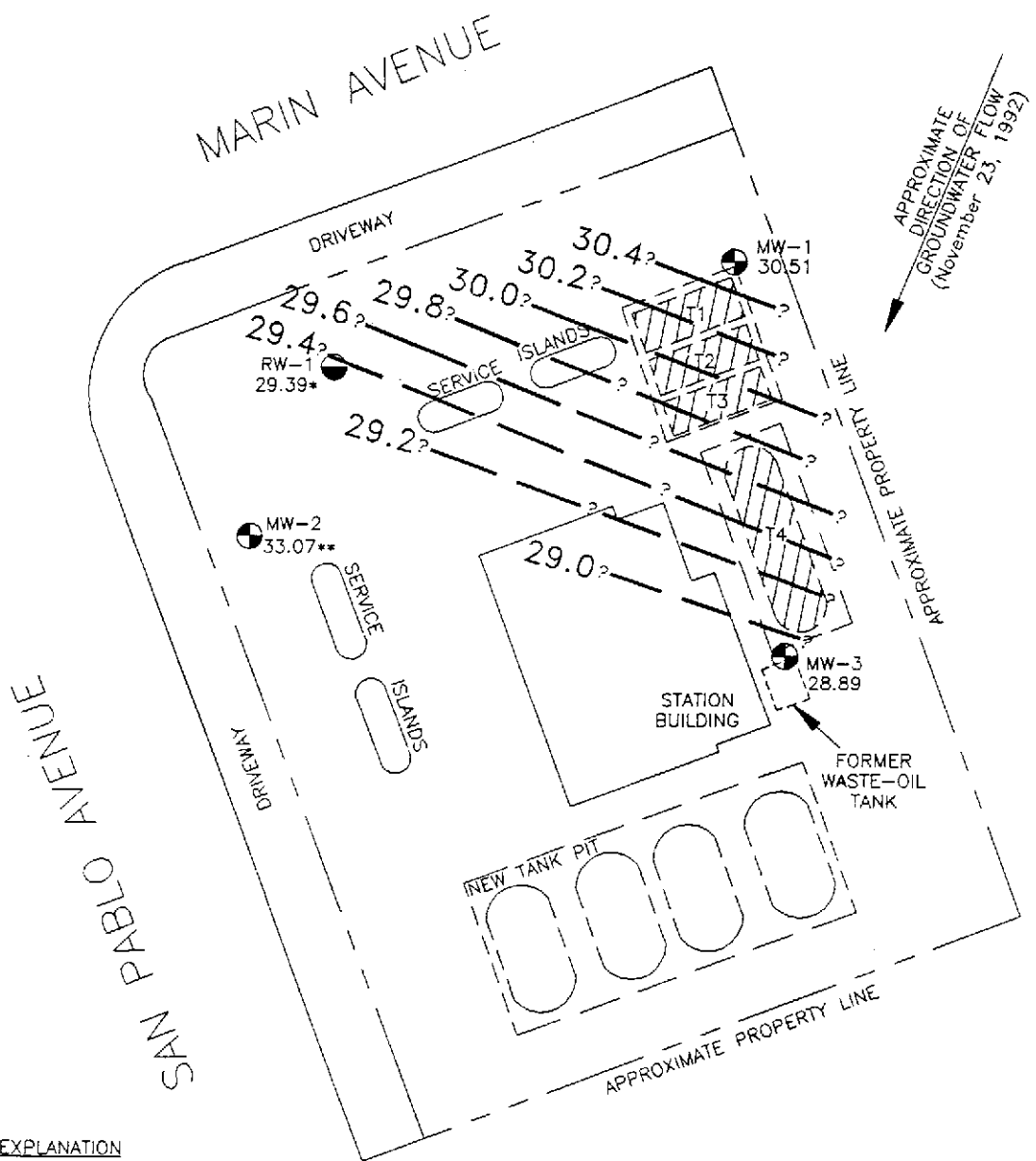
Source: Surveyed by John E. Koch, Land Surveyor.  
 Dated October 29, 1991.



**GROUNDWATER GRADIENT MAP**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

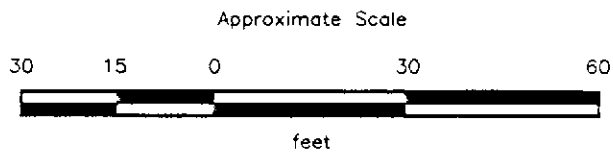
**PLATE**  
**3**

**PROJECT 69036.04**



**EXPLANATION**

- RW-1 = Recovery well (Exceltech, October 1991)
- MW-3 = Monitoring well (Exceltech, October 1991)
- = Former underground gasoline tank pits
- 30.4 = Line of equal elevation of groundwater in feet above mean sea level (MSL)
- 30.51 = Elevation of groundwater in feet above MSL, November 23, 1992
- \* = Floating product
- \*\* = Not used for gradient evaluation due to anomalous DTW level



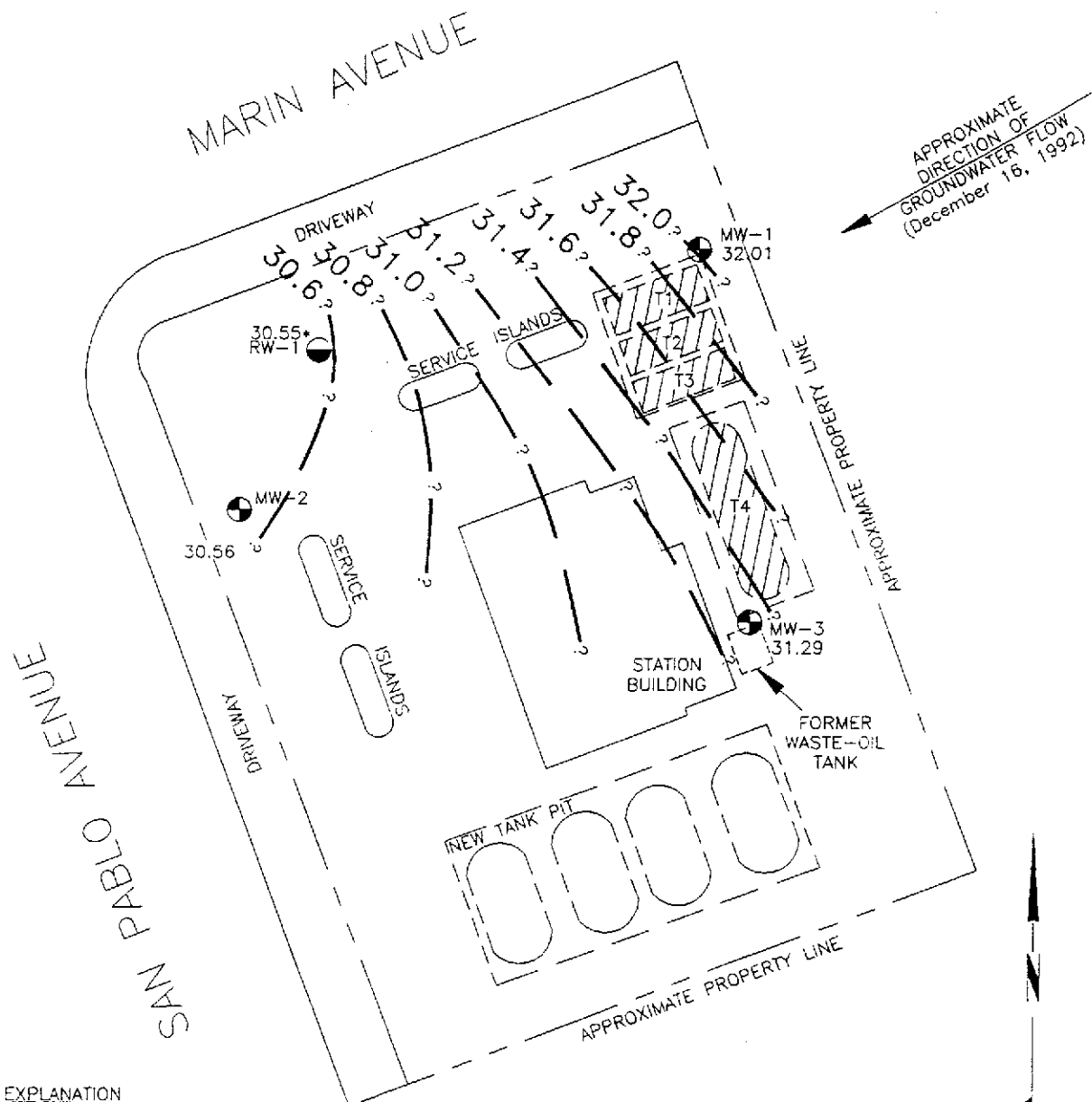
Source: Surveyed by John E. Koch, Land Surveyor.  
Dated October 29, 1991.



**GROUNDWATER GRADIENT MAP**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

**PLATE**  
**4**

**PROJECT 69036.04**



**EXPLANATION**

RW-1 = Recovery well  
(Exceitech, October 1991)

MW-3 = Monitoring well  
(Exceitech, October 1991)

= Former underground gasoline tank pits

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

32.01 = Elevation of groundwater in feet above MSL,  
December 16, 1992

\* = Floating product

Approximate Scale



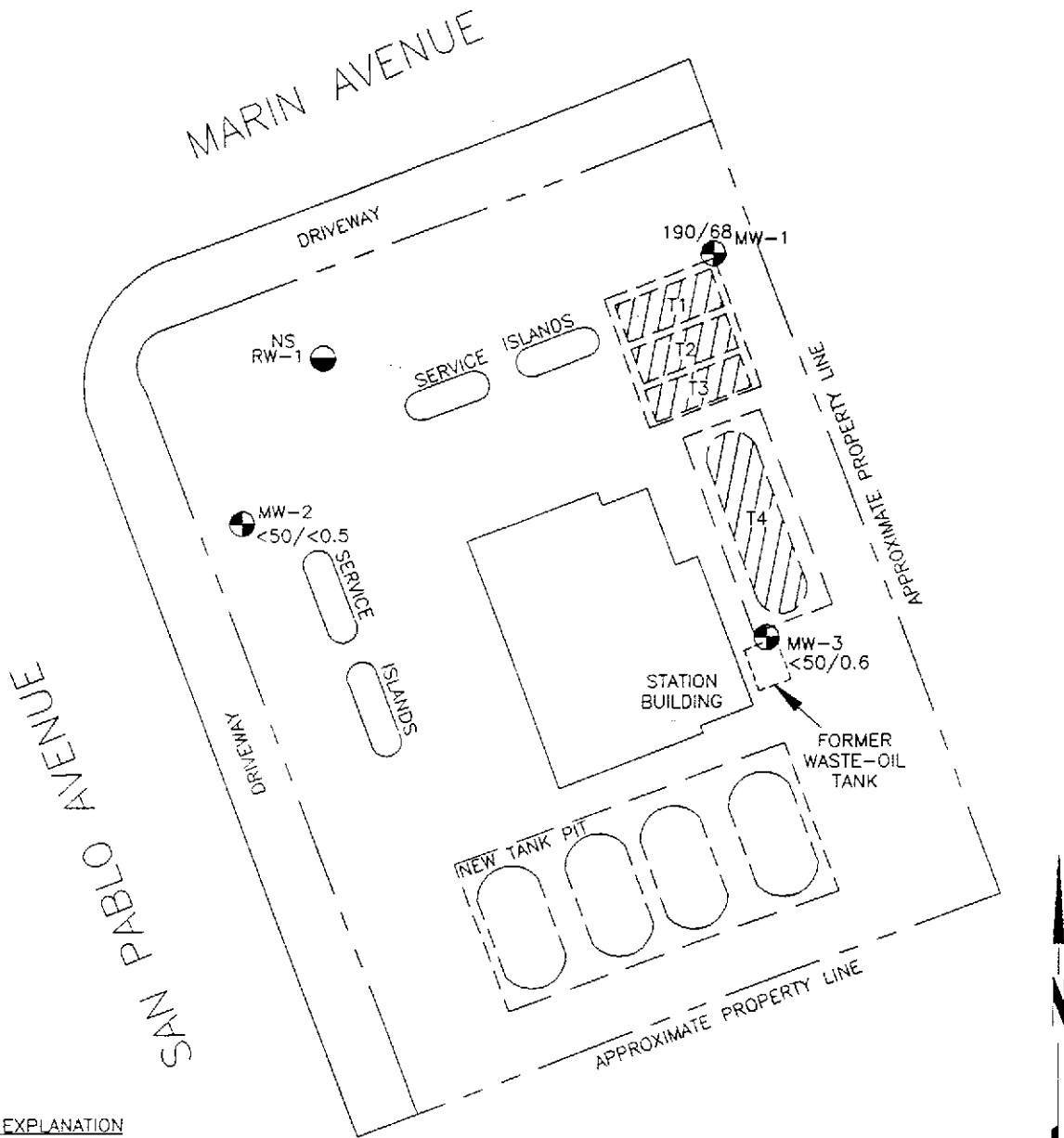
Source: Surveyed by John E. Koch, Land Surveyor.  
Dated October 29, 1991.

**RESNA**  
*Working to Restore Nature*




**GROUNDWATER GRADIENT MAP**  
**ARCO Station 2035**  
**1001 San Pablo Avenue**  
**Albany, California**

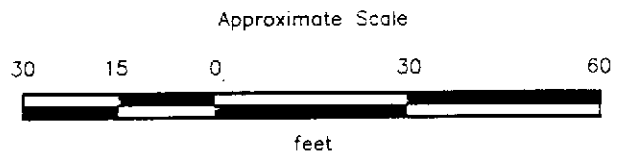
**PLATE**  
**5**

**PROJECT 69036.04**



**EXPLANATION**

- RW-1  = Recovery well (Exceltech, October 1991)
- MW-3  = Monitoring well (Exceltech, October 1991)
-  = Former underground gasoline tank pits
- 190/68 = Concentration of TPH<sub>g</sub>/Benzene in groundwater, in parts per billion (ppb), October 26, 1992
- NS = Not sampled due to floating product



Source: Surveyed by John E. Koch, Land Surveyor.  
Dated October 29, 1991.

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**TPH<sub>g</sub>/BENZENE CONCENTRATIONS  
IN GROUNDWATER  
ARCO Station 2035  
1001 San Pablo Avenue  
Albany, California**

**PLATE  
6**

**PROJECT 69036.04**

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

TABLE 1  
CUMULATIVE GROUNDWATER MONITORING DATA  
ARCO Station 2035  
Albany, California  
(Page 1 of 2)

<u>Well</u> <u>Date</u>	<u>Elevation</u> <u>of Wellhead</u>	<u>Depth</u> <u>to Water</u>	<u>Elevation</u> <u>of Groundwater</u>	<u>Evidence of</u> <u>Product</u>
<u>MW-1</u>				
10/29/91	41.41	11.86	29.55	None
11/07/91		10.94	30.47	None
11/14/91		10.97	30.44	None
01/19/92		10.06	31.35	None
02/19/92		8.65	32.76	None
03/19/92		8.33	33.08	None
04/21/92		9.32	32.09	None
05/12/92		9.82	31.59	None
06/12/92		10.50	30.91	None
07/15/92		10.69	30.72	None
08/07/92		10.53	30.88	None
09/08/92		11.04	30.37	None
10/26/92		11.24	30.17	None
11/23/92		10.90	30.51	None
12/16/92		9.40	32.01	None
<u>MW-2</u>				
10/29/91	40.38	11.10	29.28	None
11/07/91		11.20	29.18	None
11/14/91		11.21	29.17	None
01/19/92		10.44	29.94	None
02/19/92		8.70	31.68	None
03/19/92		8.84	31.54	None
04/21/92		9.80	30.58	None
05/12/92		10.29	30.09	None
06/12/92		10.95	29.43	None
07/15/92		11.15	29.23	None
08/07/92		11.01	29.37	None
09/08/92		11.41	28.97	None
10/26/92		11.60	28.78	None
11/23/92		7.31	33.07	None
12/16/92		9.82	30.56	None
<u>MW-3</u>				
10/29/91	41.44	11.62	29.82	None
11/07/91		11.52	29.92	None
11/14/91		11.50	29.94	None
01/19/92		10.56	30.88	None
02/19/92		9.52	31.92	None
03/19/92		9.01	32.43	None
04/21/92		9.70	31.74	None
05/12/92		10.29	31.15	None

See notes on Page 2 of 2.

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

TABLE 1  
CUMULATIVE GROUNDWATER MONITORING DATA  
ARCO Station 2035  
Albany, California  
(Page 2 of 2)

<u>Well</u> Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Evidence of Product
<u>MW-3cont.</u>				
06/12/92		11.26	30.18	None
07/15/92		11.28	30.16	None
08/07/92		11.15	30.29	None
09/08/92		11.70	29.74	None
10/26/92		12.15	29.29	None
11/23/92		12.55	28.89	None
12/16/92		10.15	31.29	None
<u>RW-1</u>				
10/29/91	40.33	10.85	29.48	Sheen
11/07/91		11.97	28.36	0.01
11/14/91		11.03	29.30	0.01
01/19/92		10.22*	30.11*	3.26
02/19/92		8.49*	31.84*	2.14
03/19/92		8.50*	31.83*	0.50
04/21/92		9.68*	30.65	0.03
05/12/92		10.47	29.86	Product not measured
06/12/92		11.41	28.92	Product not measured
07/15/92		11.35	28.98	None
08/07/92		10.80*	29.53*	0.02
09/08/92		10.80*	29.53*	0.62
10/26/92		11.42*	28.91*	0.04
11/23/92		10.94	29.39	Sheen
12/16/92		9.78*	30.55*	0.51

Wellhead Elevation based on benchmark (B1198): A standard Bronze Disk in the sidewalk 0.8' behind the face of curb on the northerly side of Marin Avenue 6' +/- westerly of the curb return at the northeast corner of Marin Avenue and San Pablo Avenue at an elevation of 40.426 feet above mean sea level, City of Albany, California.

Depth-to-water measurements in feet below the top of the well casing.

\*Adjusted water level due to product. The recorded thickness of the floating product was multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value was then subtracted from the measured depth to water to obtain a calculated depth to water. These calculated groundwater depths were subtracted from surveyed wellhead elevations to calculate the differences in groundwater elevations.



Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

TABLE 2  
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES - TPHg and BTEX  
ARCO Station 2035  
Albany, California

WELL DATE	TPHg	B	T	E	X
<u>MW-1</u>					
10/29/91	620	76	69	15	60
03/19/92	6,500	2,600	89	42	290
06/12/92	2,900	1,100	2.5	21	15
09/08/92	820	350	<5*	<5*	<5*
10/26/92	190	68	<0.5	0.6	<0.5
<u>MW-2</u>					
10/29/91	<60	2.4	4.6	0.48	2.3
03/19/92	<50	6.8	0.9	<0.5	1.1
06/12/92	<50	<0.5	<0.5	<0.5	<0.5
09/08/92	<50	<0.5	<0.5	<0.5	<0.5
10/26/92	<50	<0.5	<0.5	<0.5	<0.5
<u>MW-3</u>					
10/29/91	32	2.1	2.8	0.35	1.8
03/19/92	2,100	780	8.8	16	58
06/12/92	720	210	<2.5*	23	4.0
09/08/92	<50	5.3	<0.5	<0.5	<0.5
10/26/92	<50	0.6	<0.5	<0.5	<0.5
<u>RW-1</u>					
10/29/91	Not sampled—sheen				
03/19/92	Not sampled—floating product				
06/12/92	Not sampled—floating product				
09/08/92	Not sampled—floating product				
10/23/92	Not sampled—floating product				
MCL:	—	1	—	680	1,750
DWAL:	—	—	100	—	—

Results in parts per billion (ppb).

TPHg: Total petroleum hydrocarbons as gasoline by EPA Method 5030/8015/8020.

B: benzene, T: toluene, E: ethylbenzene, X: total xylenes isomers

BTEX: Analyzed by EPA Method 5030/8015/8020.

<: Results reported below the laboratory detection limit.

\*: Laboratory Raised Methods Reporting Limit (MRL) due to high analyte concentration requiring sample dilution.

MCL: State Maximum Contaminant Level (October 1990).

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

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

TABLE 3  
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES  
- TPHd, TOG, VOC, SVOC, PCB and Metals  
ARCO Station 2035  
Albany, California

WELL DATE	TPHd	TOG	VOC	SVOC	PCB	Cd	Cr	Pb	Ni	Zn
<u>MW-3</u>										
10/29/91	NA	<5,000	ND <sup>a</sup>	NA	NA	<10	<10	<5	<50	45
03/19/92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
06/12/92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
09/08/92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/26/92	<50	600	ND <sup>b</sup>	NA	NA	NA	NA	NA	NA	NA
12/01/92	NA	NA	NA	ND <sup>c</sup>	ND <sup>d</sup>	NA	NA	NA	NA	NA
MCL:	--	--	--	--	--	10	50	50	--	--

Results in parts per billion (ppb).

- TPHd: Total petroleum hydrocarbons as diesel by EPA Method 3510/California DHS LUFT Method.  
 TOG: Total oil and grease by Standard Method 5520 B&F or 5520 C&F.  
 VOC: Volatile organic compounds by EPA Method 624.  
 SVOC: Semivolatile organic compounds by EPA Method 3510/8270.  
 PCB: Polychlorinated biphenyls by EPA Method 3510/8080.  
 Cd: Cadmium by EPA Method 200.7.  
 Cr: Chromium by EPA Method 200.7.  
 Ni: Nickel by EPA Method 200.7.  
 Zn: Zinc by EPA Method 200.7.  
 Pb: Lead by EPA Method 3010.  
 NA: Not analyzed.  
 <: Results reported below the laboratory detection limit.  
 ND: Not detected; detection limit varied according to analyte.  
<sup>a</sup>: All 37 compounds were nondetectable except for toluene (3.0 ppb).  
<sup>b</sup>: All 41 compounds analyzed were nondetectable.  
<sup>c</sup>: All 34 compounds analyzed were nondetectable.  
<sup>d</sup>: All 7 compounds analyzed were nondetectable.  
 MCL: State Maximum Contaminant Level (October 1990).

Quarterly Groundwater Monitoring  
ARCO Station 2035, Albany, California

March 16, 1993  
69036.04

TABLE 4  
APPROXIMATE CUMULATIVE PRODUCT RECOVERED  
ARCO Station 2035  
Albany, California

Well Date	Product Thickness (feet)	Product Recovered (gallons)
YEAR: 1992		
<u>RW-1</u>		
01/29/92	3.35	5.0
02/28/92	2.58	3.8
03/12/92	1.28	2.0
03/25/92	0.91	0.5
05/29/92	0.23	0.3
06/08/92	0.60	0.5
06/30/92	0.15	0.25
07/23/92	0.27	0.5
08/05/92	0.45	0.25
08/17/92	0.50	0.5
09/10/92	0.75	0.5
09/22/92	0.80	1.2
10/06/92	0.65	1.0
10/21/92	0.50	1.0
11/04/92	0.48	1.5
11/17/92	0.40	0.75
12/02/92	0.41	0.75
12/17/92	0.39	1.0
12/29/92	0.53	1.0
	1992 TOTAL:	22.30

Product measured and bailed by RESNA personnel.

**APPENDIX A**  
**EMCON'S FIELD REPORT SHEETS;**  
**SUMMARY OF GROUNDWATER MONITORING DATA,**  
**CERTIFIED ANALYTICAL REPORTS WITH CHAIN-OF-CUSTODY, AND**  
**WATER SAMPLE FIELD DATA SHEETS**

**MONITORING WELL PURGE WATER DISPOSAL FORM**



**EMCON**  
ASSOCIATES

Consultants in Wastes  
Management and  
Environmental Control

RECEIVED  
DEC 4 - 1992  
RESNA  
SAN JOSE

Date December 3, 1992

Project 0G70-017.01

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>          </u>	<u>November 1992 monthly water level survey, ARCO</u>
<u>          </u>	<u>station 2035, 1001 San Pablo Avenue, Albany, 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

Robert Porter  
Robert Porter, Senior Project  
Engineer.



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

PROJECT # : 0G70-017.01

STATION ADDRESS : 1001 San Pablo Ave. Albany, CA

DATE : 4/23/12

ARCO STATION # : 2035

FIELD TECHNICIAN : JG/MG

DAY : MONDAY

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-2	OK	YES	YES	3259	OK	7.31	7.31	ND	NR	28.8	-
2	MW-3	OK	YES	YES	3259	OK	12.55	12.55	ND	NR	33.0	-
3	MW-1	OK	YES	YES	3259	OK	10.90	10.90	ND	NR	29.7	-
4	RW-1	OK	YES	YES	3259	OK	10.94	10.94	ND	NR	25.0	STRONG ODOR PRODUCT SHEEN

**SURVEY POINTS ARE TOP OF WELL CASINGS**



**EMCON**  
ASSOCIATES

Consultants in Wastes  
Management and  
Environmental Control

RECEIVED

JAN 18 1993

RESNA  
SAN JOSE

Date December 31, 1992

Project OG70-017.01

To:

Mr. Joel Coffman

RESNA/ Applied Geosystems

3315 Almaden Expressway, Suite 34

San Jose, California 95118

We are enclosing:

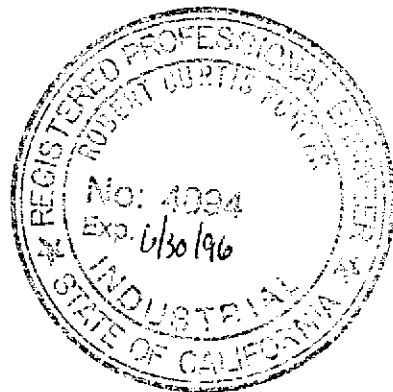
Copies	Description
<u>1</u>	<u>Depth To Water/Floating Product Survey Results</u>
<u>          </u>	<u>December 1992 monthly water level survey, ARCO</u>
<u>          </u>	<u>station 2035, 1001 San Pablo Avenue, Albany, CA</u>

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 # : OG70-017.01

STATION ADDRESS : 1001 San Pablo Ave. Albany, CA

DATE : 12/11/92

ARCO STATION # : 2035

FIELD TECHNICIAN : Steve Harten

DAY : Wednesday

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-2	good	yes	na	3259	yes	9.82	9.82	ND	ND	28.7	under pressure allowed to stabilize
2	MW-3	good	yes	na	3259	yes	10.15	10.15	ND	ND	33.0	under pressure allowed to stabilize
3	MW-1	good	yes	na	3259	yes	9.41	9.41	ND	ND	29.7	water in box valve on skimmer was open
4	RW-1	good	yes	na	3259	yes	10.19	10.20	9.69	.51	25.1	skimmer not set at correct depth

**SURVEY POINTS ARE TOP OF WELL CASINGS**





**EMCON**  
ASSOCIATES

Consultants in Wastes  
Management and  
Environmental Control

JAN 1993

Date December 21, 1992  
Project OG70-017.01

To:

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

We are enclosing:

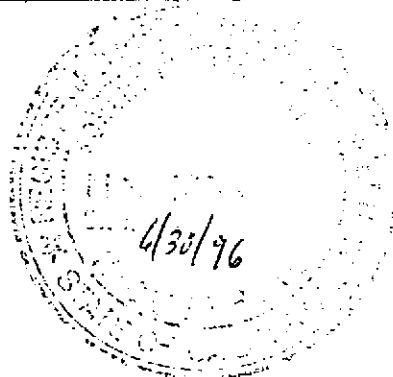
Copies	Description
<u>          </u>	<u>Depth To Water / Floating Product Survey Results</u>
<u>          </u>	<u>Summary of Groundwater Monitoring Data</u>
<u>1</u>	<u>Certified Analytical Reports with Chain-of-Custody</u>
<u>1</u>	<u>Water Sample Field Data Sheets</u>

For your:   X   Information      Sent by:   X   Mail

Comments:

Enclosed are the data from well MW-3 at ARCO service station 2035, 1001 San Pablo Avenue, Albany, California. Due to a laboratory error, well MW-3 had to be re-sampled on December 1, 1992. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

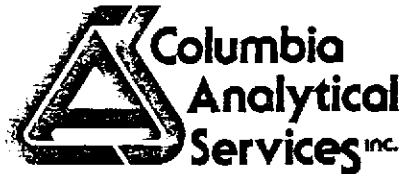
Reviewed by:



Jim Butera *JB*

Robert Porter  
Robert Porter, Senior Project  
Engineer.





December 14, 1992

Service Request No.: K927530C

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

Re: ARCO #2035 - Albany/Project #1.16/SJ921513

Dear Jim:

Enclosed are the results of the analysis of the re-sampled water sample received on December 2, 1992, analyzed by EPA Methods 8270 and 8080 (PCBs only). This sample was re-collected and re-analyzed because the original sample had exceeded the recommended maximum holding time. Preliminary results were transmitted via facsimile on December 4, 1992. For your reference, these analyses have been assigned our service request number K927530C.

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.

Respectfully submitted,

Columbia Analytical Services, Inc.

A handwritten signature in black ink, appearing to read "Colin B. Elliott".

Colin B. Elliott  
Senior Project Chemist

CBE/gb

Columbia Analytical Services, Inc.

A handwritten signature in black ink, appearing to read "Kevin DeWhitt".

Kevin DeWhitt  
Quality Assurance Coordinator

Page 1 of

13

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Northwest, Inc.  
 Project: ARCO #2035 - Albany  
 Sample Matrix: Water

Date Received: 12/02/92  
 Date Extracted: 12/02/92  
 Work Order No.: K927530C

Polychlorinated Biphenyls (PCBs)  
 EPA Methods 3510/8080  
 µg/L (ppb)

Sample Name:	MW-3 (32)	Method Blank
Lab Code:	K7530-1	K7530-MB
Date Analyzed:	12/03/92	12/03/92

Analyte	MRL		
Aroclor 1016	0.1	ND	ND
Aroclor 1221	0.1	ND	ND
Aroclor 1232	0.1	ND	ND
Aroclor 1242	0.1	ND	ND
Aroclor 1248	0.1	ND	ND
Aroclor 1254	0.1	ND	ND
Aroclor 1260	0.1	ND	ND
Total Aroclors	0.1	ND	ND

MRL Method Reporting Limit  
 ND None Detected at or above the method reporting limit

Approved by Colin Elliott Date 12/14/92

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Northwest, Inc.  
 Project: ARCO #2035 - Albany  
 Sample Matrix: Water

Date Received: 12/02/92  
 Date Extracted: 12/02/92  
 Date Analyzed: 12/04/92  
 Work Order No.: K927530C

Base Neutral/Acid Semivolatile Organic Compounds  
 EPA Methods 3510/8270  
 µg/L (ppb)

Sample Name: MW-3 (32)  
 Lab Code: K7530-1

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol*	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

\* Quantified as 4-methylphenol.

Approved by

*Chris Elliott*

Date

12/14/92

00000

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Northwest, Inc.  
 Project: ARCO #2035 - Albany  
 Sample Matrix: Water

Date Extracted: 12/02/92  
 Date Analyzed: 12/03/92  
 Work Order No.: K927530C

Base Neutral/Acid Semivolatile Organic Compounds  
 EPA Methods 3510/8270  
 µg/L (ppb)

Sample Name: Method Blank  
 Lab Code: K7530-MB

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	5	ND	2,6-Dinitrotoluene	5	ND
Aniline	20	ND	Diethyl Phthalate	5	ND
Bis(2-chloroethyl) Ether	5	ND	4-Chlorophenyl Phenyl Ether	5	ND
1,2-Dichlorobenzene	5	ND	Fluorene	5	ND
1,3-Dichlorobenzene	5	ND	4-Nitroaniline	20	ND
1,4-Dichlorobenzene	5	ND	N-Nitrosodiphenylamine	5	ND
Bis(2-chloroisopropyl) Ether	5	ND	4-Bromophenyl Phenyl Ether	5	ND
N-Nitrosodi-n-propylamine	5	ND	Hexachlorobenzene	5	ND
Hexachloroethane	5	ND	Phenanthrene	5	ND
Nitrobenzene	5	ND	Anthracene	5	ND
Isophorone	5	ND	Di-n-butyl Phthalate	5	ND
Bis(2-chloroethoxy)methane	5	ND	Fluoranthene	5	ND
1,2,4-Trichlorobenzene	5	ND	Pyrene	5	ND
Naphthalene	5	ND	Butylbenzyl Phthalate	5	ND
4-Chloroaniline	5	ND	3,3'-Dichlorobenzidine	20	ND
Hexachlorobutadiene	5	ND	Benz(a)anthracene	5	ND
2-Methylnaphthalene	5	ND	Bis(2-ethylhexyl) Phthalate	5	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	5	ND
2-Chloronaphthalene	5	ND	Di-n-octyl Phthalate	5	ND
2-Nitroaniline	20	ND	Benzo(b)fluoranthene	5	ND
Dimethyl Phthalate	5	ND	Benzo(k)fluoranthene	5	ND
Acenaphthylene	5	ND	Benzo(a)pyrene	5	ND
3-Nitroaniline	20	ND	Indeno(1,2,3-c,d)pyrene	5	ND
Acenaphthene	5	ND	Dibenz(a,h)anthracene	5	ND
Dibenzofuran	5	ND	Benzo(g,h,i)perylene	5	ND
2,4-Dinitrotoluene	5	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	5	ND	2,4-Dichlorophenol	5	ND
2-Chlorophenol	5	ND	4-Chloro-3-methylphenol	5	ND
Benzyl Alcohol	5	ND	2,4,6-Trichlorophenol	5	ND
2-Methylphenol	5	ND	2,4,5-Trichlorophenol	5	ND
3- and 4-Methylphenol*	5	ND	2,4-Dinitrophenol	50	ND
2-Nitrophenol	5	ND	4-Nitrophenol	50	ND
2,4-Dimethylphenol	5	ND	2-Methyl-4,6-dinitrophenol	20	ND
Benzoic Acid	50	ND	Pentachlorophenol	30	ND

MRL Method Reporting Limit  
 ND None Detected at or above the method reporting limit  
 \* Quantified as 4-methylphenol.

00000

Approved by Alan Elliott Date 12/14/92

APPENDIX A  
LABORATORY QC RESULTS

000005

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest, Inc.  
Project: ARCO #2035 - Albany  
Sample Matrix: Water

Date Received: 12/02/92  
Date Extracted: 12/02/92  
Date Analyzed: 12/03/92  
Work Order No.: K927530C

Surrogate Recovery Summary  
Polychlorinated Biphenyls (PCBs)  
EPA Methods 3510/8080

Sample Name	Lab Code	Percent Recovery Decachlorobiphenyl
MW-3 (32)	K7530-1	75
Laboratory Control Sample	K7530-LCS	91
Method Blank	K7530-MB	82

CAS Acceptance Criteria 42-116

Approved by

*Ann Elliott*

Date

12/14/92

000008

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest, Inc.  
Project: ARCO #2035 - Albany  
LCS Matrix: Water

Date Extracted: 12/02/92  
Date Analyzed: 12/03/92  
Work Order No.: K927530C

Laboratory Control Sample Summary  
Polychlorinated Biphenyls (PCBs)  
EPA Methods 3510/8080  
 $\mu\text{g/L}$  (ppb)

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Aroclor 1254	1.0	1.0	100	65-126

Approved by

*Alan Elliott*

Date

12/14/92

006007



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest, Inc.  
 Project: ARCO #2035 - Albany  
 Sample Matrix: Water

Date Received: 12/02/92  
 Date Extracted: 12/02/92  
 Date Analyzed: 12/03,04/92  
 Work Order No.: K927530C

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	
MW-3 (32)	K7530-1	54	34	97	90	90	113
Laboratory Control Sample	K7530-LCS	56	39	100	92	85	109
Method Blank	K7530-MB	49	34	89	79	74	103
EPA Acceptance Criteria		21-100	10-94	10-123	35-114	43-116	33-141

2FP 2-Fluorophenol  
 PHL Phenol-D<sub>6</sub>  
 TBP 2,4,6-Tribromophenol  
 NBZ Nitrobenzene-D<sub>5</sub>  
 FBP 2-Fluorobiphenyl  
 TPH Terphenyl-D<sub>14</sub>

000008

Approved by

*Ch. Elliott*

Date

12/14/92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest, Inc.  
 Project: ARCO #2035 - Albany  
 Sample Matrix: Water

Date Extracted: 12/04/92  
 Date Analyzed: 12/09/92  
 Work Order No.: K927530C

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	
Batch QC	K7535-1MS	61	50	90	73	80	83
Batch QC	K7535-1DMS	68	59	92	80	87	92
Batch QC	K7535-1	38	27	84	66	75	72
EPA Acceptance Criteria		21-100	10-94	10-123	35-114	43-116	33-141

2FP 2-Fluorophenol  
 PHL Phenol-D<sub>6</sub>  
 TBP 2,4,6-Tribromophenol  
 NBZ Nitrobenzene-D<sub>5</sub>  
 FBP 2-Fluorobiphenyl  
 TPH Terphenyl-D<sub>14</sub>

Approved by

*Ann Elliott*

Date

12/14/92

000009

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest, Inc.  
 Project: ARCO #2035 - Albany  
 Sample Matrix: Water

Date Extracted: 12/04/92  
 Date Analyzed: 12/09/92  
 Work Order No.: K927530C

Matrix Spike/Duplicate Matrix Spike Summary  
 Base Neutral/Acid Semivolatile Organic Compounds  
 EPA Methods 3510/8270  
 µg/L (ppb)

Sample Name: Batch QC  
 Lab Code: K7535-1

Percent Recovery

Analyte	Spike Level		Sample Result	Spike Result		Percent Recovery		EPA Acceptance Criteria	Relative Percent Difference
	MS	DMS		MS	DMS	MS	DMS		
Phenol	400	470	ND	210	258	52	55	12-89	6
2-Chlorophenol	400	470	ND	347	398	87	85	27-123	2
1,4-Dichlorobenzene	200	230	ND	150	174	75	76	36-97	1
N-Nitrosodi-n-propylamine	200	230	ND	158	188	79	82	41-116	4
1,2,4-Trichlorobenzene	200	230	ND	143	166	72	72	39-98	0
4-Chloro-3-methylphenol	400	470	ND	256	318	64	68	23-97	6
Acenaphthene	200	230	ND	167	198	84	86	46-118	2
4-Nitrophenol	400	470	ND	130	163	32	35	10-80	9
2,4-Dinitrotoluene	200	230	ND	132	159	66	69	24-96	4
Pentachlorophenol	400	470	ND	372	193	93	41	9-103	78
Pyrene	200	230	ND	161	198	80	86	26-127	7

ND None Detected at or above the method reporting limit

Approved by Alan Elliott Date 12/14/92

000010

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Northwest, Inc.  
 Project: ARCO #2035 - Albany  
 LCS Matrix: Water

Date Extracted: 12/02/92  
 Date Analyzed: 12/04/92  
 Work Order No.: K927530C

Laboratory Control Sample Summary  
 Base Neutral/Acid Semivolatile Organic Compounds  
 EPA Methods 3510/8270  
 µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Phenol	200	58	29	5-112
2-Chlorophenol	200	160	80	23-134
1,4-Dichlorobenzene	100	78	78	20-124
N-Nitrosodi-n-propylamine	100	74	74	D-230
1,2,4-Trichlorobenzene	100	78	78	44-142
4-Chloro-3-methylphenol	200	141	70	22-147
Acenaphthene	100	91	91	47-145
4-Nitrophenol	200	61	30	D-132
2,4-Dinitrotoluene	100	89	89	39-139
Pentachlorophenol	200	*202	101	14-176
Pyrene	100	111	111	52-115

D Detected; result must be greater than zero.  
 a Analyte concentration is an estimate because the result was above the instrument calibration range.

Approved by

*Colin Elliott*

Date 12/14/92

000921

APPENDIX B  
CHAIN OF CUSTODY INFORMATION

000014





# WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1.16  
 PURGED BY: I. GRAHAM  
 SAMPLED BY: I. GRAHAM

SAMPLE ID: MW-3 (32)  
 CLIENT NAME: ARCO # 2035  
 LOCATION: 1001 SAN PABLO AVE, ALBANY, CA,

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.): 14.05  
 DEPTH TO WATER (feet): 11.57 CALCULATED PURGE (gal.): 70.29  
 DEPTH OF WELL (feet): 33.0 ACTUAL PURGE VOL. (gal.): 70.5  
21.43

DATE PURGED: <u>12-1-92</u>	Start (2400 Hr) <u>1020</u>	End (2400 Hr) <u>1042</u>
DATE SAMPLED: <u>12-1-92</u>	Start (2400 Hr) <u>1045</u>	End (2400 Hr) <u>1045</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1024</u>	<u>14.0</u>	<u>6.31</u>	<u>787</u>	<u>64.6</u>	<u>LT. GREY</u>	<u>MODERATE</u>
<u>1028</u>	<u>28.0</u>	<u>6.40</u>	<u>775</u>	<u>67.4</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1033</u>	<u>42.0</u>	<u>6.52</u>	<u>752</u>	<u>71.6</u>	<u>TAN</u>	<u>  </u>
<u>1037</u>	<u>56.0</u>	<u>6.60</u>	<u>647</u>	<u>73.4</u>	<u>  </u>	<u>  </u>
<u>1042</u>	<u>70.5</u>	<u>6.54</u>	<u>642</u>	<u>73.6</u>	<u>  </u>	<u>  </u>

D. O. (ppm): NR ODOR: NO (COBALT 0 - 100) (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

### PURGING EQUIPMENT

### SAMPLING EQUIPMENT

- |  |   |  |  |
|--|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump             | <input type="checkbox"/> Bailer (Teflon®)         | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC)             | <input type="checkbox"/> DDL Sampler     | <input type="checkbox"/> Bailer (Stainless Steel)    |
| <input type="checkbox"/> Submersible Pump            | <input type="checkbox"/> Bailer (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: \_\_\_\_\_

WELL INTEGRITY: OK CLEANING WATER 11-25-92 LOCK #: 3259

REMARKS: SALVAGE PUMP  
CLEANING WATER 11-25-92  
PURGE WATER 12-1-92 15 GAL.  
PURGE WATER 12-1-92 60 GAL

Meter Calibration: Date: 12-1-92 Time: 1015 Meter Serial #: 9105 Temperature °F: 59.1  
 ( EC 1000 1009 / 1000 ) ( DI 8.90 ) ( pH 7 6.58 / 7.00 ) ( pH 10 1010 / 10.00 ) ( pH 4 3.96 / \_\_\_\_\_ )

Location of previous calibration: \_\_\_\_\_

Signature: [Signature] Reviewed By: \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_







Summary of Groundwater Monitoring Data  
 Fourth Quarter 1992  
 ARCO Service Station 2035  
 1001 San Pablo Avenue, Albany, California  
 micrograms per liter (µg/l) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH <sup>1</sup> as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Total Xylenes (ppb)	TPH as Diesel (ppb)	Total Oil and Grease (ppm)*
MW-1(29)	10/26/92	11.24	ND. <sup>2</sup>	190.	68.	<0.5	0.6	<0.5	NR. <sup>3</sup>	NR.
MW-2(27)	10/26/92	11.60	ND.	<50	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-3(32)	10/26/92	12.15	ND.	<50	0.6	<0.5	<0.5	<0.5	<50.	0.6
RW-1	10/26/92	11.45	FP. <sup>4</sup>	FP.	FP.	FP.	FP.	FP.	NR.	NR.
FB-15	10/26/92	NA. <sup>6</sup>	NA.	<50	<0.5	<0.5	<0.5	<0.5	NR.	NR.

1. TPH. = Total petroleum hydrocarbons  
 2. ND. = Not detected  
 3. NR. = Not required, well was not analyzed for the above listed parameter  
 4. FP. = Floating product; well was not sampled due to detection of floating product  
 5. FB. = Field blank  
 6. NA. = Not applicable  
 \* = Reported as parts-per-million



November 9, 1992

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

Re: EMCON Project No. OG70-017.01  
Arco Facility No. 2035

Dear Mr. Butera:

Enclosed are the results of the water samples submitted to our lab on October 26, 1992. For your reference, our service request number for this work is SJ92-1324.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

*Carol Klein for*  
Keoni A. Murphy  
Laboratory Manager

*Annelise J. Bazar*  
Annelise J. Bazar  
Regional QA Coordinator

KAM/ajb



COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035  
Sample Matrix: Water

Date Received: 10/26/92  
Date Extracted: 10/27/92  
Date Analyzed: 10/28/92  
Work Order No.: SJ92-1324

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

<u>Sample Name</u>	<u>MRL</u>	<u>TPH as Diesel</u>
MW-3 (32)	50	ND
Method Blank	50	ND

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

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates  
 Project: EMCON Project No. 0G70-017.01  
 ARCO Facility No. 2035

Date Received: 10/26/92  
 Work Order No.: SJ92-1324  
 Sample Matrix: Water

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

Sample Name: MW-1 (29)      MW-2 (27)      MW-3 (32)  
 Date Analyzed: 11/04/92      11/04/92      11/04/92

<u>Analyte</u>	<u>MRL</u>	<u>MW-1 (29)</u>	<u>MW-2 (27)</u>	<u>MW-3 (32)</u>
Benzene	0.5	68.	ND	0.6
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	0.6	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	190.	ND	ND

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

Approved by: Carol Klein      Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates  
Project: EMCON Project No. OG70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

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

Sample Name: FB-1                      Method Blank  
Date Analyzed: 11/04/92                      11/04/92

<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: Carol Klein                      Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates  
 Project: EMCON Project No. 0G70-017.01  
 ARCO Facility No. 2035

Date Received: 10/26/92  
 Work Order No.: SJ92-1324  
 Sample Matrix: Water

Volatile Organic Compounds  
 EPA Method 624  
 µg/L (ppb)

Sample Name: MW-3 (32)      Method Blank  
 Date Analyzed: 10/29/92      10/29/92

Analyte	MRL		
Chloromethane	1	ND	ND
Vinyl Chloride	1	ND	ND
Bromomethane	1	ND	ND
Chloroethane	1	ND	ND
Trichlorofluoromethane (Freon 11)	1	ND	ND
Trichlorotrifluoroethane (Freon 113)	10	ND	ND
1,1-Dichloroethene	1	ND	ND
Acetone	20	ND	ND
Carbon Disulfide	1	ND	ND
Methylene Chloride	10	ND	ND
trans-1,2-Dichloroethene	1	ND	ND
cis-1,2-Dichloroethene	1	ND	ND
2-Butanone (MEK)	10	ND	ND
1,1-Dichloroethane	1	ND	ND
Chloroform	1	ND	ND
1,1,1-Trichloroethane (TCA)	1	ND	ND
Carbon Tetrachloride	1	ND	ND
Benzene	1	ND	ND
1,2-Dichloroethane	1	ND	ND
Vinyl Acetate	10	ND	ND
Trichloroethene (TCE)	1	ND	ND
1,2-Dichloropropane	1	ND	ND
Bromodichloromethane	1	ND	ND
2-Chloroethyl Vinyl Ether	10	ND	ND
trans-1,3-Dichloropropene	1	ND	ND
2-Hexanone	10	ND	ND
4-Methyl-2-pentanone (MIBK)	10	ND	ND
Toluene	1	ND	ND
cis-1,3-Dichloropropene	1	ND	ND
1,1,2-Trichloroethane	1	ND	ND
Tetrachloroethene (PCE)	1	ND	ND
Dibromochloromethane	1	ND	ND
Chlorobenzene	1	ND	ND
Ethylbenzene	1	ND	ND
Styrene	1	ND	ND
Total Xylenes	1	ND	ND
Bromoform	1	ND	ND
1,1,2,2-Tetrachloroethane	1	ND	ND
1,3-Dichlorobenzene	1	ND	ND
1,4-Dichlorobenzene	1	ND	ND
1,2-Dichlorobenzene	1	ND	ND

MRL Method Reporting Limit  
 ND None Detected at or above the method reporting limit

Approved by: Carol Klein      Date: 11-9-92



APPENDIX A  
LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. OG70-017.01  
Arco Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

Continuing Calibration Summary  
Inorganics  
SM 5520 C & F  
mg/L

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
Hydrocarbons, IR	100.	106.	106.	90-110

SM Standard Methods for the Examination of Water and Wastewater, 17th Ed., 1989

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No.0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

Matrix Spike Summary  
Total Recoverable Petroleum Hydrocarbons  
SM 5520 F  
mg/L (ppm)

<u>Sample Name</u>	<u>Spike Level</u>	<u>Sample Result</u>	<u>Spike Result</u>		<u>Percent Recovery</u>		<u>CAS Acceptance Criteria</u>
			<u>MS</u>	<u>DMS</u>	<u>MS</u>	<u>DMS</u>	
MW-3 (32)	8.0	0.6	9.1	8.3	106.	96.	80-120

SM Standard Methods for the Examination of Water and Wastewater, 17th Ed., 1989

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

Initial Calibration Verification  
TPH as Diesel  
EPA Methods 3510/DHS LUFT Method  
mg/L (ppm)

Date Analyzed: 10/28/92

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
TPH as Diesel	1,000.	995.	100.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

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

<u>Sample Name</u>	<u>Date Analyzed</u>	<u>Percent Recovery</u> P-Terphenyl
MW-3 (32)	10/28/92	86.
MS	10/28/92	96.
DMS	10/28/92	91.
Method Blank	10/28/92	91.

CAS Acceptance Criteria 46-133

TPH Total Petroleum Hydrocarbons

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary  
Total Petroleum Hydrocarbons as Diesel  
EPA Method 3510/DHS LUFT Method  
 $\mu\text{g/L}$  (ppb)

Date Analyzed: 10/28/92

<u>Parameter</u>	<u>Spike Level</u>	<u>Sample Result</u>	<u>Spike Result</u>		<u>Percent Recovery</u>		<u>Acceptance Criteria</u>
			<u>MS</u>	<u>DMS</u>	<u>MS</u>	<u>DMS</u>	
Diesel	4,000.	ND	4,590.	3,620.	115.	91.	61-121

ND None Detected at or above the method reporting limit

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324

Initial Calibration Verification  
BTEX and TPH as Gasoline  
EPA Methods 5030/8020/DHS LUFT Method  
Nanograms

Date Analyzed: 11/04/92

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
Benzene	250.	265.	106.	85-115
Toluene	250.	277.	111.	85-115
Ethylbenzene	250.	264.	106.	85-115
Total Xylenes	750.	793.	106.	85-115
TPH as Gasoline	2,500.	2,315.	93.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
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>α,α,α-Trifluorotoluene</i>
MW-1 (29)	11/04/92	90.
MW-2 (27)	11/04/92	82.
MW-3 (32)	11/04/92	85.
FB-1	11/04/92	86.
MS	11/04/92	93.
DMS	11/04/92	93.
Method Blank	11/04/92	97.

CAS Acceptance Criteria 70-130

TPH Total Petroleum Hydrocarbons

Approved by: Carol Klein

Date: 11-9-92



COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary  
BTE  
EPA Methods 5030/8020  
 $\mu\text{g/L}$  (ppb)

Date Analyzed: 11/04/92

Percent Recovery

Analyte	Spike Level	Sample Result	Spike Result		MS		DMS		CAS Acceptance Criteria
			MS	DMS	MS	DMS			
Benzene	250.	54.	314.	340.	104.	114.	39-150		
Toluene	250.	157.	418.	434.	104.	111.	46-148		
Ethylbenzene	250.	37.	279.	328.	97.	116.	32-160		

Approved by: Carol Klein Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
 Project: EMCON Project No. 0G70-017.01  
 Arco Facility No. 2035

Date Received: 10/26/92  
 Work Order No.: SJ92-1324

Initial Calibration Verification  
 Volatile Organic Compounds  
 EPA Method 624  
 µg/L (ppb)

Date Analyzed: 10/29/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Chloromethane	50	43.7	87.	70-130
Vinyl Chloride	50	44.2	88.	70-130
Bromomethane	50	43.5	87.	70-130
Chloroethane	50	44.7	89.	70-130
Acetone	50	45.8	92.	70-130
1,1-Dichloroethene	50	44.5	89.	70-130
Carbon Disulfide	50	44.0	88.	70-130
Methylene Chloride	50	47.5	95.	70-130
trans-1,2-Dichloroethene	50	44.1	88.	70-130
cis-1,2-Dichloroethene	50	42.9	86.	70-130
1,1-Dichloroethane	50	44.6	89.	70-130
Vinyl Acetate	50	40.5	81.	70-130
2-Butanone	50	43.5	87.	70-130
Chloroform	50	44.9	90.	70-130
1,1,1-Trichloroethane (TCA)	50	44.7	89.	70-130
Carbon Tetrachloride	50	44.5	89.	70-130
Benzene	50	46.8	94.	70-130
1,2-Dichloroethane	50	45.0	90.	70-130
Trichloroethene (TCE)	50	45.5	91.	70-130
1,2-Dichloropropane	50	47.5	95.	70-130
Bromodichloromethane	50	48.1	96.	70-130
2-Chloroethyl Vinyl Ether	50	45.3	91.	70-130
2-Hexanone	50	47.8	96.	70-130
trans-1,3-Dichloropropene	50	44.7	89.	70-130
Toluene	50	46.9	94.	70-130
cis-1,3-Dichloropropene	50	46.0	92.	70-130
1,1,2-Trichloroethane	50	46.2	92.	70-130
Tetrachloroethene (PCE)	50	43.4	87.	70-130
Dibromochloromethane	50	43.8	88.	70-130
Chlorobenzene	50	45.1	90.	70-130
Ethylbenzene	50	46.0	92.	70-130
o Xylene	50	45.3	91.	70-130
Styrene	50	45.3	91.	70-130
Bromoform	50	46.4	93.	70-130
1,1,2,2-Tetrachloroethane	50	47.1	94.	70-130

Approved by: Carol Klein

Date: 11-9-92

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
Project: EMCON Project No. 0G70-017.01  
ARCO Facility No. 2035

Date Received: 10/26/92  
Work Order No.: SJ92-1324  
Sample Matrix: Water

Surrogate Recovery Summary  
Volatile Organic Compounds  
EPA Method 624

<u>Sample Name</u>	<u>Date Analyzed</u>	<u>P e r c e n t R e c o v e r y</u>		
		1,2-Dichloroethane - D <sub>4</sub>	Toluene - D <sub>8</sub>	4-Bromofluorobenzene
MW-3 (32)	10/29/92	103.	103.	105.
Method Blank	10/29/92	106.	100.	103.
EPA Acceptance Criteria		76-114	88-110	86-115

Approved by:

*Carol Klein*

Date:

*11-9-92*

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates  
 Project: EMCON Project No. 0G70-017.01  
 ARCO Facility No. 2035

Date Received: 10/26/92  
 Work Order No.: SJ92-1324  
 Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary  
 Volatile Organic Compounds  
 EPA Method 624  
 µg/L (ppb)

Date Analyzed: 10/29/92

Percent Recovery

Analyte	Spike Level	Sample Result	Spike Result		Percent Recovery		EPA Acceptance Criteria	Relative Percent Difference
			MS	DMS	MS	DMS		
1,1-Dichloroethene	50.	ND	51.4	60.2	103.	120.	61-145	16.
Trichloroethene	50.	ND	42.9	46.4	86.	93.	71-120	8.
Chlorobenzene	50.	ND	47.4	50.0	95.	100.	75-130	5.
Toluene	50.	ND	45.0	47.8	90.	96.	76-125	6.
Benzene	50.	ND	45.8	49.3	92.	99.	76-127	7.

ND None Detected at or above the method reporting limit

Approved by: Carol Klein

Date: 11-9-92

APPENDIX B  
CHAIN OF CUSTODY





EMCON ASSOCIATES

PROJECT NO: 0670-017.01

SAMPLE ID: MW-1

PURGED BY: RATH/REICHELDERFER

CLIENT NAME: ARCO 2035

SAMPLED BY: [Signature]

LOCATION: 1001 SAN PABLO AVE ALBANY, CA

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.): 11.89

DEPTH TO WATER (feet): 11.47 CALCULATED PURGE (gal.): 59.47

DEPTH OF WELL (feet): 29.6 ACTUAL PURGE VOL (gal.): 55.00

DATE PURGED: 10-26-92 Start (2400 Hr) 14:00 End (2400 Hr) 14:12  
DATE SAMPLED: 10-26-92 Start (2400 Hr) 14:30 End (2400 Hr) 14:32

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
14:02	12.00	6.36	834	68.9	CLOUDY	MODERATE
14:04	24.00	6.34	864	68.9	LT BROWN	↓
14:07	36.00	6.38	937	68.6	↓	↓
14:09	48.00	6.40	988	68.3	BROWN	HEAVY
14:12	WELL DRIED @ 55.00 GALLONS					
14:29	NR RECHARGE	7.01	922	67.9	NR	NR
D. O. (ppm):			ODOR: NONE		(COBALT 0 - 100)	(NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 @ 14:25

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- 2" Sladder Pump
- Centrifugal Pump
- Submersible Pump
- Well Wizard™
- Other: \_\_\_\_\_
- Bailer (Teflon &)
- Bailer (PVC)
- Bailer (Stainless Steel)
- Dedicated
- Other: \_\_\_\_\_
- 2" Sladder Pump
- DDL Sampler
- Dipper
- Well Wizard™
- Other: \_\_\_\_\_
- Bailer (Teflon &)
- Bailer (Stainless Steel)
- Submersible Pump
- Dedicated

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: 14:12 WELL DRIED @ 55.00 GALLONS (DTW - 28.63 @ 14:23)

Meter Calibration: Date: 10-26-92 Time: 12:00 Meter Serial #: 5516 Temperature °F: \_\_\_\_\_  
(MC 1000 \_\_\_\_\_ / \_\_\_\_\_) (DI \_\_\_\_\_) (pH 7 \_\_\_\_\_ / \_\_\_\_\_) (pH 10 \_\_\_\_\_ / \_\_\_\_\_) (pH 4 \_\_\_\_\_ / \_\_\_\_\_)

Location of previous calibration: MW-2  
[Signature] JB 1 4



PROJECT NO: OG 70 - 017 . 01 SAMPLE ID: MW-2  
 PURGED BY: L. RATH / REICHEL WERFER CLIENT NAME: ARCO 2035  
 SAMPLED BY: ↓ LOCATION: 1001 San Pablo Ave Albany CA

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.): 11.21  
 DEPTH TO WATER (feet): 11.60 CALCULATED PURGE (gal.): 56.08  
 DEPTH OF WELL (feet): 28.7 ACTUAL PURGE VOL (gal.): 56.50  
171

DATE PURGED: 10-26-92 Start (2400 Hr) 12:45 End (2400 Hr) 12:56  
 DATE SAMPLED: 10-26-92 Start (2400 Hr) 13:02 End (2400 Hr) 13:04

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	EC. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
<u>12:47</u>	<u>11.50</u>	<u>6.11</u>	<u>918</u>	<u>69.6</u>	<u>CLOUDY</u>	<u>LIGHT</u>
<u>12:49</u>	<u>23.00</u>	<u>6.31</u>	<u>911</u>	<u>69.3</u>	<u>"</u>	<u>"</u>
<u>12:51</u>	<u>34.50</u>	<u>6.44</u>	<u>913</u>	<u>68.8</u>	<u>LT BROWN</u>	<u>LIGHT</u>
<u>12:53</u>	<u>46.00</u>	<u>6.50</u>	<u>910</u>	<u>68.5</u>	<u>↓</u>	<u>↓</u>
<u>12:56</u>	<u>56.50</u>	<u>6.52</u>	<u>912</u>	<u>68.3</u>	<u>↓</u>	<u>↓</u>
D. O. (ppm):	<u>NR</u>	ODOR:	<u>NONE</u>		<u>NR</u>	<u>NR</u>
					(COBALT 0 - 100)	(NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> 2" Sladder Pump             | <input type="checkbox"/> Bailer (Teflon &)        | <input type="checkbox"/> 2" Sladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon &) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC)             | <input type="checkbox"/> DDL Sampler     | <input type="checkbox"/> Bailer (Stainless Steel)     |
| <input type="checkbox"/> Submersible Pump            | <input type="checkbox"/> Bailer (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: 10-26-92 Time: 1200 Meter Serial #: 5516 Temperature °F: 27.2  
 (EC 1000 998 / 1000) (DI \_\_\_\_\_) (pH 7 7.00 / 7.00) (pH 10 9.72 / 10.00) (pH 4 3.99 /)  
 Location of previous calibration: \_\_\_\_\_  
Karin JB 2 u





PROJECT NO: 0670-017.01

SAMPLE ID: MW-3

PURGED BY: RATH/REICHELDERFER CLIENT NAME: ARCO 2035

SAMPLED BY: [Signature] LOCATION: 1001 SAN PABLO AVE ALBANY, CA

TYPE: Ground Water X Surface Water \_\_\_\_\_ Treatment Effluent \_\_\_\_\_ Other \_\_\_\_\_

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 13.63  
 DEPTH TO WATER (feet): 12.23 CALCULATED PURGE (gal.): 68.13  
 DEPTH OF WELL (feet): 33.0 ACTUAL PURGE VOL (gal.): 38.00

DATE PURGED: 10-26-92 Start (2400 Hr) 13:14 End (2400 Hr) 13:21  
 DATE SAMPLED: 10-26-92 Start (2400 Hr) 13:30 End (2400 Hr) 13:52

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	EC. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
<u>13:16</u>	<u>14.00</u>	<u>6.33</u>	<u>851</u>	<u>68.3</u>	<u>CLOUDY</u>	<u>LIGHT</u>
<u>13:19</u>	<u>28.00</u>	<u>6.36</u>	<u>896</u>	<u>67.7</u>	<u>LT BROWN</u>	<u>LIGHT</u>
<u>13:21</u>	<u>WELL DRIED @ 38.00 GALLONS</u>					
<u>13:53</u>	<u>RECHARGE</u>	<u>6.48</u>	<u>804</u>	<u>67.7</u>	<u>BROWN</u>	<u>HEAVY</u>
D. O. (ppm):	<u>NR</u>	ODOR:	<u>SLIGHT</u>		<u>NR</u>	<u>NR</u>
					(COBALT 0 - 100)	(NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> 2" Bladder Pump             | <input type="checkbox"/> Bailer (Teflon &)        | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon &) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC)             | <input type="checkbox"/> DDL Sampler     | <input type="checkbox"/> Bailer (Stainless Steel)     |
| <input type="checkbox"/> Submersible Pump            | <input type="checkbox"/> Bailer (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: 13:21 WELL DRIED @ 38.00 GALLONS DTW - 29.42 13:28

Meter Calibration: Date: 10-26-92 Time: 12:00 Meter Serial #: 5516 Temperature °F: \_\_\_\_\_  
 (EC 1000 \_\_\_\_\_ / \_\_\_\_\_) (DI \_\_\_\_\_) (pH 7 \_\_\_\_\_ / \_\_\_\_\_) (pH 10 \_\_\_\_\_ / \_\_\_\_\_) (pH 4 \_\_\_\_\_ / \_\_\_\_\_)

Location of previous calibration: MW-2  
[Signature] JB 3 4



EMCON ASSOCIATES

# WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: OG70-017-01

SAMPLE ID: RW-1

PURGED BY: RATH

CLIENT NAME: ARCO 2035

SAMPLED BY: \_\_\_\_\_

LOCATION: 1001 SAN PABLO AVE

TYPE: Ground Water  Surface Water \_\_\_\_\_ Treatment Effluent \_\_\_\_\_ Other \_\_\_\_\_

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

CASING ELEVATION (feet/MSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>NA</u>
DEPTH TO WATER (feet): <u>NA</u>	CALCULATED PURGE (gal.): <u>Y</u>
DEPTH OF WELL (feet): _____	ACTUAL PURGE VOL (gal.): _____

DATE PURGED: <u>10/16/92</u>	Start (2400 Hr) <u>NA</u>	End (2400 Hr) <u>NA</u>
DATE SAMPLED: _____	Start (2400 Hr) _____	End (2400 Hr) _____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>NO SAMPLE WELL CONTAINED 0.04 feet of PRODUCT</u>						
D. O. (ppm):	<u>NA</u>	ODOR:	<u>NA</u>		<u>NA</u>	<u>NA</u>
					(COBALT 0 - 100)	(NTU 0 - 200)

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

### PURGING EQUIPMENT

### SAMPLING EQUIPMENT

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

WELL INTEGRITY: Fine LOCK #: 3259

REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Meter Calibration: Date: \_\_\_\_\_ Time: \_\_\_\_\_ Meter Serial #: \_\_\_\_\_ Temperature °F: \_\_\_\_\_  
 ( EC 1000 \_\_\_\_\_ / \_\_\_\_\_ ) ( DI \_\_\_\_\_ ) ( pH 7 \_\_\_\_\_ / \_\_\_\_\_ ) ( pH 10 \_\_\_\_\_ / \_\_\_\_\_ ) ( pH 4 \_\_\_\_\_ / \_\_\_\_\_ )  
 Location of previous calibration: \_\_\_\_\_

Signature: J Butera for L RATH Reviewed By: JB Page 4 of 4

# MONITORING WELL PURGE WATER TRANSPORT FORM

## GENERATOR INFORMATION

NAME: ARCO PRODUCTS  
 ADDRESS: P.O. BOX 5811  
 CITY, STATE, ZIP: SAN MATEO, CA 94402 PHONE #: (415) 571-2434

DESCRIPTION OF WATER: PURGE WATER GENERATED DURING SAMPLING OR DEVELOPMENT OF MONITORING WELLS LOCATED AT VARIOUS SITES. AUGER RINSATE GENERATED DURING THE INSTALLATION OF MONITORING WELLS AT VARIOUS SITES. THE WATER MAY CONTAIN DISSOLVED HYDROCARBONS.

THE GENERATOR CERTIFIES THAT THIS WATER AS DESCRIBED IS NON-HAZARDOUS

KYLE CHRISTIE *by Jon DeLon* 11/12/92  
 (Typed or printed full name & signature) (Date)

## SITE INFORMATION

STA #	JOB #	ADDRESS	GALS
1 A-2133	21240-PW	2908 BENJAMIN HOLT DR., STOCKTON, CA	84
2 A-716	21175-PW	699 SAN ANTONIO RD., PALO ALTO, CA	120
3 A-440	21262-PW	600 PORTOLA ST., SAN FRANCISCO, CA	12
4 A-1326	21176-PW	840 SAN ANTONIO RD., PALO ALTO, CA	226
5 A-5662	21293-PW	OROVILLE DAM RD., OROVILLE, CA	122
6 A-2035	21179-PW	1001 SAN PABLO AVE., ALBANY, CA	129
7 A-601	21195-DW	712 LEWELLING BLVD., SAN LEANDRO, CA	118
8 A-2152	21174-PW	22141 CENTER ST., CASTRO VALLEY, CA	114
9 A-2162	21131-PW	15135 HESPERIAN BLVD., SAN LEANDRO, CA	104
10 A-2076	21193-DW	800 E. KETTLEMAN LANE, LODI, CA	583
11 A-2185	21186-PW	9800 E. 14TH AVE., OAKLAND, CA	104
TOTAL GALLONS:			1,716

## TRANSPORTER INFORMATION

NAME: BALCH PETROLEUM  
 ADDRESS: 930 AMES AVE.  
 CITY, STATE, ZIP: MILPITAS, CA 95035 PHONE #: (408) 942-8686  
 TRUCK ID #: PETERBILT HURSHEL WARD *Hurschel Ward* 11-13-92  
 (Typed or printed full name & signature) (Date)

## TSD FACILITY INFORMATION

NAME: GIBSON ENVIRONMENTAL  
 ADDRESS: 475 SEAPORT BLVD  
 CITY, STATE, ZIP: REDWOOD CITY, CA 94063 PHONE #: (415) 368-5511  
 RELEASE #: 11320 Shree Raghvi 11-13-92  
 (Typed or printed full name & signature) (Date)