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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Second Quarter 1993
at
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

69036.08

7/19/93

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July 19, 1993
0402MWHE
69036.08

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

Subject: Second Quarter 1993 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 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 petroleum hydrocarbons in the local groundwater associated with the former underground 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.

The results of previous environmental investigations at the site are summarized in the reports listed in the References section. The locations of 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 April 13, May 22, and June 17, 1993. Quarterly sampling was performed by EMCON field personnel on April 13, 1993. 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-6, 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. A presence of floating product or sheen was noted in the product skimmer or bailer in RW-1 during the April, May, and June monitoring events. During April, the amount of floating product was not measured, and therefore the elevation of groundwater for RW-1 was not used in gradient evaluation. 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. The groundwater gradients and flow directions evaluated for April, May, and June 1993, are shown on the Groundwater Gradient Maps, Plates 3 through 5. The average interpreted groundwater gradient was approximately 0.02 ft/ft with flow directions toward the west in April, west-northwest in May, and west-southwest in June. These gradients and flow directions are generally consistent with those interpreted for previous quarters.

Groundwater monitoring wells MW-1 through MW-6 were purged and sampled by EMCON field personnel on April 13, 1993. RW-1 was not sampled due to the presence of floating product. 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. 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 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 benzene, toluene, ethylbenzene, and total xylenes (BTEX), and for total petroleum hydrocarbons as gasoline (TPHg) using modified Environmental Protection Agency (EPA) Methods 5030/8020/California DHS LUFT Method. In addition, the water sample from groundwater monitoring well MW-3, located next to the former waste-oil tank pit was analyzed for total oil and grease (TOG) using Standard Method 5520 C and F. 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, BNAs, 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 monitoring wells at the site since the last quarterly monitoring event: concentrations increased in wells MW-1 and MW-3; and remained nondetectable in MW-2, MW-4, MW-5, and MW-6. The floating product in recovery well RW-1 remained present as only a sheen.

Product Removal

The floating product skimmer was inspected and floating product was measured in well RW-1 by RESNA field personnel on April 7, and 22, May 6, and June 22, 1993. No measurable amount of floating product (except for product sheen) was detected in well RW-1 in April, May or June. The results of skimmer inspections are presented on RESNA's Field Reports, which are included in Appendix A. Quantities of floating product recovered and thickness of floating product for this and previous quarters are presented in Table 4, Approximate Cumulative Product Recovered. The total cumulative recovered product from RW-1 is approximately 23 gallons.

Copies of this report should be forwarded to:

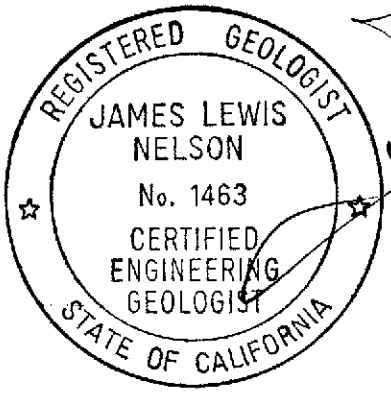
Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

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

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 # 1463

Enclosures: References
Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, April 13, 1993
Plate 4, Groundwater Gradient Map, May 22, 1993
Plate 5, Groundwater Gradient Map, June 17, 1993
Plate 6, TPHg/Benzene Concentrations in Groundwater, April 13, 1993

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, BNAs, PCB and Metals
Table 4, Approximate Cumulative Product Recovered

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

RESNA's Field Reports

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

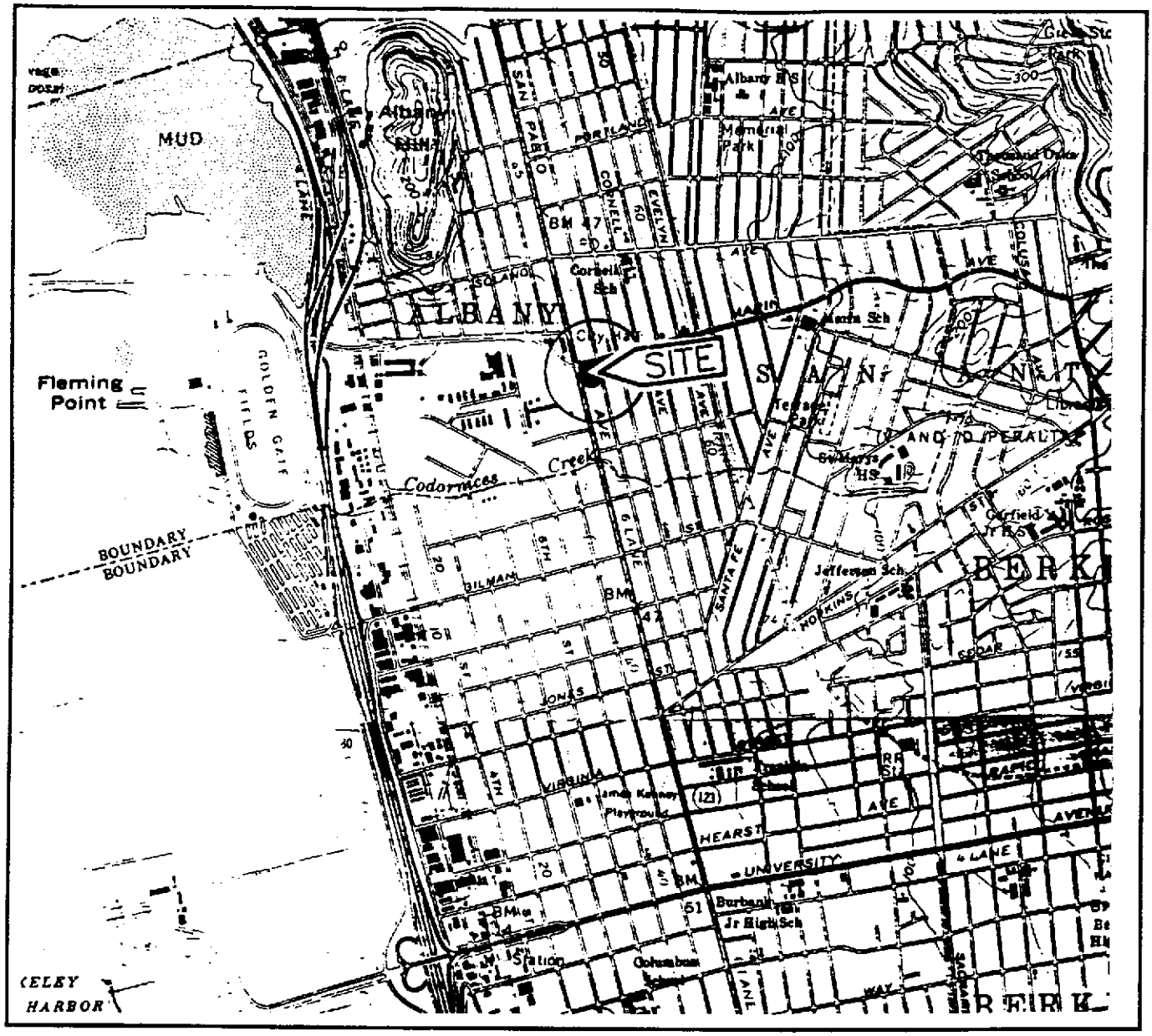
RESNA November 30, 1992. Letter Report, Quarterly Groundwater Monitoring Third Quarter 1992 at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.04

REFERENCES

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

RESNA March 16, 1993. Letter Report, Quarterly Groundwater Monitoring Fourth Quarter 1992 at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.04

RESNA April 29, 1993. Letter Report, Quarterly Groundwater Monitoring First Quarter 1993 at ARCO Station 2035, 1001 San Pablo Avenue, Albany, California. 69036.08



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

LEGEND

⊙ = Site Location

N

Approximate Scale

2000 1000 0 2000 4000

feet

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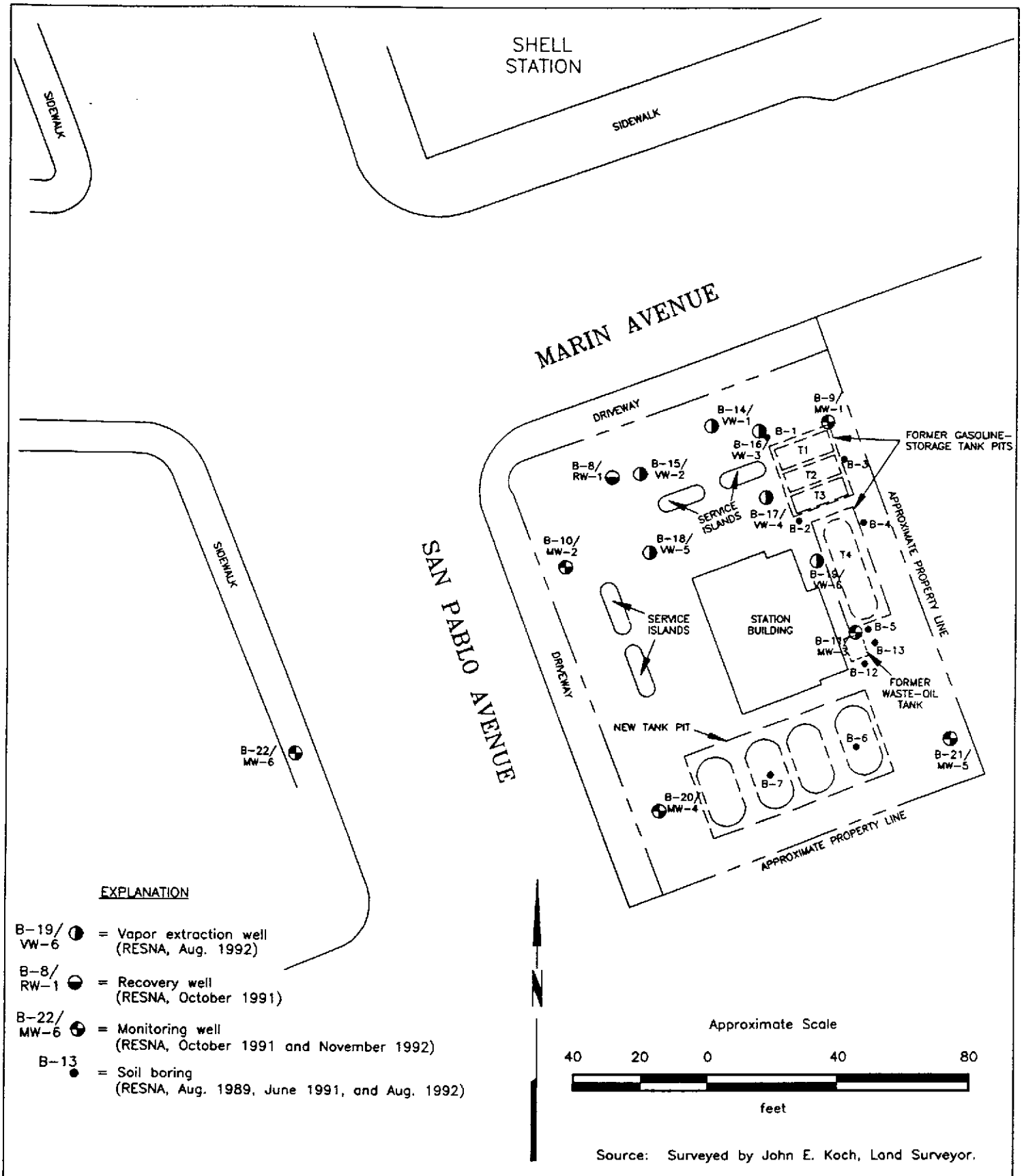

EXPLANATION

B-19/VW-6 = Vapor extraction well (RESNA, Aug. 1992)

B-8/RW-1 = Recovery well (RESNA, October 1991)

B-22/MW-6 = Monitoring well (RESNA, October 1991 and November 1992)

B-13 = Soil boring (RESNA, Aug. 1989, June 1991, and Aug. 1992)

Source: Surveyed by John E. Koch, Land Surveyor.

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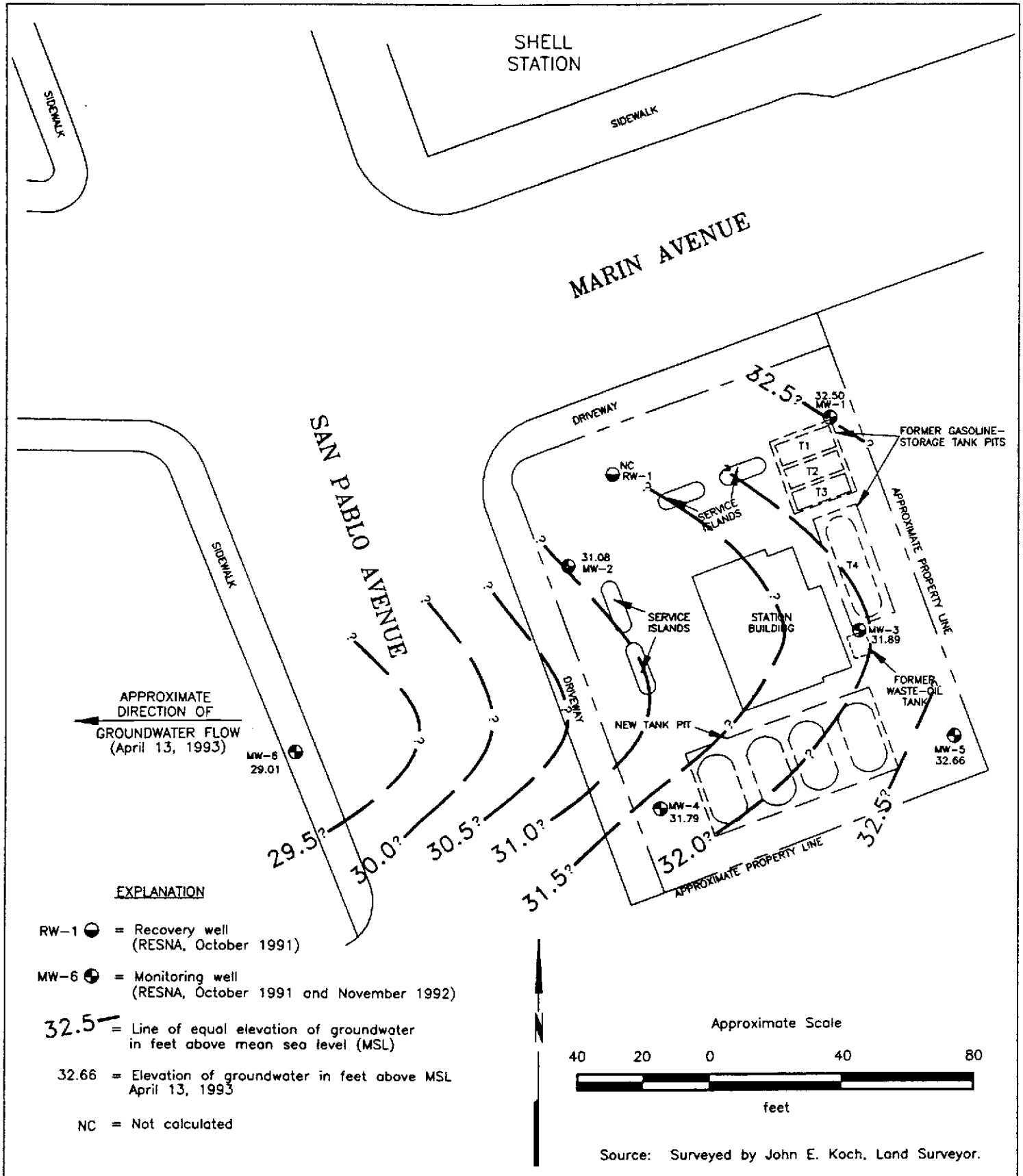
GENERALIZED SITE PLAN
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE 2



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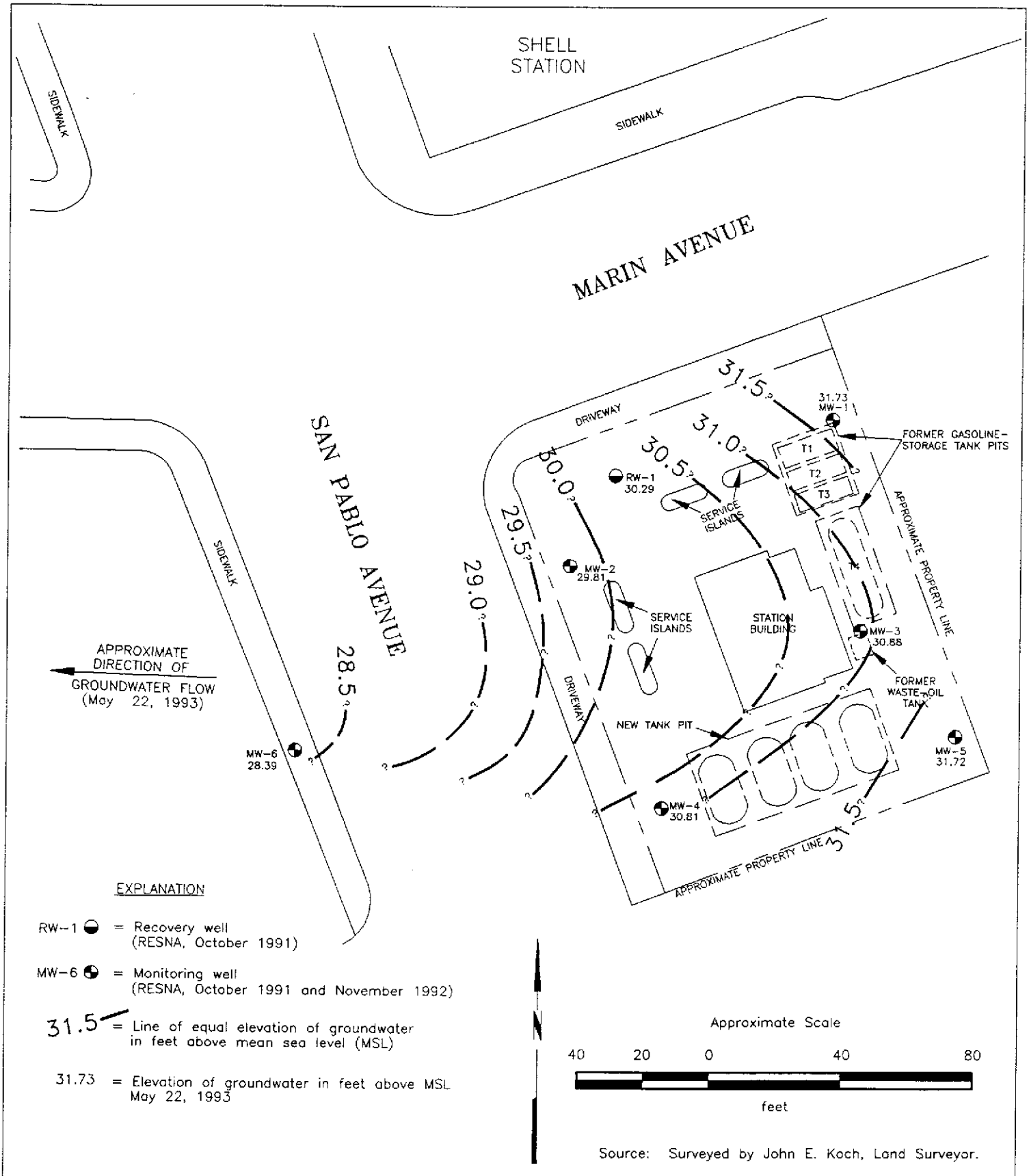
GROUNDWATER GRADIENT MAP
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE
3



Source: Surveyed by John E. Koch, Land Surveyor.

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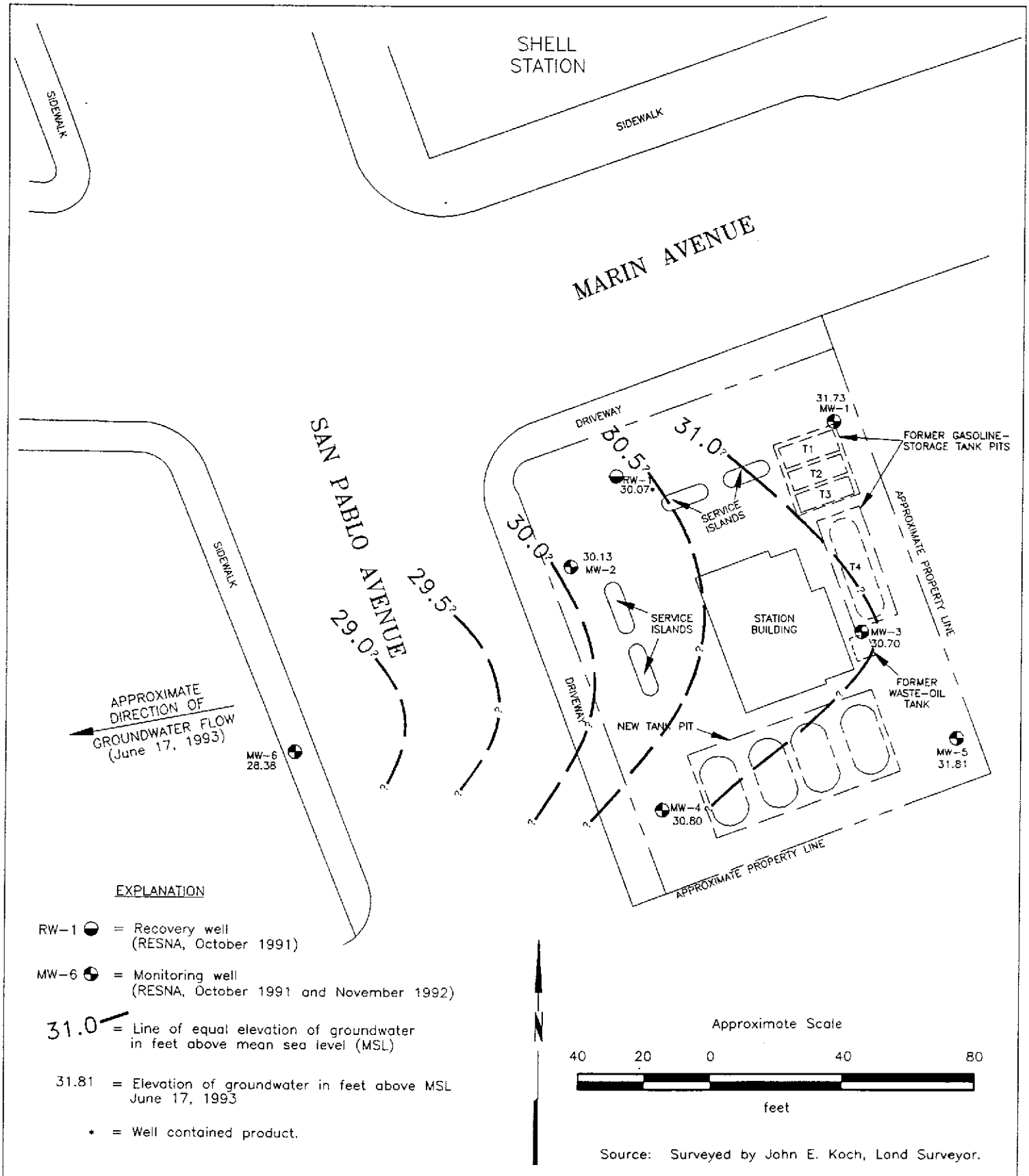
GROUNDWATER GRADIENT MAP

ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE

4



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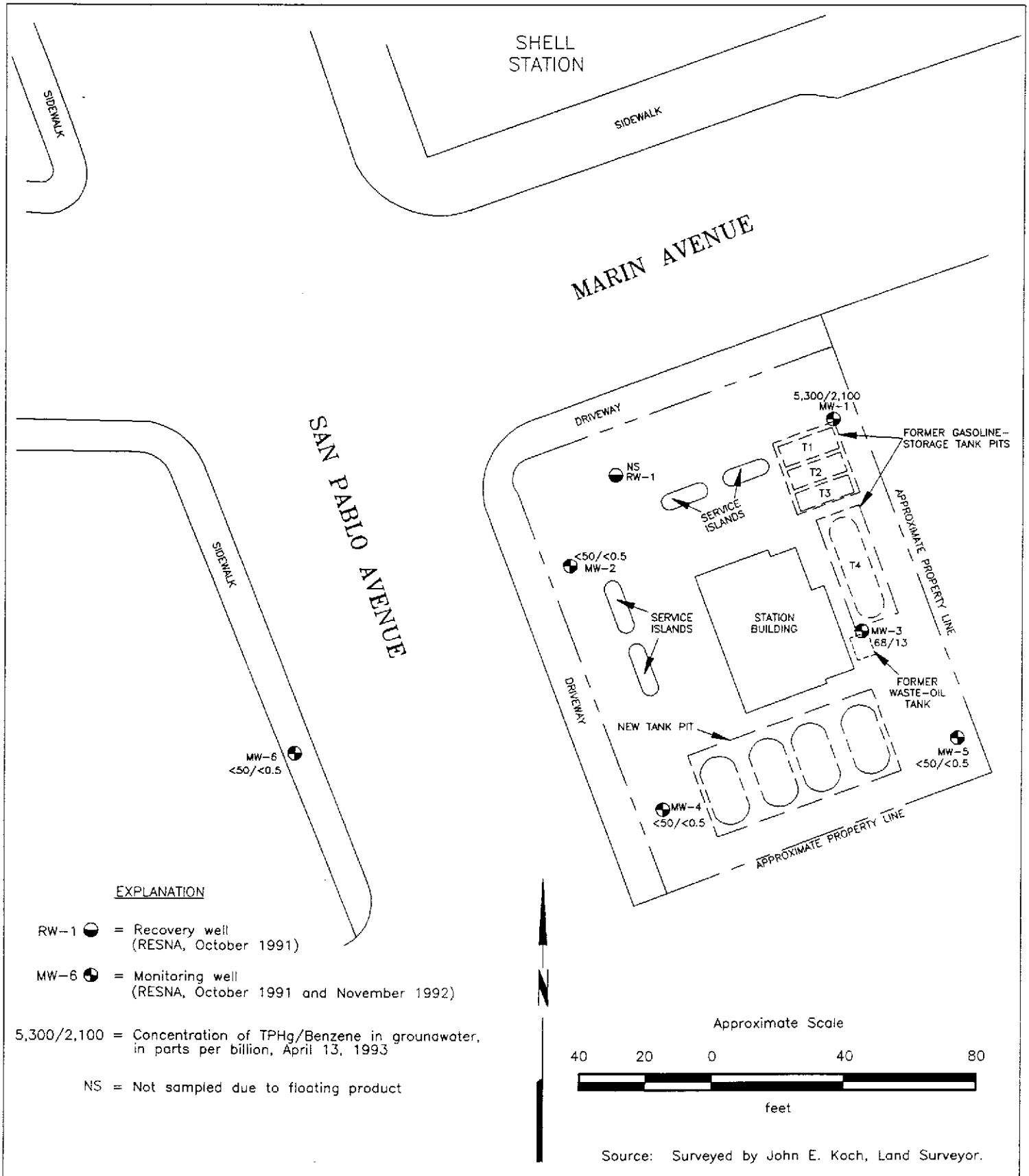
GROUNDWATER GRADIENT MAP

ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE

5



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TPHg/BENZENE CONCENTRATIONS IN GROUNDWATER
ARCO Station 2035
1001 San Pablo Avenue
Albany, California

PLATE
6

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2035
Albany, California
(Page 1 of 3)

Well Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Evidence of Product
MW-1				
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
01/13/93		7.73	33.68	None
02/22/93		7.56	33.85	None
03/25/93		8.48	32.93	None
04/13/93		8.91	32.50	None
05/22/93		9.68	31.73	None
06/17/93		9.68	31.73	None
MW-2				
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
01/13/93		8.25	32.13	None

See notes on Page 3 of 3.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2035
Albany, California
(Page 2 of 3)

Well Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Evidence of Product
MW-2 (cont.)				
02/22/93		8.25	32.13	None
03/25/93		8.82	31.56	None
04/13/93		9.30	31.08	None
05/22/93		10.57	29.81	None
06/17/93		10.25	30.13	None
MW-3				
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
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
01/13/93		9.12	32.32	None
02/22/93		8.18	33.26	None
03/25/93		8.57	32.87	None
04/13/93		9.55	31.89	None
05/22/93		10.56	30.88	None
06/17/93		10.41	30.70	None
MW-4				
01/13/93	40.33	8.05	32.28	None
02/22/93		7.58	32.75	None
03/25/93		8.27	32.06	None
04/13/93		8.54	31.79	None
05/22/93		9.52	30.81	None
06/17/93		9.53	30.80	None
MW-5				
01/13/93	41.84	8.22	33.62	None
02/22/93		7.92	33.92	None
03/25/93		8.67	33.17	None

See notes on Page 3 of 3.

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Quarterly Groundwater Monitoring
ARCO Station 2035, Albany, California

July 19, 1993
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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2035
Albany, California
(Page 3 of 3)

Well Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Evidence of Product
MW-5 (cont.)				
04/13/93		9.18	32.66	None
05/22/93		10.12	31.72	None
06/17/93		10.03	31.81	None
MW-6				
01/13/93	40.13	9.84	30.29	None
02/22/93		9.94	30.19	None
03/25/93		10.68	29.45	None
04/13/93		11.12	29.01	None
05/22/93		11.74	28.39	None
06/17/93		11.75	28.38	None
RW-1				
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	40.33	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
01/13/93		8.35	31.98	Product in skimmer
02/22/93		7.94*	32.39*	0.01
03/25/93		8.81	31.52	None
04/13/93		9.67**	NC**	Product not measured
05/22/93		10.04	30.29	Sheen
06/17/93		10.26*	30.07*	0.01 in bailer

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 obtain the adjusted groundwater elevations.

**Well contained product of unknown thickness. Groundwater elevation could not be corrected, therefore it was not used in gradient evaluation.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF WATER SAMPLES - TPHg and BTEX
ARCO Station 2035
Albany, California
(Page 1 of 2)

WELL DATE	TPHg	B	T	E	X
MW-1					
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	25	21	15
09/08/92	820	350	<5*	<5*	<5*
10/26/92	190	68	<0.5	0.6	<0.5
01/13/93	430	130	5.3	5.0	9.0
04/13/93	5,300	2,100	<20*	63	36
MW-2					
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
01/13/93	<50	<0.5	<0.5	<0.5	<0.5
04/13/93	<50	<0.5	<0.5	<0.5	<0.5
MW-3					
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
01/13/93	<50	1.1	<0.5	<0.5	<0.5
04/13/93	68	13	<0.5	1.6	1.1
MW-4					
01/13/93	<50	<0.5	1.3	<0.5	1.6
04/13/93	<50	<0.5	<0.5	<0.5	<0.5
MW-5					
01/13/93	<50	<0.5	<0.5	<0.5	<0.5
04/13/93	<50	<0.5	<0.5	<0.5	<0.5
MW-6					
01/13/93	<50	<0.5	<0.5	<0.5	<0.5
04/13/93	<50	<0.5	<0.5	<0.5	<0.5

See notes on Page 2 of 2

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

WELL DATE	TPHg	B	T	E	X
RW-1					
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				
01/13/93	Not sampled--floating product in skimmer				
04/13/93	Not sampled--floating product				
MCL:	—	1	—	680	1,750
DWAL:	—	—	100	—	—

Results in parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline using EPA Method 5030/8015/8020.
B: benzene, T: toluene, E: ethylbenzene, X: total xylenes isomers
BTEX: Analyzed using 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).

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Quarterly Groundwater Monitoring
ARCO Station 2035, Albany, California

July 19, 1993
69036.08

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

WELL DATE	TPHd	TOG	VOC	BNAs	PCB	Cd	Cr	Pb	Ni	Zn
MW-3										
10/29/91	NA	<5,000	ND[a]	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)[600]	ND[b]	NA	NA	NA	NA	NA	NA	NA
12/01/92	NA	NA	NA	ND[c]	ND[d]	NA	NA	NA	NA	NA
01/13/93	NA	(780)[1,100]	NA	NA	NA	NA	NA	NA	NA	NA
04/13/93	NA	(<0.5)[<0.5]	NA	NA	NA	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 5520B&F or 5520C (780) and 5520F [1.100].
VOC: Volatile organic compounds by EPA Method 624.
BNAs: 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.
[a]: All 37 compounds were nondetectable except for toluene (3.0 ppb).
[b]: All 41 compounds analyzed were nondetectable.
[c]: All 34 compounds analyzed were nondetectable.
[d]: All 7 compounds analyzed were nondetectable.
MCL: State Maximum Contaminant Level (October 1990).

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

Well / Date	Product Thickness (feet)	Product Recovered (gallons)
YEAR: 1992		
RW-1		
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
YEAR: 1993		
RW-1		
01/19/92	0.01	0.5
01/29/93	0.01	0.5
02/11/93	sheen	0
03/03/93	sheen	0
03/11/93	sheen	0
03/23/93	sheen	0
04/07/93	sheen	0
04/22/93	sheen	0
05/06/93	sheen	0
06/21/93	sheen	0
	1993 TOTAL:	0.5
	TOTAL 1992 and 1993:	**23.3**

Product measured and bailed by RESNA personnel.

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

RESNA'S FIELD REPORTS

EMCON Associates
1938 Junction Avenue • San Jose, California 95131-2102 • (408) 453-0719 • Fax (408) 453-0455

Date April 28, 1993
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
1	Depth To Water / Floating Product Survey Results
1	Summary of Groundwater Monitoring Data
1	Certified Analytical Reports with Chain-of-Custody
7	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the second quarter 1993 monitoring event at ARCO service station 2035, 1001 San Pablo Avenue, Albany, California. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT CURTIS PORTER
No: 4024
Exp. 6/30/94
INDUSTRIAL
STATE OF CALIFORNIA

Robert C 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 : 4/13/93

ARCO STATION # : 2035 FIELD TECHNICIAN : Reichelderfer/Horton DAY : Tuesday

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-4	good	yes	na	3259	yes	8.54	8.54	ND	ND	25.1	—
2	MW-5	good	yes	na	dolphin	yes	9.18	9.18	ND	ND	24.3	needs lock
3	MW-6	good	yes	no	dolphin	yes	11.12	11.12	ND	ND	24.3	needs lock
4	MW-2	good	yes	na	3259	yes	9.30	9.30	ND	ND	28.7	—
5	MW-3	good	yes	na	3259	yes	9.55	9.55	ND	ND	33.0	odor
6	MW-1	good	yes	na	3259	yes	8.91	8.91	ND	ND	29.6	odor
7	RW-1	good	yes	na	none	slip	9.67	9.67	*	*	25.6	*skimmer contained small amount of product skimmer was dirty, unable to see in order to take measurement

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
Second Quarter 1993
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[1] as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	Hydro-carbons IR (ppm)*	Total Oil and Grease (ppm)*
MW-1(29)	04/13/93	8.91	ND.[2]	5,300.	2,100.	<20.	63.	36.	NR.[3]	NR.
MW-2(28)	04/13/93	9.30	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-3(33)	04/13/93	9.55	ND.	68.	13.	<0.5	1.6	1.1	<0.5	<0.5
MW-4(25)	04/13/93	8.54	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-5(24)	04/13/93	9.18	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
MW-6(24)	04/13/93	11.12	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.	NR.
RW-1	04/13/93	9.67	FP.[4]	FP.	FP.	FP.	FP.	FP.	NR.	NR.
FB-1[5]	04/13/93	NA.[6]	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 analized for the above listed parameter
4. FP. = Floating product was detected in well, not sampled
5. FB. = Field blank
6. NA. = Not applicable
* = Reported as parts-per-million

Columbia Analytical Services, Inc.

April 27, 1993

Service Request No: SJ93-0502

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

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

Dear Mr. Butera:

Attached are the results of the water samples submitted to our lab on April 13, 1993. For your reference, these analyses have been assigned our service request number SJ93-0502.

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. 0G70-017.01
ARCO Facility No. 2035

Date Received: 04/13/93
Service Request No.: SJ93-0502
Sample Matrix: Water

Inorganic Parameters
mg/L (ppm)

Sample Name:			MW-3 (33)	Method Blank
Date Sampled:			04/13/93	
Analyte	**Method**	**MRL**		
Total Oil and Grease	SM 5520C	0.5	ND	ND
Hydrocarbons, IR	SM 5520F	0.5	ND	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
SM *Standard Methods for the Examination of Water and Wastewater*, 17th Ed., 1989

Approved by: Robert Murphy Date: April 27, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	04/13/93
Project:	EMCON Project No. 0G70-017.01	Service Request No.:	SJ93-0502
	ARCO Facility No. 2035	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 (28)	MW-3 (33)
Date Analyzed:		04/22/93	04/21/93 *	04/21/93 *
Analyte	**MRL**			
Benzene	0.5	2,100.	ND	13.
Toluene	0.5	<20. **	ND	ND
Ethylbenzene	0.5	63.	ND	1.6
Total Xylenes	0.5	36.	ND	1.1
TPH as Gasoline	50	5,300	ND	68.

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on April 21, 1993. However, it was analyzed after midnight so the actual date analyzed is April 22, 1993.
** Raised MRL due to high analyte concentration requiring sample dilution.

Approved by: Kevin Murphy Date: April 27, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	04/13/93
Project:	EMCON Project No. 0G70-017.01	Service Request No.:	SJ93-0502
	ARCO Facility No. 2035	Sample Matrix:	Water

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

Sample Name:		MW-4 (25)	MW-5 (24)	MW-6 (24)
Date Analyzed:		04/21/93 *	04/21/93 *	04/21/93 *
Analyte	MRL			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
***** This sample was part of the analytical batch started on April 21, 1993. However, it was analyzed after midnight so the actual date analyzed is April 22, 1993.

Approved by: Kevin Murphy Date: April 29, 1993

4224 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	04/13/93
Project:	EMCON Project No. 0G70-017.01	Service Request No.:	SJ93-0502
	ARCO Facility No. 2035	Sample Matrix:	Water

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

Sample Name:		FB-1	Method Blank	Method Blank
Date Analyzed:		04/21/93 *	04/21/93	04/22/93
Analyte	MRL			
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
* This sample was part of the analytical batch started on April 21, 1993. However, it was analyzed after midnight so the actual date analyzed is April 22, 1993.

Approved by: Kevin Murphy Date: April 27, 1993

1924 Pioneer Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9264

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	04/13/93
Project:	EMCON Project No. 0G70-017.01	**Service Request No.:**	SJ93-0502
	Arco Facility No. 2035	**Sample Matrix:**	Water

Continuing Calibration Summary
Inorganics
SM5520
mg/L

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Hydrocarbons, IR	100.	109.	109.	90-100

Approved by: K. Edward Murphy Date: April 27, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

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

Date Received: 04/13/93
Service Request No.: SJ93-0502
Sample Matrix: Water

Matrix Spike Summary
Inorganic Parameters
mg/L (ppm)

Sample Name: MW-3 (33)
Date Sampled: 04/13/93

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria
Total Oil and Grease	8.0	ND	6.5	6.7	81.	84.	56-151
Hydrocarbons, IR	8.0	ND	6.9	6.9	86.	86.	56-151

ND None Detected at or above the method reporting limit

Approved by: Kevin Murphy Date: April 7, 1993

4224 Pinewood Avenue • San Jose, California 95124 • Telephone 408/437-9400 • Fax 408/437-9454

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	04/13/93
Project:	EMCON Project No. 0G70-017.01	**Service Request No.:**	SJ93-0502
	ARCO Facility No. 2035	**Sample Matrix:**	Water

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

Date Analyzed: 04/21/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	25.	23.6	95.	85-115
Toluene	25.	24.6	98.	85-115
Ethylbenzene	25.	23.7	95.	85-115
Total Xylenes	75.	70.2	94.	85-115
TPH as Gasoline	250.	235.	94.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Kevin Murphy Date: April 27, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	04/13/93
Project:	EMCON Project No. 0G70-017.01	**Service Request No.:**	SJ93-0502
	ARCO Facility No. 2035	**Sample Matrix:**	Water

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

Sample Name	Date Analyzed	Percent Recovery *α,α,α*-Trifluorotoluene
MW-1 (29)	04/22/93	94.
MW-2 (28)	04/21/93	89.
MW-3 (33)	04/21/93	92.
MW-4 (25)	04/21/93	89.
MW-5 (24)	04/21/93	89.
MW-6 (24)	04/21/93	91.
FB-1	04/21/93	89.
MS	04/21/93	94.
DMS	04/21/93	92.
Method Blank	04/21/93	91.
Method Blank	04/22/93	89.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by: Kevin Murphy Date: April 27, 1993

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	**Date Received:**	04/13/93
Project:	EMCON Project No. 0G70-017.01	**Service Request No.:**	SJ93-0502
	ARCO Facility No. 2035	**Sample Matrix:**	Water

Matrix Spike/Duplicate Matrix Spike Summary
BTE
EPA Methods 5030/8020
µg/L (ppb)

Date Analyzed: 04/21/93

			Spike Result		Percent Recovery		CAS Acceptance
Analyte	Spike Level	Sample Result	MS	DMS	MS	DMS	Criteria
Benzene	250.	48.6	296.	300	99.	101.	76-122
Toluene	250.	2.8	268.	274.	106.	108.	75-127
Ethylbenzene	250.	29.8	291.	298.	104.	107.	70-135

Approved by: Kevin Murphy Date: April 27, 1993

APPENDIX B

CHAIN OF CUSTODY

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no. 2035 | City (Facility) Albany | Project manager (Consultant) JIM BUTERA

ARCO engineer Kyle Christie | Telephone no. (ARCO) 571-2434 | Telephone no. (Consultant) 453-0719 | Fax no. (Consultant) 453-0452

Consultant name EMCON ASSOCIATES | Address (Consultant) 1938 Junction Ave San Jose

Laboratory name: CAS

Contract number: 07077

Method of shipment: Sampler will deliver

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH GAS EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐ (5520C+F)	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1 (29)	1-2	2		X		X	HCl	4/13/93	13:25		X											
MW-2 (28)	3-4	2		X		X	↓	4/13/93	12:28		X											
MW-3 (33)	5-10	6		X		X	↓	4/13/93	13:00		X		X									
MW-4 (25)	11-12	2		X		X	↓	4/13/93	11:15		X											
MW-5 (24)	13-14	2		X		X	↓	4/13/93	11:35		X											
MW-6 (24)	15-16	2		X		X	↓	4/13/93	12:05		X											
~~RW-1 ( )~~		~~2~~		~~X~~		~~X~~	↓				~~X~~	no sample, well contained product										
FB-1	17-18	2		X		X	↓	4/13/93	11:18		X											

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40 ml VOA's
0670-017.01
4 Liter HCl GLASS

Lab number: 5592-0502

Condition of sample: OK

Temperature received: Cool

Relinquished by sampler	Date	Time	Received by
[signature]	4/13/93	16:05	
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory: [signature] Date 4-13-93 Time 16:05

Turnaround time:
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0070-017.01 SAMPLE ID: MW-1(89)

PURGED BY: Horton/Reichelderfer CLIENT NAME: ARCO#2035

SAMPLED BY: ↓ LOCATION: 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.): 13.51

DEPTH TO WATER (feet): 8.91 CALCULATED PURGE (gal.): 40.55

DEPTH OF WELL (feet): 29.6 ACTUAL PURGE VOL. (gal.): 41.0

DATE PURGED: 4/13/93 Start (2400 Hr) 13:15 End (2400 Hr) 13:22

DATE SAMPLED: 4/13/93 Start (2400 Hr) 13:24 End (2400 Hr) 13:25

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13:17	14	6.39	739	65.2	cloudy	slight
13:20	27.5	6.36	907	66.3	cloudy	slight
13:22	41	6.40	815	67.2	brown	mod.

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon ®)	___ 2" Bladder Pump	X Bailer (Teflon ®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 4/13/93 Time: 10:55 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-4

Signature: [signature] Reviewed By: JG Page 1 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-017.01 SAMPLE ID: MW-7(23)

PURGED BY: Horton/Reichelderfer CLIENT NAME: ARCO # 2035

SAMPLED BY: ↓ LOCATION: 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.):	12.67
DEPTH TO WATER (feet):	4.30	CALCULATED PURGE (gal.):	38.02
DEPTH OF WELL (feet):	28.7	ACTUAL PURGE VOL. (gal.):	38.5

DATE PURGED: 4/13/93 Start (2400 Hr) 12:15 End (2400 Hr) 12:24

DATE SAMPLED: 4/13/93 Start (2400 Hr) 12:27 End (2400 Hr) 12:28

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:19	13	6.62	772	67.3	cloudy	slight
12:21	25.5	6.54	787	67.6	brown	mod
12:24	38.5	6.58	778	67.9	brown	heavy

D. O. (ppm): NR ODOR: none

COLOR (COBALT 0 - 100): NR TURBIDITY (NTU 0 - 200): NR

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

PURGING EQUIPMENT				SAMPLING EQUIPMENT			
___	2" Bladder Pump	___	Bailer (Teflon®)	___	2" Bladder Pump	X	Bailer (Teflon®)
X	Centrifugal Pump	___	Bailer (PVC)	___	DDL Sampler	___	Bailer (Stainless Steel)
___	Submersible Pump	___	Bailer (Stainless Steel)	___	Dipper	___	Submersible Pump
___	Well Wizard™	___	Dedicated	___	Well Wizard™	___	Dedicated
Other: ___				Other: ___			

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 4/13/93 Time: 10:55 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-4

Signature: [signature] Reviewed By: JB Page 2 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-017.01 SAMPLE ID: MW-3(33)

PURGED BY: Horton/Reichelder CLIENT NAME: ARCO #2035

SAMPLED BY: ✓ LOCATION: 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.):	15.32
DEPTH TO WATER (feet):	9.55	CALCULATED PURGE (gal.):	45.96
DEPTH OF WELL (feet):	33.0	ACTUAL PURGE VOL. (gal.):	~~46.0~~ 28.5

DATE PURGED: 4/13/93 Start (2400 Hr) 12:44 End (2400 Hr) 12:52

DATE SAMPLED: 4/13/93 Start (2400 Hr) 12:59 End (2400 Hr) 13:00

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:50	15.5	6.56	760	65.0	cloudy	slight
12:52	___	Well Dried At 28.5 Gallons			___	___
13:00	recharge	6.57	738	62.7	brown	mod
___	___	___	___	___	___	___
___	___	___	___	___	___	___

D. O. (ppm): NR ODOR: moderate

NR (COBALT 0 - 100)	NR (NTU 0 - 200)

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 4/13/93 Time: 10:55 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-4

Signature: [signature] Reviewed By: JP Page 3 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-017.01 SAMPLE ID: MW-4(25)

PURGED BY: Horton / Reichelderfer CLIENT NAME: ARCO #203

SAMPLED BY: ↓ LOCATION: 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.):	10.81
DEPTH TO WATER (feet):	8.54	CALCULATED PURGE (gal.):	32.45
DEPTH OF WELL (feet):	25.1	ACTUAL PURGE VOL. (gal.):	32.5

DATE PURGED: 4/13/93 Start (2400 Hr) 10:57 End (2400 Hr) 11:11

DATE SAMPLED: 4/13/93 Start (2400 Hr) 11:14 End (2400 Hr) 11:15

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
11:07	11	6.07	620	65.9	brown	mod.
11:09	22	6.12	630	65.9	brown	heavy
11:11	32.5	6.14	650	65.7	brown	heavy

D. O. (ppm): NR ODOR: none NR (COBALT 0 - 100) NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 (11:18)

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 4/13/93 Time: 10:55 Meter Serial #: 9703 Temperature °F: 69.4

(EC 1000 1037 / 1000) (DI ___) (pH 7 7.02 / 7.00) (pH 10 9.96 / 10.00) (pH 4 4.00 / ___)

Location of previous calibration: ___

Signature: Steve Horton Reviewed By: JP Page 4 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-017.01 SAMPLE ID: MW-5(24)

PURGED BY: Horton/Reichelder for CLIENT NAME: ARCO # 70??

SAMPLED BY: ↓ LOCATION: 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.):	9.87
DEPTH TO WATER (feet):	9.18	CALCULATED PURGE (gal.):	29.63
DEPTH OF WELL (feet):	24.3	ACTUAL PURGE VOL. (gal.):	30 C

DATE PURGED: 4/13/93 Start (2400 Hr) 11:25 End (2400 Hr) 11:32

DATE SAMPLED: 4/13/93 Start (2400 Hr) 11:34 End (2400 Hr) 11:35

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
11:28	10	6.03	684	64.4	brown	mod.
11:30	20	6.33	629	64.0	brown	heavy
11:32	30	6.39	673	64.6	brown	heavy

D. O. (ppm): NR ODOR: none NR (COBALT 0 - 100) NR (NTU 0 - 200)

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: Dolphin [illegible]

REMARKS: ___

Meter Calibration: Date: 4/13/93 Time: 10:55 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-4

Signature: [signature] Reviewed By: JB Page 5 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OC70-017.01 SAMPLE ID: MW-4(24)

PURGED BY: Horton/Reichelderfer CLIENT NAME: ARCO #2035

SAMPLED BY: ↓ LOCATION: Albany, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	2.15
DEPTH TO WATER (feet):	11.12	CALCULATED PURGE (gal.):	6.45
DEPTH OF WELL (feet):	24.3	ACTUAL PURGE VOL. (gal.):	6.50

DATE PURGED: 4/13/93 Start (2400 Hr) 11:55 End (2400 Hr) 12:03

DATE SAMPLED: 4/13/93 Start (2400 Hr) 12:04 End (2400 Hr) 12:05

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:00	2.5	6.53	974	69.3	brown	heavy
12:01	4.5	6.72	863	68.1	brown	heavy
12:03	6.5	6.81	877	67.7	brown	heavy

D. O. (ppm): NR ODOR: none COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: Dolphin 3000

REMARKS: ___

Meter Calibration: Date: 4/13/93 Time: 10:55 Meter Serial #: 9703 Temperature °F: ___

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

Location of previous calibration: MW-4

Signature: Stan Horton Reviewed By: JS Page 6 of 7

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-017.01 SAMPLE ID: RW-1

PURGED BY: Horton/Reichelderfer CLIENT NAME: ARCO #2035

SAMPLED BY: ↓ LOCATION: Albany, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

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

DEPTH TO WATER (feet): 9.67 CALCULATED PURGE (gal.): ___

DEPTH OF WELL (feet): 25.6 ACTUAL PURGE VOL. (gal.): ___

DATE PURGED: 4/13/93 Start (2400 Hr) ___ End (2400 Hr) ___

DATE SAMPLED: 4/13/93 Start (2400 Hr) ___ End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
		No Sample, Well Contained Product				

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon ®)	___ 2" Bladder Pump	___ Bailer (Teflon ®)
___ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: NA		Other: NA	

WELL INTEGRITY: Good LOCK #: ~~Good~~ none

REMARKS: 0.01 feet of Product measured in well.

Meter Calibration: Date: 4/13/93 Time: 10:55 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 1 of 7

EMCON Associates
1938 Junction Avenue • San Jose, California 95131-2102 • **(408) 453-0719** • Fax (408) 453-0452

Date June 3, 1993
Project 0G70-017.01

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

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	May 1993 monthly water level survey, ARCO
	station 2035, 1001 San Pablo Avenue, Albany, CA

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

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4084 EXP. 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

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 : 5-22-13

ARCO STATION # : 2035 FIELD TECHNICIAN : K REICHELDERFER DAY : SATURDAY

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	OK	3259	OK	10.57	10.56	ND	NA	28.7	—
2	**MW-4**	OK	YES	OK	3259	OK	9.52	9.52	ND	NA	25.1	—
3	**MW-5**	OK	YES	OK	DOLPHIN	OK	10.12	10.12	ND	NA	24.3	REPLACED DOLPHIN LOCK 4/3900
4	**MW-6**	OK	YES	OK	DOLPHIN	OK	11.74	11.74	ND	NA	24.3	COULDN'T CHANGE LOCK BECAUSE MY DOLPHIN KEY SNAPPED OFF INSIDE OF LOCK (LOCK WAS RUSTY)
5	**MW-3**	OK	YES	OK	3259	OK	10.56	10.56	ND	NA	32.9	WELL UNDER PRESSURE
6	**MW-1**	OK	YES	OK	3259	OK	9.68	9.68	ND	NA	29.6	LWC WAS COMPLETELY OFF CASING
7	**RW-1**	OK	YES	OK	NO	SLIP CAP	10.04	10.04	ND	NA	25.1	SKIMMER IN WELL / STRONG ODOR VERY DIFFICULT TO SEE "INTO" SKIMMER BECAUSE IT IS VERY DIRTY - THEREFORE I COULDN'T TELL IF SKIMMER CONTAINED PRODUCT (SHEEN ON MMC THAT HAD A VERY STRONG ODOR

SURVEY POINTS ARE TOP OF WELL CASINGS

EMCON Associates
1938 Junction Avenue • San Jose, California 95131-2102 • **(408) 453-0719** • Fax (408) 453-0452

Date June 21, 1993
Project 0G70-017.01

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

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	June 1993 monthly water level survey, ARCO
	station 2035, 1001 San Pablo Avenue, Albany, CA

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, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-017.01 STATION ADDRESS : 1001 San Pablo Ave. Albany, CA DATE : 6-17-93

ARCO STATION # : 2035 FIELD TECHNICIAN : REICHELDERFER/GALLEGOS DAY : THURSDAY

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	15/16	OK	3259	OK	10.25	10.25	ND	NA	28.7	—
2	MW-4	OK	15/16	OK	3259	OK	9.53	9.53	ND	NA	25.0	—
3	MW-5	OK	15/16	OK	3900	OK	10.03	10.03	ND	NA	24.2	—
4	MW-6	OK	15/16	OK	~~dolphin~~	OK	11.75	11.75	ND	NA	24.2	INSTALLED 3900 LOCK
5	MW-3	OK	15/16	OK	3259	OK	10.41	10.41	ND	NA	32.8	—
6	MW-1	OK	15/16	OK	3259	OK	9.68	9.68	ND	NA	29.6	—
7	RW-1	OK	15/16	OK	none	Slip	10.27	10.27	ND	NA	25.0	STRONG ODOR - DIDN'T LOOK LIKE THERE WAS PRODUCT IN SKIMMER (SKIMMER IS DARK - HARD TO SEE INSIDE) (0.01 IN BAILER)

SURVEY POINTS ARE TOP OF WELL CASINGS

FIELD REPORT
SKIMMER INSPECTION/FLOATING PRODUCT REMOVAL

DATE: 4-7-93

SITE: Arco 2035

ADDRESS: Albany

JOB #: 60036.13

FIELD TECHNICIAN: [illegible]

WELL NO/ TIME	ODOR (OBS)	SHEEN (H,M,S-EMUL., COLOR)	PROD(FRESH (TRANSCLU-SCENT), DEGRADED(DK.BR.), AS-PHALTINE(DK, VISCOUS)	WELL ELEV	DTP	DTW	TOT. DET.	WAT. EL.
MW-1	Sheen only/Degraded					9.11		
			Gasoline					

PRODUCT REMOVED:

Notes:

FIELD REPORT
SKIMMER INSPECTION/FLOATING PRODUCT REMOVAL

DATE: 4/22/93

SITE: ARCO 2035

ADDRESS: 1001 San Pablo Ave, Albany

JOB #: 69036.08

FIELD TECHNICIAN: B. Gieniecki

WELL NO/ TIME	ODOR (OBS)	SHEEN (H,M,S-EMUL., COLOR)	PROD(FRESH (TRANSCLU-SCENT), DEGRADED(DK.BR.),ASPHALTINE(DK,VISCOUS)	WELL ELEV	DTP	DTW	TOT. DET.	WAT. EL.
RW-1	strong	yes	no			9.50		

PRODUCT REMOVED: ~~0~~

Notes:

FIELD REPORT
SKIMMER INSPECTION/FLOATING PRODUCT REMOVAL

DATE: 5/6/93

SITE: ARCO 2035

ADDRESS: 1001 San Pablo Ave, Albany

JOB #: 69036.08

FIELD TECHNICIAN: B. Sieminski

WELL NO/ TIME	ODOR (OBS)	SHEEN (H,M,S-EMUL., COLOR)	PROD(FRESH (TRANSCLU-SCENT), DEGRADED(D K.BR.),AS-PHALTINE(D K,VISCOUS)	WELL ELEV	DTP	DTW	TOT. DET.	WAT. EL.
RW-1	strong	yes	no			9.88		

PRODUCT REMOVED: None

Notes: