Applied GeoSystems, Inc.
A RESNA Company

RESNA
Working To Restore Nature

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
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TRANSMITTAL

TO: Mr. Scott Seery
Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, California 94621

DATE: September 25, 1992
PROJECT NUMBER: 60006.03
SUBJECT: Final - Second Quarter 1992 Quarterly Groundwater Monitoring at ARCO Station 6041, 7249 Village Parkway, Dublin, California.

FROM: Erin McLucas
TITLE: Staff Geologist

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	9/25/92	Final - Second Quarter 1992, Groundwater Monitoring at the above subject site.

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REMARKS: cc: Mr. H.C. Winsor, ARCO Products Company
Mr. Michael Whelan, ARCO Products Company
Mr. Richard Hiett, CRWQCB, San Francisco Bay Region
Mr. Joel Coffman, RESNA Industries Inc.

Copies: 1 to RESNA project file no. 60006.03

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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Second Quarter 1992
at
ARCO Station 6041
7249 Village Parkway
Dublin, California

60006.03

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3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
Fax: (408) 264-2435

September 25, 1992
0924MWHE
60006.03

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

Subject: Second Quarter 1992 Groundwater Monitoring Report for ARCO Station 6041, 7249 Village Parkway, Dublin, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), this letter report summarizes the results of second quarter 1992 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, 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 a reported minor fuel spill 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-water (DTW), 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 direction of EMCON; evaluation and warrant of their field data and field protocols is beyond RESNA Industries Inc.'s (RESNA's) scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analyses data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

The operating ARCO Station 6041 is located in the northern corner of the intersection of Village Parkway and Amador Valley Boulevard in a commercial and residential area at 7249 Village Parkway, in Dublin, California, as shown on the Site Vicinity Map, Plate 1.

Prior to the present monitoring, RESNA (formerly Applied GeoSystems [AGS]) performed the following environmental and subsurface investigations for the site. On June 6 and 7,

1990, RESNA supervised the excavation and removal of one 550-gallon waste-oil tank (AGS, September 1990). It was decided that extensive excavation of soil beneath the tank was not necessary because: 1) field observations during tank removal indicted the tank appeared to be in good condition, and 2) laboratory analyses results indicated the soil beneath the tank had not been impacted by petroleum hydrocarbons. On September 25, 1990, a spill of approximately 10 gallons (estimated by Tom Hathocox of Dogherty Regional Fire Department) was reported. In September 1991, RESNA initiated a subsurface environmental investigation, which included drilling three soil borings (B-1 through B-3), collecting soil samples from the borings, constructing 4-inch-diameter groundwater monitoring wells in the borings (MW-1 through MW-3, respectively), and developing and sampling the monitoring wells (RESNA, February 1992). The location of the groundwater monitoring wells, borings, and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

DTW measurements were performed by EMCON field personnel on April 24, May 15, and June 9, 1992. Quarterly sampling was performed by EMCON field personnel on June 9, 1992. The results of EMCON's field work on the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in MW-1 through MW-3 are presented on EMCON's field report sheets, and EMCON's Summary of Groundwater Monitoring Data. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater from MW-1 through MW-3 for this quarter and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. EMCON's DTW measurements were used to evaluate groundwater elevations. Evidence of product or sheen was not observed by EMCON's field personnel during this quarterly monitoring (see EMCON's field report sheets, Appendix A). Groundwater elevations in wells MW-1 through MW-3 decreased approximately 0.5 feet between April 24 and June 9, 1992. The groundwater gradients interpreted from the April, May, and June 1992 groundwater monitoring episodes as shown on the Groundwater Gradient Maps, Plates 3 through 5. The groundwater gradients interpreted from EMCON's DTW measurements were essentially flat (less than 0.01), and gradient directions were interpreted to be generally toward the west-southwest in April, and south-southwest in May and June.

Groundwater monitoring wells MW-1 through MW-3 were purged and sampled by EMCON field personnel on June 9, 1992. EMCON's water sample field data sheets are included in Appendix A. Approximately five well volumes were purged from each groundwater

monitoring well prior to collecting the groundwater samples. 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.

Laboratory Methods and Analyses

Under the direction of EMCON, water samples collected from the wells were analyzed by Columbia Analytical Services, Inc., located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426). The water samples from MW-1 through MW-3 were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using modified Environmental Protection Agency (EPA) Methods 5030/8020. Concentrations of TPHg and benzene in the groundwater are shown on Plate 6, TPHg/Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analysis Reports are attached in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples.

Results of this quarter's groundwater monitoring indicate:

- TPHg was detected in groundwater from MW-2 at a concentration of 120 parts per billion (ppb), MW-1 at a concentration of 700 ppb, and from MW-3 at a concentration of 1,800 ppb.

- Benzene was detected in groundwater from MW-1 at a concentration of 8.8 ppb, from MW-2 at a concentration of 3.7 ppb, and from MW-3 at a concentration of 290 ppb. The concentrations of benzene in wells MW-1 through MW-3 exceed the State of California Department of Health Services (DHS) Maximum Contaminant Level (MCL) of 1.0 ppb benzene for drinking water.

- Toluene was detected in the groundwater from MW-1 at a concentration of 15 ppb and MW-3 at a concentration of 2.4 ppb. Toluene was nondetectable in the groundwater from MW-2 (<0.5 ppb). The concentrations of toluene in the groundwater from MW-1 and MW-3 were less than the DHS recommended drinking water action level (DWAL) of 100 ppb.

- Ethylbenzene was detected in groundwater from MW-1, MW-2, and MW-3, and ranged between 5.7 and 49 ppb. The concentrations of ethylbenzene in wells MW-1 through MW-3 were less than the MCL of 680 ppb.

- Total xylenes were detected in groundwater from MW-1 and MW-3, with concentrations of 18 ppb and 17 ppb respectively. The concentrations of total xylenes in wells MW-1 and MW-3 were less than the MCL of 1,750 ppb.

The following general trends were noted in reported hydrocarbon concentrations in groundwater from the three monitoring wells. Concentrations of TPHg and BTEX in groundwater monitoring wells MW-1 and MW-2 were generally consistent with previous analytical results. The concentrations of TPHg and BTEX in well MW-3 have fluctuated since initial sampling in September 1991, but are generally consistent with September and December 1991 analytical data. The March 1992 analytical data for MW-3 indicates lower concentrations of TPHg and BTEX; the sampling event coincides with a seasonal low water level.

Conclusions

Groundwater on this site has been impacted by gasoline hydrocarbons; the lateral extent of petroleum hydrocarbons has not been delineated. Additional recommendations will be included under separate cover.

RESNA concludes that monthly groundwater monitoring and quarterly groundwater sampling, including analyses of groundwater for TPHg and BTEX, should continue at the site. This will provide data to monitor groundwater flow direction and gradient and to evaluate changes in concentrations of petroleum hydrocarbons in groundwater.

It is recommended that copies of this report be forwarded to:

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

Mr. Richard Hiett
California 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

REGISTERED GEOLOGIST
JAMES LEWIS NELSON
No. 1463
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

James L. Nelson
Certified Engineering Geologist 1463

cc: H.C. Winsor, ARCO Products Company

RESNA

Enclosures: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, April 24, 1992
Plate 4, Groundwater Gradient Map, May 15, 1992
Plate 5, Groundwater Gradient Map, June 6, 1992
Plate 6, TPHg Concentration in Groundwater, June 9, 1992

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples

Appendix A: EMCON's Field Reports (2), Depth To Water/Floating Product Survey Results, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain of Custody, Water Sample Field Data Sheets

Monitoring Well Purge Water Disposal Form

REFERENCES

Alameda County Flood Control and Water Conservation District, Zone 7. January 16, 1991. Fall 1990 groundwater Level Report.

Applied GeoSystems. September 19, 1990. Letter Report Limited Environmental Investigation Related to the Removal of Waste-Oil Tank at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006-1.

California Department of Water Resources, 1974. Evaluation of Ground-Water Resources Engineering Livermore and Sunol Valleys; Bulletin No. 118-2, Appendix A.

RESNA. August 22, 1991. Work Plan for Subsurface Investigation and Remediation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02.

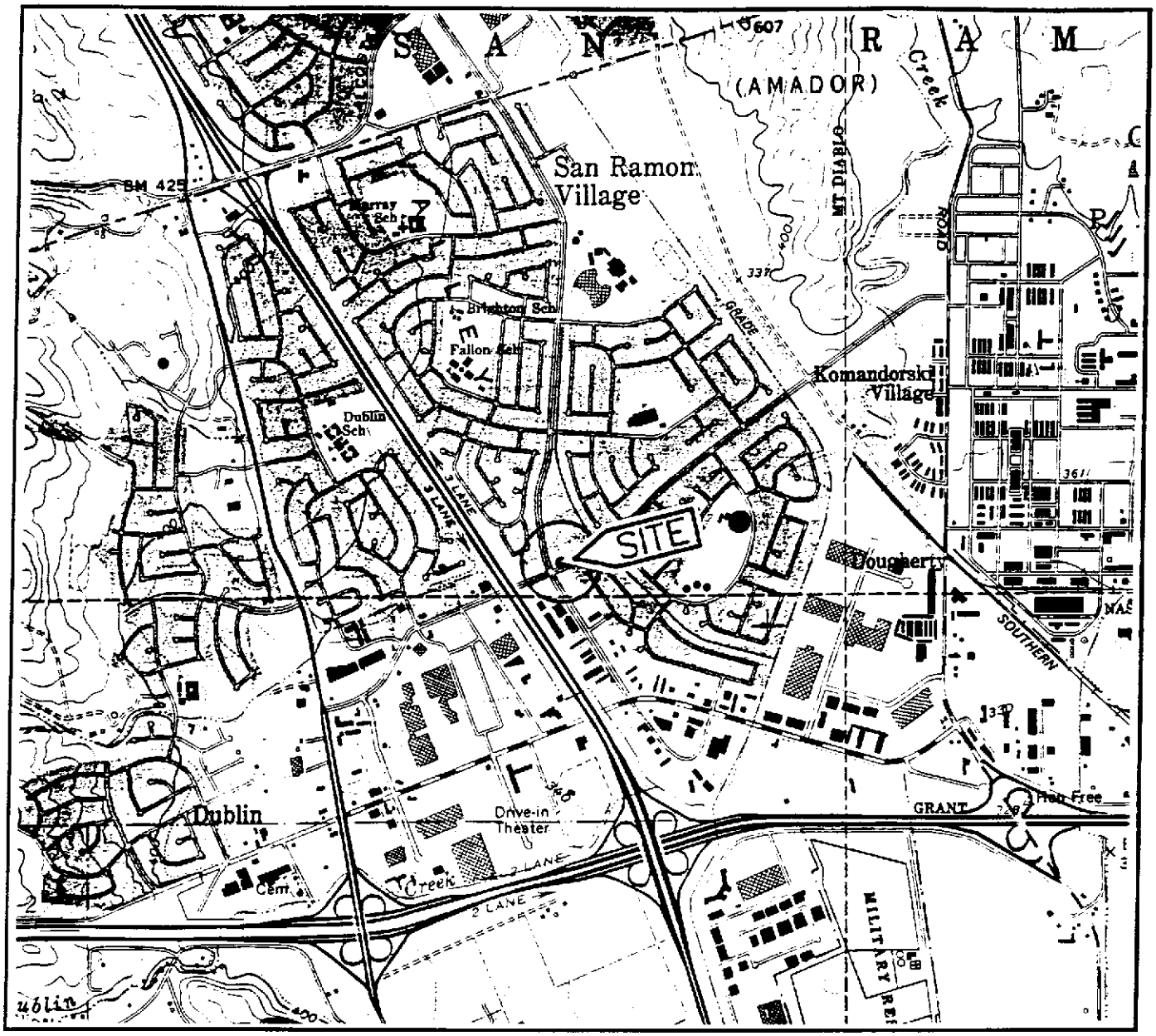
RESNA. August 22, 1991. Addendum One to Work Plan for Subsurface Investigation and Remediation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02.

RESNA. August 30, 1991. Site Safety Plan. 60006.02S.

RESNA. February 12, 1992. Subsurface Environmental Investigation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02

RESNA. March 7, 1992. Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1992 at ARCO Station, 6041, 7249 Village Parkway, Dublin, California. 60006.03

RESNA. May 1, 1992. Letter Report, Quarterly Groundwater Monitoring, First Quarter 1992 at ARCO Station, 6041, 7249 Village Parkway, Dublin, California. 60006.03



Base: U.S. Geological Survey
7.5–Minute Quadrangle
Dublin, California
Photorevised 1980

LEGEND

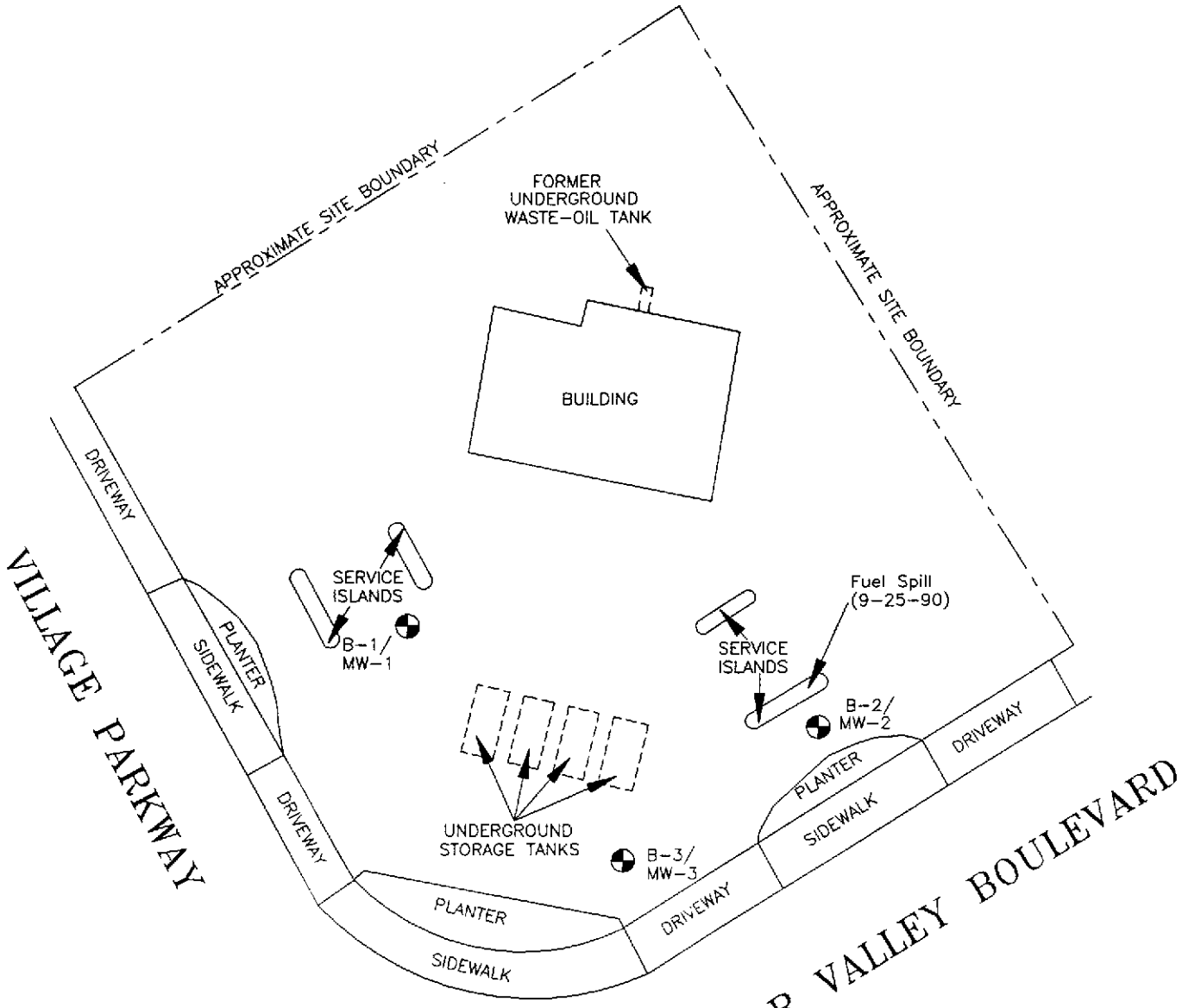
◉ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

RESNA	**SITE VICINITY MAP** **ARCO Service Station 6041** **7249 Village Parkway** **Dublin, California**	**PLATE** **1**
PROJECT 60006.03		



EXPLANATION

B-3/ MW-3 = Boring/groundwater monitoring well (RESNA, Sept. 1991)

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by ARCO.

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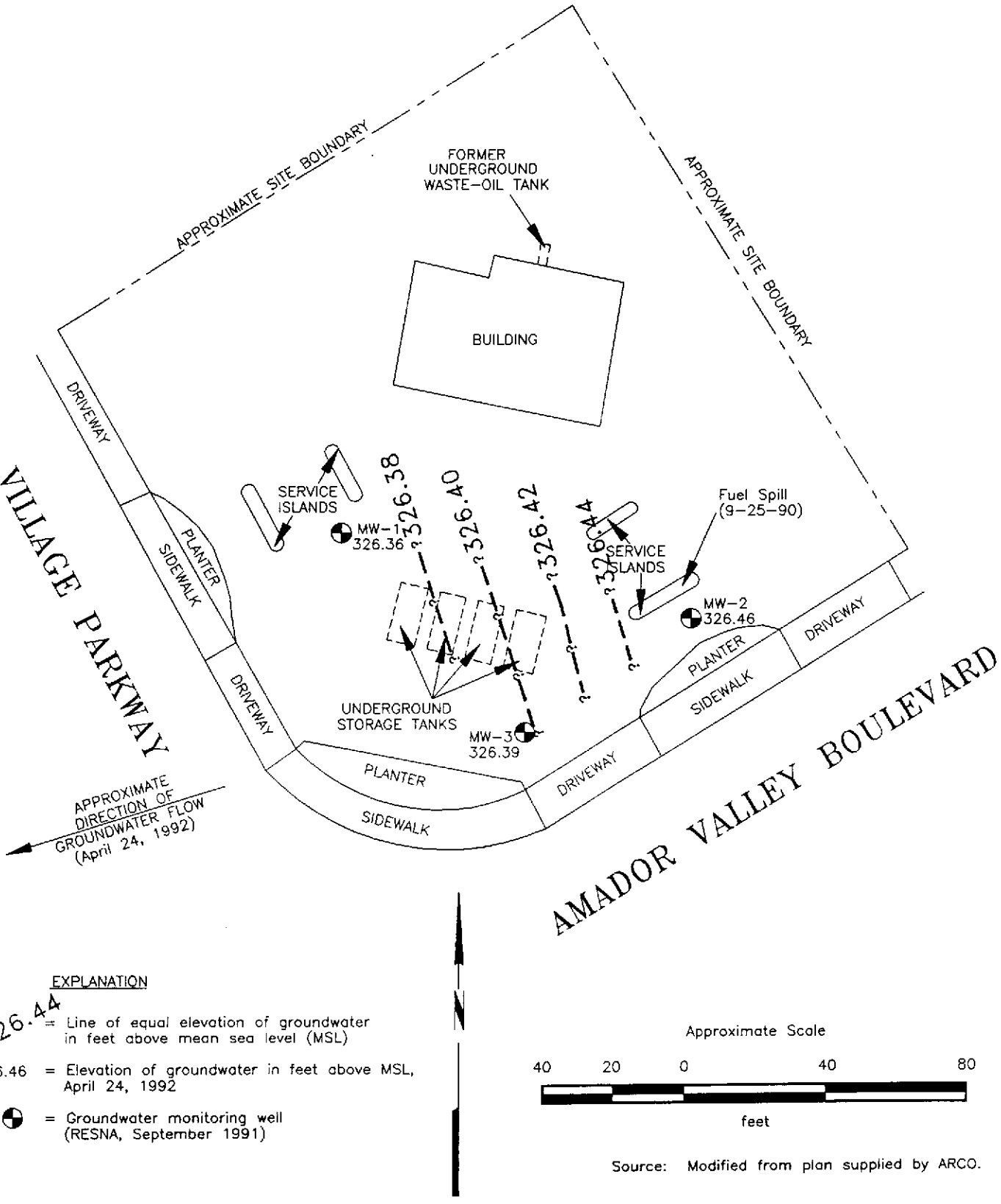
PROJECT 60006.03

GENERALIZED SITE PLAN
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
2



Source: Modified from plan supplied by ARCO.

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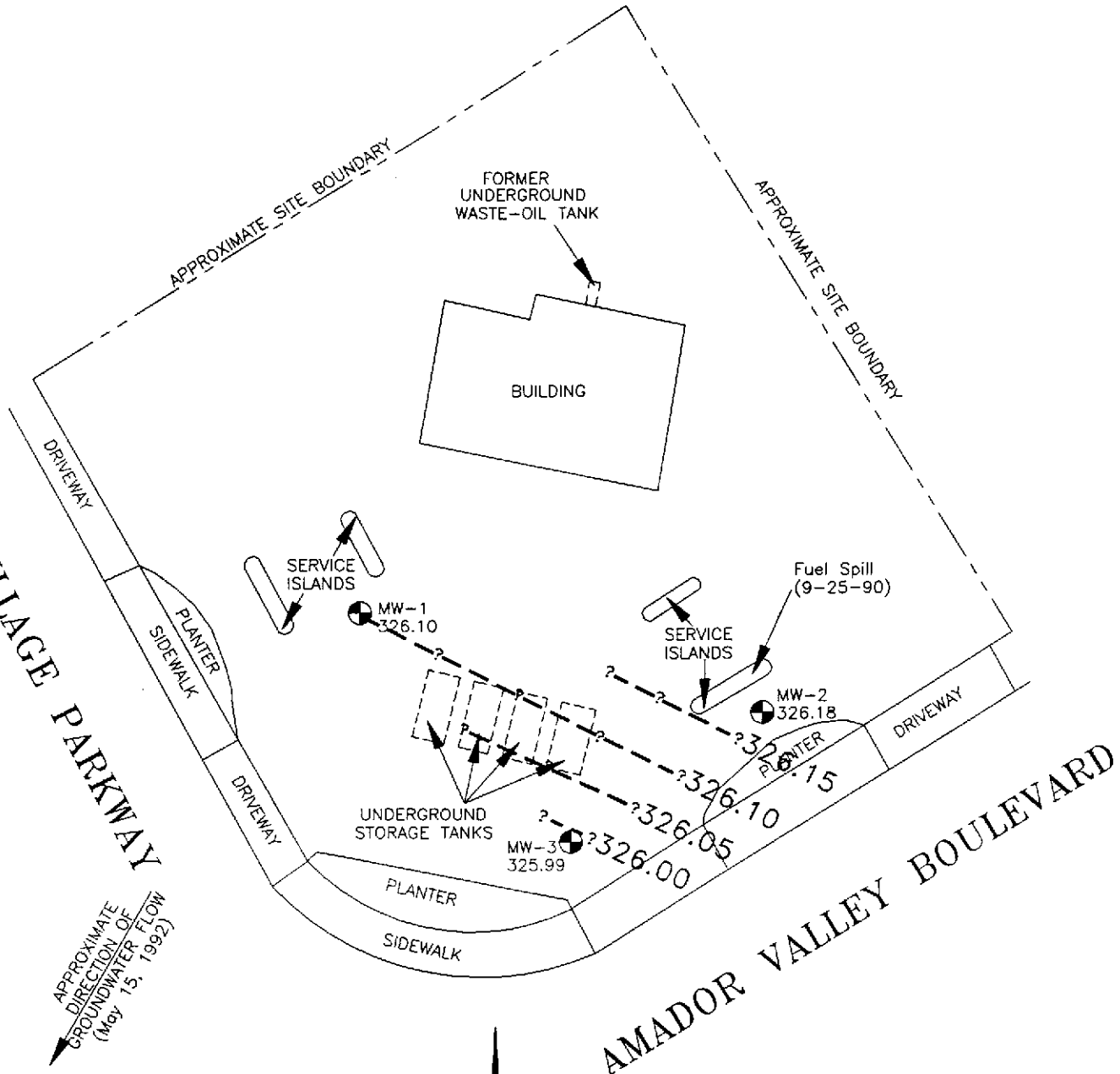
PROJECT 60006.03

GROUNDWATER GRADIENT MAP
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
3



EXPLANATION

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

326.18 = Elevation of groundwater in feet above MSL, May 15, 1992

MW-3 = Groundwater monitoring well (RESNA, September 1991)

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by ARCO.

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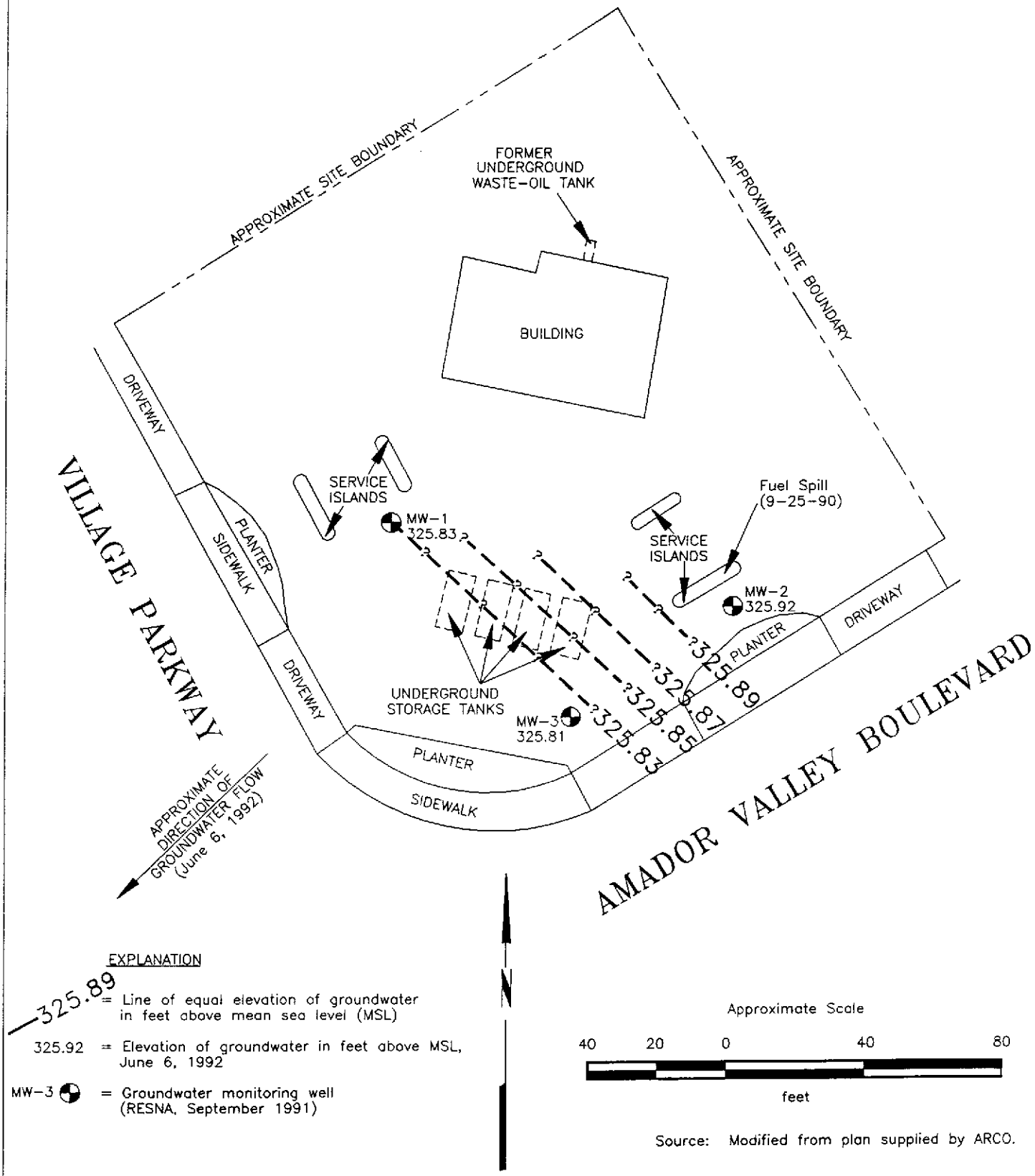
PROJECT 60006.03

GROUNDWATER GRADIENT MAP
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 4



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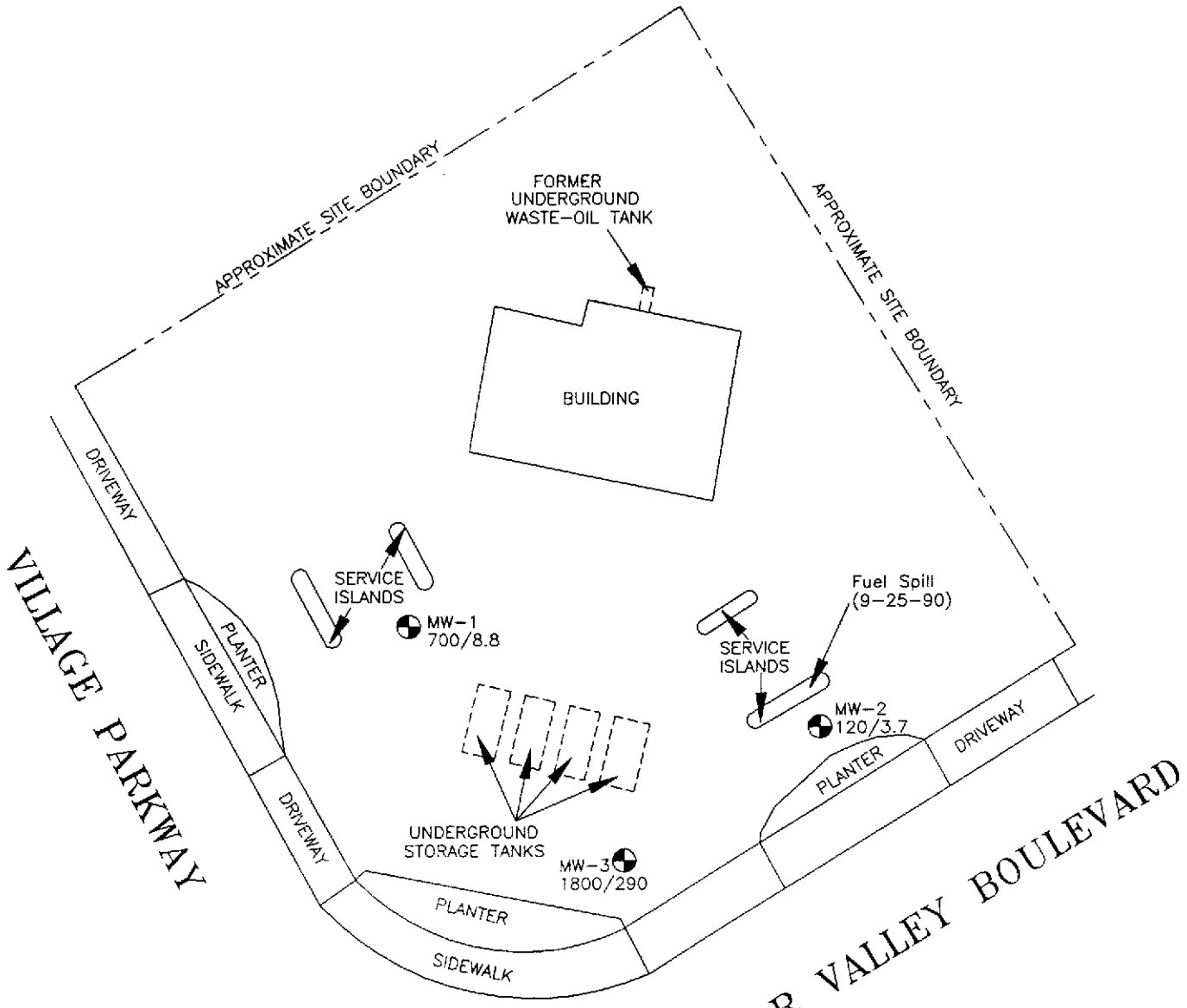
GROUNDWATER GRADIENT MAP
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 5



EXPLANATION

1800/290 = Concentration of TPHg/Benzene in groundwater, in ppb, June 9, 1992

MW-3 = Groundwater monitoring well (RESNA, September 1991)

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by ARCO.

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PROJECT 60006.03

TPHg/BENZENE CONCENTRATIONS IN GROUNDWATER
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 6

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6041
Dublin, California

Date Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-1				
09-20-91	336.56	11.20	325.36	None
10-22-91		11.48	325.08	None
11-27-91		11.27	325.29	None
12-16-91		11.55	325.01	None
01-18-92		11.37	325.19	None
02-21-92		9.13	327.43	None
03-16-92		9.70	326.86	None
04-24-92		10.20	326.36	None
05-15-92		10.46	326.10	None
06-09-92		10.73	325.83	None
MW-2				
09-20-91	334.80	9.22	325.58	None
10-22-91		9.66	325.14	None
11-27-91		9.48	325.32	None
12-16-91		9.76	325.04	None
01-18-92		9.47	325.33	None
02-21-92		7.62	327.18	None
03-16-92		7.84	326.96	None
04-24-92		8.34	326.46	None
05-15-92		8.62	326.18	None
06-09-92		8.88	325.92	None
MW-3				
09-20-91	335.53	10.16	325.37	None
10-22-91		10.48	325.05	None
11-27-91		10.17	325.36	None
12-16-91		10.25	325.28	None
01-18-92		10.71	324.82	None
02-21-92		8.68	326.85	None
03-16-92		8.91	326.62	None
04-24-92		9.14	326.39	None
05-15-92		9.54	325.99	None
06-09-92		9.72	325.81	None

Measurements in feet.
Wells surveyed on October 11, 1991. Datum is City of Dublin = (USGS)

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 6041
Dublin, California

Well Date	TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes
MW-1					
09-20-91	410	28	36	4.3	89
12-16-91	840	50	50	3.9	12
03-16-92	780	22	12	45	22
06-09-92	700	8.8	15	16	18
MW-2					
09-20-91	130	6.6	0.96	1.4	1.5
12-16-91	83	0.96	<0.30	<0.30	<0.30
03-16-92	430	130	<2.5*	37	5.0
06-09-92	120	3.7	<0.5	5.7	<0.5
MW-3					
09-20-91	990	50	100	11	200
12-16-91	1,000	180	5.1	23	4.3
03-16-92	430	86	<1.0*	22	3.4
06-09-92	1,800	290	2.4	49	17
MCL	—	1	—	680	1,750
DWAL	—	—	100	—	—

Results in parts per billion (ppb)
Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 5030/8015/8020.
TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Method 5030/8015/8020).
MCL: Maximum contaminant level in drinking water (DHS, October 1990)
DWAL: Department of Health Services Recommended drinking water action level (DHS, October 1990).
*: Raised method reporting limit due to high analyte concentration requiring sample dilution, as reported by Columbia Analytical Services, Inc.
Sample Identification: MW-3
└— Monitoring well number

APPENDIX A

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

MONITORING WELL PURGE WATER DISPOSAL FORM

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date April 27, 1992
Project G70-35.01

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
	April 1992 monthly water level survey, ARCO
	station 6041, 7249 Village Parkway, Dublin, 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:

REGISTERED PROFESSIONAL ENGINEER No: 4084 Exp. 6/30/92 INDUSTRIAL STATE OF CALIFORNIA

Mark Knuttel MK

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-35.01 STATION ADDRESS : 7249 Village Parkway, Dublin, CA DATE : 4-24-92

ARCO STATION # : 6041 FIELD TECHNICIAN : Mark Knuttel DAY : Friday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-3	OK	YES	✓	3259	YES	9.14	9.14	ND	ND	14.68	—
2	MW-1	OK	YES	✓	3259	YES	10.20	10.21	ND	ND	17.54	—
3	MW-2	OK	YES	✓	3259	YES	8.34	8.34	ND	ND	14.06	—

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
MAY 2[illegible]
RESNA
SAN JOSE

Date May 19, 1992
Project G70-35.01

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
	May 1992 monthly water level survey, ARCO
	station 6041, 7249 Village Parkway, Dublin, 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:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4004 Exp. 6/30/92 INDUSTRIAL STATE OF CALIFORNIA

Jim Butera JB

Robert Porter, Senior Project Engineer.

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

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-35.01 STATION ADDRESS : 7249 Village Parkway, Dublin, CA DATE : 5·15·92

ARCO STATION # : 6041 FIELD TECHNICIAN : BUTERA DAY : FRIDAY

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-3	OK	15/16	OK	3259	YES	9.54	9.54	ND	NA	14.7	—
2	MW-1	OK	15/16	OK	3259	YES	10.46	10.46	ND	NA	17.5	—
3	MW-2	OK	15/16	OK NA	3259	YES	8.61	8.61	ND	NA	14.1	—

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date July 1, 1992
Project G70-35.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95050

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
3	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the second quarter 1992 monitoring event at ARCO service station 6041, 7249 Village Parkway, Dublin, California. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Reviewed by

Jim Butera JB

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4094 Exp. 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-35.01 STATION ADDRESS : 7249 Village Parkway, Dublin, CA DATE : 6-9-92

ARCO STATION # : 6041 FIELD TECHNICIAN : S. Williams 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-3	✓	✓	✓	✓		9.72	9.73	ND	NA	14.72	-
2	MW-2	✓	✓	✓	✓	✓	8.88	8.89	ND	NA	14.0	-
3	MW-1	✓	✓	✓	✓	✓	11.[illegible]	10.[illegible]	ND	NA	14.[illegible]	-

Summary of Groundwater Monitoring Data
Second Quarter 1992
ARCO Service Station 6041
7249 Village Parkway, Dublin, 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)
MW-1(16)	06/09/92	10.73	ND.[2]	700.	8.8	15.	16.	18.
MW-2(13)	06/09/92	8.88	ND.	120.	3.7	<0.5	5.7	<0.5
MW-3(14)	06/09/92	9.72	ND.	1,800.	290.	2.4	49.	17.
FB-1[3]	06/09/92	NA.[4]	NA.	<50	<0.5	<0.5	<0.5	<0.5

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. FB. = Field blank
4. NA. = Not applicable

Columbia Analytical Services Inc.

June 24, 1992

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

Re: **EMCON Project No. G70-35.01**
Arco Facility No. 6041

Dear Mr. Butera:

Enclosed are the results of the water samples submitted to our lab on June 11, 1992. For your reference, our service request number for this work is SJ92-0721.

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.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

le/KAM

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	06/11/92
Project:	EMCON Project No. G70-35.01	Work Order #:	SJ92-0721
	Arco Facility No. 6041	Sample Matrix:	Water

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

Sample Name:		MW-1 (16)	MW-2 (13)	MW-3 (14)
Date Analyzed:		06/18/92	06/19/92	06/18/92
Analyte	**MRL**			
Benzene	0.5	8.8	3.7	290.
Toluene	0.5	15.	ND	2.4
Ethylbenzene	0.5	16.	5.7	49.
Total Xylenes	0.5	18.	ND	17.
TPH as Gasoline	50	700.	120.	1,800.

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

Approved by Kenneth Minyard Date June 24, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	06/11/92
Project:	EMCON Project No. G70-35.01	Work Order #:	SJ92-0721
	Arco Facility No. 6041	Sample Matrix:	Water

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

Sample Name:		FB-1	Method Blank	Method Blank
Date Analyzed:		06/18/92	06/18/92	06/19/92
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

Approved by Kevin Mayhew Date June 29, 1992

Client: EMCON Associates
Project: EMCON Project No. G70-35.01
Arco Facility No. 6041

Date Received: 06/11/92
Work Order #: SJ92-0721
Sample Matrix: Water

QA/QC Report
Continuing Calibration Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
Nanograms

Date Analyzed: 06/18/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	250.	247.	99.	85-115
Toluene	250.	269.	107.	85-115
Ethylbenzene	250.	260.	104.	85-115
Total Xylenes	750.	743.	99.	85-115
TPH as Gasoline	2,500.	2,694.	108.	90-110

Date Analyzed: 06/19/92

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	250.	248.	99.	85-115
Toluene	250.	267.	107.	85-115
Ethylbenzene	250.	257.	103.	85-115
Total Xylenes	750.	745.	99.	85-115
TPH as Gasoline	2,500.	2,482.	99.	90-110

TPH Total Petroleum Hydrocarbons

Approved by Kevin Murphy Date June 24, 1992

Client: EMCON Associates
Project: EMCON Project No. G70-35.01
Arco Facility No. 6041

Date Received: 06/11/92
Work Order #: SJ92-0721
Sample Matrix: Water

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

Sample Name	Date Analyzed	Percent Recovery *a,a,a*-Trifluorotoluene
MW-1 (16)	06/18/92	118.
MW-2 (13)	06/19/92	110.
MW-3 (14)	06/18/92	110.
FB-1	06/18/92	112.
MS	06/18/92	106.
DMS	06/18/92	102.
Method Blank	06/18/92	111.
Method Blank	06/19/92	108.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by Kenneth Murphy Date June 24, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Client: EMCON Associates
Project: EMCON Project No. G70-35.01
Arco Facility No. 6041

Date Received: 06/11/92
Work Order #: SJ92-0721
Sample Matrix: Water

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

Date Analyzed: 06/18/92

Analytes	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	Acceptance Criteria
Benzene	25.	ND	25.8	26.2	103.	105.	39-150
Toluene	25.	ND	27.1	27.4	108.	110.	46-148
Ethylbenzene	25.	ND	27.0	27.3	108.	109.	32-160

ND None Detected at or above the method reporting limit

Approved by Scott Wright Date June 24, 1992

ARCO Products Company
Division of Atlantic Richfield Company

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no	6041	City (Facility)	Dublin
ARCO engineer	Kyle Christie	Telephone no. (ARCO)	(415)571-2434
Consultant name	AMCON Associates	Address (Consultant)	1938 Junction Avenue San Jose CA
Project manager (Consultant)	Jim Butera		
Telephone no. (Consultant)	(408)453-0719	Fax no. (Consultant)	(408)453-0452

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 EPA M602/8020/8015 (CAS)	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Sem ☐ Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(10)	1-2	2		X		X	HCl	6-9	1343		X											
MW-2(13)	3-4	2		X		X	HCl	↓	1314		X											
MW-3(14)	5-6	2		X		X	HCl		1356		X											
TB-1	7-8	2		X		X	HCl	↓	1354		X											

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml VOA's Per well

G70-35.01

Lab number: 5192-0721

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☑

Laboratory name: CAS

Contract number: 07077

Method of shipment: Sampler will deliver

Condition of sample: OK

Temperature received: cool

Relinquished by sampler	Sec Williams	Date / Time	6-11-92 9:00
Relinquished by		Date / Time	
Relinquished by		Date / Time	
Received by	[signature]	Date / Time	6-11-92 1125
Received by		Date / Time	
Received by laboratory		Date / Time	

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

ARCO-3292 (2-91)

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-35.01 SAMPLE ID: MW-7

PURGED BY: M Collins CLIENT NAME: Arco #6041

SAMPLED BY: M Collins LOCATION: Dublin

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.): 4.47

DEPTH TO WATER (feet): 10.73 CALCULATED PURGE (gal.): 22.36

DEPTH OF WELL (feet): 17.55 ACTUAL PURGE VOL. (gal.): 10 gal

DATE PURGED: 11-6-09-92 Start (2400 Hr) 1326 End (2400 Hr) 1354

DATE SAMPLED: 11-6-09-92 Start (2400 Hr) 1342 End (2400 Hr) 1348

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1334	5	6.60	3100	67.9	Gray	Heavy
1344	10	6.66	3040	67.7	Gray	Heavy
1345	~~15~~ Recharge	6.97	2950	68.2	Gray	Heavy
	20					
	~~24~~					

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	~~X~~ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X 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: All Samples Taken Well Dried at 10 gallons

Meter Calibration: Date: ___ Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: [signature] Reviewed By: JH Page 1 of 3

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: G70-3501 SAMPLE ID: MW-2

PURGED BY: M Gallegos CLIENT NAME: ARCO #6041

SAMPLED BY: M Gallegos LOCATION: Dublin

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.): 3.35

DEPTH TO WATER (feet): 4.88 CALCULATED PURGE (gal.): 16.79

DEPTH OF WELL (feet): 10.0 ACTUAL PURGE VOL (gal.): ~~20~~ 17.5

DATE PURGED: 06-09-92 Start (2400 Hr) 1125 End (2400 Hr) 1305

DATE SAMPLED: 06-09-92 Start (2400 Hr) 1312 End (2400 Hr) 1315

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1207	3.5	5.85	2250	66.0	Grey	Heavy
1252	7	6.30	2250	68.7	Grey	Heavy
1257	10.5	6.49	2250	67.6	Grey	Heavy
1301	~~14~~ 14.0	6.50	2250	67.7	Grey	Heavy
1305	~~17.5~~ 17.5	6.57	2250	67.7	Grey	Heavy

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

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

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: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 3259

REMARKS: All samples taken

Meter Calibration: Date: [illegible] Time: ___ Meter Serial #: ___ Temperature °F: 73.1

(EC 1000 10.78 / 1000) (DI ___) (pH 7 7.23 / 7.00) (pH 10 10.80 / 10.00) (pH 4 3.90 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: JB Page 2 of 3

Rev. 2, 5/91

EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: G-70-35.11 SAMPLE ID: MW-3

PURGED BY: J. Williams CLIENT NAME: ARCO 6041

SAMPLED BY: J. Williams LOCATION: Dublin 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.): 3.28

DEPTH TO WATER (feet): 9.72 CALCULATED PURGE (gal.): 16.4

DEPTH OF WELL (feet): 14.7? ACTUAL PURGE VOL. (gal.): 7.0

DATE PURGED: 01-08-92 Start (2400 Hr) 12:42 End (2400 Hr) 12:5?

DATE SAMPLED: 01-08-92 Start (2400 Hr) 13:35 End (2400 Hr) 13:38 (14)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:49	3.5	6.48	2820	72.1	GRAY	HEAVY
12:54	7	7.02	2910	69.0	"	"
	~~10.5~~					
	~~14~~					
13:46	Recharge	7.13	2910	72.3	GRAY	HEAVY

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

(COBALT 0 - 100) (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	✓ 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: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: DRIED AFTER 7 GALLON Time 12:5?

Meter Calibration: Date: ___ Time: ___ Meter Serial #: ___ Temperature °F: 72

(EC 1000 1000 / 1000) (DI ___) (pH 7 700 / 700) (pH 10 1000 / 1000) (pH 4 400 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: JB Page 3 of 3

{TF1047} 60006.03 TF NUMBER: 1047 GIB-92-056

MONITORING WELL PURGE WATER TRANSPORT FORM

GENERATOR INFORMATION

NAME: ARCO PRODUCTS RECEIVED

ADDRESS: P.O. BOX 5811 JUL 30 1992

CITY,STATE,ZIP: SAN MATEO, CA 94402 FRESNO SAN JOSE 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 DeZon 7-2-92
(Typed or printed full name & signature) (Date)

SITE INFORMATION

	STA #	JOB #	ADDRESS	GALS
1	A-697	20598&20665	420W. SHAW AVE., FRESNO, CA	58
2	A-335	20597-PW	4595 E. CLINTON ST., FRESNO, CA	5
3	A-6100	20717-DW	25775 SO. PATTERSON PASS RD., TRACY, CA	102
4	A-771	20656-PW	899 RINCON AVE., LIVERMORE, CA	90
5	A-6041	20657-PW	7249 VILLAGE PARKWAY, DUBLIN, CA	31
6	A-5387	20655-PW	20200 HESPERIAN BLVD., SAN LORENZO, CA	187
7	A-761	20599-PW	1985 BROADWAY AVE., VALLEJO, CA	109
8	A-2035	20659-PW	1001 SAN PABLO AVE., ALBANY, CA	165
9	A-414	20660-PW	5000 SHATTUCK AVE., BERKELEY, CA	80
10	A-6148	20658-PW	5131 SHATTUCK AVE., OAKLAND, CA	54
			TOTAL GALLONS:	881

TRANSPORTER INFORMATION

NAME: BALCH PETROLEUM

ADDRESS: 930 AMES AVE.

CITY,STATE,ZIP: MILPITAS, CA 95035 PHONE #: (408) 942-8686

TRUCK ID #: PETERBILT HURSCHEL WARD Hurschel Ward 7-2-92
(Typed or printed full name & signature) (Date)

TSD FACILITY INFORMATION

NAME: GIBSON OIL & REFINING

ADDRESS: 475 SEAPORT BLVD

CITY,STATE,ZIP: REDWOOD CITY, CA 94063 PHONE #: (415) 368-5511

RELEASE #: 11320 BILL EDIN Bill Edin 7-2-92
(Typed or printed full name & signature) (Date)

GAR 1100