SECOR

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San Diego, CA 92108
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Date: January 15, 2005

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 1919 Address:	660 Via de la Valle, Solana Beach, CA
ARCO Environmental Engineer :	Roy Thun
Consulting Co./Contact Person:	SECOR/Marci J. Richards and Bradley Eisenberg
SECOR Project No.:	08BP.U1919.04
Primary Agency/Regulatory ID No.:	County of San Diego, Departmental of Environmental Health (DEH), Land and Water Quality Division, Site Assessment and Mitigation Program (SAM), Danny Martinez/H05166-002

WORK PERFORMED THIS QUARTER [Fourth - 2004]:

1. Conducted fourth quarter 2004 groundwater monitoring and sampling.
2. Submitted the third quarter 2004 groundwater monitoring report.
3. Submitted the Additional Site Assessment Report dated October 26, 2004.

WORK PROPOSED FOR NEXT QUARTER [First - 2005]:

1. Conduct first quarter 2005 groundwater monitoring and sampling.
2. Submit fourth quarter 2004 groundwater monitoring report.

REGISTERED GEOLOGIST
BRADLEY G. EISENBERG
No. 6872
1/05
STATE OF CALIFORNIA

Current Phase of Project:	Monitoring	(Assessment, Remed., etc.)
Frequency of Sampling:	Quarterly (Well reduction 2nd, 3rd, 4th Quarters)	(Quarterly, etc.)
Frequency of Monitoring:	Quarterly	(Monthly, etc.)
Are Liquid Phase Hydrocarbons Present On-Site:	No	(Yes/No)
Cumulative LPH Recovered to Date:	180	(gallons)
LPH recovered This Quarter:	None	(gallons)
Bulk Soil Removed to Date:	Unknown	(cubic yards)
Bulk Soil Removed This Quarter:	None	(cubic yards)
Water Wells or Surface Waters within a 2000' Radius & Their Respective Directions:	None	(Distance and Direction)
Current Remediation Techniques:	None	(SVES, LPH Removal, etc.)
Permits for Discharge:	APCD	(NPDES, POTW, etc.)

Date: January 15, 2005

ARCO QUARTERLY GROUNDWATER MONITORING REPORT (Cont'd)
ARCO Facility #1919

Approximate Depth to Groundwater	3.09 to 23.93	(Measured Feet)
Groundwater Gradient:	Southwest	(Direction)
	0.004	(Magnitude)
Groundwater Beneficial Use	No (Exempt as Source of Drinking Water)	(Yes/ No)

DISCUSSION: On December 20, 2004 SECOR gauged the 18 groundwater monitoring wells, and purged and sampled seven monitoring wells associated with the site in general accordance with the well sampling reduction program (Figure 1). Field data was documented on the attached monitoring well gauging log and well purging/sampling logs. The depth to water ranged between 3.09 feet below ground surface (bgs) in MW-25 to 23.93 feet bgs in MW-26. Groundwater elevations ranged between 4.01 and 5.89 feet above mean sea level (MSL). Estimated groundwater flow direction was to the southwest at an approximate gradient of 0.003 (Figure 2). No liquid phase hydrocarbons (LPH) were observed in the wells during the monitoring and sampling event.

In accordance with the attached sampling procedures, SECOR performed purge groundwater sampling on seven wells. Groundwater samples were analyzed for gasoline-range organics (C_6-C_{12}; GRO); for benzene, toluene, ethylbenzene, and total xylenes (BTEX); and for the fuel oxygenates methyl tert-butyl ether (MTBE), ethyl tert-butyl ether (ETBE), di-isopropyl ether (DIPE), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), and ethanol. Analytical results are summarized in Tables 2 and 3, and TPHg, benzene, and MTBE concentration distribution is shown on Figure 3. Figure 4 depicts a dissolved benzene and MTBE isoconcentration map. Hydrographs showing changes in groundwater elevation and benzene and MTBE concentrations with time are also attached.

Based on low influent petroleum hydrocarbon vapor concentrations, SECOR shut down the AS/SVE remediation system on June 19, 2003. Therefore, the AS/SVE system was not operated during the fourth quarter 2004.

CONCLUSIONS AND RECOMMENDATIONS: Groundwater monitoring and laboratory analytical results are generally consistent with previous quarters. Groundwater elevations were generally higher than the previous quarter. Due to past low influent petroleum hydrocarbon concentrations, SECOR recommends that the AS/SVE system remain shut-down. SECOR recommends continued groundwater monitoring and sampling, in accordance with the well reduction program.

SUMMARY OF UNUSUAL ACTIVITIES: None

AGENCY DIRECTIVE REQUIREMENTS: Conduct purge groundwater sampling.

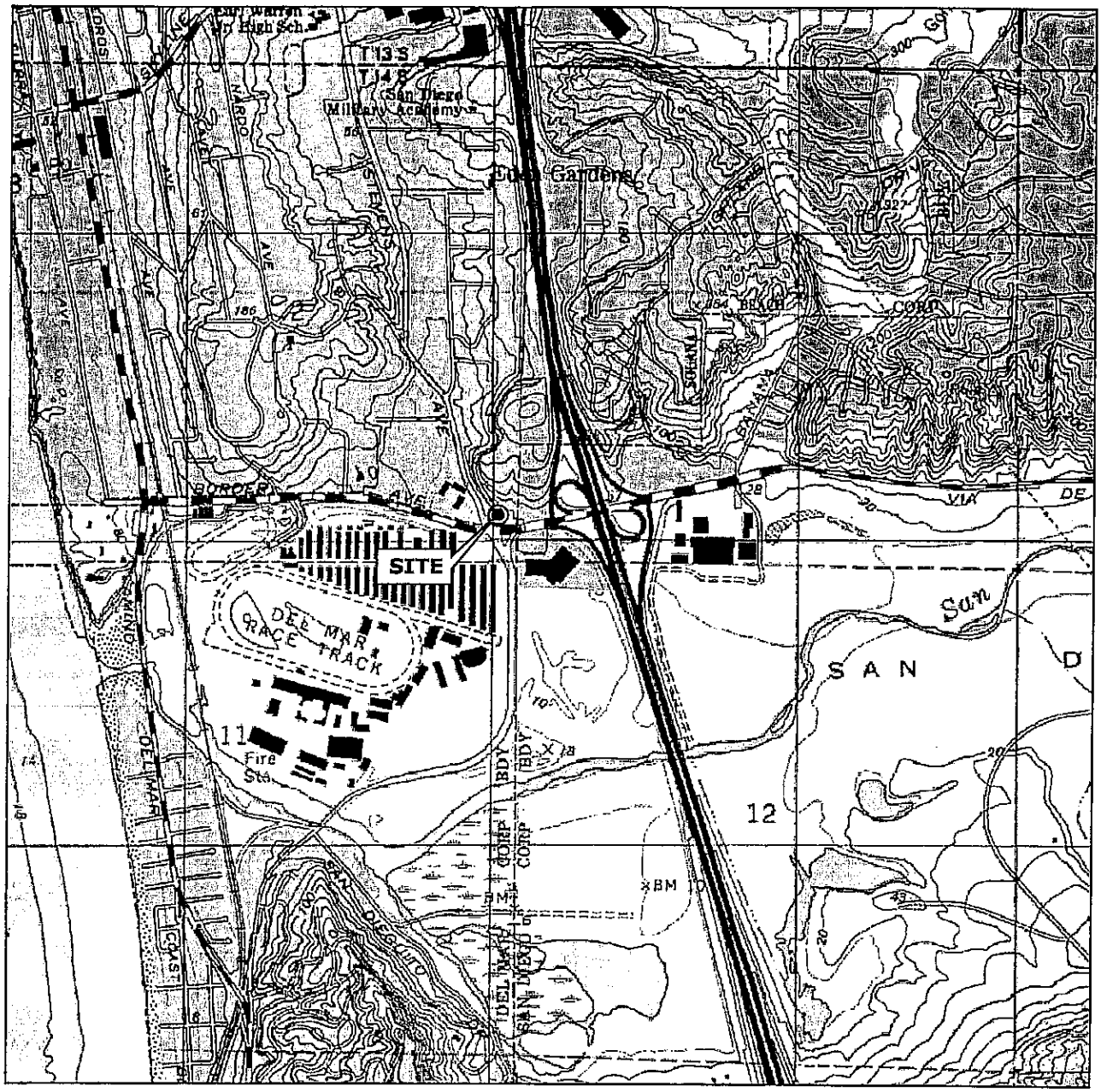
Date: January 15, 2005

ARCO QUARTERLY GROUNDWATER MONITORING REPORT (Cont'd)
ARCO Facility #1919

ATTACHED:

- Site Plan (Figure 1)
- Groundwater Gradient Map, December 20, 2004 (Figure 2)
- GRO, Benzene, and MTBE Concentrations in Groundwater, December 20, 2004 (Figure 3)
- Benzene and MTBE Isoconcentration Map, December 20, 2004 (Figure 4)
- Summary of Groundwater Elevations, 2001 to Present (Table 1)
- Summary of Groundwater Sample Analytical Results, 2001 to Present (Table 2)
- Summary of Additional Oxygenates Analytical Results, 2001 to Present (Table 3)
- Hydrographs
- Monitoring Well Purging and Sampling Procedures – San Diego County
- Monitoring Well Gauging Log
- Well Purging and Sampling Logs
- Laboratory Report and Chain-of-Custody Documentation

cc: Roy Thun, Atlantic Richfield
Larry Bauman, Del Mar Fairgrounds
Lyntonia Staton, Paclantic Properties, LLC



REFERENCE: PROFFESIONAL USGS TOPOGRAPHIC SERIES

NORTH

0 2000 4000

APPROXIMATE SCALE IN FEET

DRAWN BY: PD CHECKED: APPROVED: DATE: 9/16/04 JOB No.: 08BP.01919.04 CAD FILE: 1919SLOC	PREPARED BY: SECOR 2655 Camino del Rio North, Suite 302 San Diego, California	PREPARED FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA	FIGURE: 1 **SITE LOCATION MAP**

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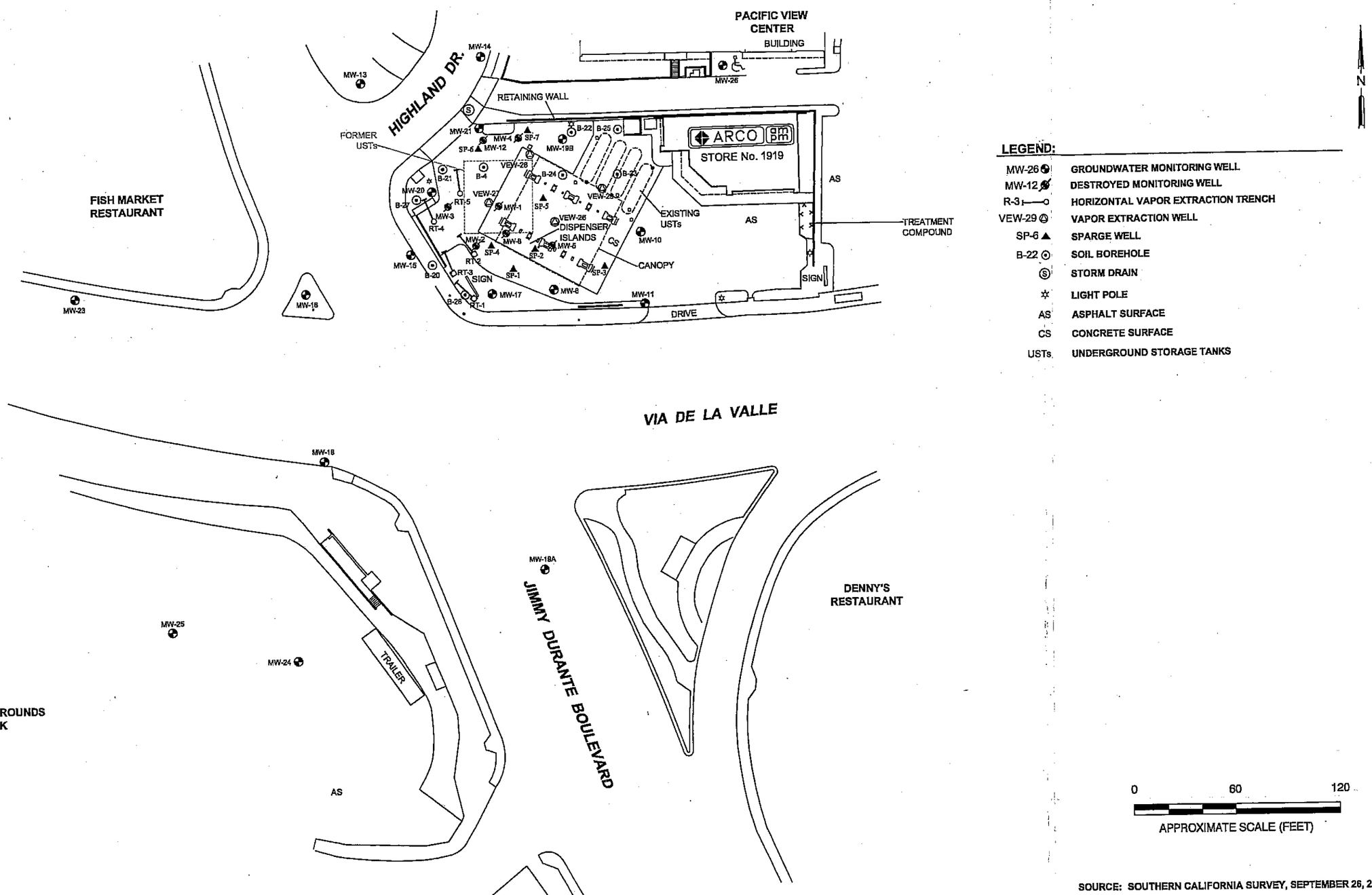

LEGEND:

MW-26	GROUNDWATER MONITORING WELL
MW-12	DESTROYED MONITORING WELL
R-3	HORIZONTAL VAPOR EXTRACTION TRENCH
VEW-29	VAPOR EXTRACTION WELL
SP-6	SPARGE WELL
B-22	SOIL BOREHOLE
S	STORM DRAIN
✲	LIGHT POLE
AS	ASPHALT SURFACE
CS	CONCRETE SURFACE
USTs	UNDERGROUND STORAGE TANKS

SOURCE: SOUTHERN CALIFORNIA SURVEY, SEPTEMBER 26, 2003

DRAWN BY: LGH CHECKED: APPROVED: DATE: 10/7/04 JOB No.: 08BP.U1919.04 CAD FILE: 1919SP10-04	PREPARED BY: SECOR 2655 Camino del Rio North, Suite 302 San Diego, California	PREPARED FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA	FIGURE: 2 **SITE PLAN**

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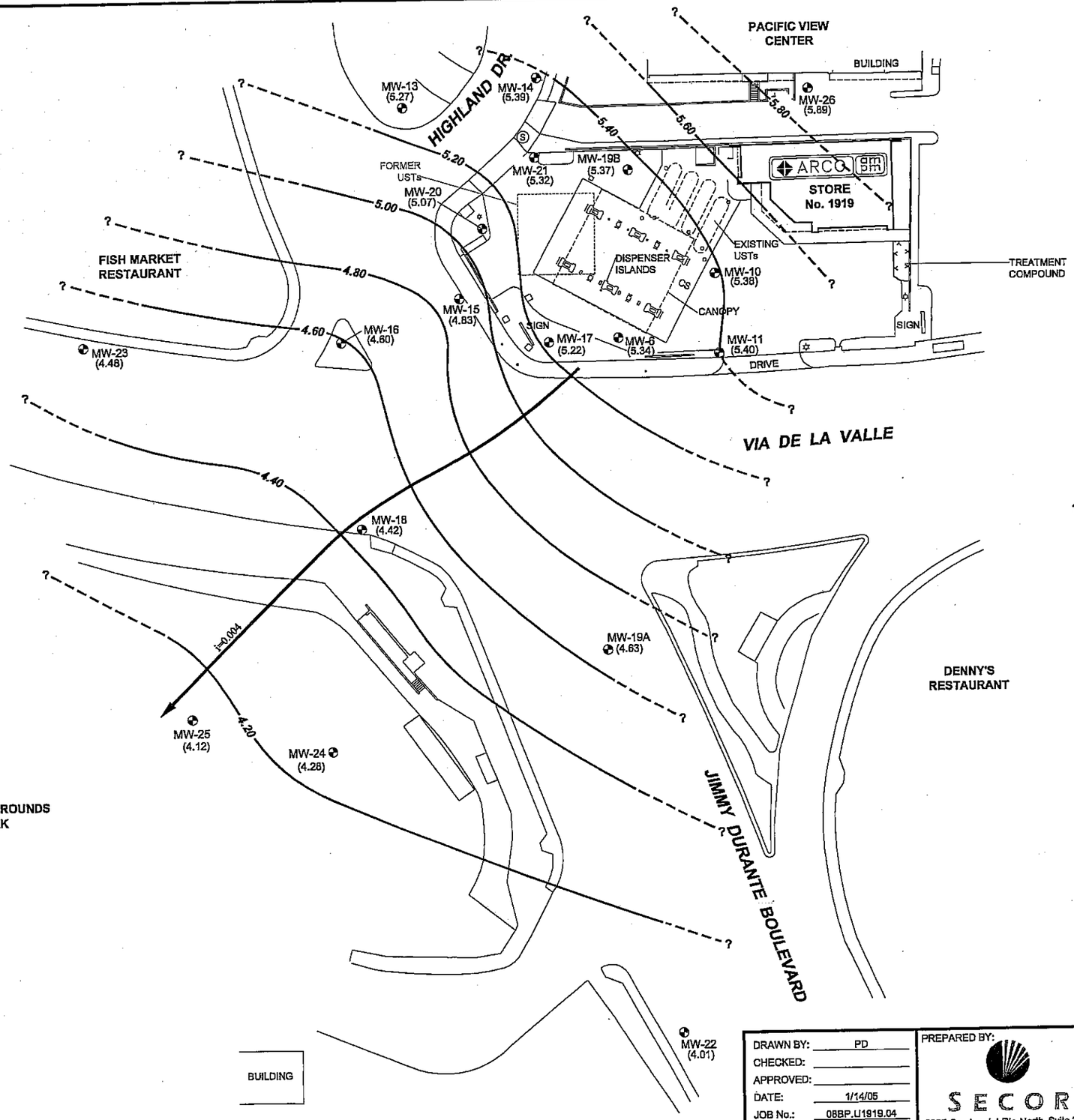

LEGEND:

MW-26	GROUNDWATER MONITORING WELL
(S)	STORM DRAIN
☼	LIGHT POLE
AS	ASPHALT SURFACE
CS	CONCRETE SURFACE
USTs	UNDERGROUND STORAGE TANKS
(5.89)	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
?- - -5.00—	INTERPRETED RELATIVE GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MSL. DASHED WHERE INFERRED. QUERIED WHERE UNKNOWN.
i=0.004	INTERPRETED GROUNDWATER FLOW DIRECTION AND HYDRAULIC GRADIENT (i)
UST	UNDERGROUND STORAGE TANK
[NM]	GROUNDWATER ELEVATION NOT MEASURED- INACCESSIBLE

0 60 120

APPROXIMATE SCALE (FEET)

SOURCE: SOUTHERN CALIFORNIA SURVEY, SEPTEMBER 26, 2003

DRAWN BY:	PD
CHECKED:	
APPROVED:	
DATE:	1/14/05
JOB No.:	08BP.U1919.04
CAD FILE:	1919GW12-04

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San Diego, California

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660 VIA DE LA VALLE
SOLANA BEACH, CALIFORNIA

FIGURE: 3

GROUNDWATER GRADIENT MAP
DECEMBER 20, 2004

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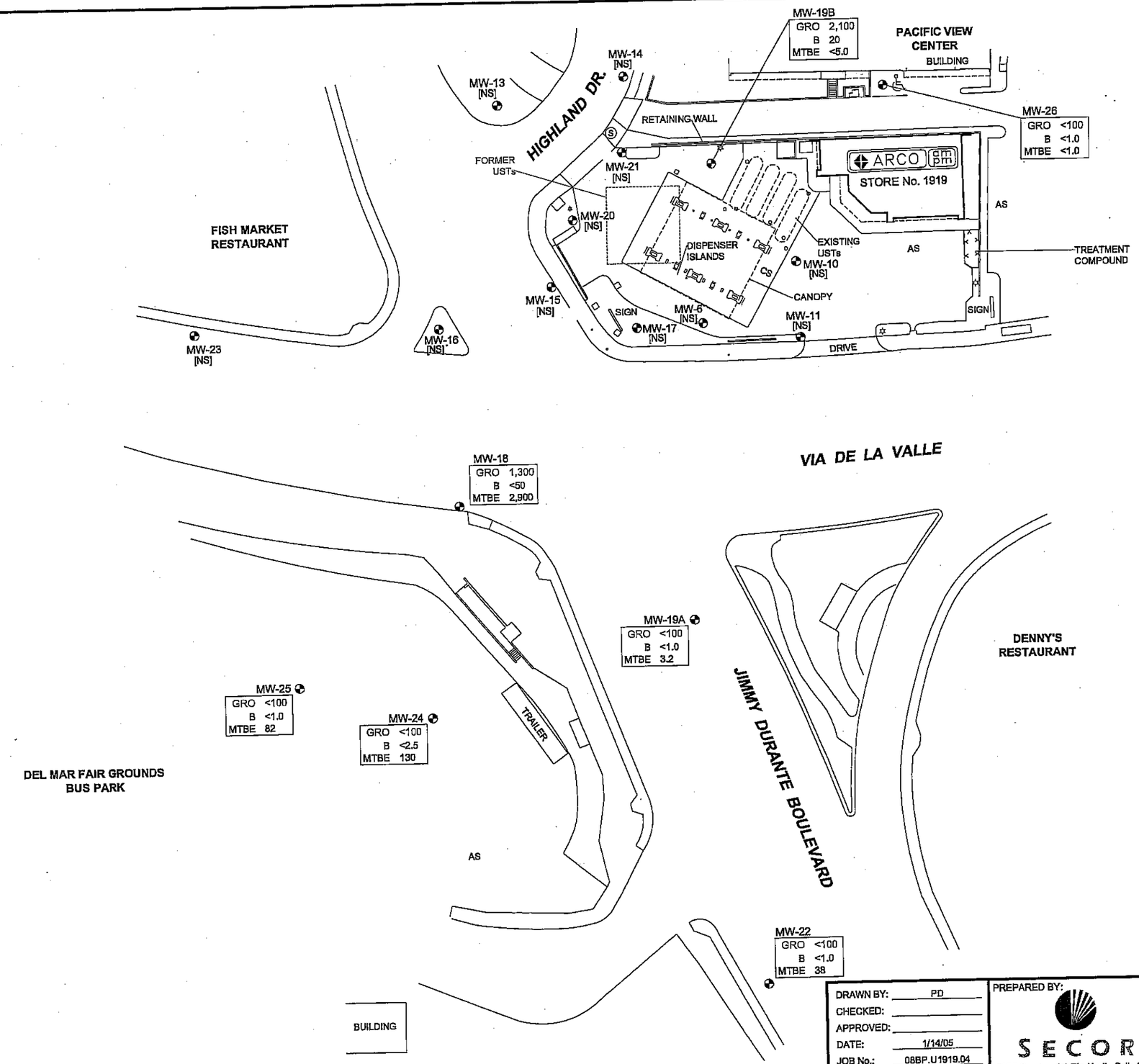

LEGEND:

MW-26	GROUNDWATER MONITORING WELL
Ⓢ	STORM DRAIN
☼	LIGHT POLE
AS	ASPHALT SURFACE
CS	CONCRETE SURFACE
USTs	UNDERGROUND STORAGE TANKS
GRO <100 B <1.0 MTBE <1.0	NO PURGE AND PURGE GROUNDWATER SAMPLE ANALYTICAL CONCENTRATION IN MICROGRAMS PER LITER ($\mu g/L$), RESPECTIVELY
GRO =	GASOLINE-RANGE ORGANICS C6-C12
B =	BENZENE
MTBE =	METHYL TERT-BUTYL ETHER
< =	BELOW LABORATORY REPORTING LIMIT SHOWN
[NS]	NOT SAMPLED PER WELL REDUCTION PROGRAM

0 60 120

APPROXIMATE SCALE (FEET)

SOURCE: SOUTHERN CALIFORNIA SURVEY, SEPTEMBER 26, 2003

DRAWN BY: PD CHECKED: APPROVED: DATE: 1/14/05 JOB No.: 08BP.U1919.04 CAD FILE: 1919CON12-04	PREPARED BY: SECOR 2655 Camino del Rio North, Suite 302 San Diego, California	PREPARED FOR: ARCO FACILITY #1919 660 VIA DE LA VALLE SOLANA BEACH, CALIFORNIA	FIGURE: 4 **GRO, BENZENE, AND MTBE CONCENTRATIONS IN GROUNDWATER DECEMBER 20, 2004**

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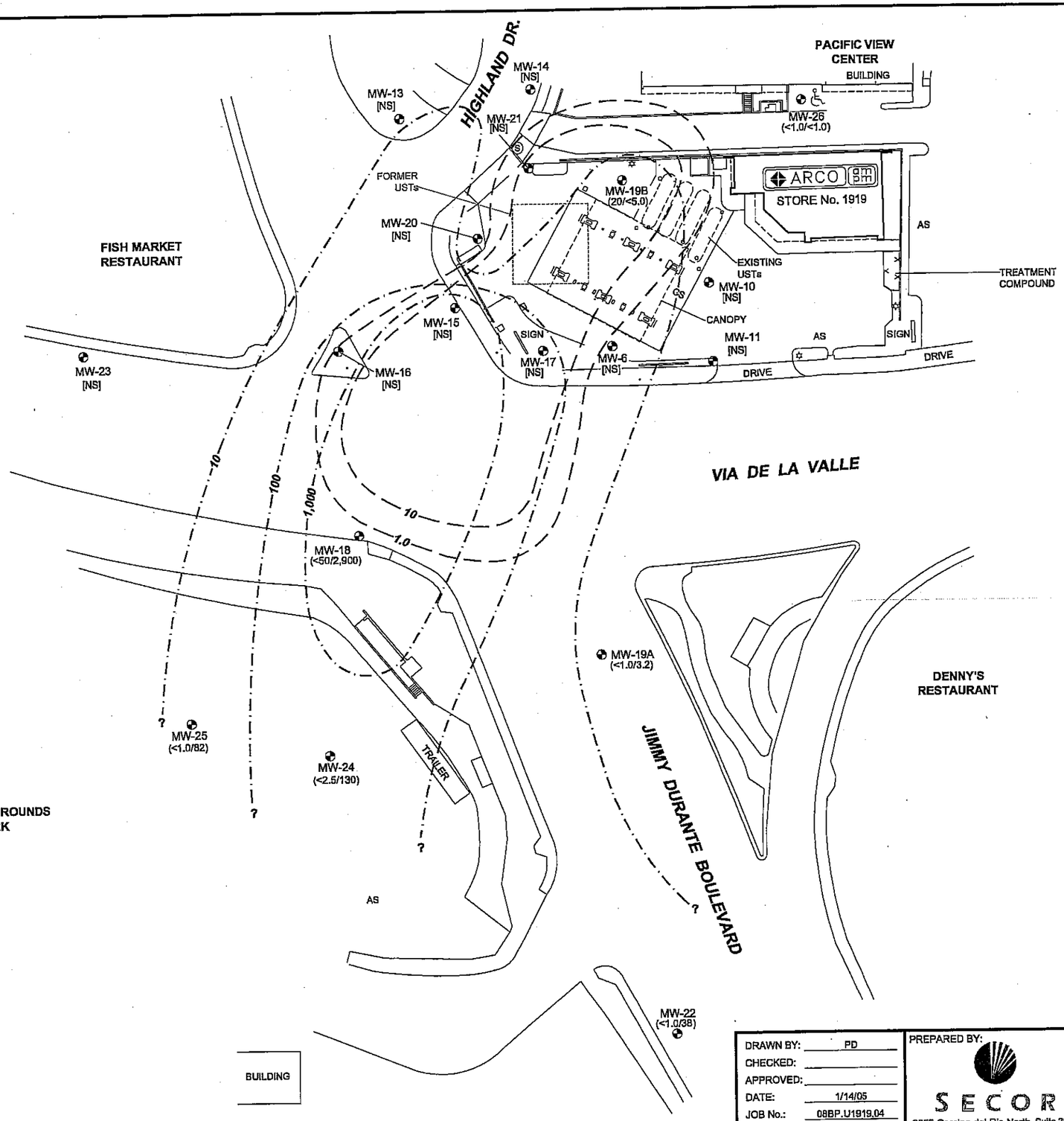

N

LEGEND:

MW-26	GROUNDWATER MONITORING WELL
Ⓢ	STORM DRAIN
✡	LIGHT POLE
AS	ASPHALT SURFACE
CS	CONCRETE SURFACE
USTs	UNDERGROUND STORAGE TANKS
(<1.0/130)	BENZENE AND METHYL-TERT-BUTYL ETHER (MTBE) CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (ug/L).
? — —1.0— —	BENZENE ISOCONCENTRATION CONTOURS IN ug/L
? — · —10— · —	MTBE ISOCONCENTRATION CONTOURS IN ug/L
<	BELOW LABORATORY REPORTING LIMIT SHOWN
[NS]	NOT SAMPLED PER WELL REDUCTION PROGRAM

0 60 120

APPROXIMATE SCALE (FEET)

SOURCE: SOUTHERN CALIFORNIA SURVEY, SEPTEMBER 26, 2003

DRAWN BY:	PD
CHECKED:	
APPROVED:	
DATE:	1/14/05
JOB No.:	08BP.U1919.04
CAD FILE:	1919ISO12-04

PREPARED BY:

SECOR

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San Diego, California

PREPARED FOR:

ARCO FACILITY #1919
660 VIA DE LA VALLE
SOLANA BEACH, CALIFORNIA

FIGURE: 5

BENZENE AND MTBE ISOCONCENTRATION MAP DECEMBER 20, 2004

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TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-1 14.02	01/14/93	7.69	0.01	6.33
	02/20/93	7.69	Sheen	6.30
	03/16/93	7.77	Sheen	6.25
	04/14/93	7.64	Sheen	6.38
	05/10/93	7.99	0.03	6.05 [3]
	09/02/93	8.13	0.05	5.93 [3]
	10/01/93	Well Destroyed		
MW-2 12.93	01/14/93	6.98	Sheen	5.95
	02/20/93	6.77	Sheen	6.16
	03/16/93	6.72	Sheen	6.21
	04/14/93	6.80	Sheen	6.13
	05/10/93	6.90	Sheen	6.03
	09/02/93	7.08	Sheen	5.85
	10/01/93	Well Destroyed		
MW-3 12.55	01/14/93	6.38	0.00	4.17
	04/14/93	6.94	0.00	5.61
	09/02/93	6.99	0.00	5.56
	10/01/93	Well Destroyed		
MW-4 13.34	01/14/93	7.28	Sheen	6.06
	02/20/93	7.01	Sheen	6.33
	03/16/93	7.12	Sheen	6.22
	04/14/93	7.14	Sheen	6.20
	05/10/93	7.29	0.00	6.05
	09/02/93	7.37	0.00	5.97
	10/01/93	Well Destroyed		
MW-5 14.54	01/14/93	8.56	0.01	5.99 [3]
	02/20/93	8.16	Sheen	6.38
	03/16/93	8.31	0.02	6.25 [3]
	04/14/93	8.47	0.09	6.14 [3]
	05/10/93	8.64	0.16	6.02 [3]
	09/02/93	8.88	0.30	5.88 [3]
	10/01/93	Well Destroyed		
MW-6 16.11	02/06/01	9.93	0.00	6.18
	05/08/01	Not Measured		
	07/16/01	10.05	0.00	6.06
	10/09/01	10.21	0.00	5.90
	01/28/02	10.13	0.00	5.98
	04/17/02	10.10	0.00	6.01
	07/09/02	10.17	0.00	5.94
	10/21/02	10.44	0.00	5.67
	02/21/03	10.27	0.00	5.84

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-6 Cont'd 15.96	05/08/03	10.47	0.00	5.64
	07/25/03	10.39	0.00	5.72
	11/21/03	10.66	0.00	5.30
	02/25/04	10.52	0.00	5.44
	06/21/04	10.55	0.00	5.41
	09/13/04	10.78	0.00	5.18
	12/20/04	10.62	0.00	5.34
MW-7 12.47	01/14/93	7.00	Sheen	5.47
	02/20/93	6.61	0.29	6.08 [3]
	03/16/93	6.83	0.02	5.66 [3]
	04/14/93	6.88	0.14	5.70 [3]
	05/10/93	6.95	0.03	5.54 [3]
	09/02/93	7.03	Sheen	5.44
	10/01/93	Well Destroyed		
MW-8 13.83	01/14/93	7.80	0.01	6.04 [3]
	02/20/93	7.51	Sheen	6.32
	03/16/93	7.61	Sheen	6.22
	04/14/93	7.70	0.02	6.15 [3]
	05/10/93	7.86	0.07	6.02 [3]
	09/02/93	7.99	0.08	5.90 [3]
	10/01/93	Well Destroyed		
MW-10 16.74	02/06/01	10.47	0.00	6.27
	05/08/01	Not Measured		
	07/16/01	10.61	0.00	6.13
	10/09/01	10.76	0.00	5.98
	01/28/02	10.70	0.00	6.04
	04/17/02	10.67	0.00	6.07
	07/09/02	10.73	0.00	6.01
	10/21/02	11.03	0.00	5.71
	02/21/03	10.87	0.00	5.87
	05/08/03	11.04	0.00	5.70
	07/25/03	11.02	0.00	5.72
16.59	11/21/03	11.16	0.00	5.43
	02/25/04	11.16	0.00	5.43
	06/21/04	11.21	0.00	5.38
	09/13/04	11.38	0.00	5.21
	12/20/04	11.21	0.00	5.38
MW-11 13.57	02/06/01	7.45	0.00	6.12
	05/08/01	7.42	0.00	6.15
	07/16/01	7.57	0.00	6.00
	10/09/01	7.72	0.00	5.85
	01/28/02	7.62	0.00	5.95

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-11 cont'd	04/17/02	7.55	0.00	6.02
13.57	07/09/02	7.65	0.00	5.92
	10/21/02	7.96	0.00	5.61
	02/21/03	7.78	0.00	5.79
	05/08/03	7.87	0.00	5.70
	07/25/03	7.85	0.00	5.72
13.40	11/21/03	8.17	0.00	5.23
	02/25/04	7.95	0.00	5.45
	06/21/04	7.98	0.00	5.42
	09/13/04	8.22	0.00	5.18
	12/20/04	8.00	0.00	5.40
MW-12	01/14/93	8.20	0.00	6.07
14.27	04/14/93	8.20	0.00	6.07
	09/02/93	8.27	0.00	6.00
	10/01/93	Well Destroyed		
MW-13	02/06/01	6.78	0.00	6.15
12.93	05/08/01	6.71	0.00	6.22
	07/16/01	6.89	0.00	6.04
	10/09/01	7.00	0.00	5.93
	01/28/02	6.97	0.00	5.96
	04/17/02	6.95	0.00	5.98
	07/09/02	6.97	0.00	5.96
	10/21/02	7.37	0.00	5.56
	02/21/03	7.28	0.00	5.65
	05/08/03	7.36	0.00	5.57
	07/25/03	7.32	0.00	5.61
12.79	11/21/03	7.63	0.00	5.16
	02/25/04	7.54	0.00	5.25
	06/21/04	7.66	0.00	5.13
	09/13/04	7.67	0.00	5.12
	12/20/04	7.52	0.00	5.27
MW-14	02/06/01	8.49	0.00	6.10
14.59	05/08/01	Not Measured		
	07/16/01	Not Measured		
	10/09/01	8.21	0.00	6.38
	01/28/02	8.14	0.00	6.45
	04/17/02	8.73	0.00	5.86
	07/09/02	8.72	0.00	5.87
	10/21/02	Not Measured - Not Accessible		
	02/21/03	9.08	0.00	5.51
	05/08/03	9.31	0.00	5.28
14.59	07/25/03	9.13	0.00	5.46
14.62	11/21/03	9.31	0.00	5.31

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-14 Cont'd	02/25/04	9.31	0.00	5.31
	06/21/04	9.40	0.00	5.22
	09/13/04	9.47	0.00	5.15
	12/20/04	9.23	0.00	5.39
MW-15 11.67	02/06/01	5.86	0.00	5.81
	05/08/01	5.90	0.00	5.77
	07/16/01	6.08	0.00	5.59
	10/09/01	6.21	0.00	5.46
	01/28/02	5.88	0.00	5.79
	04/17/02	5.61	0.00	6.06
	07/09/02	5.90	0.00	5.77
	10/21/02	Not Measured - Not Accessible		
	02/21/03	Not Measured - Not Accessible		
	05/08/03	Not Measured - Not Accessible		
	07/25/03	Not Measured - Not Accessible		
11.30	11/21/03	7.05	Sheen	4.25
	02/25/04	6.25	0.00	5.05
	06/21/04	6.40	0.00	4.90
	09/13/04	6.60	0.00	4.70
	12/20/04	6.47	0.00	4.83
MW-16 13.11	02/06/01	7.93	0.00	5.18
	05/08/01	8.08	0.00	5.03
	07/16/01	8.30	0.00	4.81
	10/09/01	8.35	0.00	4.76
	01/28/02	7.92	0.00	5.19
	04/17/02	7.69	0.00	5.42
	07/09/02	7.96	0.00	5.15
	10/21/02	8.41	0.00	4.70
	02/21/03	7.91	0.00	5.20
	05/08/03	8.08	0.00	5.03
	07/25/03	8.01	0.00	5.10
13.08	11/21/03	8.50	0.00	4.58
	02/25/04	8.28	0.00	4.80
	06/21/04	8.34	0.00	4.74
	09/13/04	8.56	0.00	4.52
	12/20/04	8.48	0.00	4.60
MW-17 15.18	02/06/01	9.14	0.00	6.04
	05/08/01	9.15	0.00	6.03
	07/16/01	9.29	0.00	5.89
	10/09/01	9.44	0.00	5.74
	01/28/02	9.30	0.00	5.88
	04/17/02	9.21	0.00	5.97

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-17 Cont'd	07/09/02	9.32	0.00	5.86
	10/21/02	9.60	0.00	5.58
	02/21/03	9.39	0.00	5.79
	05/08/03	9.57	0.00	5.61
	07/25/03	9.43	0.00	5.75
15.00	11/21/03	9.96	0.00	5.04
	02/25/04	9.60	0.00	5.40
	06/21/04	9.70	0.00	5.30
	09/13/04	9.91	0.00	5.09
	12/20/04	9.78	0.00	5.22
MW-18 13.75	02/06/01	8.75	0.00	5.00
	05/08/01	8.91	0.00	4.84
	07/16/01	9.16	0.00	4.59
	10/09/01	9.26	0.00	4.49
	01/28/02	8.73	0.00	5.02
	04/17/02	8.55	0.00	5.20
	07/09/02	8.85	0.00	4.90
	10/21/02	9.24	0.00	4.51
	02/21/03	8.74	0.00	5.01
	05/08/03	8.91	0.00	4.84
	07/25/03	8.78	0.00	4.97
13.74	11/21/03	9.36	0.00	4.38
	02/25/04	9.03	0.00	4.71
	06/21/04	9.18	0.00	4.56
	09/13/04	9.37	0.00	4.37
	12/20/04	9.32	0.00	4.42
*MW-19A 13.42	02/06/01	8.21	0.00	5.21
	05/08/01	8.37	0.00	5.05
	07/16/01	8.60	0.00	4.82
	10/09/01	8.75	0.00	4.67
	01/28/02	8.27	0.00	5.15
	04/17/02	8.08	0.00	5.34
	07/09/02	8.35	0.00	5.07
	10/21/02	8.68	0.00	4.74
	02/21/03	8.24	0.00	5.18
	05/08/03	8.39	0.00	5.03
	07/25/03	8.25	0.00	5.17
	11/21/03	8.79	0.00	4.60
13.39	02/25/04	8.45	0.00	4.94
	06/21/04	8.54	0.00	4.85
	09/13/04	8.91	0.00	4.48
	12/20/04	8.76	0.00	4.63

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-19B	02/06/01	10.52	0.00	6.30
16.82	05/08/01	10.50	0.00	6.32
	07/16/01	10.47	0.00	6.35
	10/09/01	10.81	0.00	6.01
	01/28/02	10.76	0.00	6.06
	04/17/02	10.74	0.00	6.08
	07/09/02	10.78	0.00	6.04
	10/21/02	11.14	0.00	5.68
	02/21/03	10.99	0.00	5.83
	05/08/03	11.15	0.00	5.67
	07/25/03	11.08	0.00	5.74
16.67	11/21/03	11.42	0.00	5.25
	02/25/04	11.28	0.00	5.39
	06/21/04	11.36	0.00	5.31
	09/13/04	11.48	0.00	5.19
	12/20/04	11.30	0.00	5.37
MW-20	02/06/01	7.29	0.00	6.09
13.38	05/08/01	7.31	0.00	6.07
	07/16/01	7.50	0.00	5.88
	10/09/01	7.65	0.00	5.73
	01/28/02	7.50	0.00	5.88
	04/17/02	7.48	0.00	5.90
	07/09/02	7.59	0.00	5.79
	10/21/02	7.95	0.00	5.43
	02/21/03	7.74	0.00	5.64
	05/08/03	7.87	0.00	5.51
	07/25/03	7.74	0.00	5.64
13.26	11/21/03	8.35	0.00	4.91
	02/25/04	8.12	0.00	5.14
	06/21/04	8.15	0.00	5.11
	09/13/04	8.36	0.00	4.90
	12/20/04	8.19	0.00	5.07
MW-21	02/06/01	7.41	0.00	6.36
13.77	05/08/01	7.37	0.00	6.40
	07/16/01	7.53	0.00	6.24
	10/09/01	7.68	0.00	6.09
	01/28/02	7.63	0.00	6.14
13.77	04/17/02	7.62	0.00	6.15
	07/09/02	7.65	0.00	6.12
	10/21/02	8.04	0.00	5.73
	02/21/03	7.89	0.00	5.88

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-21 Cont'd 13.52	05/08/03	8.03	0.00	5.74
	07/25/03	8.00	0.00	5.77
	11/21/03	8.32	0.00	5.20
	02/25/04	8.16	0.00	5.36
	06/21/04	8.28	0.00	5.24
	09/13/04	8.40	0.00	5.12
	12/20/04	8.20	0.00	5.32
MW-22 9.81	02/06/01	5.20	0.00	4.61
	05/08/01	5.33	0.00	4.48
	07/16/01	5.63	0.00	4.18
	10/09/01	5.83	0.00	3.98
	01/28/02	5.36	0.00	4.45
	04/17/02	5.07	0.00	4.74
	07/09/02	5.24	0.00	4.57
	10/21/02	5.55	0.00	4.26
	02/21/03	5.27	0.00	4.54
	05/08/03	5.25	0.00	4.56
	07/25/03	5.05	0.00	4.76
9.78	11/21/03	5.65	0.00	4.13
	02/25/04	5.49	0.00	4.29
	06/21/04	5.61	0.00	4.17
	09/13/04	5.91	0.00	3.87
	12/20/04	5.77	0.00	4.01
MW-23 12.45	02/06/01	7.26	0.00	5.19
	05/08/01	7.52	0.00	4.93
	07/16/01	7.78	0.00	4.67
	10/09/01	7.77	0.00	4.68
	01/28/02	7.23	0.00	5.22
	04/17/02	6.99	0.00	5.46
	07/09/02	7.28	0.00	5.17
	10/21/02	7.80	0.00	4.65
	02/21/03	7.13	0.00	5.32
	05/08/03	7.44	0.00	5.01
	07/25/03	7.39	0.00	5.06
12.42	11/21/03	7.98	0.00	4.44
	02/25/04	7.73	0.00	4.69
	06/21/04	7.81	0.00	4.61
	09/13/04	7.99	0.00	4.43
	12/20/04	7.94	0.00	4.48
MW-24 8.83	11/21/03	4.64	0.00	4.19
	02/25/04	4.28	0.00	4.55
	06/21/04	4.49	0.00	4.34

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2001 TO PRESENT

ARCO Facility #1919

Well Identification / Surveyed Well Elevation[1] (Feet MSL)	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2] (Feet MSL)
MW-24 Cont'd	09/13/04	4.78	0.00	4.05
	12/20/04	4.55	0.00	4.28
MW-25 7.21	11/21/03	3.21	0.00	4.00
	02/25/04	2.83	0.00	4.38
	06/21/04	Not Measured - Inaccessible		
	09/13/04	3.24	0.00	3.97
	12/20/04	3.09	0.00	4.12
MW-26 29.82	11/21/03	23.93	0.00	5.89
	02/25/04	23.79	0.00	6.03
	06/21/04	23.83	0.00	5.99
	09/13/04	24.14	0.00	5.68
	12/20/04	23.93	0.00	5.89

Survey elevation and depth to water measurements prior to 9/28/94 summarized from Alton Geoscience Reports.

Notes:

[1] = Elevations are in feet above mean sea level (MSL).

[2] = Groundwater elevation in feet MSL = Surveyed Well Elevation - Depth to Water

[3] = Elevations adjusted by adding (0.75 x LPH thickness) to measured water elevations.

LPH = Liquid - Phase Hydrocarbons

* MW-19 was renamed MW-19A after the installation of another MW-19 (now MW-19B).

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-1	01/14/93	Not Sampled - Measured LPH Thickness					
	02/20/93	Not Sampled - LPH Sheen					
	03/16/93	Not Sampled - LPH Sheen					
	04/14/93	Not Sampled - LPH Sheen					
	05/10/93	Not Sampled - Measured LPH Thickness					
	09/02/93	Not Sampled - Measured LPH Thickness					
	10/01/93	Well Destroyed					
MW-2	01/14/93	Not Sampled - LPH Sheen					
	02/20/93	Not Sampled - LPH Sheen					
	03/16/93	Not Sampled - LPH Sheen					
	04/14/93	Not Sampled - LPH Sheen					
	05/10/93	Not Sampled - LPH Sheen					
	09/02/93	Not Sampled - LPH Sheen					
	10/01/93	Well Destroyed					
MW-3	01/14/93	Not Sampled					
	01/14/93	Not Sampled					
	04/14/93	Not Sampled					
	09/02/93	Not Sampled					
	10/01/93	Well Destroyed					
MW-4	01/14/93	Not Sampled - LPH Sheen					
	02/20/93	Not Sampled - LPH Sheen					
	03/16/93	Not Sampled - LPH Sheen					
	04/14/93	Not Sampled - LPH Sheen					
	05/10/93	Not Sampled					
	09/02/93	Not Sampled					
	10/01/93	Well Destroyed					
MW-5	01/14/93	Not Sampled - Measured LPH Thickness					
	02/20/93	Not Sampled - LPH Sheen					
	03/16/93	Not Sampled - Measured LPH Thickness					
	04/14/93	Not Sampled - Measured LPH Thickness					
	05/10/93	Not Sampled - Measured LPH Thickness					
	09/02/93	Not Sampled - Measured LPH Thickness					
	10/01/93	Well Destroyed					
MW-6	02/06/01 NP	<5,000	740	2.5	560	19	66
	05/08/01	Not Sampled - Well Reduction Program					
	07/16/01	Not Sampled - Well Reduction Program					
	10/09/01	Not Sampled - Well Reduction Program					
	01/28/02 NP	1,400	110	0.52	96	2.2	150
	04/17/02 NP	2,400	370	1.4	820	4.7	150
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	3,500	750	<5.0	630	<15	110
	02/21/03 NP	<500	0.56	<0.50	2.7	<1.5	62

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-6 Cont'd	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 NP	740	47	0.83	79	<1.5	120
	11/21/03 NP	820	30	<0.50	32	<1.5	94
	11/21/03	670	110	<0.50	140	<1.5	200
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	59
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-7	01/14/93	Not Sampled - LPH Sheen					
	02/20/93	Not Sampled - Measured LPH Thickness					
	03/16/93	Not Sampled - Measured LPH Thickness					
	04/14/93	Not Sampled - Measured LPH Thickness					
	05/10/93	Not Sampled - Measured LPH Thickness					
	09/02/93	Not Sampled - LPH Sheen					
	10/01/93	Well Destroyed					
MW-8	01/14/93	Not Sampled - Measured LPH Thickness					
	02/20/93	Not Sampled - LPH Sheen					
	03/16/93	Not Sampled - LPH Sheen					
	04/14/93	Not Sampled - Measured LPH Thickness					
	05/10/93	Not Sampled - Measured LPH Thickness					
	09/02/93	Not Sampled - Measured LPH Thickness					
	10/01/93	Well Destroyed					
MW-10	02/06/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/01	Not Sampled - Well Reduction Program					
	07/16/01	Not Sampled - Well Reduction Program					
	10/09/01	Not Sampled - Well Reduction Program					
	01/28/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	04/17/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	<500	<0.50	<0.50	<0.50	<1.50	<1.0
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	1.1
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-11	02/06/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/16/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/09/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/28/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	04/17/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-11 Cont'd	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-12	01/14/93	94,962	3,463	6,161	3,397	17,783	--
	04/14/93	48,000	2,500	3,500	1,600	7,500	--
	09/02/93	54,000	4,100	5,500	2,500	13,000	--
	10/01/93	Well Destroyed					
MW-13	02/06/01 NP	<500	<0.50	<0.50	<0.50	<1.5	4
	05/08/01 NP	<500	<0.50	<0.50	<0.50	<1.5	7
	07/16/01 NP	<500	<0.50	<0.50	<0.50	<1.5	33
	10/09/01 NP	<500	<0.50	<0.50	<0.50	<1.5	22
	01/28/02 NP	<500	<0.50	<0.50	<0.50	<1.5	1.1
	04/17/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/09/02 NP	Not Sampled - Well Reduction Program					
	10/21/02 NP	<500	<0.50	<0.50	<0.50	<1.5	1.8
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03	Not Sampled - Well Reduction Program					
	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	18
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	17
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-14	02/06/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/01	Not Sampled - Well Reduction Program					
	07/16/01	Not Sampled - Well Reduction Program					
	10/09/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/28/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	04/17/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02	Not Sampled - Well Reduction Program					
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03	Not Sampled - Well Reduction Program					
	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-14 Cont'd	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	2.0
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-15	02/06/01 NP	3,100	1,100	<50	190	<150	15,000
	05/08/01 NP	19,000	10,000	82	1,700	300	20,000
	07/16/01 NP	20,000	11,000	71	1,900	390	18,000
	10/09/01 NP	24,000	12,000	<250	1,800	<750	17,000
	01/28/02 NP	4,000	1,300	<62	390	<190	24,000
	04/17/02 NP	1,700	540	<100	180	<300	7,400
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02	Not Sampled - Well Not Accessible					
	02/21/03	Not Sampled - Well Not Accessible					
	05/08/03	Not Sampled - Well Not Accessible					
	07/25/03	Not Sampled - Well Not Accessible					
	11/21/03	Not Sampled - LPH Sheen					
	02/25/04	2,400	910	<200	<200	<600	51,000
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-16	02/06/01 NP	<1,000	<40	<40	<40	<120	13,000
	05/08/01 NP	<500	<25	<25	<25	<75	10,000
	07/16/01 NP	<500	<40	<40	<40	<120	9,300
	10/09/01 NP	<500	<100	<100	<100	<300	9,000
	01/28/02 NP	<500	<40	<40	<40	<120	7,000
	04/17/02 NP	<500	<50	<50	<50	<150	5,000
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	<500	<50	<50	<50	<150	7,200
	02/21/03 NP	<500	<50	<50	<50	<150	5,600
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03	Not Sampled - Well Reduction Program					
	11/21/03 NP	<500	<25	<25	<25	<75	6,300
	11/21/03	<500	<50	<50	<50	<150	6,000
	02/25/04	<500	<50	<50	<50	<150	5,900
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-17	02/06/01 NP	28,000	12,000	<40	2,500	<120	3,000
	05/08/01 NP	14,000	8,000	43	1,500	<75	1,400
	07/16/01 NP	19,000	10,000	95	2,000	220	1,300
	10/09/01 NP	15,000	8,400	<100	2,000	<300	380
	01/28/02 NP	13,000	6,300	<40	1,500	<120	760
	04/17/02 NP	7,900	4,100	<25	1,200	<75	520
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	2,800	600	<5.0	610	<15	13

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-17 Cont'd	02/21/03 NP	3,900	860	<5.0	1,200	<15	110
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 NP	700	1,600	16	1,100	46	56
	11/21/03 NP	5,700	2,600	<20	1,200	<60	47
	11/21/03	510	150	<5.0	80	<15	1,300
	02/25/04	<500	21	<5.0	42	<15	620
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-18	02/06/01 NP	<500	<25	<25	<25	<75	5,700
	05/08/01 NP	<500	<25	<25	<25	<75	8,600
	07/16/01 NP	<500	<25	<25	<25	<75	8,300
	10/09/01 NP	<500	<100	<100	<100	<300	5,600
	01/28/02 NP	<500	<40	<40	<40	<120	5,600
	04/17/02 NP	<500	<25	<25	<25	<75	6,500
	07/09/02 NP	<500	<25	<25	<25	<75	7,800
	10/21/02 NP	<500	<50	<50	<50	<150	9,100
	02/21/03 NP	<500	<20	<20	<20	<60	6,000
	05/08/03 NP	<500	<0.500	<0.500	<0.500	<1.50	3,840
	07/25/03 NP	<500	<200	<200	<200	<600	73,000
	11/21/03 NP	<500	<20	<20	<20	<60	2,800
	11/21/03	<500	<25	<25	<25	<75	6,100
	02/25/04	<500	<50	<50	<50	<150	9,100
	06/21/04	<500	<50	<50	<50	<150	8,200
	09/13/04	<500	<50	<50	<50	<150	6,100
	12/20/04	1,300	<50	<50	<50	<50	2,900
MW-19A*	02/06/01 NP	<500	<0.50	<0.50	<0.50	<1.5	97
	05/08/01 NP	<500	<0.50	<0.50	<0.50	<1.5	110
	07/16/01 NP	<500	<0.50	<0.50	<0.50	<1.5	260
	10/09/01 NP	<500	<5.0	<5.0	<5.0	<15	220
	01/28/02 NP	<500	<0.50	<0.50	<0.50	<1.5	4.3
	04/17/02 NP	<500	<0.50	<0.50	<0.50	<1.5	1.4
	07/09/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/21/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/03 NP	<500	<0.500	<0.500	<0.500	<1.50	<1.00
	07/25/03 NP	<500	<0.50	<0.50	<0.50	<1.5	1.0
	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	1.8
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	16
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	10
	06/21/04	<500	<0.50	<0.50	<0.50	<1.5	14
	09/13/04	<500	<0.50	<0.50	<0.50	<1.5	6.3
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	3.2
MW-19B*	02/06/01 NP	6,300	720	160	880	400	<5.0
	05/08/01 NP	19,000	1,900	810	2,300	3,200	<13

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-19B* Cont'd	07/16/01 NP	22,000	1,900	870	2,400	3,800	<100
	10/09/01 NP	15,000	1,100	180	1,600	1,900	<80
	01/28/02 NP	3,800	280	40	470	150	<4.0
	04/17/02 NP	4,000	250	23	530	300	<5.0
	07/09/02 NP	6,800	380	18	630	330	<5.0
	10/21/02 NP	3,900	450	<5.0	1,100	19	<10
	02/21/03 NP	1,400	77	<5.0	410	<15	<10
	05/08/03 NP	7,100	302	9.67	1,690	91.1	<1.00
	07/25/03 NP	3,200	180	<5.0	950	<15	12
	11/21/03 NP	4,600	150	<5.0	1,000	22	63
	11/21/03	6,800	190	160	1,400	550	290
	02/25/04	7,600	170	340	1,800	1,100	180
	06/21/04	7,100	75	110	1,100	440	29
	09/13/04	8,300	68	180	1,200	810	<20
	12/20/04	2,100	20	35	280	140	<5.0
MW-20	02/06/01 NP	2,900	22	21	1,200	120	<10
	05/08/01 NP	3,800	60	36	1,400	146	<10
	07/16/01 NP	3,900	60	57	720	240	<10
	10/09/01 NP	3,100	54	16	960	82	<20
	01/28/02 NP	550	20	1.1	56	7.2	<1.0
	04/17/02 NP	4,200	28	26	610	130	<1.0
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	510	4.8	<0.5	14	<1.5	<1.0
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 NP	<500	1.3	<0.50	1.1	<1.5	<1.0
	11/21/03 NP	<500	2.8	<0.50	5.2	<1.5	<1.0
	11/21/03	<500	1.2	<0.50	0.83	<1.5	<1.0
	02/25/04	<500	<0.50	<0.50	1.2	<1.5	<1.0
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-21	02/06/01 NP	5,400	160	170	1,100	300	<10
	05/08/01 NP	3,000	66	<5.0	850	<15	<10
	07/16/01 NP	3,900	130	32	1,500	71	<5.0
	10/09/01 NP	10,000	120	35	2,300	1,100	<50
	01/28/02 NP	2,200	19	18	510	38	<10
	04/17/02 NP	6,300	69	100	1,300	460	<5.0
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	3,700	50	7.8	1,200	<15	<10
	02/21/03 NP	<500	20	<2.5	320	<7.5	<5.0
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03 NP	1,700	40	<2.5	540	150	<5.0
	11/21/03 NP	1,600	110	<5.0	550	30	<10
	11/21/03	4,900	170	80	720	1,000	<10

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-21 Cont'd	02/25/04	6,000	240	160	1,000	1,800	<10
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-22	02/06/01 NP	<500	<0.50	<0.50	<0.50	<1.5	73
	05/08/01 NP	<500	<0.50	<0.50	<0.50	<1.5	54
	07/16/01 NP	<500	<0.50	<0.50	<0.50	<1.5	44
	10/09/01 NP	<500	<0.50	<0.50	<0.50	<1.5	22
	01/28/02 NP	<500	<0.50	<0.50	<0.50	<1.5	44
	04/17/02 NP	<500	<0.50	<0.50	<0.50	<1.5	21
	07/09/02 NP	<500	<0.50	<0.50	<0.50	<1.5	13
	10/21/02 NP	<500	<0.50	<0.50	<0.50	<1.50	17
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	27
	05/08/03 NP	<500	<0.500	<0.500	<0.500	<1.50	7.9
	07/25/03 NP	<500	<0.50	<0.50	<0.50	<1.5	7.7
	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	8.9
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	33
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	29
	06/21/04	<500	<0.50	<0.50	<0.50	<1.5	47
	09/13/04	<500	<0.50	<0.50	<0.50	<1.5	72
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	38
MW-23	02/06/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/16/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/09/01 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/28/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	04/17/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/09/02	Not Sampled - Well Reduction Program					
	10/21/02 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	02/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	05/08/03	Not Sampled - Well Reduction Program					
	07/25/03	Not Sampled - Well Reduction Program					
	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	06/21/04	Not Sampled - Well Reduction Program					
	09/13/04	Not Sampled - Well Reduction Program					
	12/20/04	Not Sampled - Well Reduction Program					
MW-24	11/21/03 NP	<500	<5.0	<5.0	<5.0	<15	790
	11/21/03	<500	<2.5	<2.5	<2.5	<7.5	480
	02/25/04	<500	<2.5	<2.5	<2.5	<7.5	430
	06/21/04	<500	<2.5	<2.5	<2.5	<7.5	340
	09/13/04	<500	<2.5	<2.5	<2.5	<7.5	450
	12/20/04	<100	<2.5	<2.5	<2.5	<2.5	130

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2001 TO PRESENT
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-25	11/21/03 NP	<500	<10	<10	<10	<30	2,400
	11/21/03	<500	<10	<10	<10	<30	2,000
	02/25/04	<500	<10	<10	<10	<30	2,200
	06/21/04	Not Sampled - Inaccessible					
	09/13/04	<500	<1.0	<1.0	<1.0	<3.0	140
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	82
MW-26	11/21/03 NP	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	11/21/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	02/25/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	06/21/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	09/13/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	12/20/04	<100	<1.0	<1.0	<1.0	<1.0	<1.0

Data in the table prior to 9/28/94 summarized from Alton Geoscience Reports.

Notes:

GRO = Gasoline-range organics (C_6-C_{12}) (DHS Modified EPA Method 8015)
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total Xylenes
BTEX = Analyzed by EPA Method 8260B.
MTBE = Methyl-tert-butyl ether analyzed by EPA Method 8260.
< = Less than indicated laboratory reporting limit
-- = Sample not analyzed
NP = Sample collected by no-purge sampling procedures
* MW-19 was renamed MW-19A after the installation of another well designated MW-19 (now MW-19B).

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2001 TO PRESENT

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL
MW-1	Well Destroyed 10/93					
MW-2	Well Destroyed 10/93					
MW-3	Well Destroyed 10/93					
MW-4	Well Destroyed 10/93					
MW-5	Well Destroyed 10/93					
MW-6	02/06/01 NP	<130	<25	<25	<25	--
	05/08/01	Not Sampled - Well Reduction Program				
	07/16/01	Not Sampled - Well Reduction Program				
	01/28/02 NP	<25	<5.0	<5.0	17	--
	04/17/02 NP	<25	<5.0	<5.0	24	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<500	<50	<50	<50	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03 NP	<50	<5.0	<5.0	16	<150
	11/21/03 NP	<50	<5.0	<5.0	11	<150
	11/21/03	66	<5.0	<5.0	8.1	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-7	Well Destroyed 10/93					
MW-8	Well Destroyed 10/93					
MW-10	02/06/01 NP	<25	<5.0	<5.0	<5.0	--
	05/08/01	Not Sampled - Well Reduction Program				
	07/16/01	Not Sampled - Well Reduction Program				
	10/09/01	Not Sampled - Well Reduction Program				
	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	04/17/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<50	<5.0	<5.0	<5.0	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-11	02/06/01 NP	<25	<5.0	<5.0	<5.0	--
	05/08/01 NP	<25	<5.0	<5.0	<5.0	--
	07/16/01 NP	<25	<5.0	<5.0	<5.0	--
	10/09/01 NP	<25	<5.0	<5.0	<5.0	--
	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<50	<5.0	<5.0	<5.0	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03	Not Sampled - Well Reduction Program				

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2001 TO PRESENT

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL
MW-11 Cont'd	07/25/03	<50	<0.50	<0.50	<0.50	<150
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-12	Well Destroyed 10/93					
MW-13	02/06/01 NP	<25	<5.0	<5.0	<5.0	--
	05/08/01 NP	<25	<5.0	<5.0	<5.0	--
	07/16/01 NP	<25	<5.0	<5.0	<5.0	--
	10/09/01 NP	<25	<5.0	<5.0	<5.0	--
	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	04/17/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<50	<5.0	<5.0	<5.0	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03	Not Sampled - Well Reduction Program				
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-14	02/06/01 NP	<25	<5.0	<5.0	<5.0	--
	05/08/01	Not Sampled - Well Reduction Program				
	07/16/01	--				
	10/09/01 NP	<25	<5.0	<5.0	<5.0	--
	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	04/17/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02	Not Sampled				
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03	Not Sampled - Well Reduction Program				
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-15	02/06/01 NP	4,400	<500	<500	<500	--
	05/08/01 NP	16,000	<630	<630	<630	--
	07/16/01 NP	8,100	<400	<400	<400	--
	10/09/01 NP	<12,000	<2,500	<2,500	<2,500	--
	01/28/02 NP	3,600	<620	<620	<620	--
	04/17/02 NP	<5,000	<1,000	<1,000	<1,000	--
	07/09/02	Not Sampled - Well Reduction Program				

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2001 TO PRESENT

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL
MW-15 Cont'd	10/21/02	Not Sampled - Well Reduction Program				
	02/21/03	Not Sampled - Not Accessible				
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03	Not Sampled - Well Reduction Program				
	11/21/03	Not Sampled - LPH Sheen				
	02/25/04	51,000	<2,000	<2,000	<2,000	<60,000
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-16	02/06/01 NP	4,200	<400	<400	<400	--
	05/08/01 NP	2,900	<250	<250	<250	--
	07/16/01 NP	<2000	<400	<400	<400	--
	10/09/01 NP	<5,000	<1,000	<1,000	<1,000	--
	01/28/02 NP	<2,000	<400	<400	<400	--
	04/17/02 NP	<2,500	<500	<500	<500	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<5,000	<500	<500	<500	--
	02/21/03 NP	<5,000	<500	<500	<500	<15,000
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03	Not Sampled - Well Reduction Program				
	11/21/03 NP	<2,500	<250	<250	<250	<7,500
	11/21/03	<5,000	<500	<500	<500	<15,000
	02/25/04	<5,000	<500	<500	<500	<15,000
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-17	02/06/01 NP	<2,000	<400	<400	<400	--
	05/08/01 NP	<1300	<250	<250	<250	--
	07/16/01 NP	360	<50	<50	78	--
	10/09/01 NP	<5,000	<1,000	<1,000	<1,000	--
	01/28/02 NP	<2,000	<400	<400	<400	--
	04/17/02 NP	<1,200	<250	<250	<250	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<500	<50	<50	<50	--
	02/21/03 NP	<500	<50	<50	<50	<1,500
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03 NP	<500	<50	<50	<50	<1,500
	11/21/03 NP	<2,000	<200	<200	<200	<6,000
	11/21/03	<500	<50	<50	<50	<1,500
	02/25/04	<500	<50	<50	<50	<1,500
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-18	02/06/01 NP	1,400	<250	<250	<250	--
	05/08/01 NP	2,700	<250	<250	<250	--
	07/16/01 NP	<1200	<250	<250	<250	--
	10/09/01 NP	<5,000	<1,000	<1,000	<1,000	--
	01/28/02 NP	<2,000	<400	<400	<400	--
	04/17/02 NP	<1,200	<250	<250	<250	--

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2001 TO PRESENT

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL
MW-18 Cont'd	07/09/02 NP	1,700	<250	<250	<250	--
	10/21/02 NP	<5,000	<500	<500	<500	--
	02/21/03 NP	<2,000	<200	<200	<200	<6,000
	05/08/03 NP	78.7	<1.00	<1.00	15.6	<50.0
	07/25/03 NP	<20,000	<2,000	<2,000	<2,000	<60,000
	11/21/03 NP	<2,000	<200	<200	<200	<6,000
	11/21/03	<2,500	<250	<250	<250	<7,500
	02/25/04	<5,000	<500	<500	<500	<15,000
	06/21/04	<5,000	<500	<500	<500	<15,000
	09/13/04	<5,000	<500	<500	<500	<15,000
	12/20/04	2,300	<100	<100	<100	<25,000
MW-19A*	02/06/01 NP	30	<5.0	<5.0	<5.0	--
	05/08/01 NP	41	<5.0	<5.0	<5.0	--
	07/16/01 NP	<25	<5.0	<5.0	<5.0	--
	10/09/01 NP	<250	<50	<50	<50	--
	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	04/17/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02 NP	<25	<5.0	<5.0	<5.0	--
	10/21/02 NP	<50	<5.0	<5.0	<5.0	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03 NP	<25.0	<1.00	<1.00	<1.00	<50.0
	07/25/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	<50	<5.0	<5.0	<5.0	<150
	09/13/04	<50	<5.0	<5.0	<5.0	<150
	12/20/04	<25	<2.0	<2.0	<2.0	<500
MW-19B*	02/06/01 NP	<130	<25	<25	<25	--
	05/08/01 NP	<310	<63	<63	<63	--
	07/16/01 NP	<2,500	<500	<500	<500	--
	10/09/01 NP	<2,000	<400	<400	<400	--
	01/28/02 NP	<100	<20	<20	<20	--
	04/17/02 NP	<120	<25	<25	<25	--
	07/09/02 NP	<120	<25	<25	<25	--
	10/21/02 NP	<500	<50	<50	<50	--
	02/21/03 NP	<500	<50	<50	<50	<1,500
	05/08/03 NP	<25.0	<1.00	<1.00	<1.00	<50.0
	07/25/03 NP	<500	<50	<50	<50	<1,500
	11/21/03 NP	<500	<50	<50	<50	<1,500
	11/21/03	<1,000	<100	<100	<100	<3,000
	02/25/04	<1,000	<100	<100	<100	<3,000
	06/21/04	<1,000	<100	<100	<100	<3,000
	09/13/04	<1,000	<100	<100	<100	<3,000
	12/20/04	<120	<10	<10	<10	<2,500
MW-20	02/06/01 NP	<250	<50	<50	<50	--
	05/08/01 NP	<250	<50	<50	<50	--
	07/16/01 NP	<250	<50	<50	<50	--
	10/09/01 NP	<500	<100	<100	<100	--

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2001 TO PRESENT

ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL
MW-20 Cont'd	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	04/17/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<50	<5.0	<5.0	<5.0	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-21	02/06/01 NP	<250	<50	<50	<50	--
	05/08/01 NP	<250	<50	<50	<50	--
	07/16/01 NP	<120	<25	<25	<25	--
	10/09/01 NP	<1,200	<250	<250	<250	--
	01/28/02 NP	<250	<50	<50	<50	--
	04/17/02 NP	<120	<25	<25	<25	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<500	<50	<50	<50	--
	02/21/03 NP	<250	<25	<25	<25	<750
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03 NP	<250	<25	<25	<25	<750
	11/21/03 NP	<500	<50	<50	<50	<1,500
	11/21/03	<500	<50	<50	<50	<1,500
	02/25/04	<500	<50	<50	<50	<1,500
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-22	02/06/01 NP	26	<5.0	<5.0	<5.0	--
	05/08/01 NP	<25	<5.0	<5.0	<5.0	--
	07/16/01 NP	<25	<5.0	<5.0	<5.0	--
	10/09/01 NP	<25	<5.0	<5.0	<5.0	--
	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	04/17/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02 NP	<25	<5.0	<5.0	<5.0	--
	10/21/02 NP	<50	<5.0	<5.0	<5.0	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03 NP	<25.0	<1.00	<1.00	<1.00	<50.0
	07/25/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	170	<5.0	<5.0	<5.0	<150
	02/25/04	160	<5.0	<5.0	<5.0	<150
	06/21/04	91	<5.0	<5.0	<5.0	<150
	09/13/04	110	<5.0	<5.0	<5.0	<150
	12/20/04	150	<2.0	<2.0	<2.0	<500
MW-23	02/06/01 NP	<25	<5.0	<5.0	<5.0	--
	05/08/01 NP	<25	<5.0	<5.0	<5.0	--

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL RESULTS, 2001 TO PRESENT

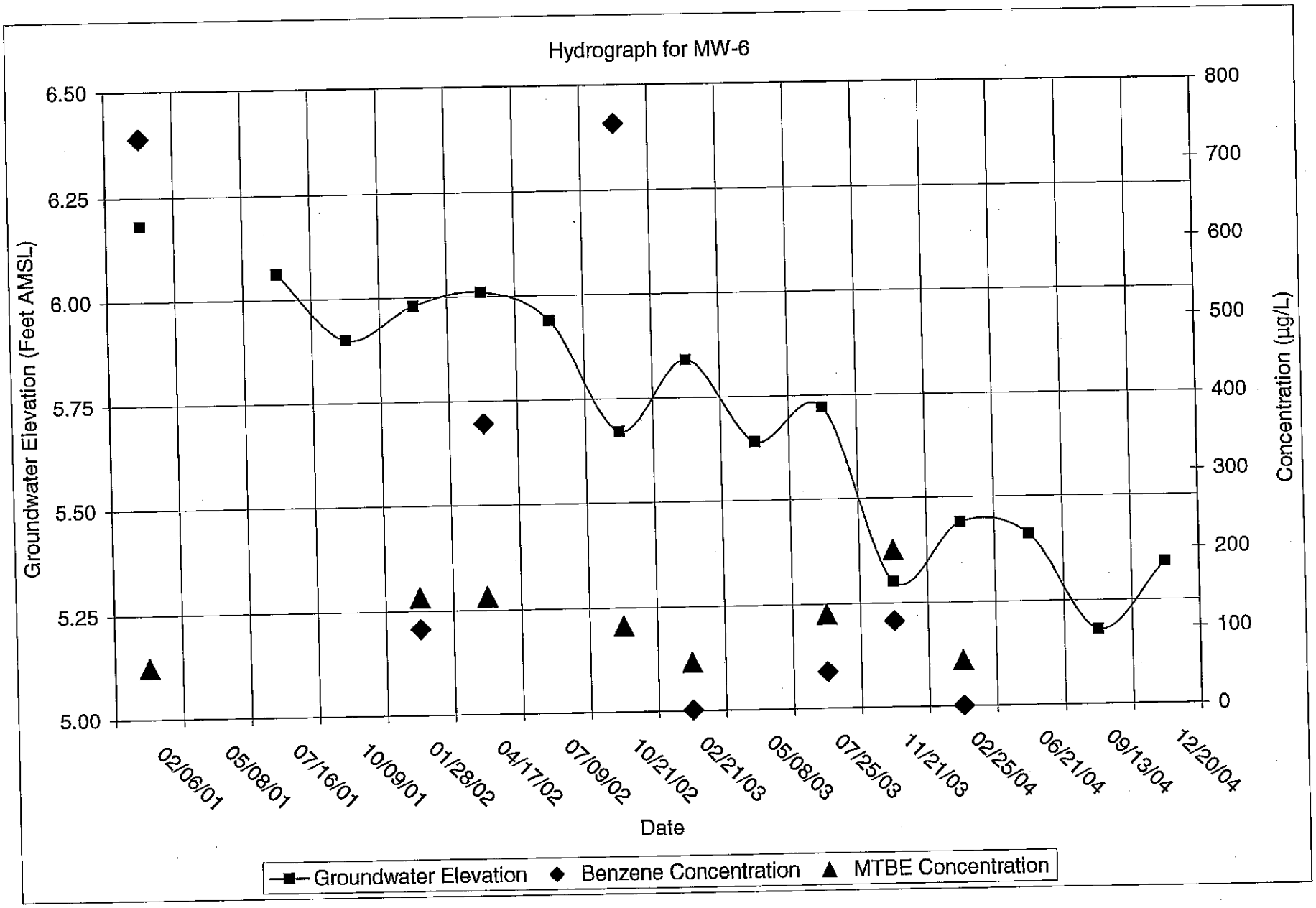
ARCO Facility #1919

All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	ETHANOL
MW-23 Cont'd	07/16/01 NP	<25	<5.0	<5.0	<5.0	--
	10/09/01 NP	<25	<5.0	<5.0	<5.0	--
	01/28/02 NP	<25	<5.0	<5.0	<5.0	--
	04/17/02 NP	<25	<5.0	<5.0	<5.0	--
	07/09/02	Not Sampled - Well Reduction Program				
	10/21/02 NP	<50	<5.0	<5.0	<5.0	--
	02/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	05/08/03	Not Sampled - Well Reduction Program				
	07/25/03	Not Sampled - Well Reduction Program				
	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	Not Sampled - Well Reduction Program				
	09/13/04	Not Sampled - Well Reduction Program				
	12/20/04	Not Sampled - Well Reduction Program				
MW-24	11/21/03 NP	<500	<50	<50	<50	<1,500
	11/21/03	<250	<25	<25	<25	<750
	02/25/04	<250	<25	<25	<25	<750
	06/21/04	<250	<25	<25	<25	<750
	09/13/04	<250	<25	<25	<25	<750
	12/20/04	<62	<5.0	<5.0	<5.0	<1,200
MW-25	11/21/03 NP	<1,000	<100	<100	<100	<3,000
	11/21/03	<1,000	<100	<100	<100	<3,000
	02/25/04	<1,000	<100	<100	<100	<3,000
	06/21/04	Not Sampled - Inaccessible				
	09/13/04	310	<10	<10	<10	<300
	12/20/04	460	<2.0	<2.0	<2.0	<500
MW-26	11/21/03 NP	<50	<5.0	<5.0	<5.0	<150
	11/21/03	<50	<5.0	<5.0	<5.0	<150
	02/25/04	<50	<5.0	<5.0	<5.0	<150
	06/21/04	<50	<5.0	<5.0	<5.0	<150
	09/13/04	<50	<5.0	<5.0	<5.0	<150
	12/20/04	<25	<2.0	<2.0	<2.0	<500

Notes:

TBA = Tert-butyl alcohol
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TAME = tert-Amyl methyl ether
Samples analyzed by EPA Method 8260B.
< = Less than indicated laboratory reporting limit
NP = Samples collected by no-purge procedures.
-- = Sample not analyzed.
* MW-19 was renamed MW-19A after the installation of another well designated MW-19 (now MW-19B).



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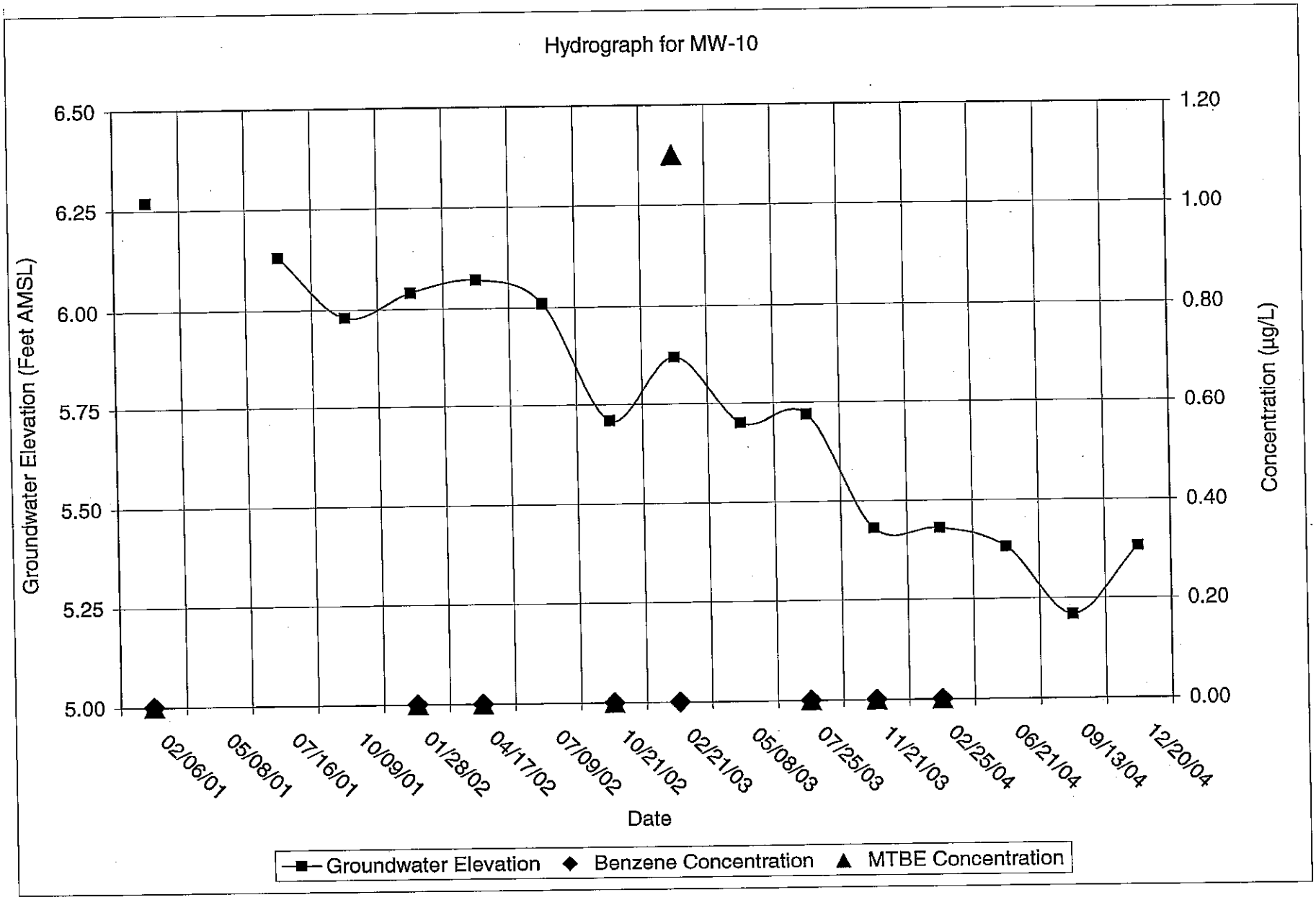

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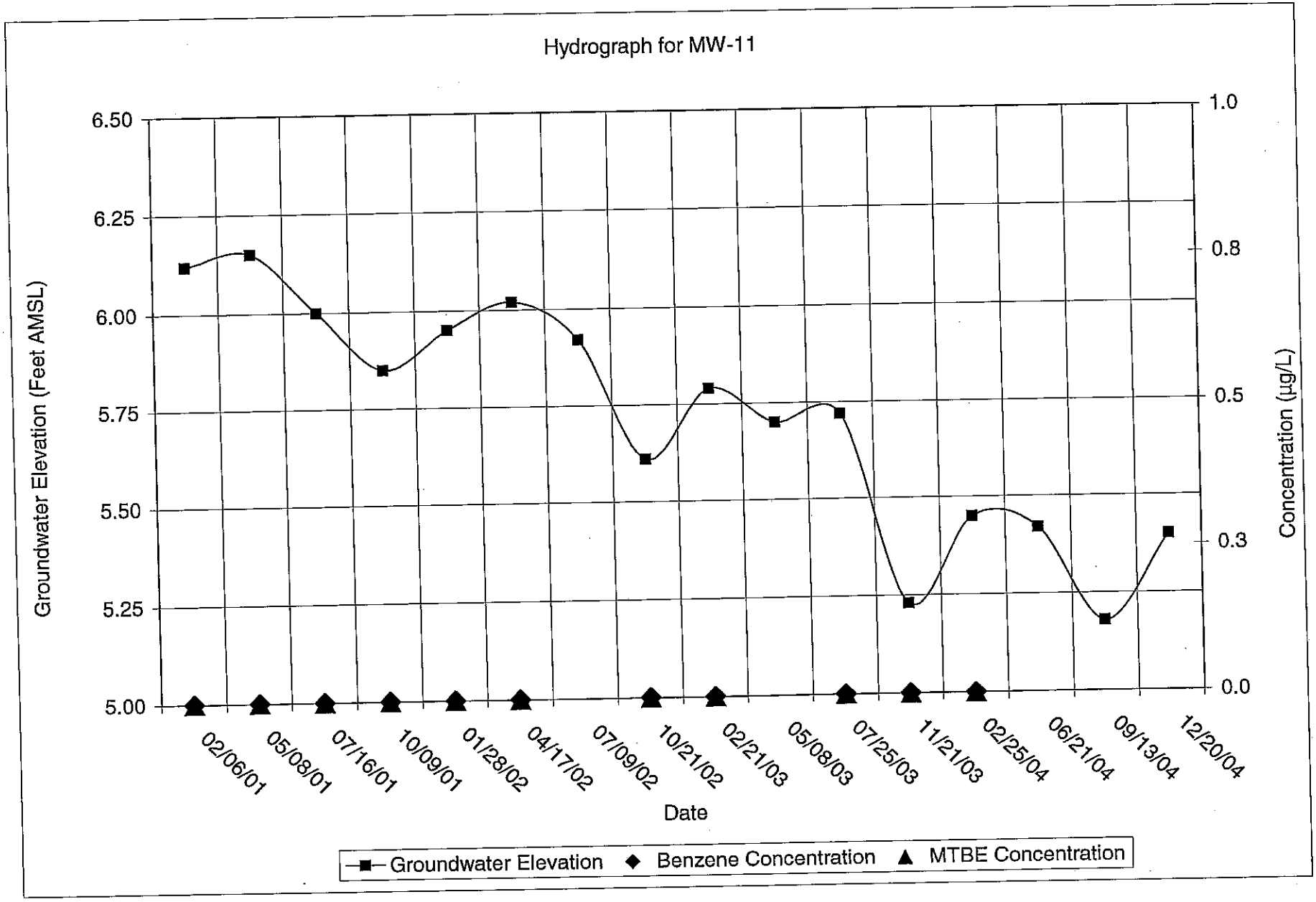

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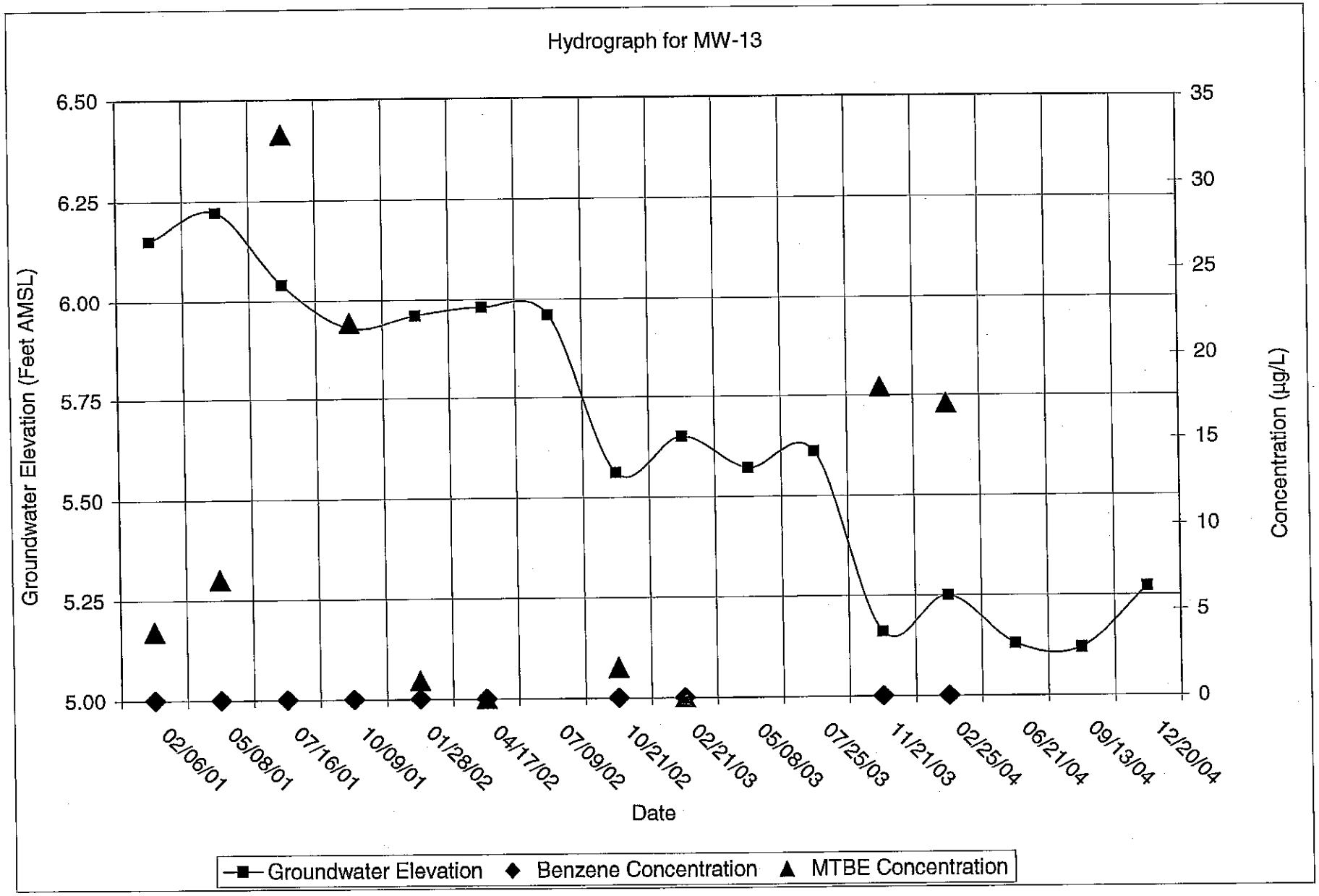

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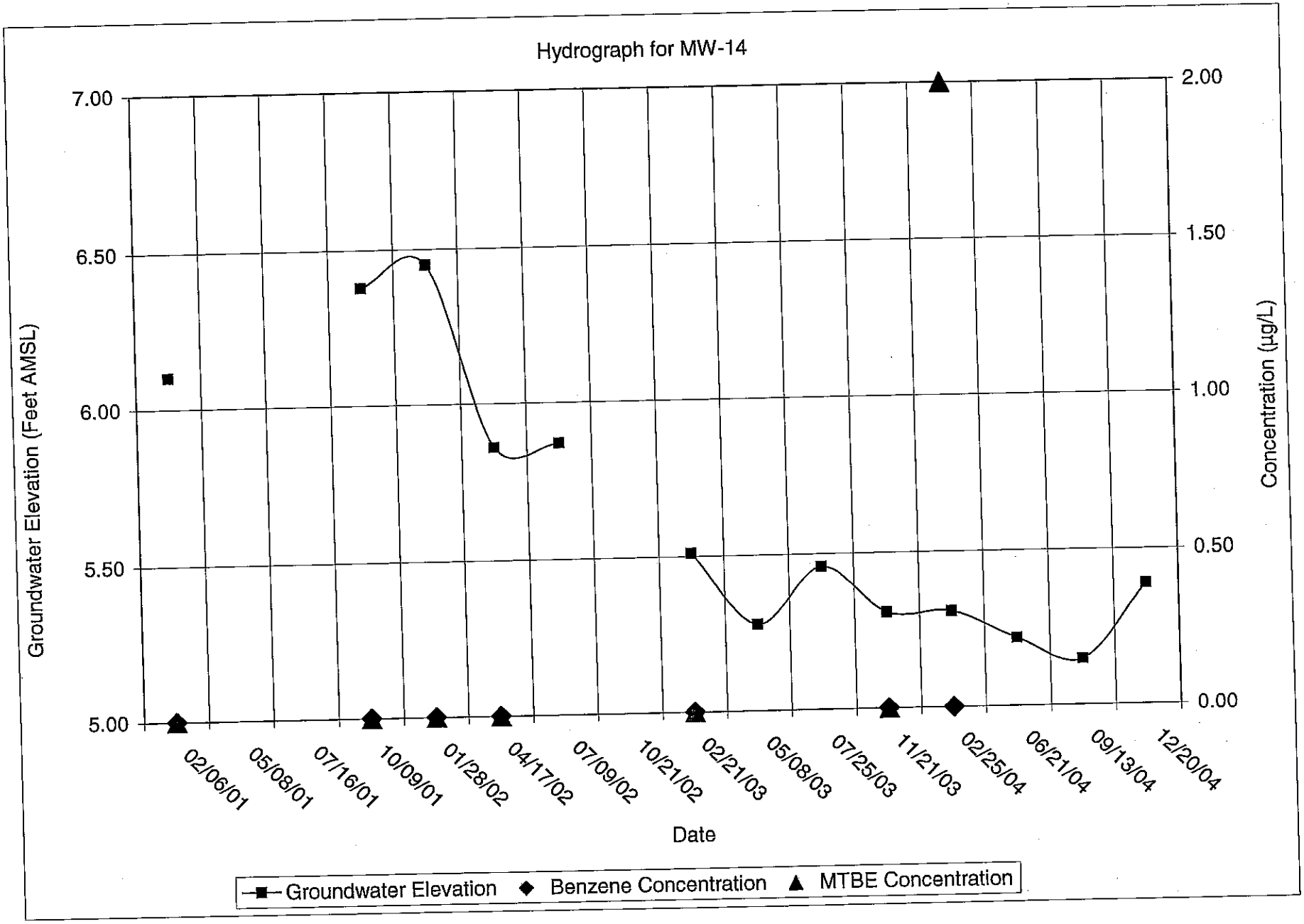

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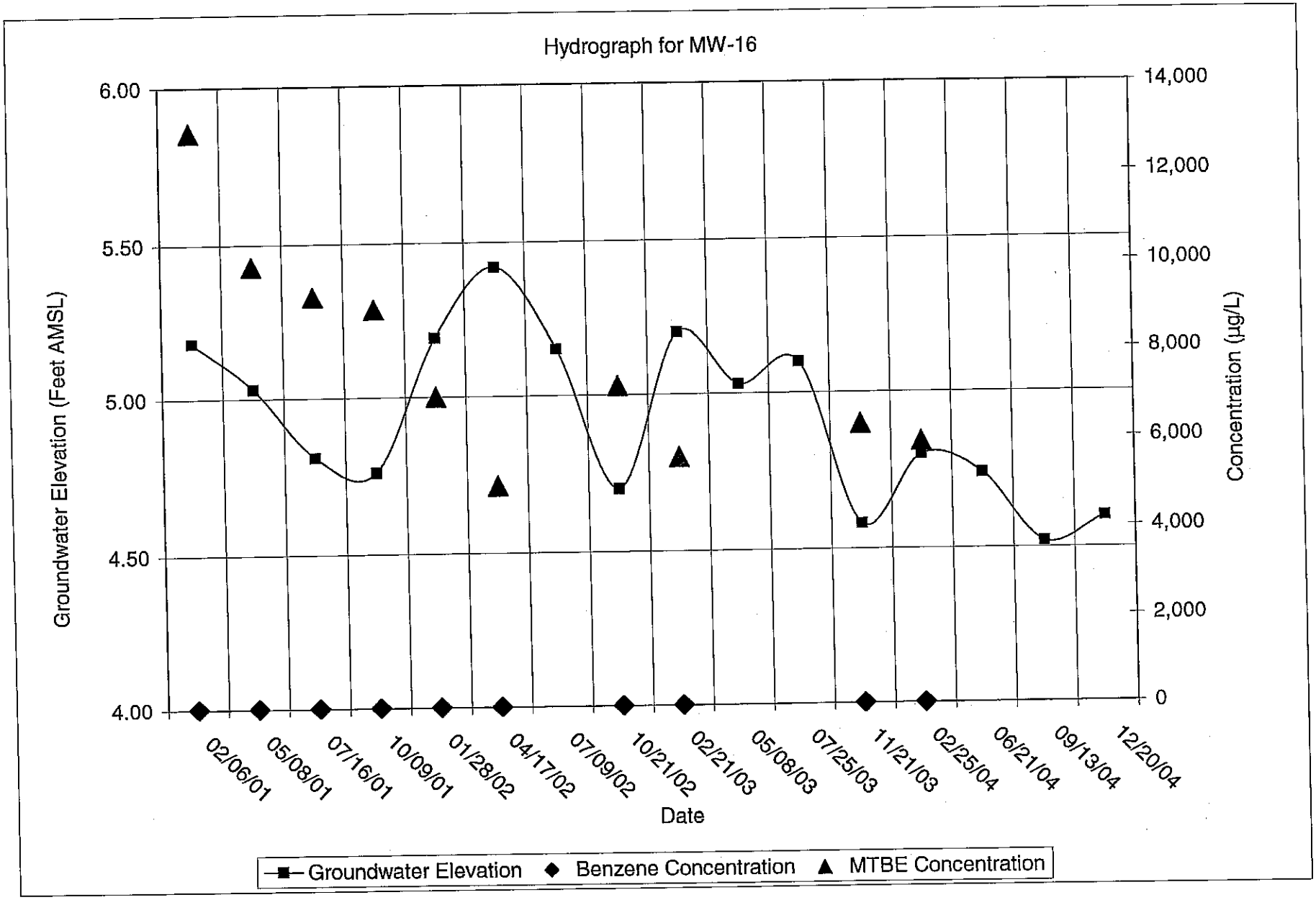

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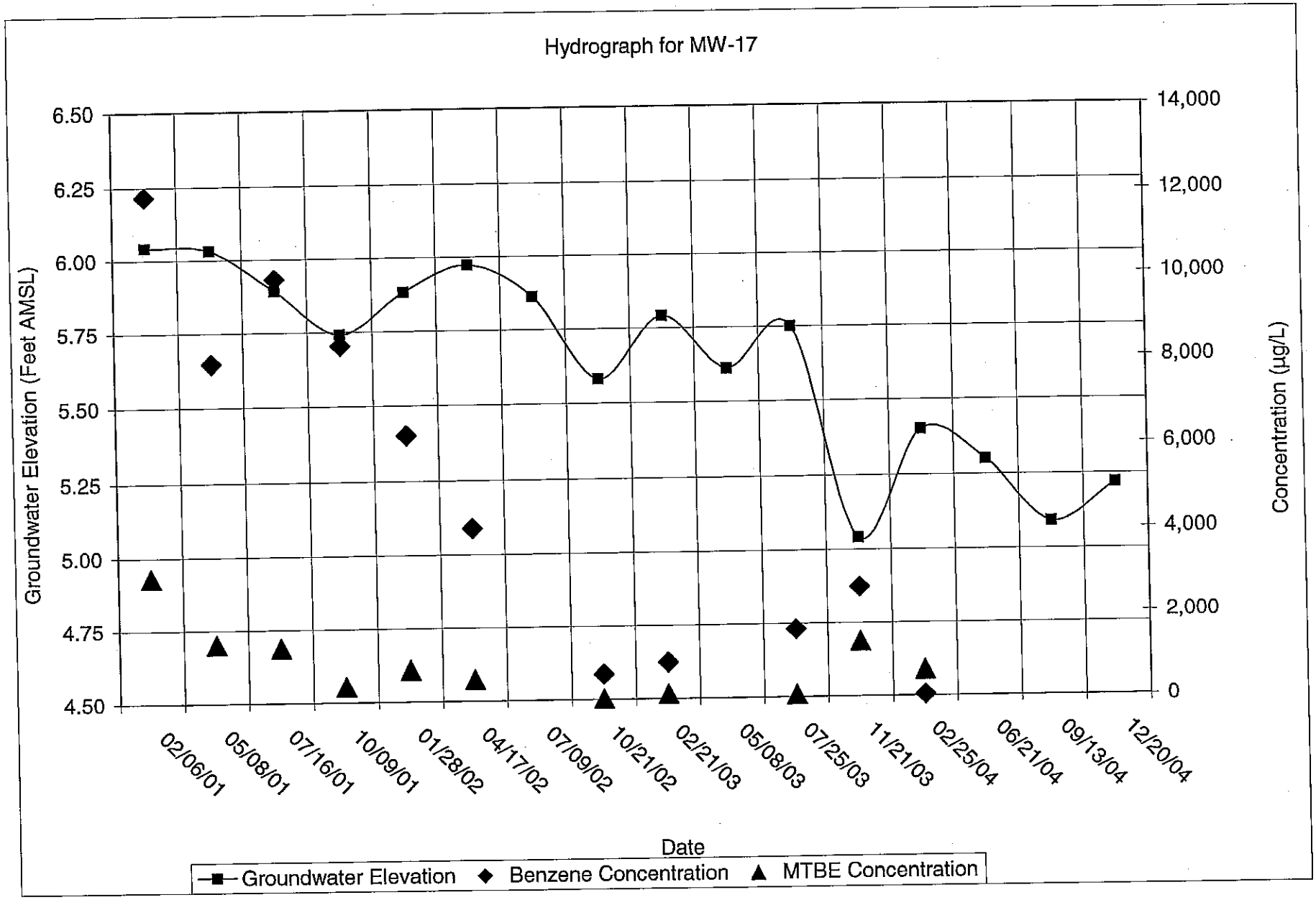

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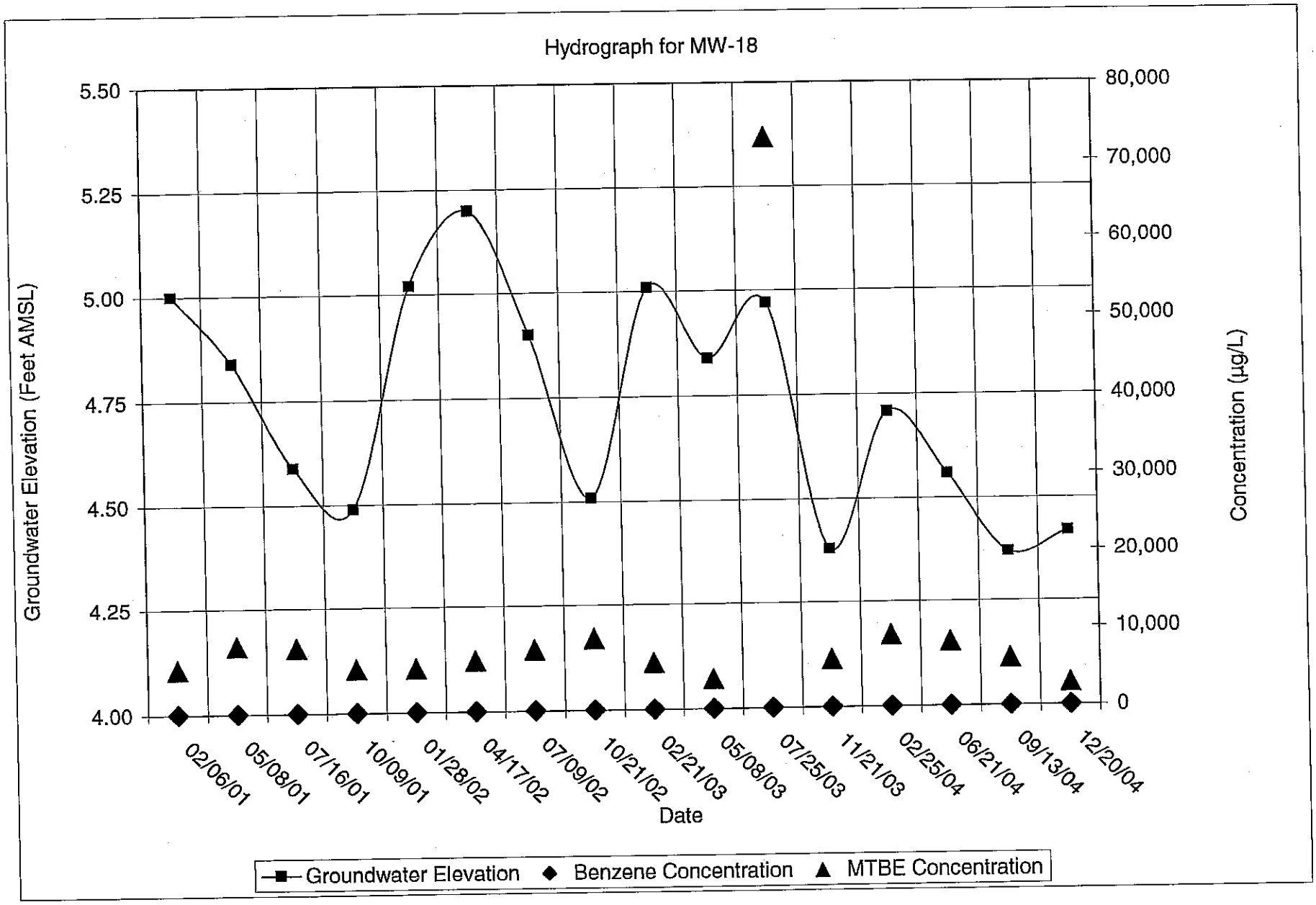

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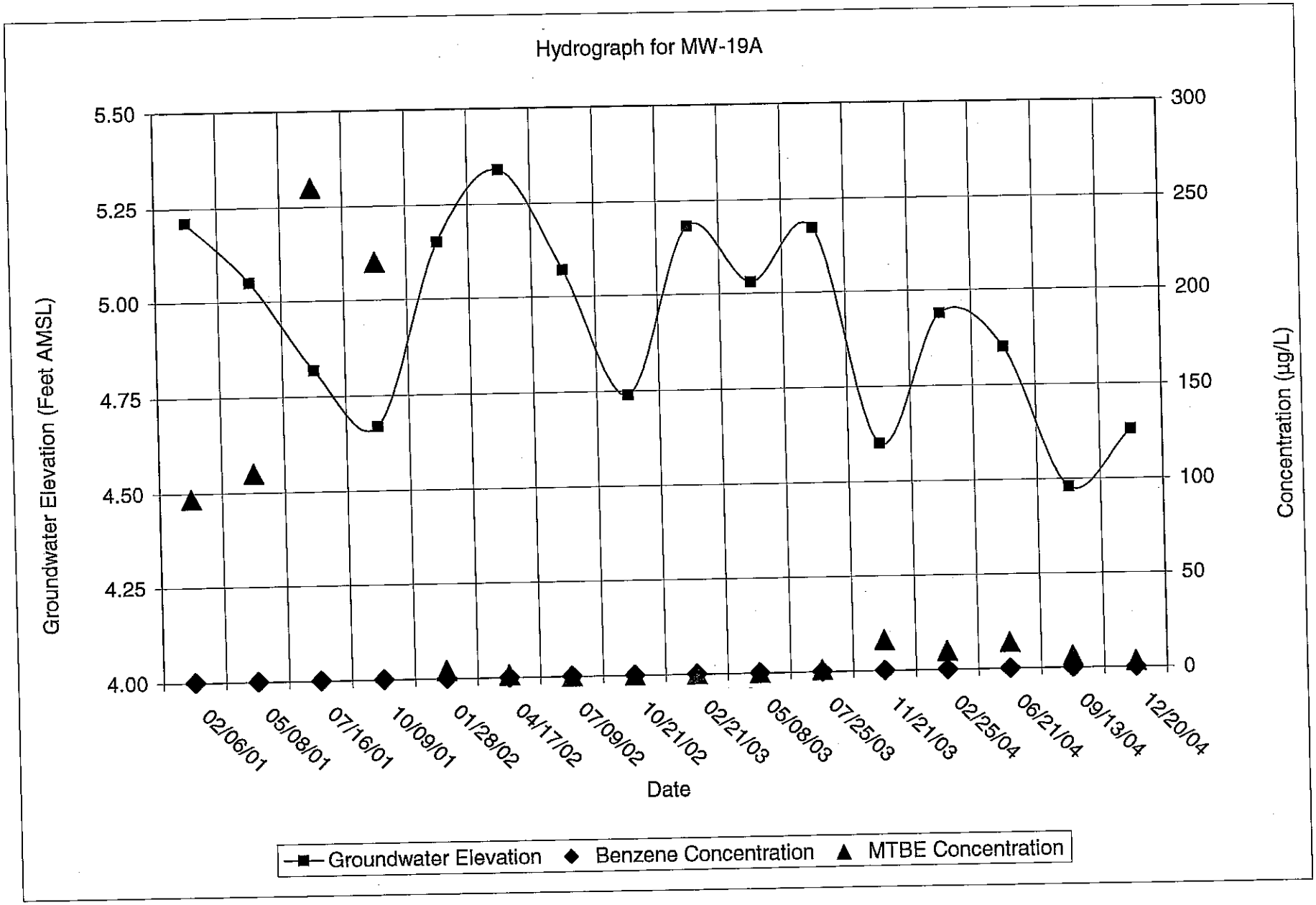

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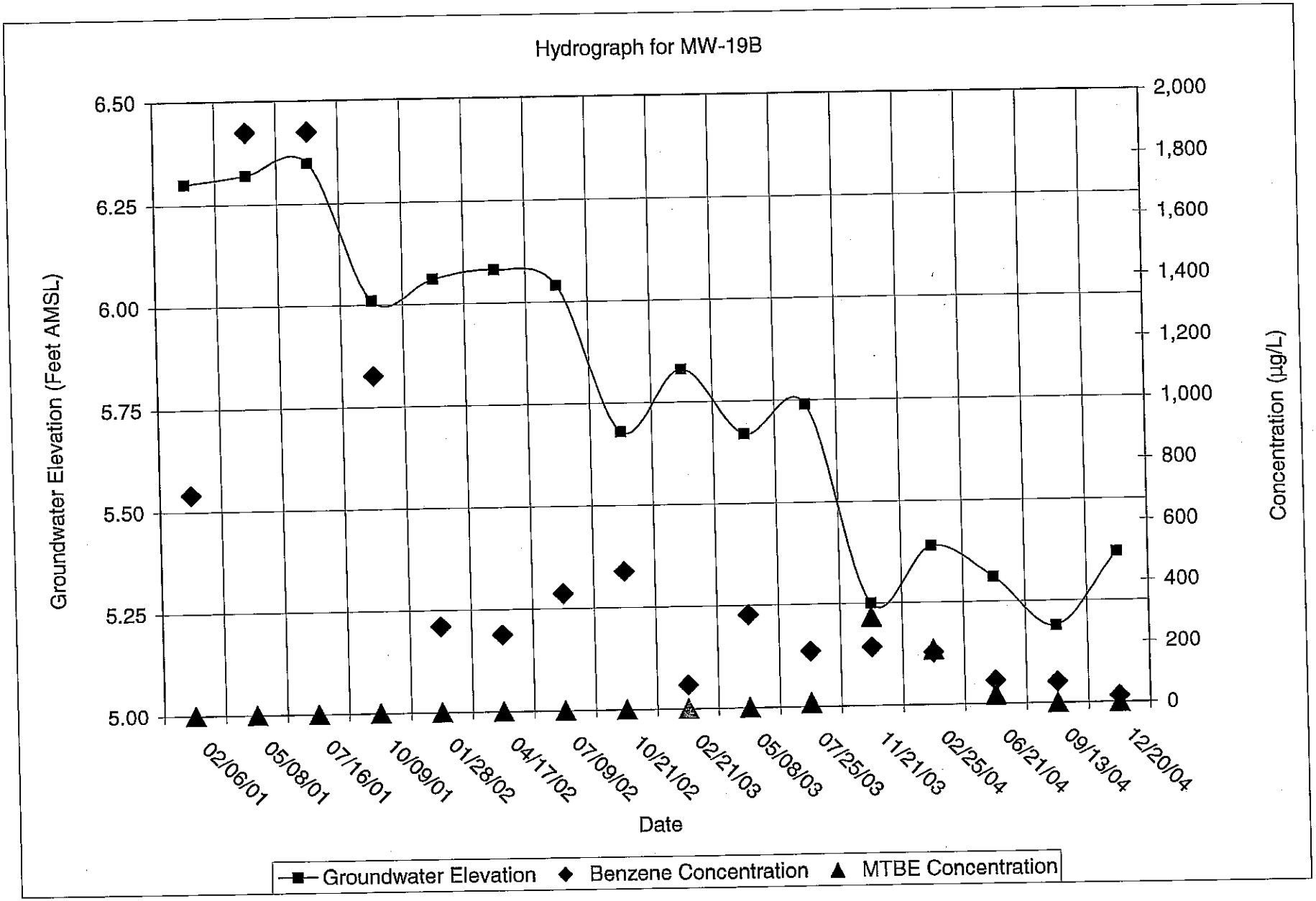

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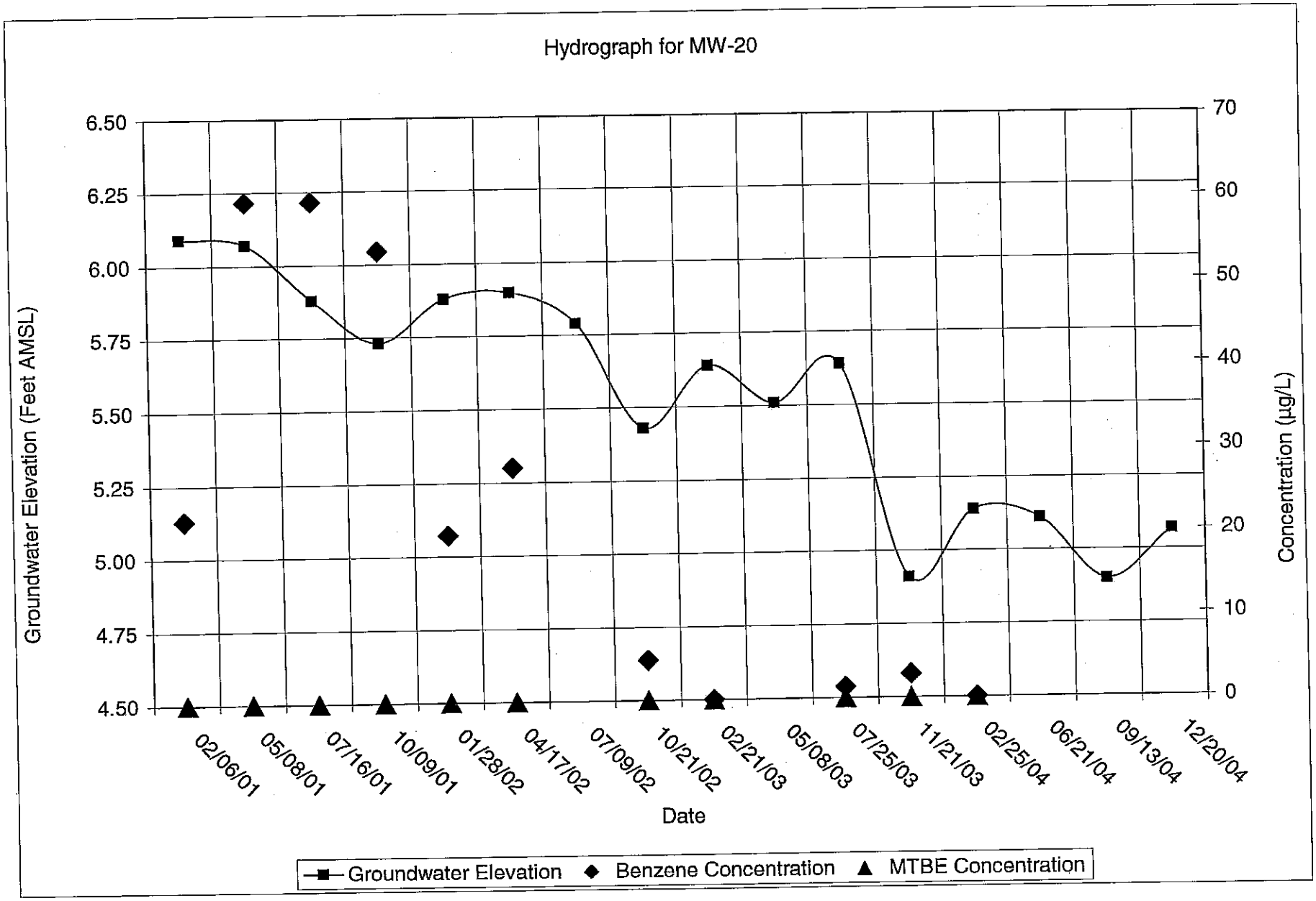

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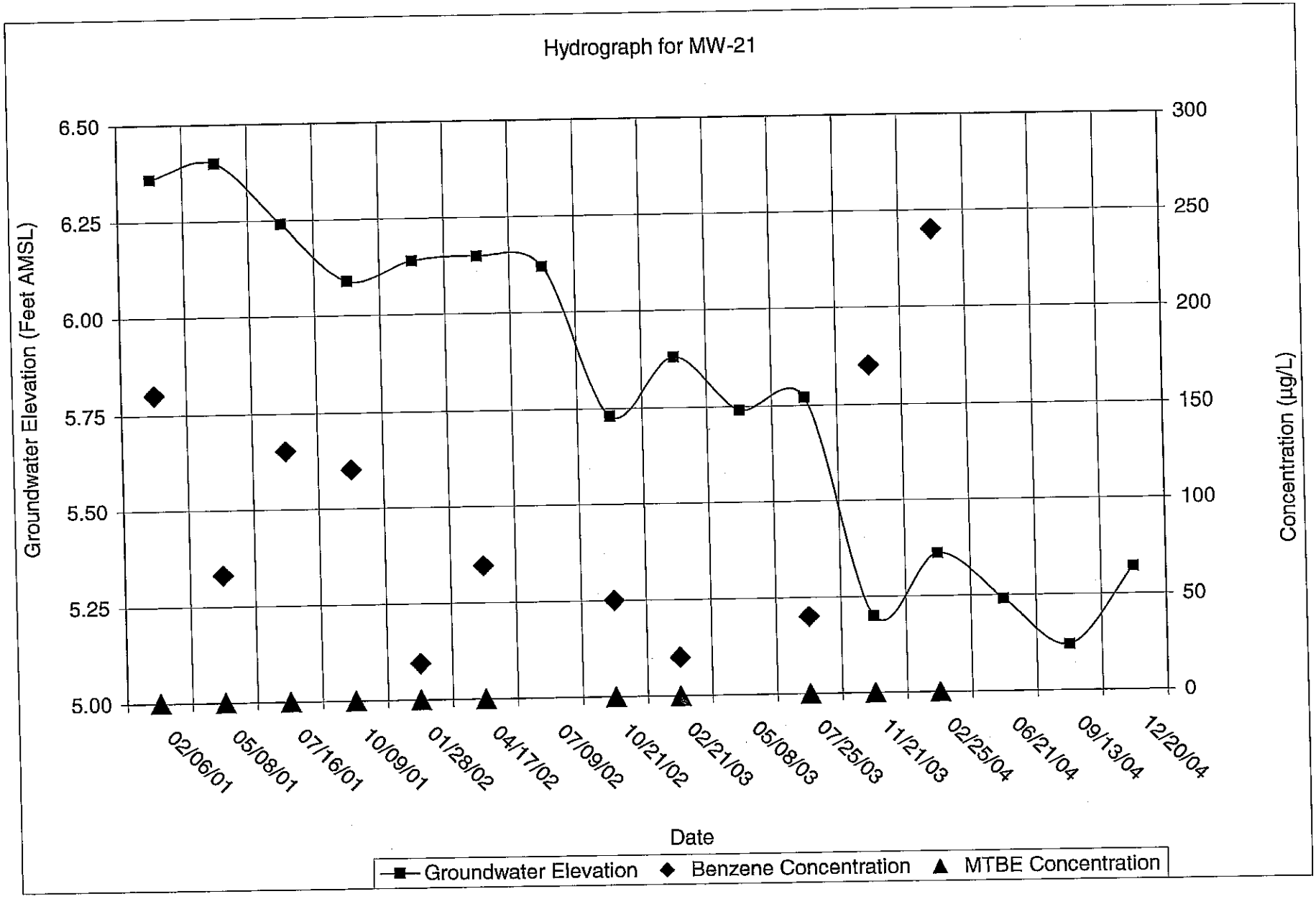

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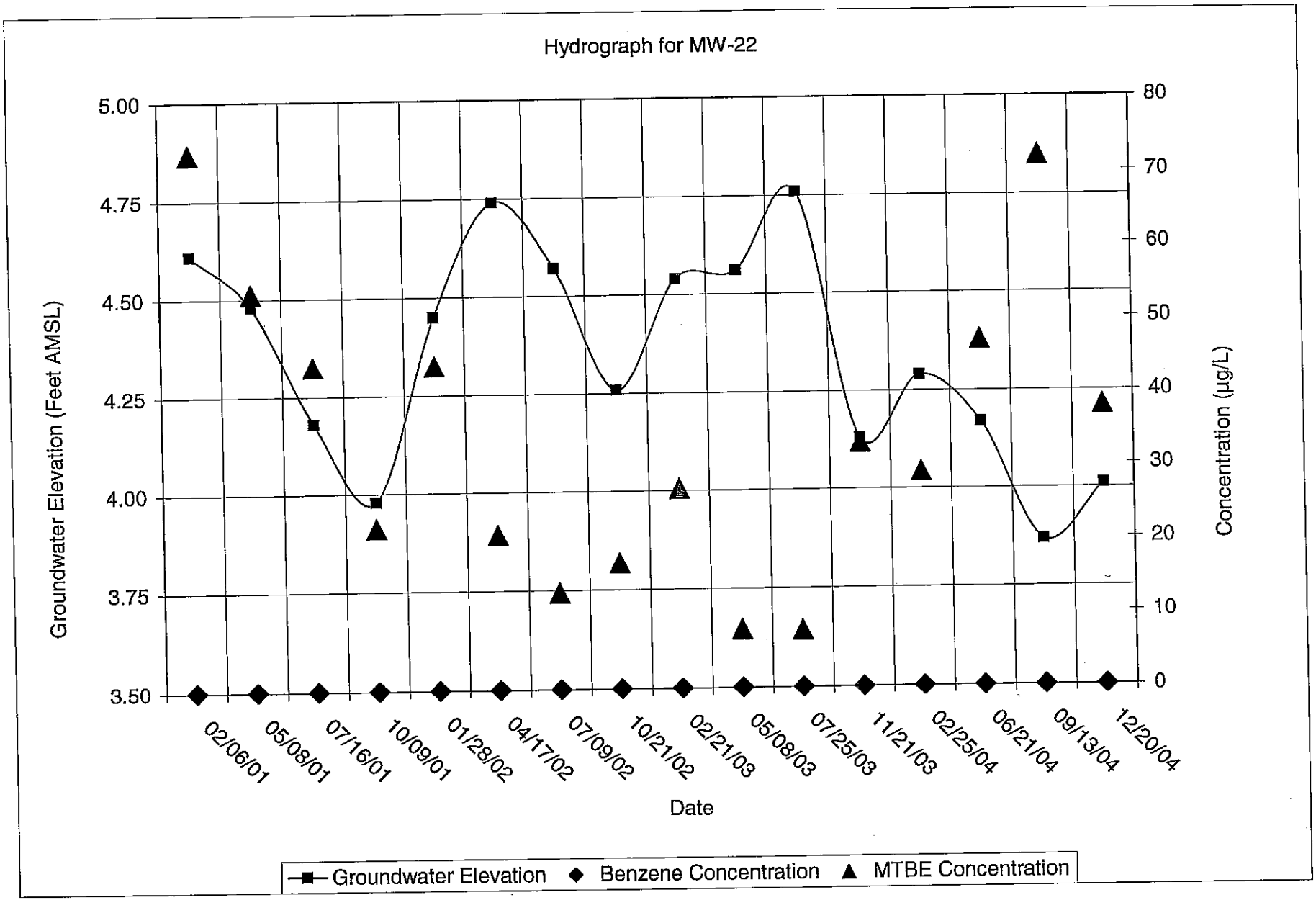

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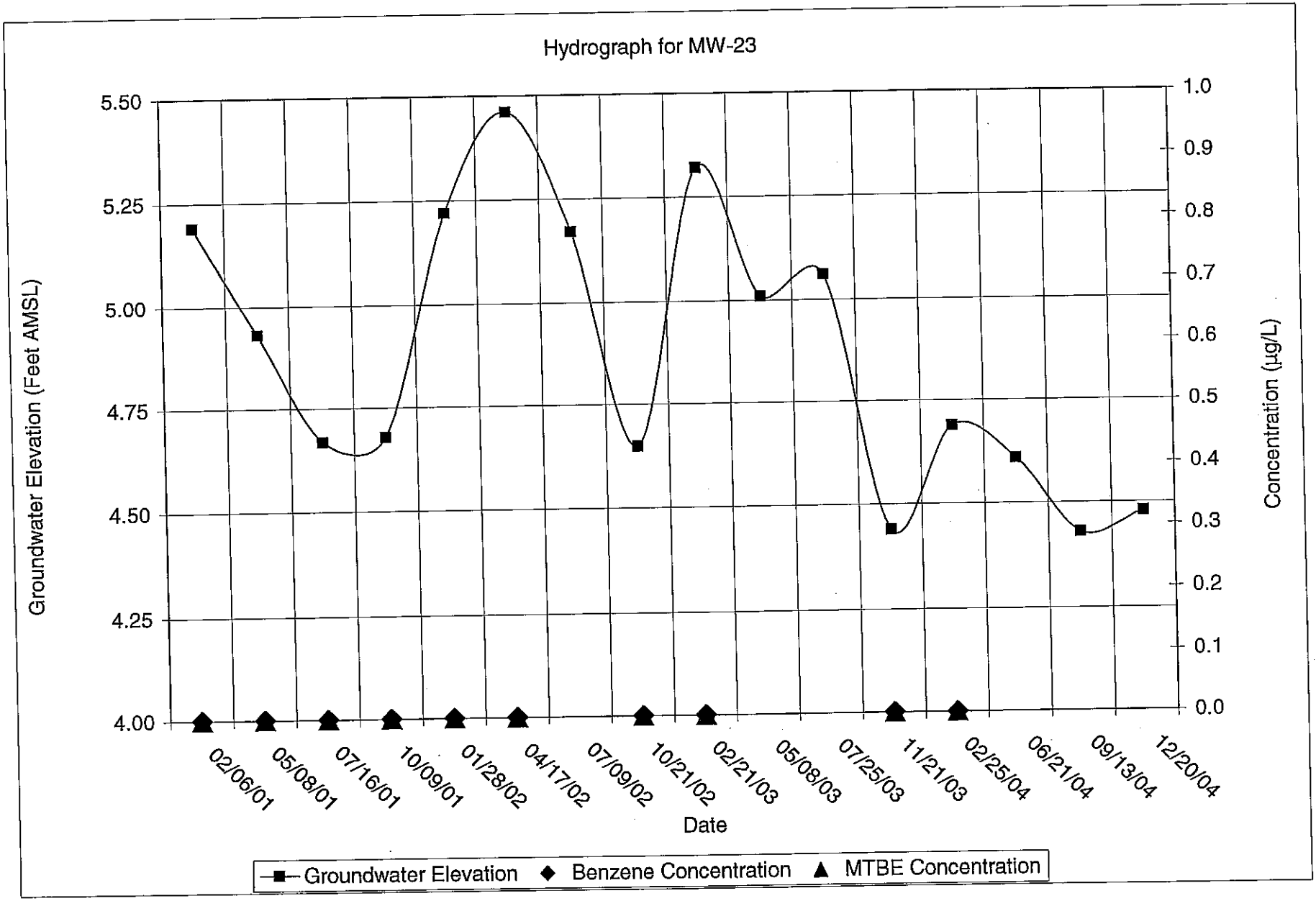

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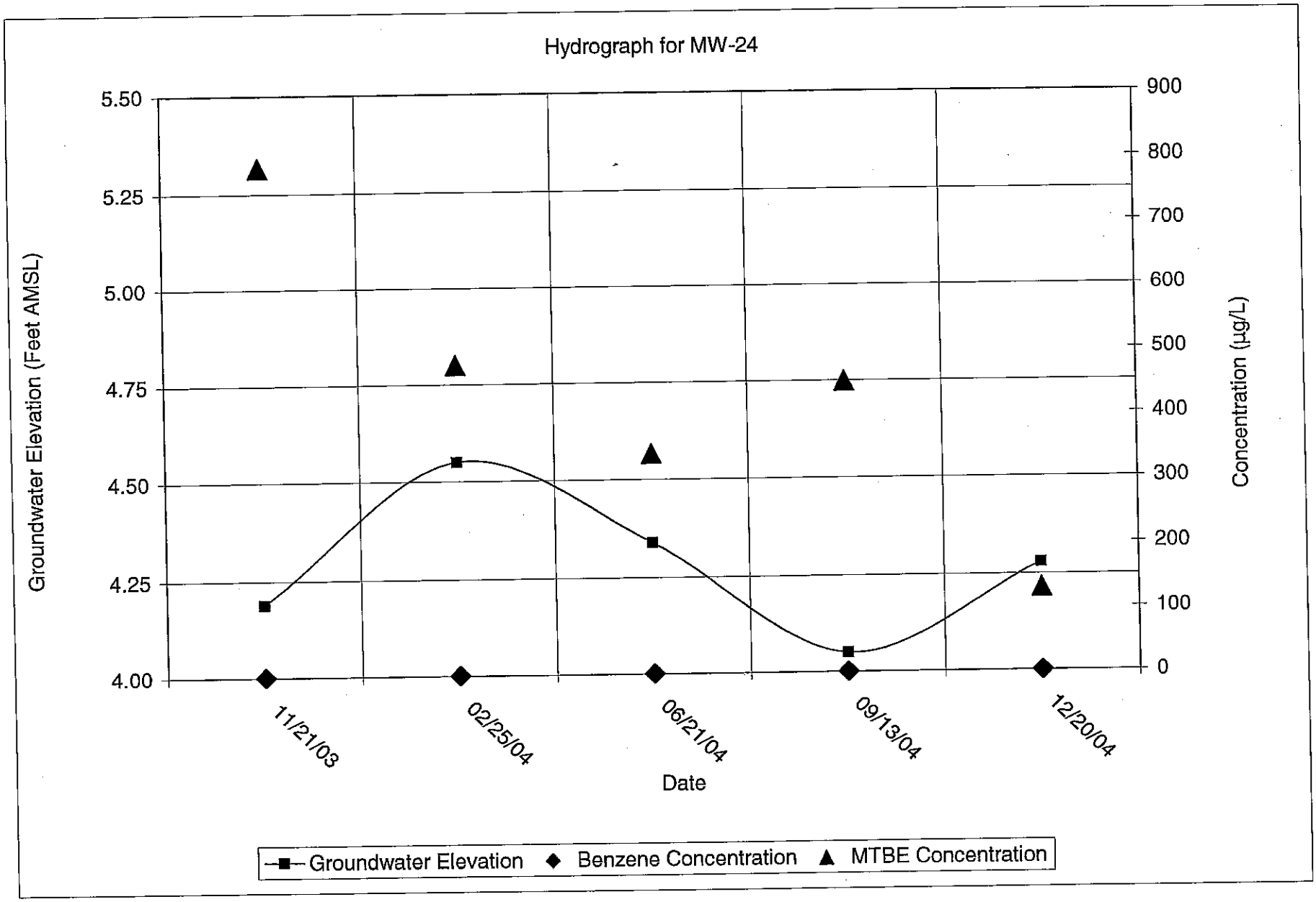

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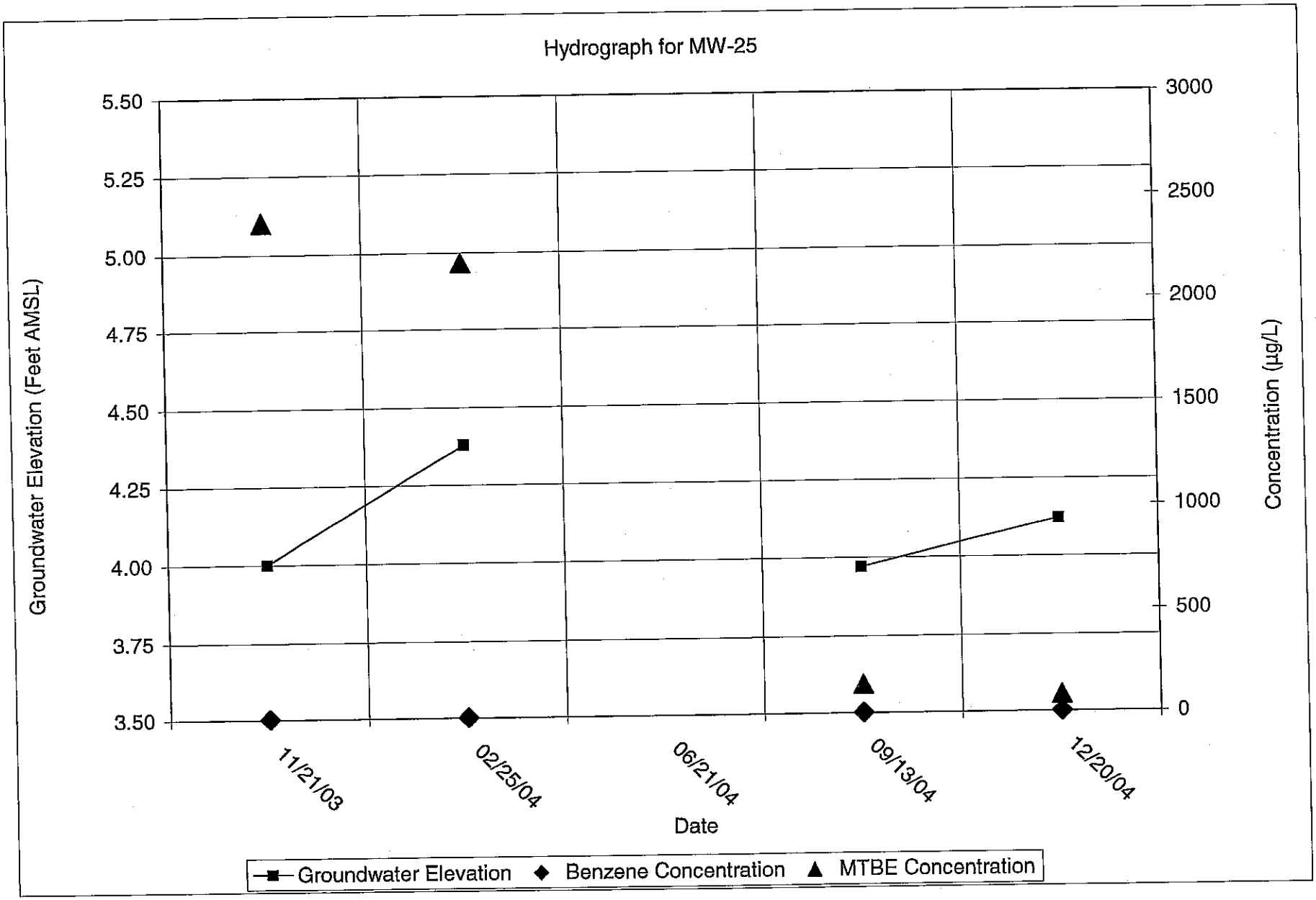

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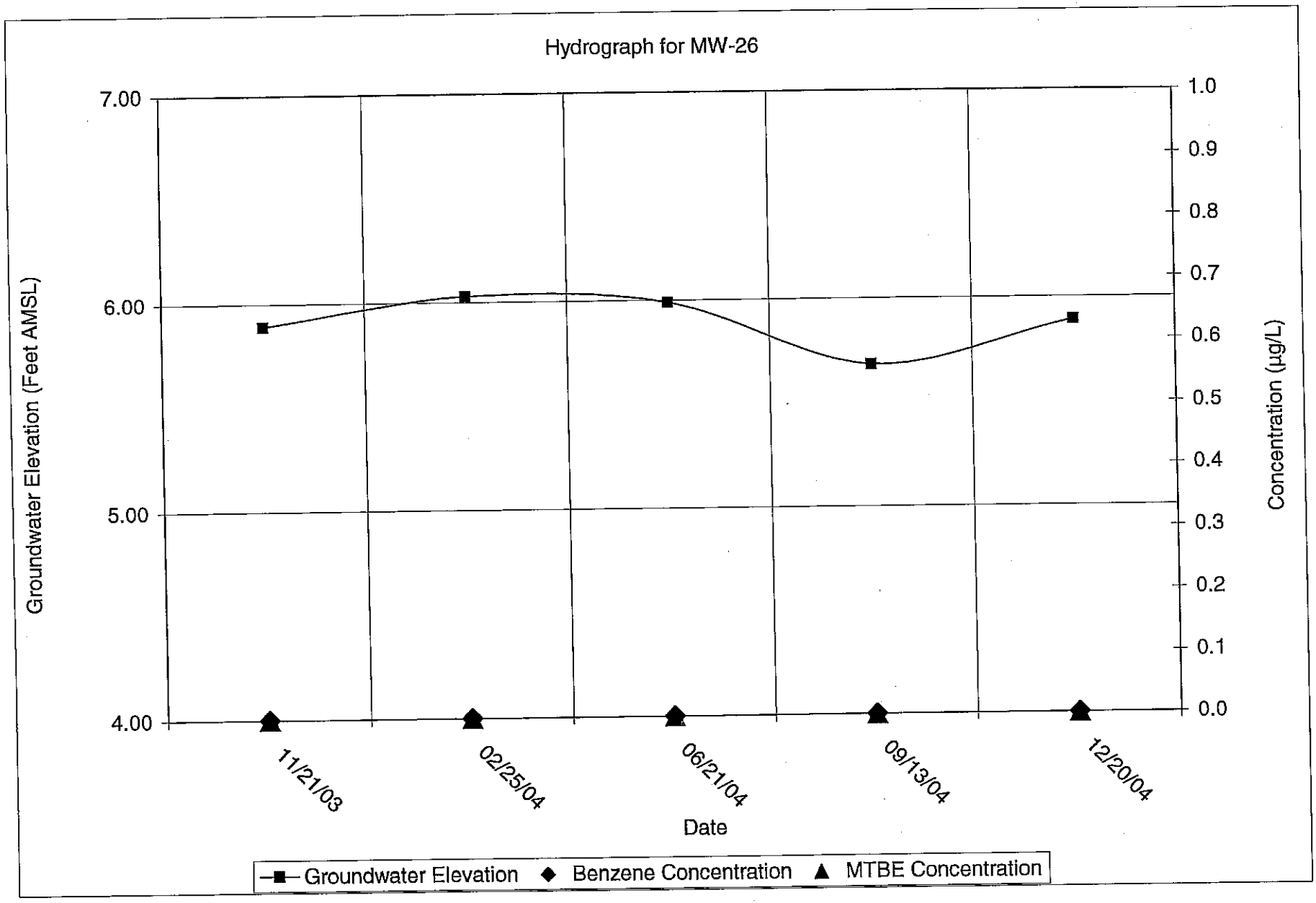

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MONITORING WELL PURGING AND SAMPLING PROCEDURES
SAN DIEGO COUNTY

Fast recovering well: A well is considered to be fast recovering if recovery to 80 percent or more of its static condition occurs within 2 hours when using the high-flow purging method.

Slow recovering well: A well is considered to be slow recovering if recovery to 80 percent of its static water level takes longer than 2 hours when using the high-flow purging and sampling method.

Purging and Sampling Methods: The following method is currently approved by SAM.

High-flow Purging and Sampling: Purging using a pumping rate greater than 1 liter per minute (lpm) or 0.26 gallon per minute (gpm) (Barcelona and Puls, 1996). Traditionally, the high-flow purging method has been widely used. This method typically involves the removal of up to 3 borehole volumes prior to sampling. Samples are most often collected with a bailer or other device after completion of purging. This methodology provides a composite of the contaminant concentration within the well and will likely not be suitable for low yield wells.

1. High-flow Purging and Sampling Method

This method is widely used and involves the removal of water from the well at a rate in excess of 1 lpm (0.26 gpm) by a variety of methods, including pumps, bailers, etc. The following steps are necessary to collect representative samples. Well purging to "dryness" should be avoided.

a. Measure for NAPL

LNAPL and DNAPL may be present in groundwater monitoring wells. If NAPL exists, the well sampling procedure described in this section will typically not apply. Special considerations may be necessary and should be discussed with the SAM project manager on a case-by-case basis.

b. Measure Water Level

The groundwater level in the monitoring well should be measured to an accuracy of 0.01 foot prior to purging and sampling activities.

c. Placement of Pump

The pump should be placed in the lower one-third of the well screen.

d. Calculation of Borehole Volume

f. Parameter Stability

It is assumed that parameter stability is achieved when the difference between successive measurements is less than 10 percent. Generally, measurements are made after one borehole volume is removed and then at one-half borehole volume intervals. Commonly, the measurement of temperature, specific conductance, and pH are used exclusively, but it has been found these parameters are less sensitive to field conditions. It is recommended that dissolved oxygen, turbidity, specific conductance, and temperature be monitored.

g. Purge Well

The well must be purged with a device that does not compromise the sample by cross-contamination, aeration, or other negative effects

(1) Fast Recovering Wells

DEH considers the following two options acceptable methods for properly purging fast recovering wells:

(a) Option I
i. Remove 3 borehole volumes of water.
ii. Allow the well to recover to 80% of its static condition prior to collecting the sample.

(b) Option II
i. Remove 1 borehole volume of water.
ii. Conduct field water-quality measurements (dissolved oxygen, turbidity, specific conductance, and temperature).
iii. Remove an additional ½ borehole volume of water. Conduct field water quality measurements again. If the first and second measurements vary by less than 10%, purging is considered adequate. Proceed to step (v.) below.
iv. Repeat step (iii) until the measurements vary by less than 10% or until 3 borehole volumes of water have been removed.
v. Allow the well to recover to 80% of its static condition before collecting the sample.

(2) Slow Recovering Wells

(a) Remove 1 borehole volume of water.

(b) The well should be allowed to recover for 2 hours after purging has stopped. Then the well should be sampled as soon after 2 hours as possible. Note that if the well recovers to greater than 80% in less than 2 hours, it is a fast recovering well. If so, follow the steps in Option I or II above.

h. Collect Samples

After the monitoring well has been properly purged, the guidelines below for groundwater sample collection should be followed.

(1) In the case of a fast recovering well, samples should be collected when the well has recovered to 80%. In the case of a slow recovering well, samples should be collected as soon as possible after 2 hours have elapsed.

(2) Collect groundwater samples from wells with sampling equipment.

Sampling equipment must be compatible with the contaminant being analyzed

(3) Sampling equipment should be decontaminated before use.

(4) Samples requiring organic analyses should not be filtered.

(5) Samples should be transferred from the sampling device to a container in a manner that minimizes aeration.

(6) Samples should be collected in approved sample containers appropriate for the type of analysis to be performed.

(7) Samples should not be transferred from one sample container to another.

(8) Headspace in sample containers should be avoided.

(9) EPA SW-846 sample preservation and holding times for specific analyses should be followed.

Appropriate sample chain-of-custody procedures must be followed.

SECOR

MONITORING WELL GAUGING LOG

Site Name & Facility No: **ARCO 1919** Date: 12/20/2004

Project Number: 08BP.U1919.04 / 4L55 Field Representative(s): AC/JM/SM

Checked by: [illegible]

Well No.	Previous QTR DTW	Gauging Time	Depth to Floating Product	Depth to Water (ft)	Floating Product Thickness	Total Casing Depth (ft)	Casing Elevation[1]	Groundwater Elevation[1]	Corrected Groundwater Elevation[1]*	Comments
MW-6	10.78	0933	–	10.62	–	15.63	15.96	5.34		
MW-10	11.38	0921	–	11.21	–	16.40	16.59	5.38		stinger
MW-11	8.22	0929	–	8.00	–	16.47	13.40	5.40		
MW-13	7.67	0927	–	7.52	–	17.25	12.79	5.27		
MW-14	9.47	0923	–	9.23	–	17.60	14.62	5.39		
MW-15	6.60	0933	–	6.47	–	17.18	11.30	4.83		
MW-16	8.56	0939	–	8.48	–	16.18	13.08	4.60		
MW-17	9.91	0948	–	9.78	–	21.90	15.00	5.22		
MW-18	9.37	0955	–	9.32	–	19.85	13.74	4.42		
MW-19A	8.91	0936		8.76		19.70	13.39	4.63		
MW-19B	11.48	0943	–	11.30	–	14.34	16.67	5.37		
MW-20	8.36	0937	–	8.19	–	18.83	13.26	5.07		

Notes:
1 = feet above mean sea level unless noted otherwise
* = elevation adjusted by adding (.75 x product thickness) to measured water elevation
\- = not measured due to the presence of liquid-phase hydrocarbons

Sheen = discontinuous, non-measurable thickness of LPH
Trace = continuous, non-measurable thickness of LPH

9.32

SECOR

MONITORING WELL GAUGING LOG

Site Name & Facility No: **ARCO 1919** Date: 12/20/2004

Project Number: 08BP.U1919.04 / 4L55 Field Representative(s): JM / SM / AC

Checked by: (dc)

Well No.	Previous QTR DTW	Gauging Time	Depth to Floating Product	Depth to Water (ft)	Floating Product Thickness	Total Casing Depth (ft)	Casing Elevation[1]	Groundwater Elevation[1]	Corrected Groundwater Elevation[1]*	Comments
MW-21	8.40	0940	–	8.20	–	11.78	13.52	5.32		
MW-22	5.91	1101	–	5.77	–	18.10	9.78	4.01		
MW-23	7.99	0947	–	7.94	–	20.30	12.42	4.48		
MW-24	4.78	1020	–	4.55	–	16.73	8.83	4.28		
MW-25	3.24	1022	–	3.09	–	17.35	7.21	4.12		
MW-26	24.14	0917	–	23.93	–	34.65	29.82	5.89		

Notes:
1 = feet above mean sea level unless noted otherwise
* = elevation adjusted by adding (.75 x product thickness) to measured water elevation
\- = not measured due to the presence of liquid-phase hydrocarbons

Sheen = discontinuous, non-measurable thickness of LPH
Trace = continuous, non-measurable thickness of LPH

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 6
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 6

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:	Total Well Depth (DTB) (ft): 15.63	Water Column:
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
		NO	SAMPLE			

Maximum Drawdown (DTW_2) (ft) =

H_2O Removal Rate (GPM) =

____Fast Recharging Well

____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:

Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 10
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 10

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___ Vac Truck ___ Bailer ___ Submersible Pump ___ Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____ Teflon Bailer ____ Disposable Bailer ____ Other:	Total Well Depth (DTB) (ft): 16.40	Water Column:
Decontamination Method: ___ Steam / High Pressure Wash ___ 3 Stage (Alconox, Tap & DI rinse) ___ Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
			NO	SAMPLE		

Maximum Drawdown (DTW_2) (ft) =	____ Fast Recharging Well
H_2O Removal Rate (GPM) =	____ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_\_$$

$$= \_\_\_\_\_ \%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 11
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 11

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:	Total Well Depth (DTB) (ft): 16.47	Water Column:
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
		NO SAMPLE				

Maximum Drawdown (DTW_2) (ft) =

H_2O Removal Rate (GPM) =

____Fast Recharging Well

____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:

Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\%\ of\ Recovery = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\%\ of\ Recovery = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\ \%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 13
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 13

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:	Total Well Depth (DTB) (ft): 17.25	Water Column:
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
		NO SAMPLE				

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\ \%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 14
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 14

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:	Total Well Depth (DTB) (ft): 17.60	Water Column:
	Floating Product:	Thickness (in):
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
	NO		SAMPLE			

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 15
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 15

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:	Total Well Depth (DTB) (ft): 17.18	Water Column:
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
		NO	SAMPLE			

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	HCL & ICE or NONE	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\%\ of\ Recovery = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\%\ of\ Recovery = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\ \%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 16
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 16

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: _____Teflon Bailer _____Disposable Bailer _____Other:_____	Total Well Depth (DTB) (ft): 16.18	Water Column:
	Floating Product:	Thickness (in):
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
		NO	SAMPLE			

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	HCL & ICE or (NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\%\ of\ Recovery = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\%\ of\ Recovery = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\ \%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 17
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 17

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:____	Total Well Depth (DTB) (ft): 21.90	Water Column:
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					

NO SAMPLE

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 18
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time: 1242
	SECOR Rep: S. Martin	Checked by: (de)	Sample No: MW- 18

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist # 7	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: U ___Vac Truck X Submersible Pump ___Bailer ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID: 5	Depth to Water (DTW_1) (ft): 9.32	
Sampling Method: ___Teflon Bailer X Disposable Bailer ___Other:	Total Well Depth (DTB) (ft): 19.85	Water Column: 10.53
	Floating Product:	Thickness (in):
Decontamination Method: ___Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___Other:	Borehole Volume (gal): 15.80	1.5 Borehole Volumes (gal): 23.69

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1230	Started Purging					
1234 ~~1230~~	11.50	16	6.31	23.4	4.50	none, clear
1240	11.18	24	6.33	23.4	4.55	"
1242	9.75	Sample				

Maximum Drawdown (DTW_2) (ft) = 11.50

H_2O Removal Rate (GPM) = 2.40

X Fast Recharging Well

___Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1242

Depth to Water at time of sampling (DTW_3): 9.75

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(9.32) - (9.75)}{(9.32) - (11.50)}$$

-0.43

-2.18

80 %

80% Recharge = 9.76

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 19A
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time: 1156
	SECOR Rep: S. Martin	Checked by: (ae)	Sample No: MW- 19A

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist # 7	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ✓ Submersible Pump ___Bailer ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID: 5	Depth to Water (DTW_1) (ft): 8.76	
Sampling Method: ___Teflon Bailer ✓ Disposable Bailer ___Other:	Total Well Depth (DTB) (ft): 19.70	Water Column: 10.94
	Floating Product:	Thickness (in):
Decontamination Method: ___Steam / High Pressure Wash ✓ 3 Stage (Alconox, Tap & DI rinse) ___Other:	Borehole Volume (gal): 16.41	1.5 Borehole Volumes (gal): 24.62

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1142	Started Purging					
1149	9.50	17	6.34	23.4	3,650	Tan, odorless, Hazy
1153	10.40	25	6.40	23.3	3670	" " " "
1156	8.98	Sample				

Maximum Drawdown (DTW_2) (ft) = 10.40

H_2O Removal Rate (GPM) = 2.27

✓ Fast Recharging Well

___Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1156

Depth to Water at time of sampling (DTW_3): 8.98

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE) or (NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(8.76) - (8.98)}{(8.76) - (10.40)} \quad \frac{-0.22}{-1.64} = 87\%$$

80% Recharge = 9.09

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 19B
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time: 1406
	SECOR Rep: A. Cunningham	Checked by: (Le)	Sample No: MW- 19B

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist # 5	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: __Vac Truck __Bailer X Submersible Pump __Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID: 1	Depth to Water (DTW_1) (ft): 11.30	
Sampling Method: __Teflon Bailer X Disposable Bailer __Other:	Total Well Depth (DTB) (ft): 14.34	Water Column: 3.04
Decontamination Method: __Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) __Other:	Floating Product: —	Thickness (in): —
	Borehole Volume (gal): 4.56	1.5 Borehole Volumes (gal): 6.84

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1334	Started Purging					
1345	DRY	5	6.99	22.9	1881	Gray, slightly cloudy, slight odor
1351	DRY	7	7.19	23.0	2040	" " " " "
1406	11.80	Sample				

Maximum Drawdown (DTW_2) (ft) = 14.34

H_2O Removal Rate (GPM) = 0.41

X Fast Recharging Well

__ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1406

Depth to Water at time of sampling (DTW_3): 11.80

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	HCL & ICE or NONE	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(11.30)-(11.80)}{(11.30)-(14.34)} = \frac{-0.50}{-3.04} = 84\%$$

80% Recharge = ~~3.652~~ 11.91 (Le)

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 20
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 20

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:	Total Well Depth (DTB) (ft): 18.83	Water Column:
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
	NO		SAMPLE			

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 21
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 21

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in): 8 (10) 12	
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in): 2 (4)	
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:	Total Well Depth (DTB) (ft): 11.78	Water Column:
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
		NO SAMPLE				

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 22
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time: 1110
	SECOR Rep: S. Martin	Checked by: (fe)	Sample No: MW- 22

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist # 17	Borehole Diameter (in): (8) 10 12	
Purging Equipment / Method: J ___Vac Truck ___Bailer X Submersible Pump ___Other	Casing Diameter (in): (2) 4	
pH Temp/Conductivity Meter Type / ID: 5	Depth to Water (DTW_1) (ft): 5.77	
Sampling Method: ___Teflon Bailer X Disposable Bailer ___Other:	Total Well Depth (DTB) (ft): 18.10	Water Column: 12.33
Decontamination Method: ___Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product:	Thickness (in):
	Borehole Volume (gal): 9.49	1.5 Borehole Volumes (gal): 14.24

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1102	Started Purging					
1106	7.40	10	6.92	22.3	6220	Sulfur odor, silty, brown
1107	7.62	15	6.94	22.9	5800	" " " "
1110	5.91	Sample				

Maximum Drawdown (DTW_2) (ft) = 7.62
H_2O Removal Rate (GPM) = 3.00

X Fast Recharging Well
___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1110

Depth to Water at time of sampling (DTW_3): 5.91

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(5.77) - (5.91)}{(5.77) - (7.62)}$$

-0.14
-1.85
$= 92\%$

80% Recharge = 6.14

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 23
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time:
	SECOR Rep:	Checked by:	Sample No: MW- 23

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS	
Water Level Meter Type & ID: Solinist #	Borehole Diameter (in):	(8) 10 12
Purging Equipment / Method: ___Vac Truck ___Bailer ___Submersible Pump ___Other	Casing Diameter (in):	(2) 4
pH Temp/Conductivity Meter Type / ID:	Depth to Water (DTW_1) (ft):	
Sampling Method: ____Teflon Bailer ____Disposable Bailer ____Other:____	Total Well Depth (DTB) (ft): 20.30	Water Column:
	Floating Product:	Thickness (in):
Decontamination Method: ___Steam / High Pressure Wash ___3 Stage (Alconox, Tap & DI rinse) ___Other:	Borehole Volume (gal):	1.5 Borehole Volumes (gal):

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
	Started Purging					
		NO SAMPLE				

Maximum Drawdown (DTW_2) (ft) =	____Fast Recharging Well
H_2O Removal Rate (GPM) =	____Slow Recharging Well

SAMPLING INFORMATION

Time Sampled:	Depth to Water at time of sampling (DTW_3):

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	HCL & ICE or NONE	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(\quad)-(\quad)}{(\quad)-(\quad)} = \_\_$$

$$= \_\_\_\_\%$$

80% Recharge = _____

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 24
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time: 1049
	SECOR Rep: A. Cunningham	Checked by: [illegible]	Sample No: MW- 24

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 5

Purging Equipment / Method: ___ Vac Truck ___ Bailer X Submersible Pump ___ Other

pH Temp/Conductivity Meter Type / ID: 1

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): (8) 10 12

Casing Diameter (in): (2) 4

Depth to Water (DTW_1) (ft): 4.55

Total Well Depth (DTB) (ft): 16.73

Water Column: 12.18

Floating Product: –

Thickness (in): –

Borehole Volume (gal): 9.38

1.5 Borehole Volumes (gal): 14.07

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1035	Started Purging					
1039	8.60	9.5	7.21	23.3	9 35	DK gray, cloudy, odor
1041	7.34	14.5	7.23	23.1	8 61	" " " "
1049	4.62	Sample				

Maximum Drawdown (DTW_2) (ft) = 8.60

H_2O Removal Rate (GPM) = 2.42

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1049

Depth to Water at time of sampling (DTW_3): 4.62

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE or NONE)	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 ($DTB-DTW_1$)
2	10	1.14 ($DTB-DTW_1$)
4	10	1.50 ($DTB-DTW_1$)
4	12	1.95 ($DTB-DTW_1$)
6	10	2.11 ($DTB-DTW_1$)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(4.55)-(4.62)}{(4.55)-(8.60)} = \frac{-0.07}{-4.05} = 98\%$$

80% Recharge = 5.36

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 25
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time: 1117
	SECOR Rep: A Cunningham	Checked by: CB	Sample No: MW- 25

PURGING & SAMPLING EQUIPMENT / METHOD	WELL SPECIFICATIONS & MEASUREMENTS
Water Level Meter Type & ID: Solinist # 5	Borehole Diameter (in): (8) 10 12
Purging Equipment / Method: ___Vac Truck ___Bailer X Submersible Pump ___Other	Casing Diameter (in): (2) 4
pH Temp/Conductivity Meter Type / ID: 1	Depth to Water (DTW_1) (ft): 3.09
Sampling Method: ___Teflon Bailer X Disposable Bailer ___Other:	Total Well Depth (DTB) (ft): 17.35 / Water Column: 14.26
Decontamination Method: ___Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___Other:	Floating Product: — / Thickness (in): —
	Borehole Volume (gal): 10.98 / 1.5 Borehole Volumes (gal): 16.47

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1105	Started Purging					
1109	3.20	11	6.98	24.0	6.80	Gray, slightly cloudy, no odor
1113	3.25	16.5	6.95	24.0	6.72	" " " " "
1117	3.12	Sample				

Maximum Drawdown (DTW_2) (ft) = 3.25

H_2O Removal Rate (GPM) = 2.75

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1117

Depth to Water at time of sampling (DTW_3): 3.12

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	HCL & ICE or NONE	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(3.09)-(3.12)}{(3.09)-(3.25)} = \frac{-0.03}{-0.16} = 81\%$$

80% Recharge = 3.12

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 26
	Project Name: ARCO 1919		Date: 12/20/2004
	Project Number: 08BP.U1919.04 / 4L55		Sample Time: 1404
	SECOR Rep: J. Morell	Checked by: de	Sample No: MW- 26

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 7

Purging Equipment / Method: ___ Vac Truck ___ Submersible Pump Ray ___ Bailer X Other

pH Temp/Conductivity Meter Type / ID: 5

Sampling Method: ___ Teflon Bailer X Disposable Bailer ___ Other:

Decontamination Method: ___ Steam / High Pressure Wash X 3 Stage (Alconox, Tap & DI rinse) ___ Other:

WELL SPECIFICATIONS & MEASUREMENTS

Borehole Diameter (in): (8) 10 12

Casing Diameter (in): (2) 4

Depth to Water (DTW_1) (ft): 23.93

Total Well Depth (DTB) (ft): 34.65

Water Column: 10.72

Floating Product:

Thickness (in):

Borehole Volume (gal): 2.25

1.5 Borehole Volumes (gal): 12.38

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1341	Started Purging					
1347	30.50	2.5	6.34	21.9	3.66	no odor, clear
1351	32.11	12.5	6.36	22.3	3.55	"
1404	25.57	Sample				

Maximum Drawdown (DTW_2) (ft) = 32.11

H_2O Removal Rate (GPM) = 1.25

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1404

Depth to Water at time of sampling (DTW_3): 25.57

Container Types & Volumes	Filtered (Y/N)	Sample Preservatives	Analytical Parameters
5 or (6) x 40ml VOAs	N	(HCL & ICE) or NONE	TPHg, BTEX, MTBE, (8015, 8260)
			DIPE, TAME, ETBE, TBA (8260b)

BOREHOLE VOLUME CALCULATIONS

The calculation of one borehole volume is based on the formula in the SAM Manual.

Diameter (in)	Borehole Diameter (in)	Calculated Borehole Volume (gal)
2	8	.77 (DTB-DTW_1)
2	10	1.14 (DTB-DTW_1)
4	10	1.50 (DTB-DTW_1)
4	12	1.95 (DTB-DTW_1)
6	10	2.11 (DTB-DTW_1)

Notes:

RECOVERY CALCULATIONS

$$\% \text{ of Recovery} = 1 - \frac{(DTW_1) - (DTW_3)}{(DTW_1) - (DTW_2)} \times 100$$

$$\% \text{ of Recovery} = 1 - \frac{(23.93) - (25.57)}{(23.93) - (32.11)}$$

-1.64

-8.18

= 80%

80% Recharge = 25.57

SEVERN TRENT STL

STL Los Angeles
1721 South Grand Avenue
Santa Ana, CA 92705

Tel: 714 258 8610 Fax: 714 258 0921
www.stl-inc.com

January 10, 2005

STL LOT NUMBER: **E4L230139**
PO/CONTRACT: 08BP.U1919.04

Brad Eisenberg
SECOR International Inc.
2655 Camino Del Rio North
Suite 302
San Diego, CA 92108-1633

Dear Brad Eisenberg,

This report contains the analytical results for the nine samples received under chain of custody by STL Los Angeles on December 23, 2004. These samples are associated with your ARCO Site #1919 project.

STL Los Angeles certifies that the test results provided in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of the report. NELAP Certification Number for STL Los Angeles is 01118CA / E87652.

Any matrix related anomaly is footnoted within the report. A cooler receipt temperature between 2-6 degrees Celsius is within EPA acceptance criteria. The temperature(s) of the cooler received for this project can be found on the Project Receipt Checklist. Historical control limits for the LCS are used to define the estimate of uncertainty for a method. All applicable quality control procedures met method-specified acceptance criteria.

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report contains 000024 pages.

If you have any questions, please feel free to call me at (714) 258-8610.

Sincerely,

Beth Riley
Project Manager

cc: Project File

Leaders in Environmental Testing

Severn Trent Laboratories, Inc.

ARCO SITE #1919

109869

E4L230139

Page 1 of 1

Chain of Custody Record

Project Name Groundwater Monitoring
BP BU/GEM CO Portfolio: Retail
BP Laboratory Contract Number: Atlantic Richfield
Requested Due Date (mm/dd/yy) Standard

On-site Time:	Temp:
Off-site Time:	Temp:
Sky Conditions:	
Meteorological Events:	
Wind Speed:	Direction:

Send To:	BP/GEM Facility No.: 1919	Consultant/Contractor: Secor
Lab Name: STL	BP/GEM Facility Address: 660 Via De La Valle, Solana Beach	Address: 2655 Camino Del Rio N, 302 San Diego, CA 92108
Lab Address: 1721 S. Grand Ave, Santa Ana, CA 92705	Site ID No.	e-mail EDD: nimmel@secor.com
	Site Lat/Long:	Consultant/Contractor Project No.: 08BP.U1919.04
	California Global ID #: T0607301584	Consultant/Contractor Tele/Fax: (619) 296-6195/296-6196
Lab PM: Beth ~~Reilly~~ Riley	BP/GEM PM Contact: Roy Thun	Consultant/Contractor PM: Brad Eisenberg
Tele/Fax: 714-258-8610/09211	Address: 4 Centerpointe Dr. La Palma, CA 90623	Invoice to: Consultant or BP or Atlantic Richfield Co (Circle one)
Report Type & QC Level:		BP/GEM Work Release No:
BP/GEM Account No.:	Tele/Fax: (661) 287-3855/222-7349	
Lab Bottle Order No:		

Item No.	Sample Description	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of containers	Preservatives: Unpreserved	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Requested Analysis: BTEX 8021	Requested Analysis: BTEX/TPH	Requested Analysis: EPA 8260 BTEX/Oxys	Requested Analysis: EPA 8270	Requested Analysis: GRO C6-C12 8015	Sample Point Lat/Long and Comments
1	MW-24	1049	12/20/04		X			6				X			X		X	Oxys include: MTBE,
2	MW-25	1117			X			6				X			X		X	TAME, DIPE, ETBE,
3	MW-18	1242			X			6				X			X		X	TBA & Ethanol
4	MW-19A	1156			X			6				X			X		X	
5	MW-26	1404			X			6				X			X		X	
6	MW-19B	1406			X			6				X			X		X	
7	MW-22	1110	↓		X			6				X			X		X	
8																		
9	EB191920041220		12/20/04					4										HOLD
10	TB191920041220		↓					3										HOLD

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: Amanda Cunningham	[signature]	12/22/04	1630	[signature] STL	12/23/04	1050
Sampler's Company: Secor						
Shipment Date:						
Shipment Method: Courier						
Shipment Tracking No:						

Special Instructions: G09K4-0040/Monitoring(04)/Retail

Custody Seals In Place Yes ___ No X Cooler Temperature on Receipt N/A °F/C Trip Blank Yes X No ___

2.4 - 0.2 = 2.2°C

LABORATORY

BP COC Rev. 2 4/18/03

2

E4L230139

STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 12/23/04

LIMS Lot #: E4L230139 Quote #: 62032

Client Name: SECOR/ SD. Project: BP / ARCO #1919

Received by: K FREITAG Date/Time Received: 12-23-04 1030

Delivered by : ☐ Client ☐ STL ☐ Airborne ☑ Fed Ex ☐ UPS ☐ Other

****

	Initial / Date
Custody Seal Status Cooler: ☐Intact ☐Broken ☑None	D 12/23
Custody Seal Status Samples: ☐Intact ☐Broken ☑None	
Custody Seal #(s): ☑No Seal #	
Sampler Signature on COC ☑Yes ☐No ☐N/A	
IR Gun # A Correction Factor -0.2°C IR passed daily verification ☑ Yes ☐No	
Temperature - BLANK 24 °C -0.2°C CF = 2.2 °C	
Temperature – COOLER (°C °C °C °C) = avg °C -0.2°C CF = °C	
Samples outside temperature criteria but received within 6 hours of final sampling ☐ Yes ☑N/A	
Sample Container(s): ☑ STL-LA ☑ Client	
One COC/Multiple coolers: ☑ ~~Yes~~ - # coolers All within temp criteria ☐ Yes ☐No ☑N/A	
One or more coolers with an anomaly: ☐ Yes – (fill out PRC for each) ☑N/A	
Samples: ☑Intact ☐Broken ☐Other	
pH measured: ☐ Yes ☐ Anomaly (if checked, notify lab and file NCM) ☑N/A	
Anomalies: ☑No ☐Yes – complete CUR and Create NCM NCM #	
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☐ Yes ☐ N/A	
Labeled by: Labeling checked	

****

Turn Around Time: ☐RUSH–24HR ☐RUSH–48HR ☐RUSH–72HR ☐NORMAL

Short-Hold Notification: ☐ pH ☐Wet Chem ☐Metals (Filter/Pres) ☐Encore ☐ >1/2 HT expired...

Outside Analysis(es) (Test/Lab/Date Sent Out) :

********** LEAVE NO BLANK SPACES ; USE N/A **********

Headspace Anomaly ☐N/A

Lab ID	Container(s) #	Headspace	Lab ID	Container(s) #	Headspace
-009	-1/-3	☐ > 5mm ☒ < 5mm			☐ > 5mm ☐ < 5mm
		☐ > 5mm ☐ < 5mm			☐ > 5mm ☐ < 5mm
		☐ > 5mm ☐ < 5mm			☐ > 5mm ☐ < 5mm
		☐ > 5mm ☐ < 5mm			☐ > 5mm ☐ < 5mm
		☐ > 5mm ☐ < 5mm			☐ > 5mm ☐ < 5mm
		☐ > 5mm ☐ < 5mm			☐ > 5mm ☐ < 5mm
		☐ > 5mm ☐ < 5mm			☐ > 5mm ☐ < 5mm

Fraction	1/7	8	9											
VOAH/ *	6	4	3											

* VOA with headspace/bubbles
H: HCL, S: H2SO4, N: HNO3, V: VOA, SL, Sleeve, E: Encore, PB: Poly Bottle, CGB: Clear Glass Bottle, AGJ: Amber Glass Jar, T: Terracore
AGB: Amber Glass Bottle, n/f/l:HNO3-Lab filtered, n/f:HNO3-Field filtered, zmna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

Condition Upon Receipt Anomaly Form

☐ N/A _____

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking
  - ☐ Other:
- **TEMPERATURE (SPECS 4 ± 2°C)**
  - ☐ Cooler Temp(s)
  - ☐ Temperature Blank(s)
- **CONTAINERS**
  - ☐ Leaking
  - ☐ Broken
  - ☐ Extra
  - ☐ Without Labels
  - ☐ Other:
- **SAMPLES**
  - ☐ Samples NOT RECEIVED but listed on COC
  - ☐ Samples received but NOT LISTED on COC
  - ☐ Logged based on Label Information
  - ☐ Logged based on info from other samples on COC
  - ☐ Logged according to Work Plan
  - ☐ Logged on HOLD UNTIL FURTHER NOTICE
- **CUSTODY SEALS (COOLER(S)**
  - ☐ None
  - ☐ Not Intact
  - ☐ Other

  CONTAINER(S)
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- **CHAIN OF CUSTODY (COC)**
  - ☐ Not relinquished by Client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ Other ☐ COC not received – notify PM
- **LABELS**
  - ☐ Not the same ID/info as in COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
  - ☐ Torn
- ☐ Will be noted on COC–Client to send samples with new COC
- ☐ Mislabeled as to tests, preservatives, etc.
- ☐ Holding time expired – list sample ID and test
- ☐ Improper container used
- ☐ Not preserved/Improper preservative used
- ☐ Improper pH _____ Lab to preserve sample and document
- ☐ Insufficient quantities for analysis ☐ Other

Comments:

_____

_____

_____

_____

_____

☐ Corrective Action Implemented:
☐ Client Informed: verbally on _____ By: _____ ☐ In writing on _____ By: _____
☐ Sample(s) on hold until: _____ ☐ Sample(s) processed "as is."

Logged by/Date:	Log Review/Date:	PM Review/Date:
12/23/04		12/23/04

Page 2 of 2

ARCO SITE #1919

E4L230139

SECOR International Inc

Client Sample ID: MW-24

GC/MS Volatiles

Lot-Sample #...: E4L230139-001
Date Sampled...: 12/20/04 10:49
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 2.5
Analyst ID.....: 000038

Work Order #...: G1QR91AA
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 15:41

Instrument ID..: MSQ
Method.....: SW846 8260B

Matrix.....: W
MS Run #.....: 4366023

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Methyl tert-butyl ether (MTBE)	130	2.5	ug/L	0.50
Tert-amyl methyl ether (TAME)	ND	5.0	ug/L	0.50
Benzene	ND	2.5	ug/L	0.75
tert-Butyl alcohol	ND	62	ug/L	15
Ethanol	ND IO	1200	ug/L	180
Ethyl-t-Butyl Ether (ETBE)	ND	5.0	ug/L	1.2
Ethylbenzene	ND	2.5	ug/L	0.50
Diisopropyl Ether (DIPE)	ND	5.0	ug/L	1.2
Toluene	ND	2.5	ug/L	0.75
m-Xylene & p-Xylene	ND	2.5	ug/L	1.2
o-Xylene	ND	2.5	ug/L	0.50
Xylenes (total)	ND	2.5	ug/L	2.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	96	(75 - 120)
1,2-Dichloroethane-d4	108	(65 - 130)
Toluene-d8	99	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-24

GC Volatiles

Lot-Sample #...: E4L230139-001
Date Sampled...: 12/20/04 10:49
Prep Date.....: 12/29/04
Prep Batch #...: 4365361
Dilution Factor: 1
Analyst ID.....: 001464

Work Order #...: G1QR91AC
Date Received..: 12/23/04 10:30
Analysis Date..: 12/29/04
Analysis Time..: 09:45

Instrument ID..: G15
Method.....: SW846 8015B

Matrix.....: W
MS Run #.....: 4365253

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
GRO (C6 - C12)	ND	100	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	87	(70 - 130)

SECOR International Inc

Client Sample ID: MW-25

GC/MS Volatiles

Lot-Sample #...: E4L230139-002
Date Sampled...: 12/20/04 11:17
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 1
Analyst ID.....: 000038

Work Order #...: G1QTA1AA
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 13:53

Instrument ID..: MSQ
Method.....: SW846 8260B

Matrix.....: W
MS Run #.....: 4366023

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Methyl tert-butyl ether (MTBE)	82	1.0	ug/L	0.50
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L	0.50
Benzene	ND	1.0	ug/L	0.30
tert-Butyl alcohol	460	25	ug/L	6.0
Ethanol	ND IO	500	ug/L	74
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L	0.50
Ethylbenzene	ND	1.0	ug/L	0.20
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	0.50
Toluene	ND	1.0	ug/L	0.30
m-Xylene & p-Xylene	ND	1.0	ug/L	0.50
o-Xylene	ND	1.0	ug/L	0.20
Xylenes (total)	ND	1.0	ug/L	0.80

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	96	(75 - 120)
1,2-Dichloroethane-d4	104	(65 - 130)
Toluene-d8	99	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-25

GC Volatiles

Lot-Sample #...:	E4L230139-002	Work Order #...:	G1QTA1AC	Matrix.....:	W
Date Sampled...:	12/20/04 11:17	Date Received..:	12/23/04 10:30	MS Run #.....:	4365253
Prep Date.....:	12/29/04	Analysis Date..:	12/29/04		
Prep Batch #...:	4365361	Analysis Time..:	10:12		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
GRO (C6 - C12)	ND	100	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	87	(70 - 130)

SECOR International Inc

Client Sample ID: MW-18

GC/MS Volatiles

Lot-Sample #...: E4L230139-003
Date Sampled...: 12/20/04 12:42
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 50
Analyst ID.....: 000038

Work Order #...: G1QTC1AA
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 15:20

Instrument ID..: MSQ
Method.....: SW846 8260B

Matrix.....: W
MS Run #.....: 4366023

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Methyl tert-butyl ether (MTBE)	2900	50	ug/L	0.50
Tert-amyl methyl ether (TAME)	ND	100	ug/L	0.50
Benzene	ND	50	ug/L	15
tert-Butyl alcohol	2300	1200	ug/L	300
Ethanol	ND IO	25000	ug/L	3700
Ethyl-t-Butyl Ether (ETBE)	ND	100	ug/L	25
Ethylbenzene	ND	50	ug/L	10
Diisopropyl Ether (DIPE)	ND	100	ug/L	25
Toluene	ND	50	ug/L	15
m-Xylene & p-Xylene	ND	50	ug/L	25
o-Xylene	ND	50	ug/L	10
Xylenes (total)	ND	50	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	102	(75 - 120)
1,2-Dichloroethane-d4	107	(65 - 130)
Toluene-d8	104	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-18

GC Volatiles

Lot-Sample #...:	E4L230139-003	Work Order #...:	G1QTC1AC	Matrix.....:	W
Date Sampled...:	12/20/04 12:42	Date Received..:	12/23/04 10:30	MS Run #.....:	4365253
Prep Date.....:	12/29/04	Analysis Date..:	12/29/04		
Prep Batch #...:	4365361	Analysis Time..:	13:44		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
GRO (C6 - C12)	1300	100	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	91	(70 - 130)

SECOR International Inc

Client Sample ID: MW-19A

GC/MS Volatiles

Lot-Sample #...: E4L230139-004
Date Sampled...: 12/20/04 11:56
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 1
Analyst ID.....: 000038

Work Order #...: G1QTD1AA
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 14:37

Instrument ID..: MSQ
Method.....: SW846 8260B

Matrix.....: W
MS Run #.....: 4366023

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Methyl tert-butyl ether (MTBE)	3.2	1.0	ug/L	0.50
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L	0.50
Benzene	ND	1.0	ug/L	0.30
tert-Butyl alcohol	ND	25	ug/L	6.0
Ethanol	ND IO	500	ug/L	74
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L	0.50
Ethylbenzene	ND	1.0	ug/L	0.20
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	0.50
Toluene	ND	1.0	ug/L	0.30
m-Xylene & p-Xylene	ND	1.0	ug/L	0.50
o-Xylene	ND	1.0	ug/L	0.20
Xylenes (total)	ND	1.0	ug/L	0.80

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	96	(75 - 120)
1,2-Dichloroethane-d4	116	(65 - 130)
Toluene-d8	99	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-19A

GC Volatiles

Lot-Sample #...:	E4L230139-004	Work Order #...:	G1QTD1AC	Matrix.....:	W
Date Sampled...:	12/20/04 11:56	Date Received..:	12/23/04 10:30	MS Run #.....:	4365253
Prep Date.....:	12/29/04	Analysis Date..:	12/29/04		
Prep Batch #...:	4365361	Analysis Time..:	11:58		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
GRO (C6 - C12)	ND	100	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	88	(70 - 130)

SECOR International Inc

Client Sample ID: MW-26

GC/MS Volatiles

Lot-Sample #...: E4L230139-005
Date Sampled...: 12/20/04 14:04
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 1
Analyst ID.....: 000038

Work Order #...: G1QTE1AA
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 14:58

Instrument ID..: MSQ
Method.....: SW846 8260B

Matrix.....: W
MS Run #.....: 4366023

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	0.50
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L	0.50
Benzene	ND	1.0	ug/L	0.30
tert-Butyl alcohol	ND	25	ug/L	6.0
Ethanol	ND IO	500	ug/L	74
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L	0.50
Ethylbenzene	ND	1.0	ug/L	0.20
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	0.50
Toluene	ND	1.0	ug/L	0.30
m-Xylene & p-Xylene	ND	1.0	ug/L	0.50
o-Xylene	ND	1.0	ug/L	0.20
Xylenes (total)	ND	1.0	ug/L	0.80

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	92	(75 - 120)
1,2-Dichloroethane-d4	106	(65 - 130)
Toluene-d8	96	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-26

GC Volatiles

Lot-Sample #...:	E4L230139-005	Work Order #...:	G1QTE1AC	Matrix.....:	W
Date Sampled...:	12/20/04 14:04	Date Received..:	12/23/04 10:30	MS Run #.....:	4365253
Prep Date.....:	12/29/04	Analysis Date..:	12/29/04		
Prep Batch #...:	4365361	Analysis Time..:	12:24		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
GRO (C6 - C12)	ND	100	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	87	(70 - 130)

SECOR International Inc

Client Sample ID: MW-19B

GC/MS Volatiles

Lot-Sample #...: E4L230139-006
Date Sampled...: 12/20/04 14:06
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 5
Analyst ID.....: 000038

Work Order #...: G1QTF1AA
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 16:46

Instrument ID..: MSQ
Method.....: SW846 8260B

Matrix.....: W
MS Run #.....: 4366023

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/L	0.50
Tert-amyl methyl ether (TAME)	ND	10	ug/L	0.50
Benzene	20	5.0	ug/L	1.5
tert-Butyl alcohol	ND	120	ug/L	30
Ethanol	ND IO	2500	ug/L	370
Ethyl-t-Butyl Ether (ETBE)	ND	10	ug/L	2.5
Ethylbenzene	280	5.0	ug/L	1.0
Diisopropyl Ether (DIPE)	ND	10	ug/L	2.5
Toluene	35	5.0	ug/L	1.5
m-Xylene & p-Xylene	100	5.0	ug/L	2.5
o-Xylene	37	5.0	ug/L	1.0
Xylenes (total)	140	5.0	ug/L	4.0

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	103	(75 - 120)
1,2-Dichloroethane-d4	104	(65 - 130)
Toluene-d8	100	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-19B

GC Volatiles

Lot-Sample #...:	E4L230139-006	Work Order #...:	G1QTF1AC	Matrix.....:	W
Date Sampled...:	12/20/04 14:06	Date Received..:	12/23/04 10:30	MS Run #.....:	4365253
Prep Date.....:	12/29/04	Analysis Date..:	12/29/04		
Prep Batch #...:	4365361	Analysis Time..:	12:51		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
GRO (C6 - C12)	2100	100	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	171 LH	(70 - 130)

NOTE(S):

Surrogate recovery is outside stated control limits.

LH Surrogate recovery above the acceptance limits.

SECOR International Inc

Client Sample ID: MW-22

GC/MS Volatiles

Lot-Sample #...: E4L230139-007
Date Sampled...: 12/20/04 11:10
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 1
Analyst ID.....: 000038

Work Order #...: G1QTG1AA
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 17:08

Instrument ID..: MSQ
Method.....: SW846 8260B

Matrix.....: W
MS Run #.....: 4366023

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Methyl tert-butyl ether (MTBE)	38	1.0	ug/L	0.50
Tert-amyl methyl ether (TAME)	ND	2.0	ug/L	0.50
Benzene	ND	1.0	ug/L	0.30
tert-Butyl alcohol	150	25	ug/L	6.0
Ethanol	ND IO	500	ug/L	74
Ethyl-t-Butyl Ether (ETBE)	ND	2.0	ug/L	0.50
Ethylbenzene	ND	1.0	ug/L	0.20
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	0.50
Toluene	ND	1.0	ug/L	0.30
m-Xylene & p-Xylene	ND	1.0	ug/L	0.50
o-Xylene	ND	1.0	ug/L	0.20
Xylenes (total)	ND	1.0	ug/L	0.80

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	97	(75 - 120)
1,2-Dichloroethane-d4	93	(65 - 130)
Toluene-d8	98	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-22

GC Volatiles

Lot-Sample #...:	E4L230139-007	Work Order #...:	G1QTG1AC	Matrix.....:	W
Date Sampled...:	12/20/04 11:10	Date Received..:	12/23/04 10:30	MS Run #.....:	4365253
Prep Date.....:	12/29/04	Analysis Date..:	12/29/04		
Prep Batch #...:	4365361	Analysis Time..:	13:18		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
GRO (C6 - C12)	ND	100	ug/L	40

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	87	(70 - 130)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E4L230139
MB Lot-Sample #: E4L310000-047

Analysis Date..: 12/30/04
Dilution Factor: 1

Work Order #...: G12KD1AA

Prep Date.....: 12/30/04
Prep Batch #...: 4366047

Analyst ID.....: 000038

Matrix.....: WATER

Analysis Time..: 12:06
Instrument ID..: MSQ

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	2.0	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
tert-Butyl alcohol	ND	25	ug/L	SW846 8260B
Ethanol	ND IO	500	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	2.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(75 - 120)
1,2-Dichloroethane-d4	105	(65 - 130)
Toluene-d8	98	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

IO Contract limits originate from BP-GCLN Technical Requirements

METHOD BLANK REPORT

GC Volatiles

Client Lot #...: E4L230139
MB Lot-Sample #: E4L300000-361

Analysis Date..: 12/29/04
Dilution Factor: 1

Work Order #...: G114Q1AA

Prep Date.....: 12/29/04
Prep Batch #...: 4365361

Analyst ID.....: 001464

Matrix.....: WATER

Analysis Time..: 02:12
Instrument ID..: G15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
GRO (C6 - C12)	ND	100	ug/L	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	83	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E4L230139
LCS Lot-Sample#: E4L310000-047
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 1
Analyst ID.....: 000038

Work Order #...: G12KD1AC

Analysis Date..: 12/30/04
Analysis Time..: 11:34
Instrument ID..: MSQ

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Tert-amyl methyl ether (T	10.0	10.8	ug/L	108	SW846 8260B
Methyl tert-butyl ether (MTBE)	10.0	10.4	ug/L	104	SW846 8260B
Benzene	10.0	10.6	ug/L	106	SW846 8260B
tert-Butyl alcohol	50.0	52.4	ug/L	105	SW846 8260B
Ethanol	2000	1870 IO	ug/L	94	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	10.0	11.7	ug/L	117	SW846 8260B
Ethylbenzene	10.0	11.2	ug/L	112	SW846 8260B
Diisopropyl Ether (DIPE)	10.0	12.8	ug/L	128	SW846 8260B
Toluene	10.0	10.4	ug/L	104	SW846 8260B
m-Xylene & p-Xylene	20.0	22.5	ug/L	112	SW846 8260B
o-Xylene	10.0	11.0	ug/L	110	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	98	(75 - 120)
1,2-Dichloroethane-d4	105	(65 - 130)
Toluene-d8	98	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

IO Contract limits originate from BP-GCLN Technical Requirements

LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: E4L230139
LCS Lot-Sample#: E4L300000-361
Prep Date.....: 12/29/04
Prep Batch #...: 4365361
Dilution Factor: 1
Analyst ID.....: 001464

Work Order #...: G114Q1AC
Analysis Date..: 12/29/04
Analysis Time..: 02:39
Instrument ID..: G15

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
GRO (C6 - C12)	1000	1000	ug/L	100	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	122	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E4L230139
MS Lot-Sample #: E4L230139-003
Date Sampled...: 12/20/04 12:42
Prep Date.....: 12/30/04
Prep Batch #...: 4366047
Dilution Factor: 50

Work Order #...: G1QTC1AD-MS
G1QTC1AE-MSD
Date Received..: 12/23/04 10:30
Analysis Date..: 12/30/04
Analysis Time..: 16:03
Analyst ID.....: 000038

Matrix.....: W
MS Run #.....: 4366023
Instrument ID..: MSQ

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Tert-amyl methyl ether (T	ND	500	591	ug/L	118		SW846 8260B
	ND	500	583	ug/L	117	1.4	SW846 8260B
Methyl tert-butyl ether (MTBE)	2900	500	3590	ug/L	129		SW846 8260B
	2900	500	3600	ug/L	132 BB	0.36	SW846 8260B
Benzene	ND	500	531	ug/L	106		SW846 8260B
	ND	500	517	ug/L	103	2.8	SW846 8260B
tert-Butyl alcohol	2300	2500	4280	ug/L	80		SW846 8260B
	2300	2500	4390	ug/L	84	2.7	SW846 8260B
Ethanol	ND	100000	137000	ug/L	137 IO		SW846 8260B
	ND	100000	122000	ug/L	122 IO	12	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	500	610	ug/L	122		SW846 8260B
	ND	500	600	ug/L	120	1.6	SW846 8260B
Ethylbenzene	ND	500	544	ug/L	109		SW846 8260B
	ND	500	531	ug/L	106	2.4	SW846 8260B
Diisopropyl Ether (DIPE)	ND	500	667	ug/L	133 LM		SW846 8260B
	ND	500	662	ug/L	132 LM	0.73	SW846 8260B
Toluene	ND	500	507	ug/L	101		SW846 8260B
	ND	500	493	ug/L	99	2.9	SW846 8260B
m-Xylene & p-Xylene	ND	1000	1100	ug/L	110		SW846 8260B
	ND	1000	1070	ug/L	107	2.0	SW846 8260B
o-Xylene	ND	500	537	ug/L	107		SW846 8260B
	ND	500	525	ug/L	105	2.2	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	97	(75 - 120)
	97	(75 - 120)
1,2-Dichloroethane-d4	101	(65 - 130)
	99	(65 - 130)
Toluene-d8	97	(80 - 130)
	96	(80 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

Spiked analyte recovery is outside stated control limits.

BB Sample > 4X spike concentration

IO Contract limits originate from BP-GCLN Technical Requirements

LM MS and/or MSD above acceptance limits. See Blank Spike (LCS).

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...: E4L230139
MS Lot-Sample #: E4L230137-003
Date Sampled...: 12/21/04 11:30
Prep Date.....: 12/29/04
Prep Batch #...: 4365361
Dilution Factor: 1

Work Order #...: G1QRK1AD-MS
G1QRK1AE-MSD
Date Received..: 12/23/04 10:30
Analysis Date..: 12/29/04
Analysis Time..: 10:38
Analyst ID.....: 001464

Matrix.....: WATER
MS Run #.....: 4365253
Instrument ID..: G15

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
GRO (C6 - C12)	ND	1000	944	ug/L	94		SW846 8015B
	ND	1000	966	ug/L	97	2.3	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	122	(70 - 130)
	126	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters