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San Diego, CA 92108
619-296-6195 TEL
619-296-6199 FAX

DATE: July 8, 2005

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Facility No.: 5350 Address: 3804 Plaza Drive, Oceanside, CA
ARCO Environmental Engineer: Roy Thun
Consulting Co./Contact Person: SECOR/Marci Richards and Kurt Myers
SECOR Project No.: 08BP.U5350.05
Primary Agency/Regulatory ID No.: County of San Diego Site Assessment and Mitigation Program (SAM) Case # H20645-001/Danny Martinez

WORK PERFORMED THIS QUARTER [Second - 2005]:

1. Performed Second Quarter 2005 groundwater monitoring and prepared report.
2. Submitted First Quarter 2005 groundwater monitoring report.
3. Submitted a Corrective Action Plan (CAP) which was conditionally approved by SAM.
4. Began minimum 30-day public notification and review of CAP.

REGISTERED GEOLOGIST KURT R. MYERS No. 1790 Exp. 3-31-06 Civil Eng. Geologist STATE OF CALIFORNIA

WORK PROPOSED FOR NEXT QUARTER [Third - 2005]:

1. Perform Third Quarter 2005 groundwater monitoring and prepare report.
2. Submit Second Quarter 2005 groundwater monitoring report.
3. Complete public notification and review of CAP; advise SAM of comments received.

Current Phase of Project:	Monitoring, CAP review	(Assmnt, Remed., etc.)
Frequency of Sampling:	Quarterly	(Quarterly, etc.)
Frequency of Monitoring:	Quarterly	(Monthly, etc.)
Are Liquid Phase Hydrocarbons Present On-site:	No	(Yes/No)
Cumulative LPH Recovered to Date:	None	(gallons)
LPH Recovered this Quarter:	None	(gallons)
Bulk Soil Removed to Date:	None	(cubic yards)
Bulk Soil Removed this Quarter:	None	(cubic yards)
Existing Beneficial Groundwater Uses:	Yes	(Yes/No)
Water Wells or Surface Waters w/in a 2000 ft. Radius & Their Respective Directions:	None Identified	(Distance and direction)
Current Remediation Techniques:	None	(SVES, LPH Removal)

DATE: July 8, 2005

ARCO QUARTERLY GROUNDWATER MONITORING REPORT (Continued)
ARCO Facility #5350

Permits for Discharge:	None	(NPDES, POTW, etc.)
Approximate Depth to Groundwater :	6.74 to 15.45	(Measured Feet)
	South-southeast	(Direction)
Groundwater Gradient:	0.07	(Magnitude)

DISCUSSION: On April 25, 2005, SECOR personnel gauged and sampled nine groundwater monitoring wells at the site. The depth to water ranged between 6.74 feet below ground surface (bgs) in MW-4 to 15.45 feet bgs in MW-9, as presented in Table 1. Groundwater elevations ranged between 186.16 and 199.86 feet above mean sea level (MSL). Groundwater flows to the south-southeast at an approximate gradient of 0.07 (Figure 1). No liquid-phase hydrocarbons (LPH) were present in any of the wells during the monitoring and sampling event. Groundwater samples were collected from the wells in accordance with the attached purging and sampling procedures. Groundwater samples were collected and analyzed for gasoline range organics (GRO); benzene, toluene, ethylbenzene, and total xylenes (BTEX); and methyl tert-butyl ether (MTBE). The samples also were analyzed for the other fuel oxygenates tert-butyl alcohol (TBA), ethyl tert-butyl ether (ETBE), di-isopropyl ether (DIPE), tert-amyl methyl ether (TAME), and ethanol. Analytical results are reported in Tables 2 and 3. TPHg, benzene, and MTBE results are presented in Figure 4; a benzene and MTBE isoconcentration map is presented in Figure 5. Hydrographs showing are also attached.

CONCLUSIONS & RECOMMENDATIONS: Dissolved hydrocarbon concentrations in groundwater appear generally consistent with previously detected levels. The extent of dissolved-phase hydrocarbons in groundwater has been adequately delineated. SECOR recommends switching to a semi-annual groundwater monitoring and sampling schedule.

AGENCY DIRECTIVE REQUIREMENTS: Conduct minimum 30-day public notification for CAP

ATTACHED:

- Site Location Map (Figure 1)
- Site Plan (Figure 2)
- Groundwater Gradient Map, April 25, 2005 (Figure 3)
- TPHg, Benzene and MTBE Concentrations in Groundwater, April 25, 2005 (Figure 4)
- Benzene and MTBE Isoconcentration Map, April 25, 2005 (Figure 5)
- Summary of Groundwater Elevations, 2002 to Present (Table 1)
- Summary of Groundwater Sample Analytical Results, 2002 to Present (Table 2)
- Summary of Additional Oxygenates Analytical Data, 2002 to Present (Table 3)
- Well Hydrographs
- Monitoring Well Purging and Sampling Procedures, San Diego County
- Monitoring Well Gauging Log

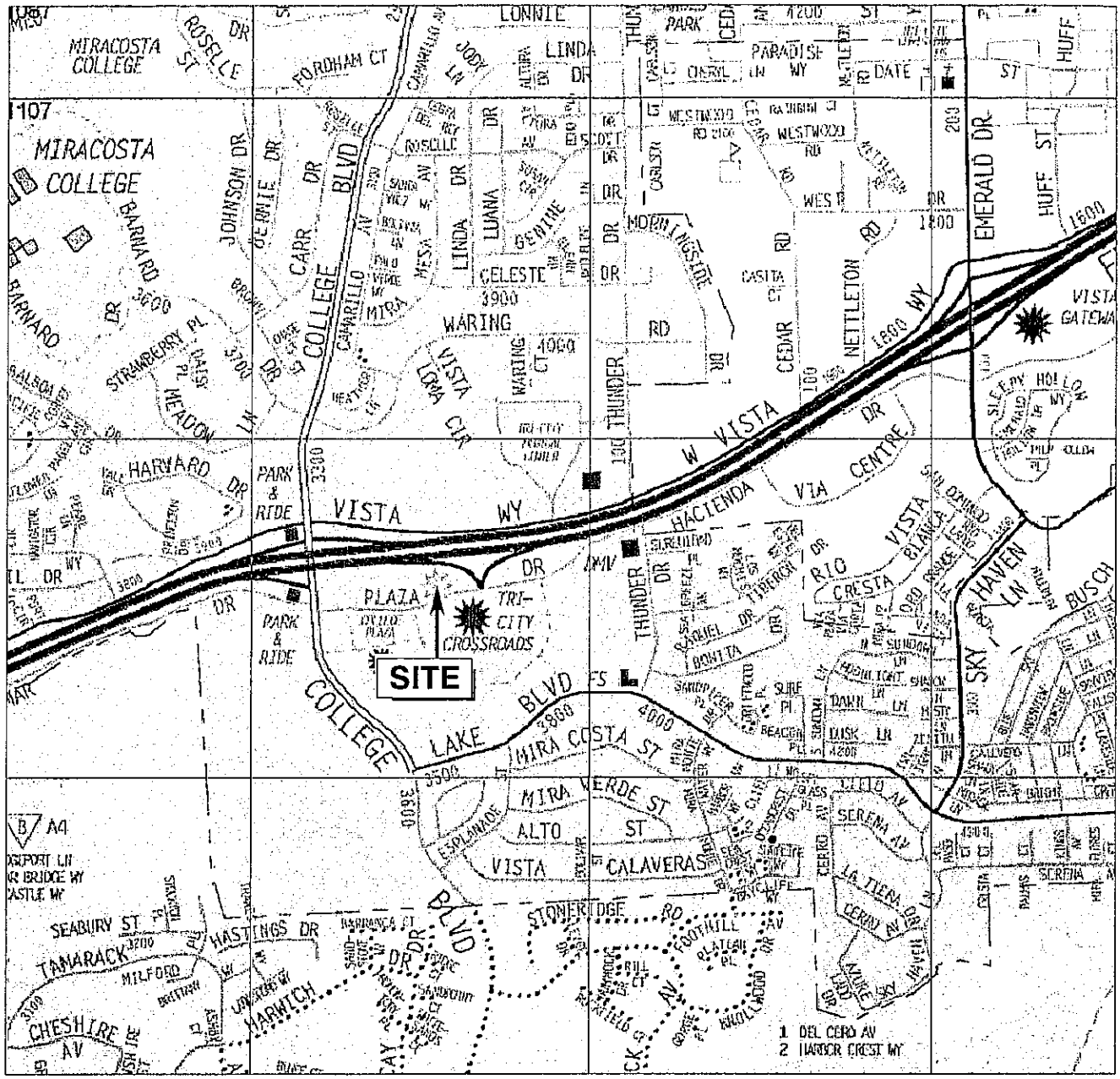
DATE: July 8, 2005

ARCO QUARTERLY GROUNDWATER MONITORING REPORT (Continued)
ARCO Facility #5350

ATTACHED (Continued):

- Well Purging/Sampling Logs
- Laboratory Report and Chain-of-Custody Documentation

cc: Mr. Roy Thun - Atlantic Richfield Company
VOC Realty Investment, Inc., c/o La Caze Development, attn: Ms. Jennifer Brunkow
McDonald's Corporation, c/o Schulz Management, Inc., attn: Mr. K. R. (Kris) Schulz



REFERENCE: THOMAS GUIDE CD-ROM, PAGE & GRID 1107 B2.

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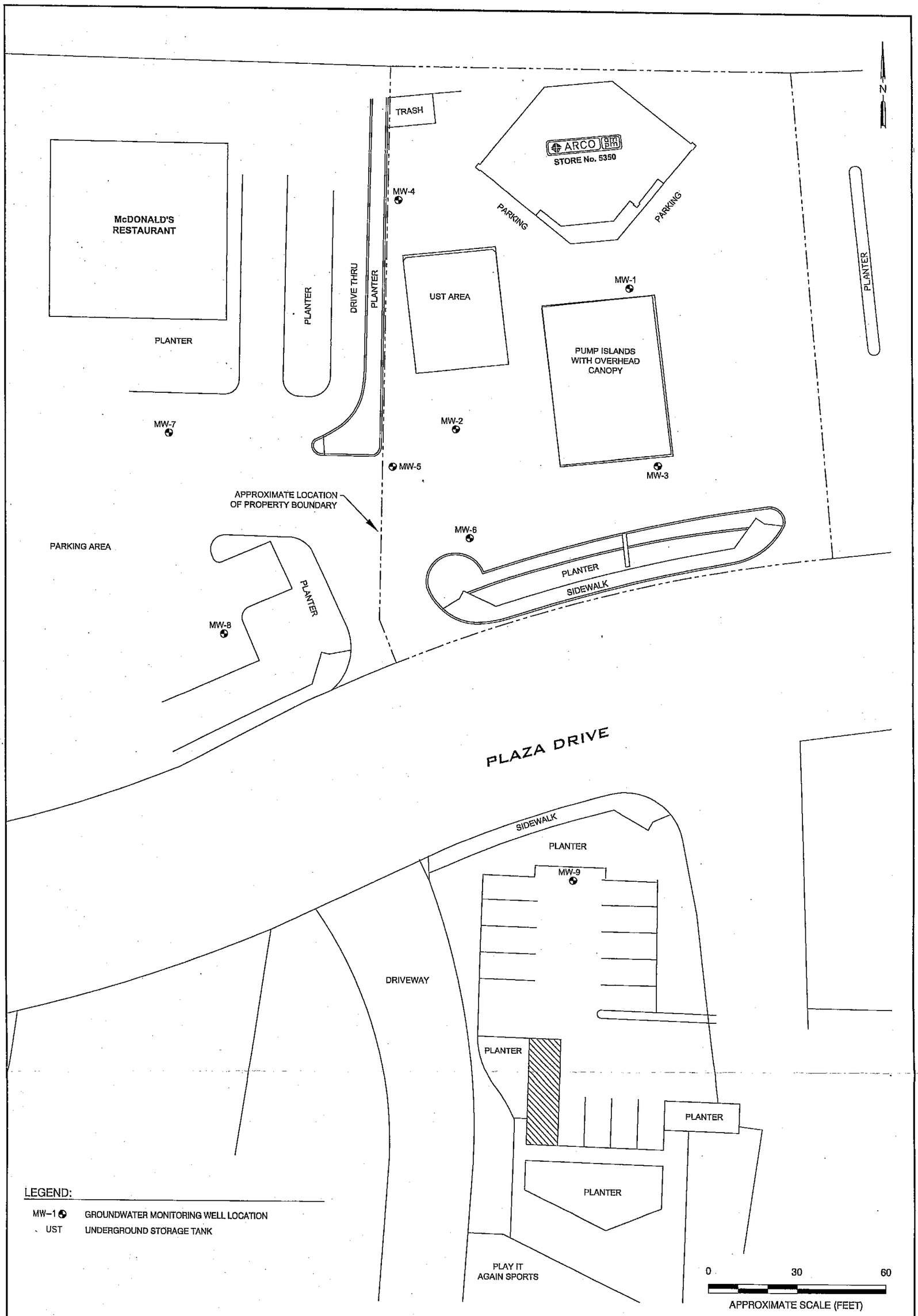
APPROXIMATE SCALE IN FEET

SECOR 2655 CAMINO DEL RIO NORTH, SUITE 302 SAN DIEGO, CALIFORNIA PHONE: (619) 296-6195/296-6199 (FAX)	FOR: ARCO FACILITY #5350 3804 Plaza Drive Oceanside, California		SITE LOCATION MAP		FIGURE: 1
	JOB NUMBER: 08BP.05350.05	DRAWN BY: RJO	CHECKED BY: MW	APPROVED BY: KRM	DATE: 2/11/05

FILEPATH:Q:\CADD-08\PROJECTS 2005\ARCO\5350-2K5\5350STLOC.DWG|PDODGE|JUN 29, 2005 AT 9:06|LAYOUT: MODEL

5350STLOC



LEGEND:

MW-1 GROUNDWATER MONITORING WELL LOCATION

UST UNDERGROUND STORAGE TANK

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	JOB NUMBER: 08BP.05350.05	DRAWN BY: RJO	CHECKED BY: MW	APPROVED BY: KRM	DATE: 2/11/05

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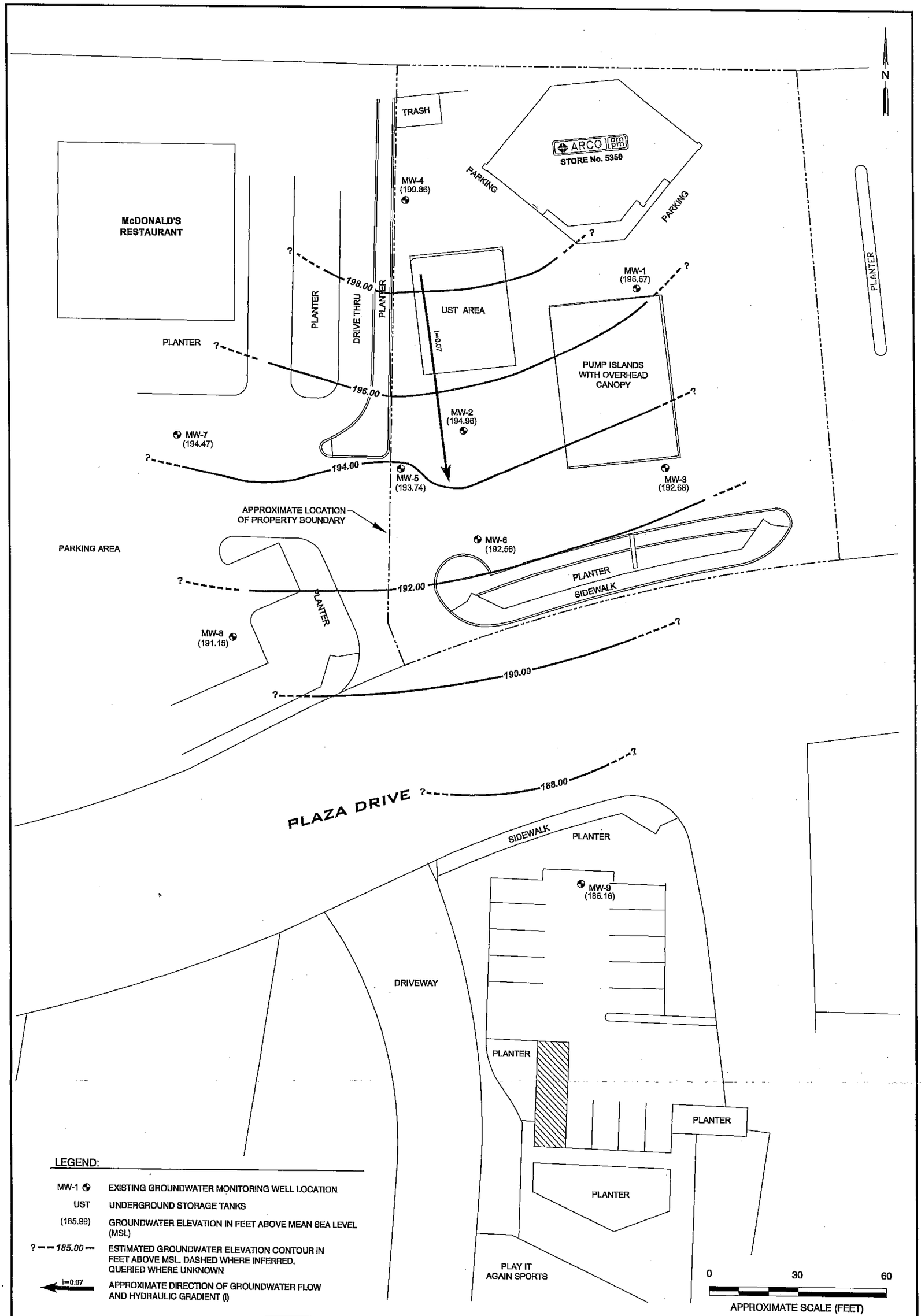
5350SUR8-04



LEGEND:

MW-1	EXISTING GROUNDWATER MONITORING WELL LOCATION
UST	UNDERGROUND STORAGE TANKS
(185.99)	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
? — — 185.00 —	ESTIMATED GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MSL. DASHED WHERE INFERRED. QUERIED WHERE UNKNOWN
i=0.07	APPROXIMATE DIRECTION OF GROUNDWATER FLOW AND HYDRAULIC GRADIENT (i)

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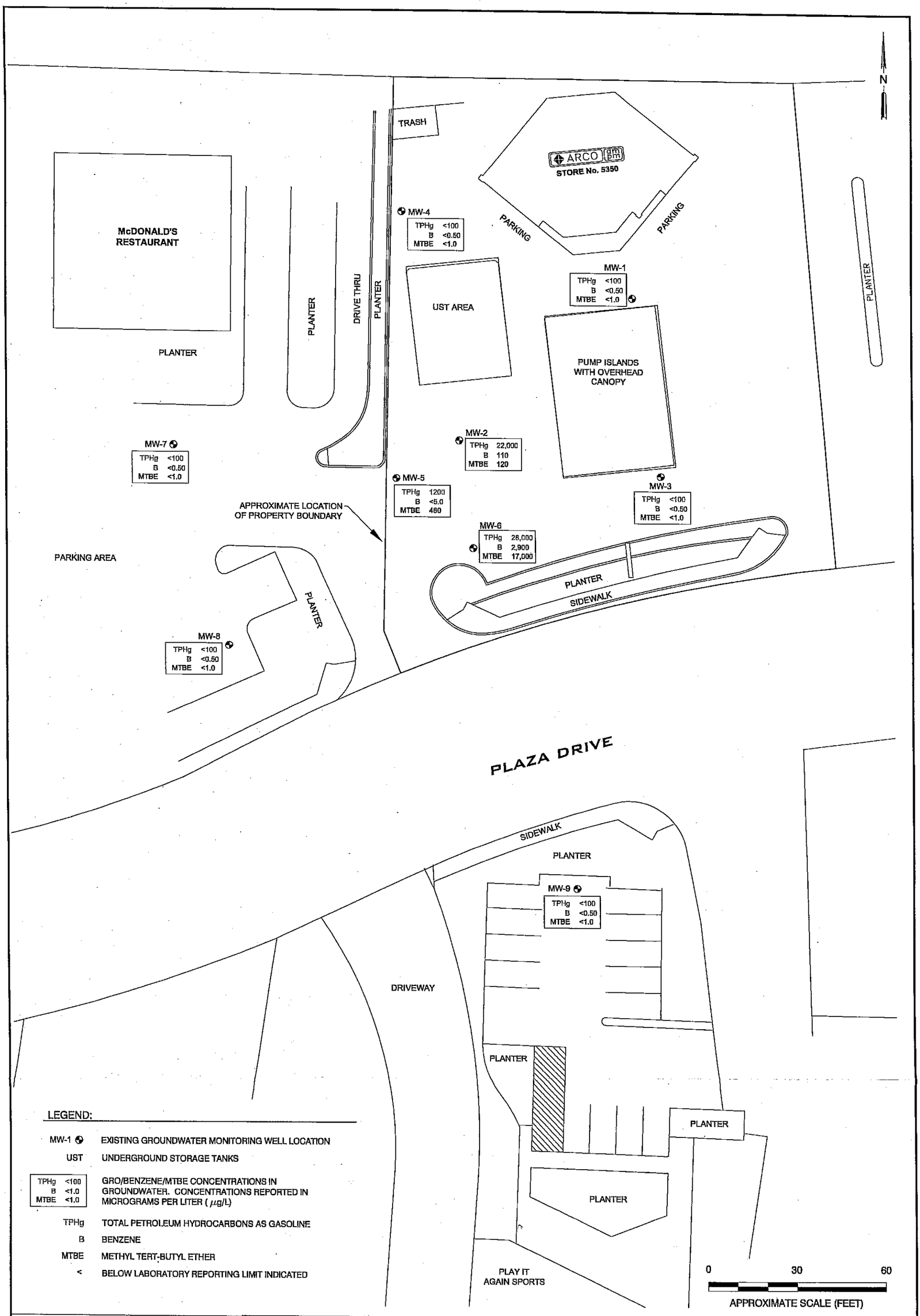
FOR:			FIGURE:
ARCO FACILITY #5350 3804 Plaza Drive Oceanside, California		GROUNDWATER GRADIENT MAP APRIL 25, 2005	3
JOB NUMBER: 08BP.U5350.05	DRAWN BY: TEA	CHECKED BY: WW	APPROVED BY: KRM	DATE: 6/8/05



LEGEND:

MW-1	EXISTING GROUNDWATER MONITORING WELL LOCATION
UST	UNDERGROUND STORAGE TANKS
TPHg <100 B <1.0 MTBE <1.0	GRO/BENZENE/MTBE CONCENTRATIONS IN GROUNDWATER. CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER ($\mu g/L$)
TPHg	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
MTBE	METHYL TERT-BUTYL ETHER
<	BELOW LABORATORY REPORTING LIMIT INDICATED

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FOR:
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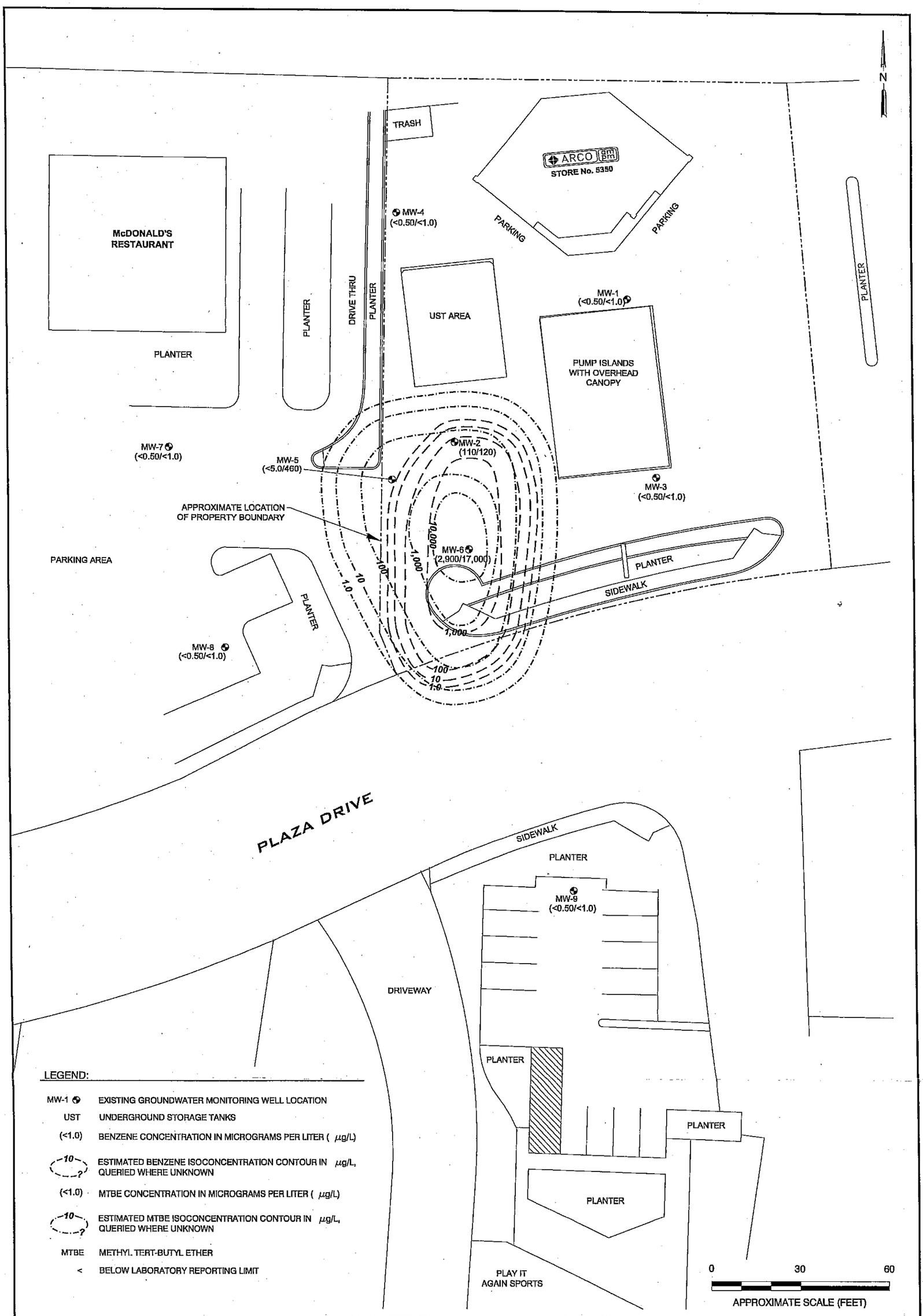
3804 Plaza Drive
Oceanside, California

TPHg, BENZENE AND MTBE CONCENTRATIONS IN GROUNDWATER
APRIL 25, 2005

FIGURE: 4

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
08BP.U5350.05	TEA	WW	KRM	6/8/05



LEGEND:

MW-1	EXISTING GROUNDWATER MONITORING WELL LOCATION
UST	UNDERGROUND STORAGE TANKS
(<1.0)	BENZENE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
10 ?	ESTIMATED BENZENE ISOCONCENTRATION CONTOUR IN µg/L, QUERIED WHERE UNKNOWN
(<1.0)	MTBE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
10 ?	ESTIMATED MTBE ISOCONCENTRATION CONTOUR IN µg/L, QUERIED WHERE UNKNOWN
MTBE	METHYL TERT-BUTYL ETHER
<	BELOW LABORATORY REPORTING LIMIT

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FOR: ARCO FACILITY #5350
3804 Plaza Drive
Oceanside, California

BENZENE AND MTBE ISOCONCENTRATION MAP
APRIL 25, 2005

FIGURE: 5

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
08BP.U5350.05	TEA	WW	KRM	6/8/05

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2002 TO PRESENT
ARCO Facility #5350

Well Identification / Surveyed Well Elevation[1]	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2]
MW-1	02/15/02	13.68	0.00	193.24
206.92	05/02/02	14.62	0.00	192.30
	07/15/02	14.24	0.00	192.68
206.93	10/16/02	13.39	0.00	193.54
	01/09/03	13.31	0.00	193.62
	04/25/03	12.50	0.00	194.43
	07/30/03	12.60	0.00	194.33
	10/23/03	12.72	0.00	194.21
	01/08/04	13.05	0.00	193.88
	04/07/04	13.09	0.00	193.84
	07/21/04	12.65	0.00	194.28
	10/14/04	12.60	0.00	194.33
	01/20/05	11.01	0.00	195.92
	04/25/05	10.36	0.00	196.57
MW-2	02/15/02	14.25	0.00	191.23
205.48	05/02/02	15.12	0.00	190.36
	07/15/02	15.02	0.00	190.46
205.49	10/16/02	14.21	0.00	191.28
	01/09/03	14.35	0.00	191.14
	04/25/03	14.25	0.00	191.24
	07/30/03	13.53	0.00	191.96
	10/23/03	14.23	0.00	191.26
	01/08/04	13.94	0.00	191.55
	04/07/04	13.98	0.00	191.51
	07/21/04	13.06	0.00	192.43
	10/14/04	12.87	0.00	192.62
	01/20/05	11.32	0.00	194.17
	04/25/05	10.53	0.00	194.96
MW-3	02/15/02	15.97	0.00	189.71
205.68	05/02/02	16.24	0.00	189.44
	07/15/02	15.77	0.00	189.91
205.70	10/16/02	14.62	0.00	191.08
	01/09/03	14.99	0.00	190.71
	04/25/03	14.80	0.00	190.90
	07/30/03	14.65	0.00	191.05
	10/23/03	14.53	0.00	191.17
	01/08/04	14.88	0.00	190.82
	04/07/04	15.35	0.00	190.35
	07/21/04	14.32	0.00	191.38
	10/14/04	14.63	0.00	191.07
	01/20/05	13.59	0.00	192.11
	04/25/05	13.02	0.00	192.68

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2002 TO PRESENT
ARCO Facility #5350

Well Identification / Surveyed Well Elevation[1]	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2]
MW-4 206.60	09/09/02	11.29	0.00	195.31
	10/16/02	11.05	0.00	195.55
	01/09/03	10.09	0.00	196.51
	04/25/03	10.20	0.00	196.40
	07/30/03	10.67	0.00	195.93
	10/23/03	10.65	0.00	195.95
	01/08/04	11.09	0.00	195.51
	01/22/04	10.50	0.00	196.10
	04/07/04	10.79	0.00	195.81
	07/21/04	10.23	0.00	196.37
	10/14/04	9.18	0.00	197.42
	01/20/05	7.35	0.00	199.25
	04/25/05	6.74	0.00	199.86
MW-5 204.75	09/09/02	14.43	0.00	190.32
	10/16/02	14.10	0.00	190.65
	01/09/03	13.85	0.00	190.90
	04/25/03	13.60	0.00	191.15
	07/30/03	13.42	0.00	191.33
	10/23/03	13.40	0.00	191.35
	01/08/04	13.89	0.00	190.86
	01/22/04	13.40	0.00	191.35
	04/07/04	13.62	0.00	191.13
	07/21/04	12.75	0.00	192.00
	10/14/04	11.96	0.00	192.79
	01/20/05	12.31	0.00	192.44
	04/25/05	11.01	0.00	193.74
MW-6 204.05	09/11/02	14.80	0.00	189.25
	10/16/02	14.62	0.00	189.43
	01/09/03	14.45	0.00	189.60
	04/25/03	14.60	0.00	189.45
	07/30/03	13.95	0.00	190.10
	10/23/03	14.07	0.00	189.98
	01/08/04	14.31	0.00	189.74
	04/07/04	14.30	0.00	189.75
	07/21/04	13.33	0.00	190.72
	10/14/04	13.06	0.00	190.99
	01/20/05	12.10	0.00	191.95
	04/25/05	11.49	0.00	192.56

TABLE 1

SUMMARY OF GROUNDWATER ELEVATIONS, 2002 TO PRESENT
ARCO Facility #5350

Well Identification / Surveyed Well Elevation[1]	Date Measured	Depth to Water (Feet)	LPH Thickness (Feet)	Groundwater Elevation[2]
MW-7 203.72	07/21/04	11.27	0.00	192.45
	10/14/04	10.28	0.00	193.44
	01/20/05	9.84	0.00	193.88
	04/25/05	9.25	0.00	194.47
MW-8 202.23	07/21/04	13.39	0.00	188.84
	07/23/04	13.36	0.00	188.87
	10/14/04	12.67	0.00	189.56
	01/20/05	11.62	0.00	190.61
	04/25/05	11.08	0.00	191.15
MW-9 201.61	07/21/04	16.85	0.00	184.76
	10/14/04	16.82	0.00	184.79
	01/20/05	15.62	0.00	185.99
	04/25/05	15.45	0.00	186.16

Notes:

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

[2] = Groundwater elevation in feet above MSL = Surveyed well elevation - Depth to water

LPH = Liquid-phase hydrocarbons

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2002 TO PRESENT
ARCO Facility #5350
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-1	02/15/02	<500	<0.50	0.63	<0.50	<1.5	2.5
	05/02/02	<25	<0.51	1.63	<0.51	120	1.8
	07/15/02	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/16/02	<500	<0.50	<0.50	<0.50	<1.5	1.6
	01/09/03	<500	2.9	14	3.8	13	2.4
	04/25/03	<500	1.4	9.9	2.5	17	<1.0
	07/30/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/23/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/08/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	04/07/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/21/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/14/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/20/05	<100	<1.0	<1.0	<1.0	<1.0	<1.0
	04/25/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
MW-2	02/15/02	35,000	3,300	7,200	1,800	11,000	18,000
	05/02/02	<3,100	<620	<620	<620	10,000	13,000
	07/15/02	32,000	2,400	6,000	1,400	8,500	13,000
	10/16/02	42,000	2,700	9,200	2,300	12,900	12,000
	01/09/03	51,000	3,000	9,600	2,200	13,000	11,000
	04/25/03	48,000	2,700	8,100	2,000	12,000	9,200
	07/30/03	51,000	2,500	9,200	2,500	13,000	6,100
	10/23/03	34,000	1,800	5,200	1,800	10,000	5,100
	01/08/04	41,000	2,100	7,500	2,500	15,000	5,200
	04/07/04	41,000	1,700	6,400	2,400	14,000	3,200
	07/21/04	52,000	1,100	5,200	2,200	11,000	2,500
	10/14/04	41,000	22	120	51	270	40
	01/20/05	31,000	230	3,400	2,400	14,000	340
	04/25/05	22,000	110	1,700	2,000	8,900	120
MW-3	02/15/02	<500	<0.50	<0.50	<0.50	<1.5	1.8
	05/02/02	<25	<5.0	<5.0	<5.0	2.3	<1.0
	07/15/02	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/16/02	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/09/03	<500	1.8	11	4.5	24	1.4
	04/25/03	<500	3.0	21	5.2	30	<1.0
	07/30/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/23/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/08/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	04/07/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/21/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/14/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/20/05	<100	<1.0	<1.0	<1.0	<1.0	<1.0
	04/25/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2002 TO PRESENT
ARCO Facility #5350

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

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-4	09/09/02	<50	<2.0	<2.0	<2.0	<4.0	<5.0
	10/16/02	<500	<0.50	<0.50	<0.50	<1.5	1.9
	01/09/03	<500	0.80	4.0	2.1	9.7	1.9
	04/25/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/30/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/23/03	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/08/04	Well Not Sampled					
	01/22/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	04/07/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	07/21/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/14/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/20/05	<100	<1.0	<1.0	<1.0	<1.0	<1.0
	04/25/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
MW-5	09/09/02	57	<2.0	<2.0	<2.0	<4.0	4,400
	10/16/02	4,100	<25	34	260	690	6,800
	01/09/03	4,500	<25	<25	500	<75	4,200
	04/25/03	6,500	<25	<25	940	<75	4,500
	07/30/03	5,200	38	<25	980	<75	4,300
	10/23/03	4,300	40	<25	970	<75	4,900
	01/08/04	Well Not Sampled					
	01/22/04	3,100	<25	<25	500	<75	3,400
	04/07/04	3,500	<25	<25	660	<75	2,000
	07/21/04	2,800	9.7	<5.0	260	21	1,000
	10/14/04	1,800	<5.0	<5.0	83	<15	900
	01/20/05	1,400	<5.0	<5.0	65	<5.0	390
	04/25/05	1,200	<5.0	<5.0	42	<10	460
MW-6	09/11/02	16,000	3,500	<2,000	<2,000	<4,000	61,000
	10/16/02	24,000	4,100	5,400	1,200	4,900	46,000
	01/09/03	26,000	4,200	4,800	1,300	4,400	47,000
	04/25/03	39,000	3,800	7,600	1,300	6,100	32,000
	07/30/03	27,000	3,700	6,000	1,500	6,300	40,000
	10/23/03	26,000	3,200	3,700	1,200	5,300	32,000
	01/08/04	21,000	2,900	2,100	1,000	4,900	35,000
	04/07/04	24,000	3,800	5,700	1,700	8,300	29,000
	07/21/04	31,000	3,300	4,700	1,900	8,600	22,000
	10/14/04	29,000	3,300	3,800	2,200	10,000	25,000
	01/20/05	20,000	1,800	1,600	1,600	6,300	5,600
	04/25/05	28,000	2,900	1,000	1,600	7,600	17,000

TABLE 2

SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS, 2002 TO PRESENT
ARCO Facility #5350

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

Well Identification	Sampling Date	GRO	B	T	E	X	MTBE
MW-7	07/21/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/14/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/20/05	<100	<1.0	<1.0	<1.0	<1.0	<1.0
	04/25/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
MW-8	07/23/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/14/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/20/05	<100	<1.0	<1.0	<1.0	<1.0	<1.0
	04/25/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0
MW-9	07/21/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	10/14/04	<500	<0.50	<0.50	<0.50	<1.5	<1.0
	01/20/05	<100	<1.0	<1.0	<1.0	<1.0	<1.0
	04/25/05	<100	<0.50	<0.50	<0.50	<1.0	<1.0

Notes:

TPHg = Total petroleum hydrocarbons as gasoline (C6-C12); beginning 1Q2005 this was reported as gasoline range organics (GRO), also C6-C12.

B = Benzene

T = Toluene

E = Ethylbenzene

X = Total Xylenes

MTBE = Methyl tert-Butyl Ether

< = Less than indicated reporting limit

BTEX and MTBE were analyzed by EPA Method 8260B

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL DATA, 2002 TO PRESENT
ARCO Facility #5350
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	Ethanol
MW-1	02/15/02	<25	<5.0	<5.0	<5.0	--
	05/02/02	<25	<5.0	<5.0	<5.0	--
	07/15/02	<25	<5.0	<5.0	<5.0	--
	10/16/02	<50	<5.0	<5.0	<5.0	--
	01/09/03	<50	<5.0	<5.0	<5.0	<150
	04/25/03	<50	<5.0	<5.0	<5.0	<150
	07/30/03	<50	<5.0	<5.0	<5.0	<150
	10/23/03	<50	<5.0	<5.0	<5.0	<150
	01/08/04	<50	<5.0	<5.0	<5.0	<150
	04/07/04	<50	<5.0	<5.0	<5.0	<150
	07/21/04	<50	<5.0	<5.0	<5.0	<150
	10/14/04	<50	<5.0	<5.0	<5.0	<150
	01/20/05	<25	<2.0	<2.0	<2.0	<500
	04/25/05	<25	<2.0	<2.0	<2.0	<500
MW-2	02/15/02	<3,100	<620	<620	<620	--
	05/02/02	3,500	<500	<500	<500	--
	07/15/02	<3,100	<620	<620	<620	--
	10/16/02	<5,000	<500	<500	<500	--
	01/09/03	<10,000	<1,000	<1,000	<1,000	<30,000
	04/25/03	<10,000	<1,000	<1,000	<1,000	<30,000
	07/30/03	<5,000	<500	<500	<500	<15,000
	10/23/03	<2,500	<250	<250	<250	<7,500
	01/08/04	<5,000	<500	<500	<500	<15,000
	04/07/04	<5,000	<500	<500	<500	<15,000
	07/21/04	<2,500	<250	<250	<250	<7,500
	10/14/04	<50	<5.0	<5.0	<5.0	<150
	01/20/05	<3,100	<250	<250	<250	<62,000
	04/25/05	<2500	<200	<200	<200	<50000
MW-3	02/15/02	<25	<5.0	<5.0	<5.0	--
	05/02/02	<25	<5.0	<5.0	<5.0	--
	07/15/02	<25	<5.0	<5.0	<5.0	--
	10/16/02	<50	<5.0	<5.0	<5.0	--
	01/09/03	<50	<5.0	<5.0	<5.0	<150
	04/25/03	<50	<5.0	<5.0	<5.0	<150
	07/30/03	<50	<5.0	<5.0	<5.0	<150
	10/23/03	<50	<5.0	<5.0	<5.0	<150
	01/08/04	<50	<5.0	<5.0	<5.0	<150
	04/07/04	<50	<5.0	<5.0	<5.0	<150
	07/21/04	<50	<5.0	<5.0	<5.0	<150
	10/14/04	<50	<5.0	<5.0	<5.0	<150
	01/20/05	<25	<2.0	<2.0	<2.0	<500
	04/25/05	<25	<2.0	<2.0	<2.0	<500

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL DATA, 2002 TO PRESENT
ARCO Facility #5350
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	Ethanol
MW-4	09/09/02	<50	<5.0	<5.0	<5.0	--
	10/16/02	<50	<5.0	<5.0	<5.0	--
	01/09/03	<50	<5.0	<5.0	<5.0	<150
	04/25/03	<50	<5.0	<5.0	<5.0	<150
	07/30/03	<50	<5.0	<5.0	<5.0	<150
	10/23/03	<50	<5.0	<5.0	<5.0	<150
	01/22/04	<50	<5.0	<5.0	<5.0	<150
	04/07/04	<50	<5.0	<5.0	<5.0	<150
	07/21/04	<50	<5.0	<5.0	<5.0	<150
	10/14/04	<50	<5.0	<5.0	<5.0	<150
	01/20/05	<25	<2.0	<2.0	<2.0	<500
	04/25/05	<25	<2.0	<2.0	<2.0	<500
MW-5	09/09/02	<2,500	<250	<250	<250	--
	10/16/02	<2,500	<250	<250	<250	--
	01/09/03	<2,500	<250	<250	<250	<7,500
	04/25/03	<2,500	<250	<250	<250	<7,500
	07/30/03	<2,500	<250	<250	<250	<7,500
	10/23/03	2,900	<250	<250	<250	<7,500
	01/22/04	<2,500	<250	<250	<250	<7,500
	04/07/04	<2,500	<250	<250	<250	<7,500
	07/21/04	<500	<50	<50	<50	<1,500
	10/14/04	<500	<50	<50	<50	<1,500
	01/20/05	<120	<10	<10	<10	<2,500
	04/25/05	<250	<20	<20	<20	<5000
MW-6	09/11/02	<50,000	<5,000	<5,000	<5,000	--
	10/16/02	<50,000	<5,000	<5,000	<5,000	--
	01/09/03	<20,000	<2,000	<2,000	<2,000	<60,000
	04/25/03	<20,000	<2,000	<2,000	<2,000	<60,000
	07/30/03	<10,000	<1,000	<1,000	<1,000	<30,000
	10/23/03	<50,000	<5,000	<5,000	<5,000	<150,000
	01/08/04	<20,000	<2,000	<2,000	<2,000	<60,000
	04/07/04	<20,000	<2,000	<2,000	<2,000	<60,000
	07/21/04	<10,000	<1,000	<1,000	<1,000	<30,000
	10/14/04	<12,000	<1,200	<1,200	<1,200	<38,000
	01/20/05	<3,100	<250	<250	<250	<62,000
	04/25/05	<8300	<670	<670	<670	<170000

TABLE 3

SUMMARY OF ADDITIONAL OXYGENATES ANALYTICAL DATA, 2002 TO PRESENT
ARCO Facility #5350

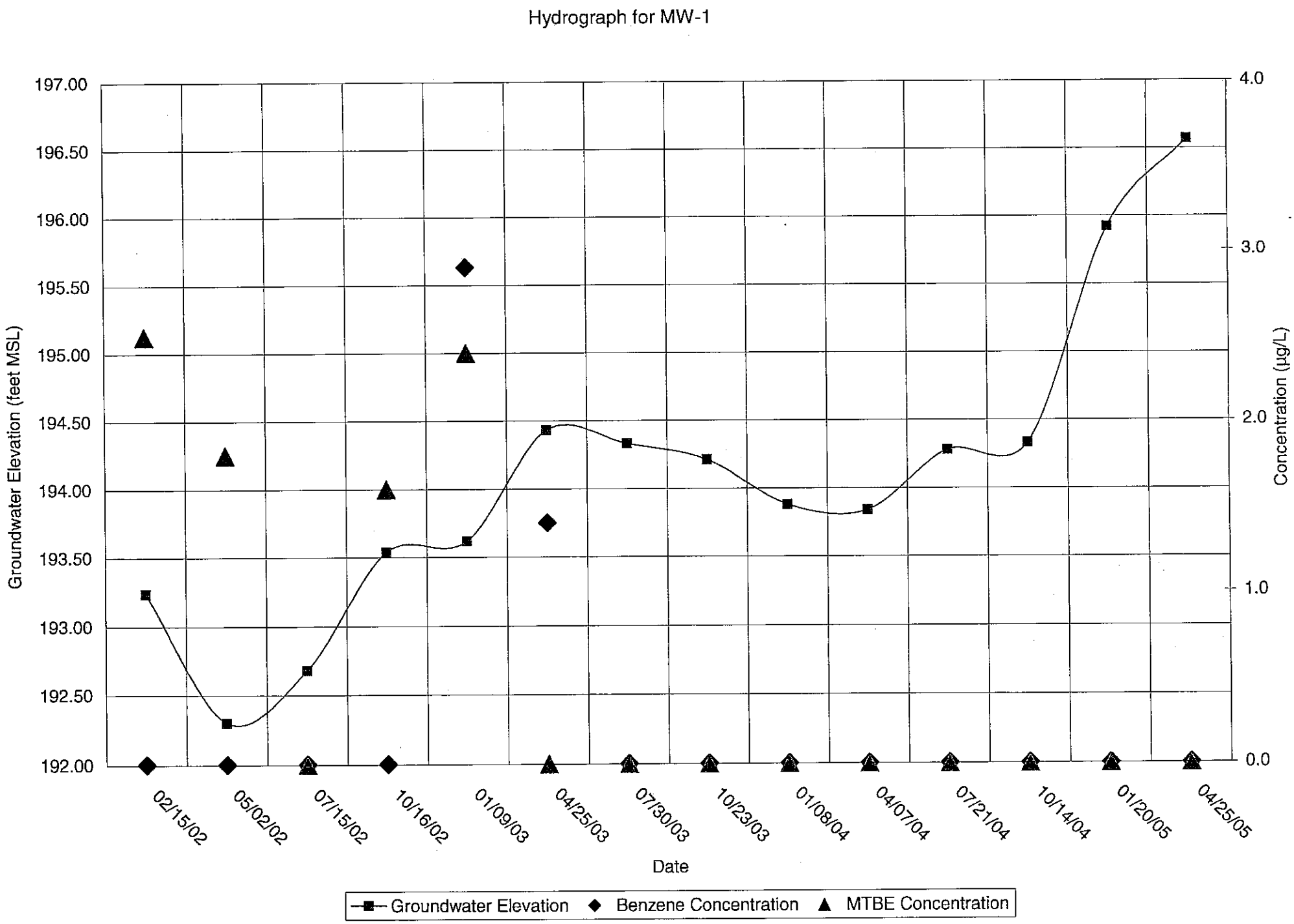
All Results Reported in Micrograms per Liter (µg/L)

Well Identification	Sampling Date	TBA	DIPE	ETBE	TAME	Ethanol
MW-7	07/21/04	<50	<5.0	<5.0	<5.0	<150
	10/14/04	<50	<5.0	<5.0	<5.0	<150
	01/20/05	<25	<2.0	<2.0	<2.0	<500
	04/25/05	<25	<2.0	<2.0	<2.0	<500
MW-8	07/23/04	<50	<5.0	<5.0	<5.0	<150
	10/14/04	<50	<5.0	<5.0	<5.0	<150
	01/20/05	<25	<2.0	<2.0	<2.0	<500
	04/25/05	<25	<2.0	<2.0	<2.0	<500
MW-9	07/21/04	<50	<5.0	<5.0	<5.0	<150
	10/14/04	<50	<5.0	<5.0	<5.0	<150
	01/20/05	<25	<2.0	<2.0	<2.0	<500
	04/25/05	<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 reporting limit
-- = Not analyzed



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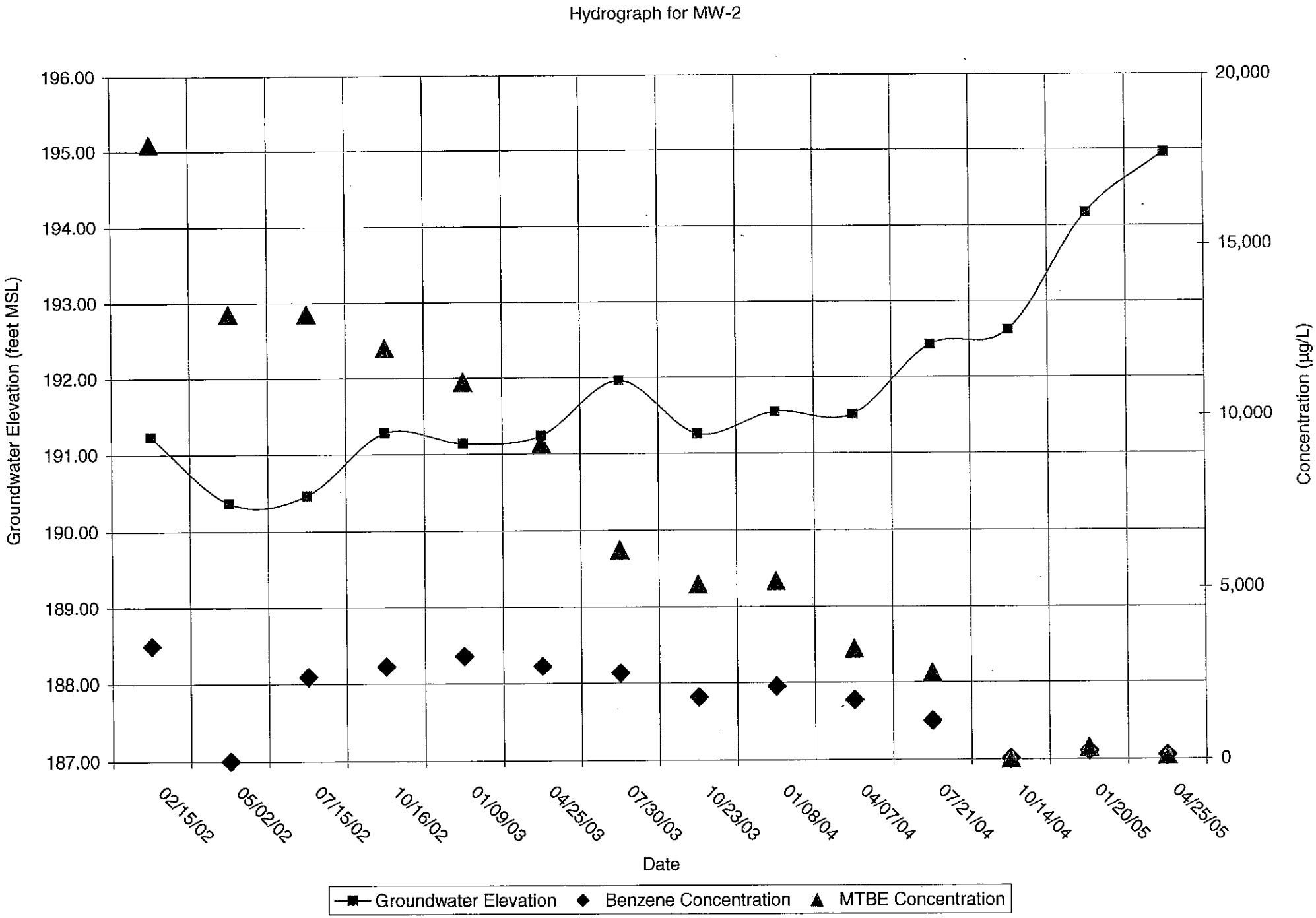

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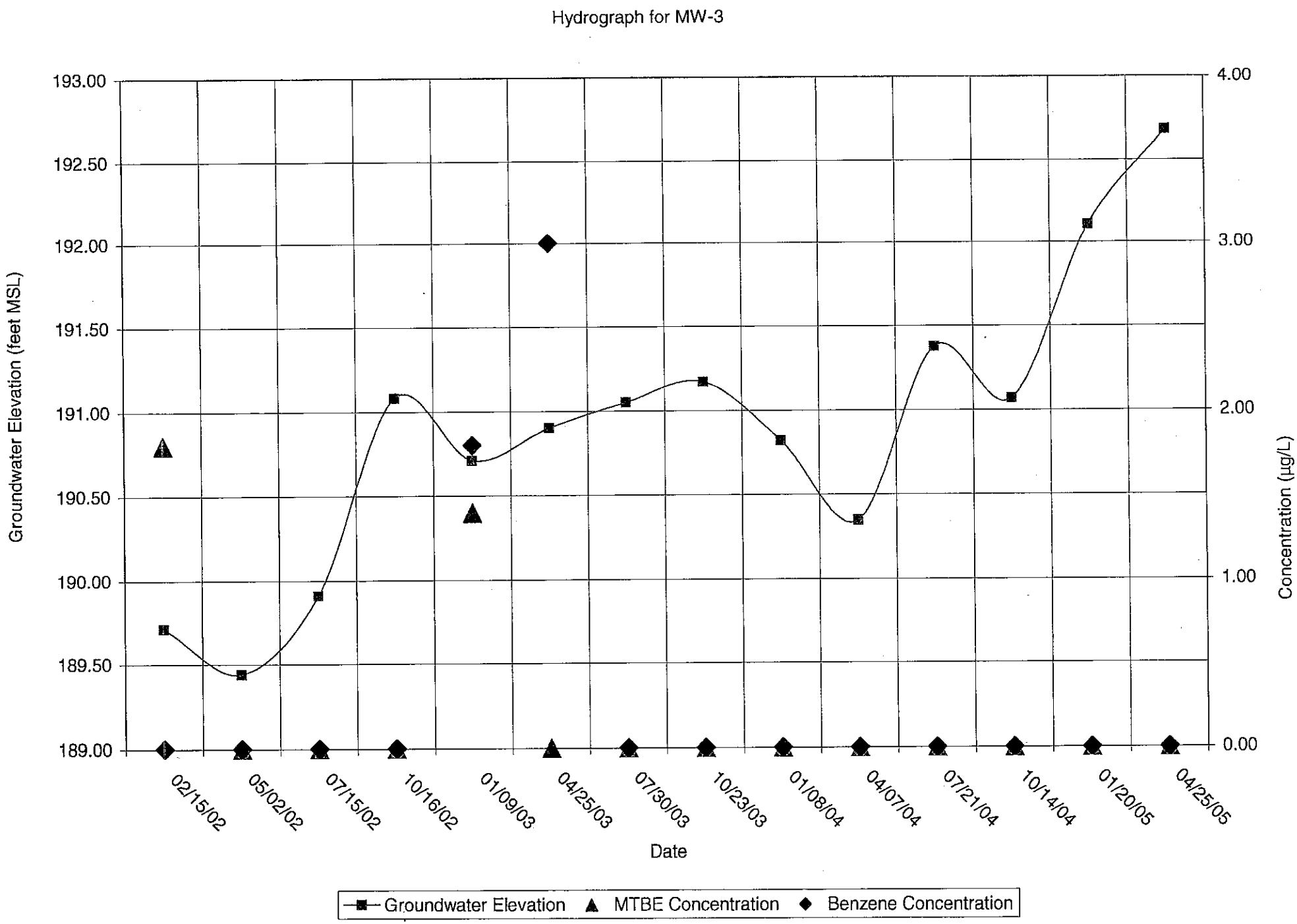

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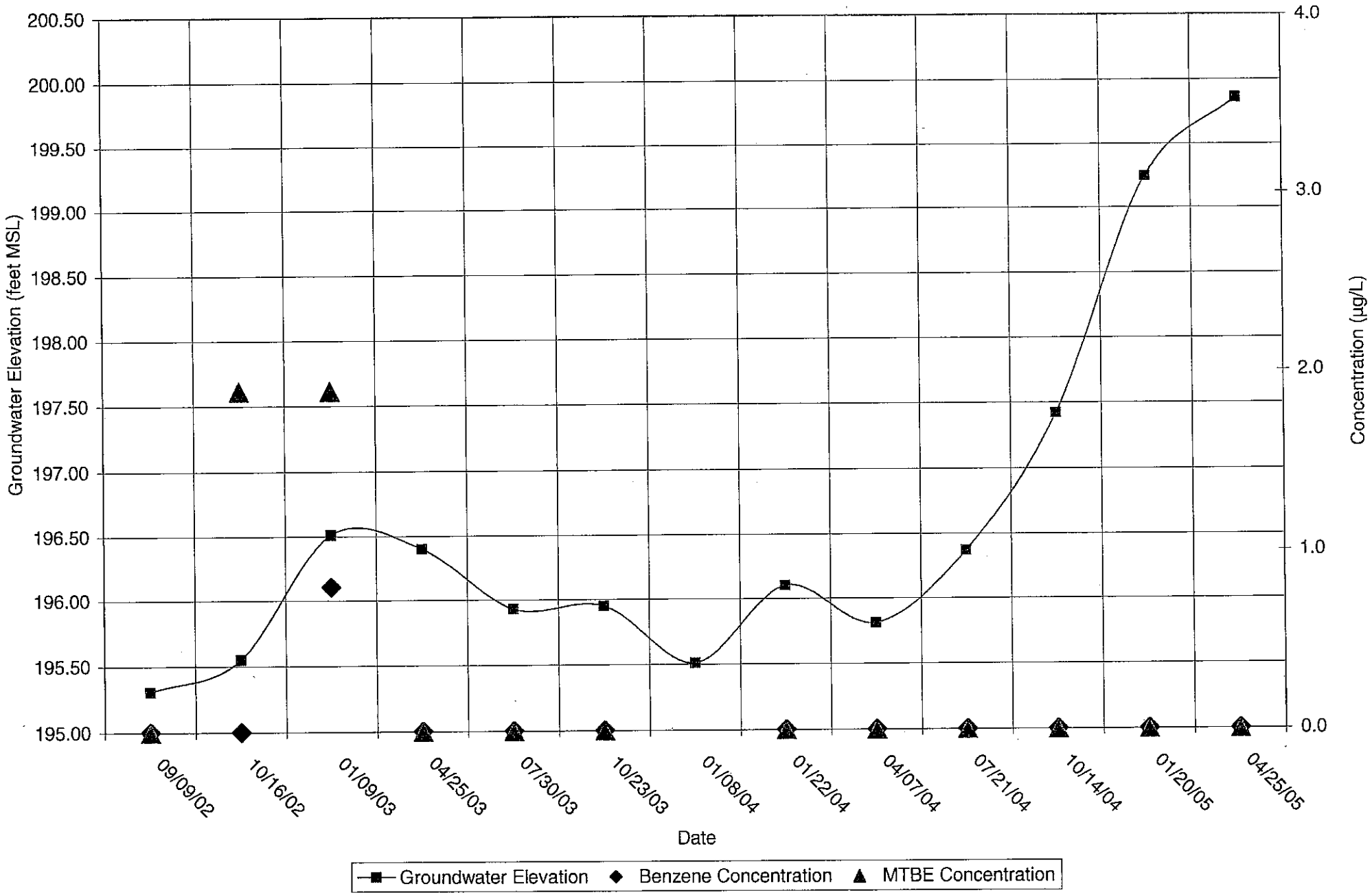
Hydrograph for MW-4



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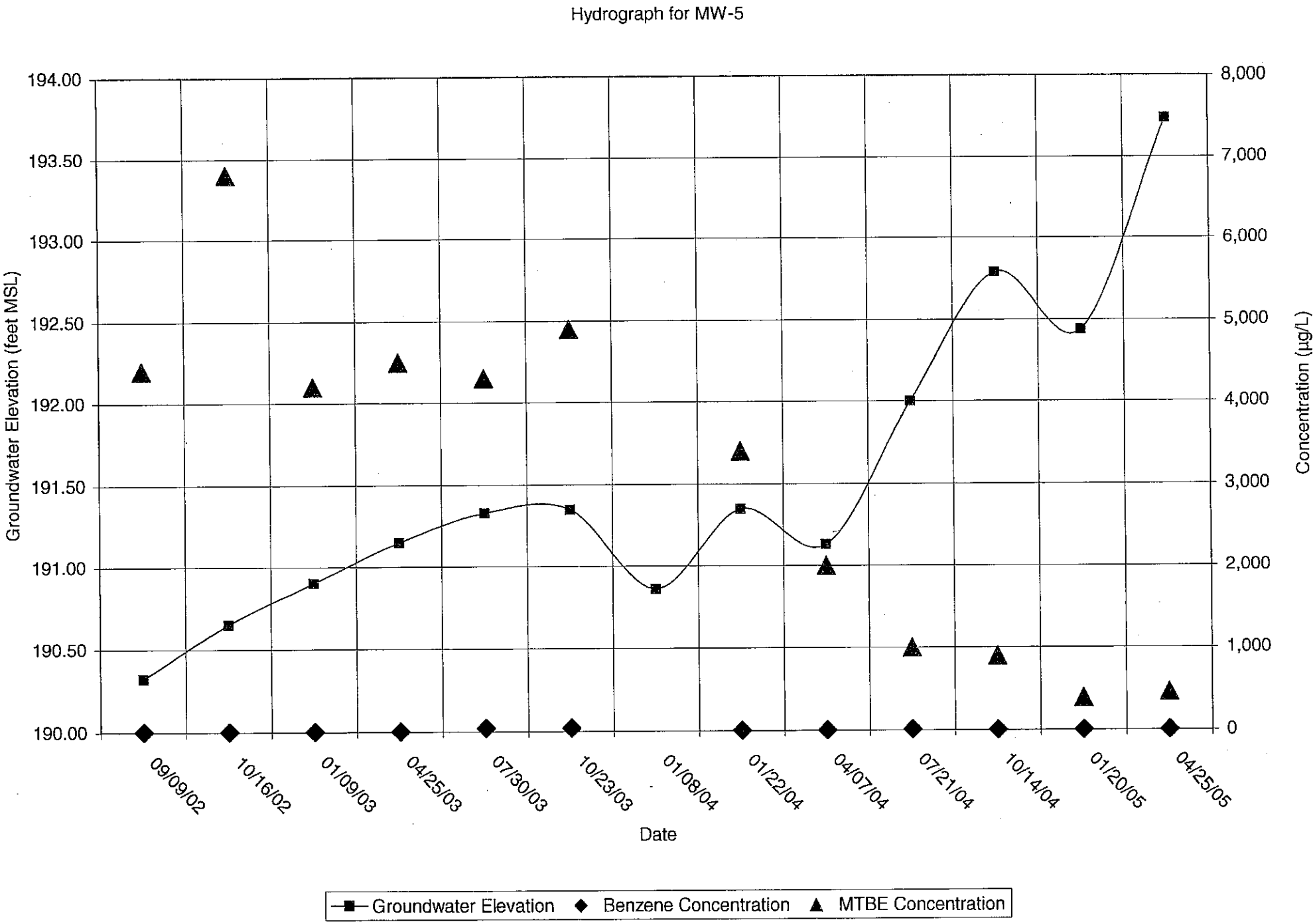

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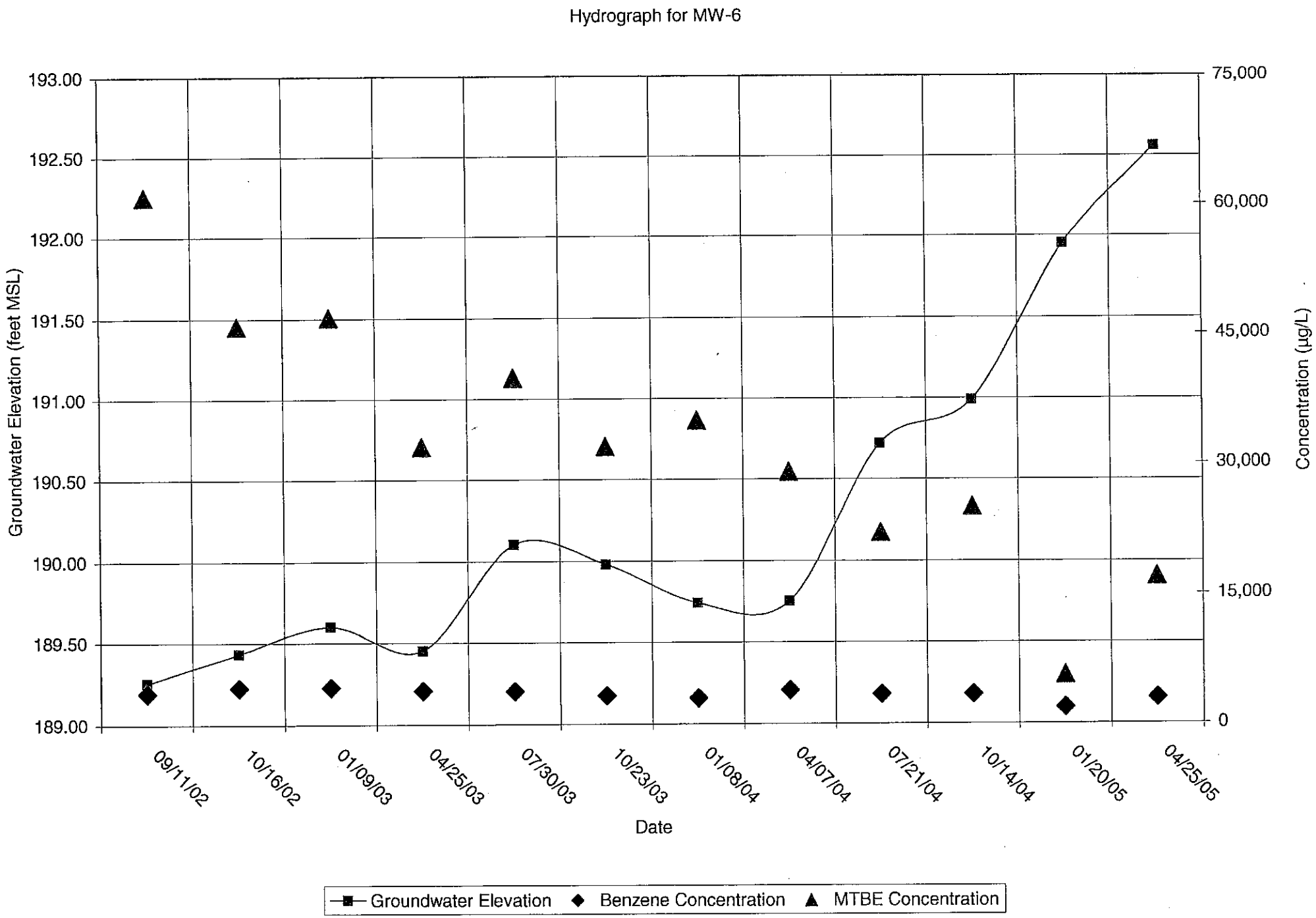

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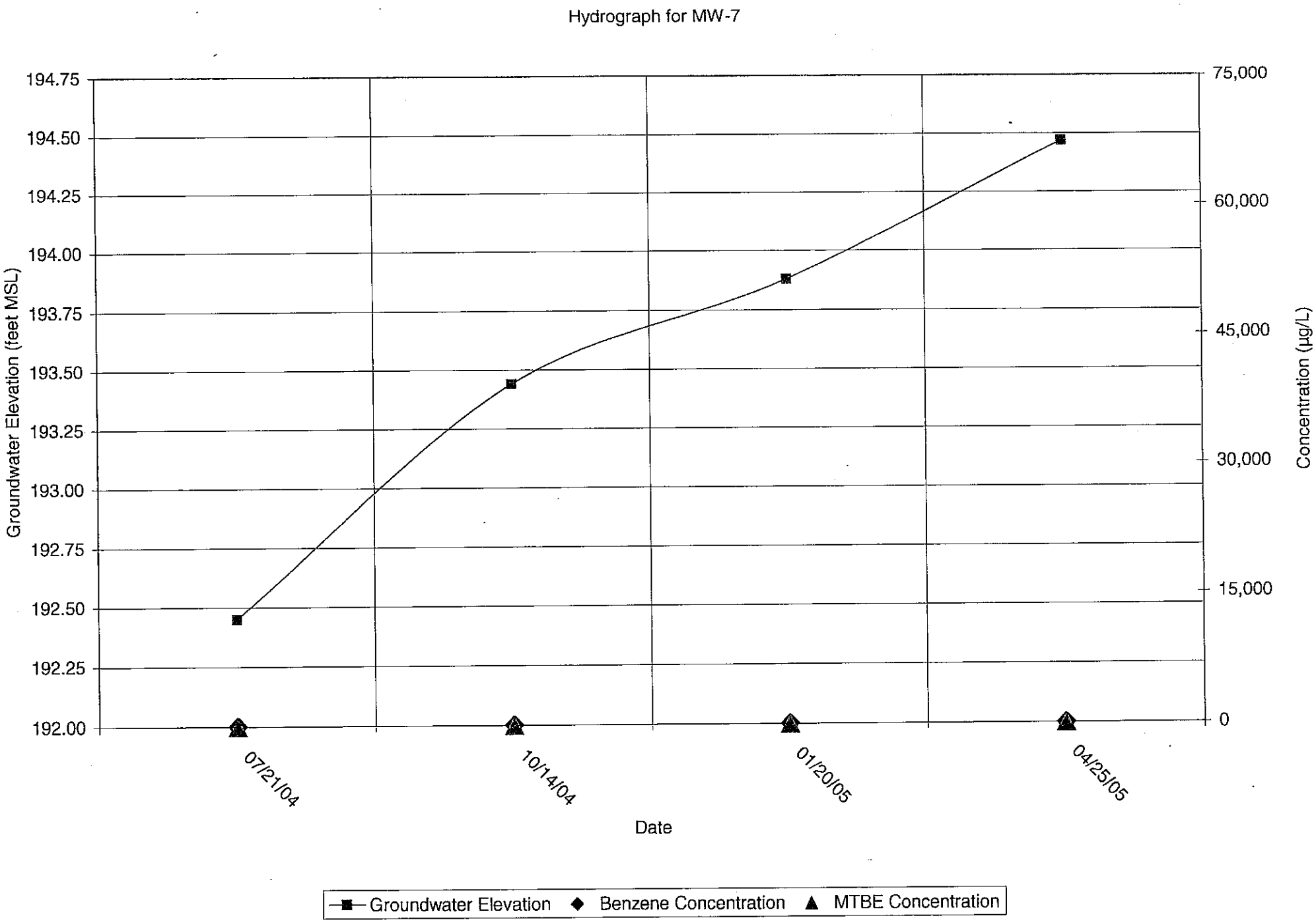

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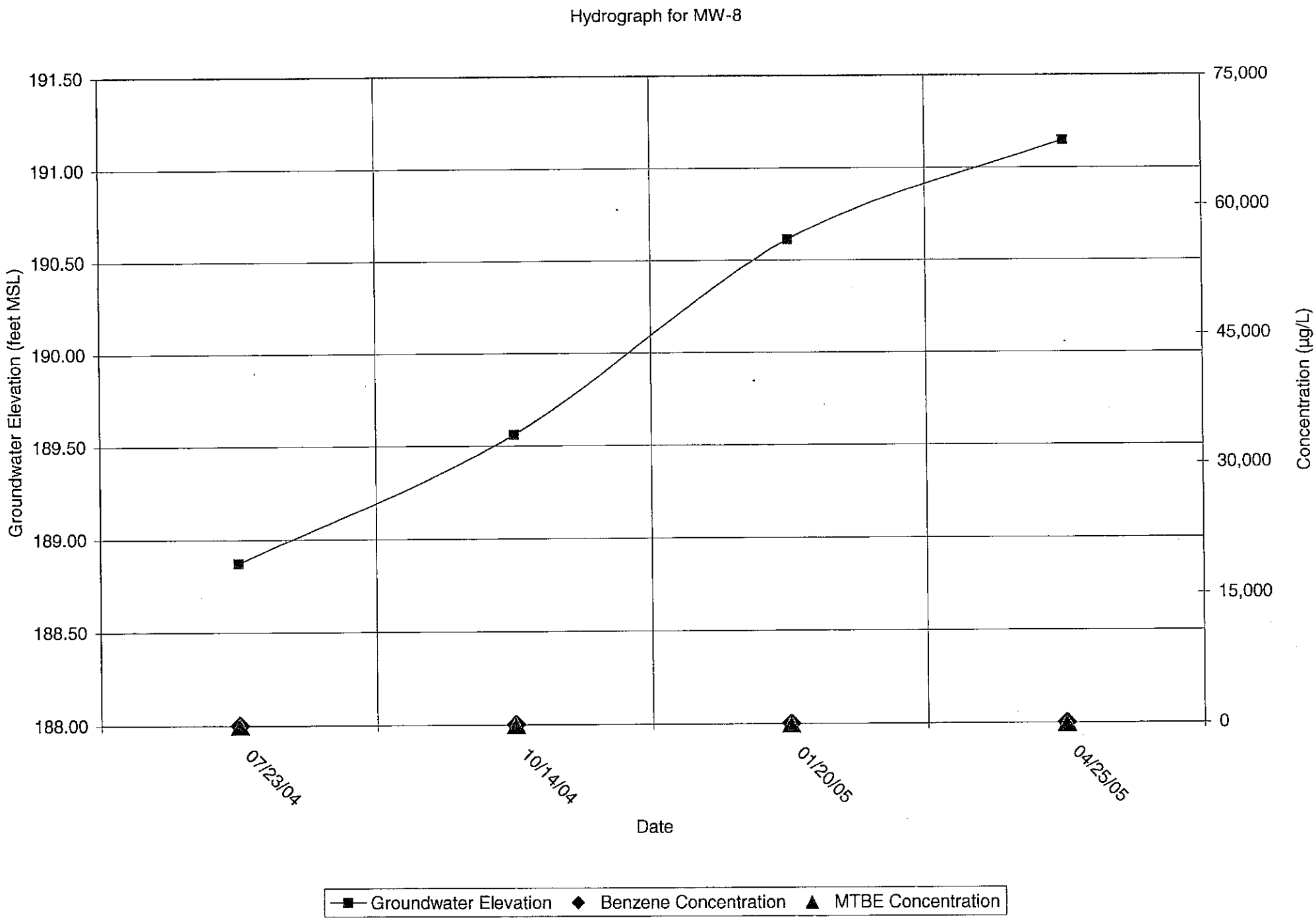

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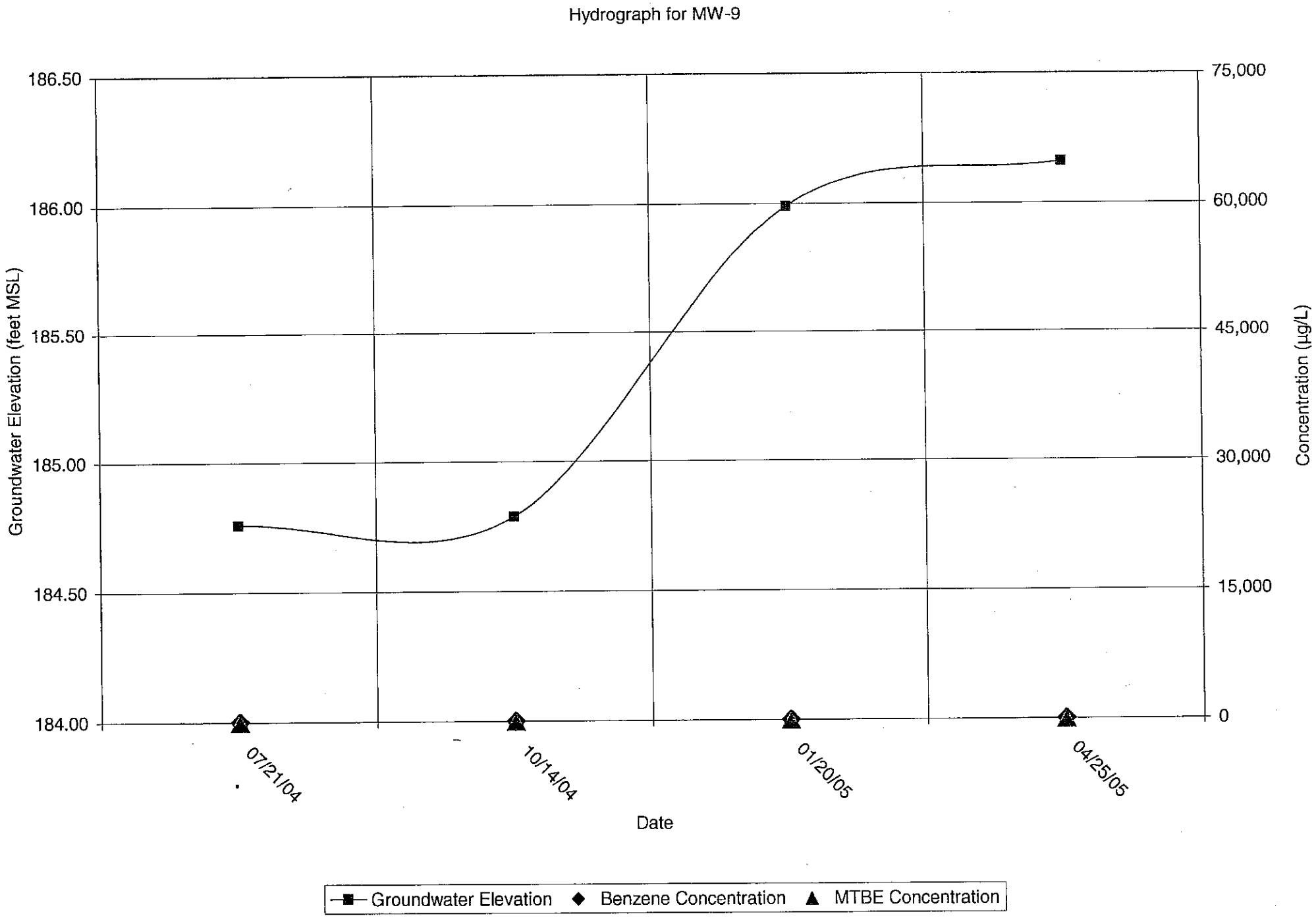

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MONITORING WELL PURGING AND SAMPLING PROCEDURES
SAN DIEGO COUNTY

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

e. 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.

f. 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.

g. 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 5350 Date: 4/25/2005

Project Number: 08BP.U5350.05.4142 Field Representative(s): JM, MN, WW

Checked by: KEM

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-1	11.01	0925	—	10.36		33.51	206.93	196.57	196.57	
MW-2	11.32	0936	—	10.53	—	34.80	205.49	194.96	194.96	
MW-3	13.59	0934	—	13.02	—	34.72	205.70	192.68	192.68	
MW-4	7.35	0930	—	6.74	—	29.90	206.60	199.86	199.86	
MW-5	12.31	0942	—	11.01	—	29.75	204.75	193.74	193.74	
MW-6	12.10	0942	—	11.49	—	29.95	204.05	192.56	192.56	
MW-7	9.84	0945	—	9.25	—	25.11	203.72	194.47	194.47	
MW-8	11.62	0939	—	11.08	—	25.12	202.23	191.15	191.15	
MW-9	15.62	0936	—	15.45	—	25.13	201.61	186.16	186.16	

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
ND = Not detected
NM = Not measured

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name:	ARCO 5350	Well No:	MW- 1
Project Number:	08BP.U5350.05.4142	Date:	4/25/2005
SECOR Rep: W Wong	Checked by: MN. KRM	Sample Time:	1213
		Sample No:	MW- 1

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist #5

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

pH Temp/Conductivity Meter Type / ID: 1A

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

Decontamination Method: ___ Steam / High Pressure Wash ✗ 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): 10.39 @ 1002

Total Well Depth (DTB) (ft): 33.51

Water Column: 23.12

Floating Product: ——

Thickness (in): ——

Borehole Volume (gal): 34.68

1.5 Borehole Volumes (gal): 52.02

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1007	Started Purging					
1015	28.58	35	6.87	22.8	9800	tan/gray, low silt, odorless
1023	dry	52.5	6.93	23.1	9870	tan/gray, med silt, odorless
1213	11.41	Sample				

Maximum Drawdown (DTW_2) (ft) = dry / 33.51

H^2O Removal Rate (GPM) = 3.28

✗ Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1213

Depth to Water at time of sampling (DTW_3): 11.41

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\%\ of\ Recovery = 1 - \frac{(10.39) - (11.41)}{(10.39) - (33.51)} = \frac{-1.02}{-23.12}$$

$$= 96\ \%$$

80% Recharge = 15.01

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 2
	Project Name: ARCO 5350		Date: 4/25/2005
	Project Number: 08BP.U5350.05.4142		Sample Time: 1315
	SECOR Rep: J. Morell	Checked by: KRM	Sample No: MW- 2

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 8

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

pH Temp/Conductivity Meter Type / ID: 1A

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): 10.55

Total Well Depth (DTB) (ft): 34.80 | Water Column: 24.25

Floating Product: | Thickness (in):

Borehole Volume (gal): 36.38 | 1.5 Borehole Volumes (gal): 54.57

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1126	Started Purging					
1142	28.12	36.3	7.11	23.8	5.21	Grey, odor, cloudy
1157	Dry	55	7.12	23.8	5.11	" "
1315	15.40	Sample				

Maximum Drawdown (DTW_2) (ft) = 34.80

H^2O Removal Rate (GPM) = 1.77

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1315

Depth to Water at time of sampling (DTW_3): 15.40

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(10.55) - (15.40)}{(10.55) - (34.80)} = \frac{5.05}{24.25}$$

$$= 80\ \%$$

80% Recharge = 15.40

SECOR INTERNATIONAL INCORPORATED	WELL PURGING / SAMPLING LOG		Well No: MW- 3
	Project Name ARCO 5350		Date: 4/25/2005
	Project Number: 08BP.U5350.05.4142		Sample Time: 1222
	SECOR Rep: J. Morell	Checked by: KRM WW	Sample No: MW- 3

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 8

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

pH Temp/Conductivity Meter Type / ID: 1A

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): 13.04

Total Well Depth (DTB) (ft): 34.72

Water Column: 21.68

Floating Product:

Thickness (in):

Borehole Volume (gal): 32.52

1.5 Borehole Volumes (gal): 48.78

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1002	Started Purging					
1014	26.20	33	7.02	23.5	8.47	Brown, odorless, cloudy
1022	Dry	50	7.04	23.5	8.41	"
1222	14.39	Sample				

Maximum Drawdown (DTW_2) (ft) = 34.72

H^2O Removal Rate (GPM) = 2.5

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1222

Depth to Water at time of sampling (DTW_3): 14.39

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(13.04)-(14.39)}{(13.04)-(34.72)} = \frac{-1.35}{21.68}$$

$$= 94\ \%$$

80% Recharge = ~~[illegible]~~ SM 17.37

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name:	ARCO 5350	Well No:	MW- 4
Project Number:	08BP.U5350.05.4142	Date:	4/25/2005
SECOR Rep: Mat Nowak (WW)	Checked by: KRM	Sample Time:	1117
		Sample No:	MW- 4

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 1

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

pH Temp/Conductivity Meter Type / ID: 1A

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): 6.79

Total Well Depth (DTB) (ft): 29.90

Water Column: 23.11

Floating Product: ✓

Thickness (in): —

Borehole Volume (gal): 34.67

1.5 Borehole Volumes (gal): 51.99

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
0956	Started Purging					
1011	18.80	35.0	6.26	22.1	7.37	No Odor/No Silt/ clear
1018	24.42	52.0	6.88	22.1	8.09	" /(med.) silt/ brown
1117	9.26	Sample				

Maximum Drawdown (DTW_2) (ft) = 24.42

H^2O Removal Rate (GPM) = 2.36

[X] Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1117

Depth to Water at time of sampling (DTW_3): 9.26

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(6.79)-(9.26)}{(6.79)-(24.42)} = \frac{-2.47}{-17.63} = 84\ \%$$

80% Recharge = 10.32

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name	ARCO- 5350	Well No:	MW- 5
Project Number:	08BP.U5350.05.4142	Date:	4/25/2005
SECOR Rep:	W Wong	Sample Time:	1334
Checked by:	NW. KRM	Sample No:	MW- 5

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 5

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

pH Temp/Conductivity Meter Type / ID: 1A

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

Decontamination Method: ___ Steam / High Pressure Wash ✗ 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): 10.21 & 11.21

Total Well Depth (DTB) (ft): 29.75

Water Column: 19.54

Floating Product: —

Thickness (in): —

Borehole Volume (gal): 29.31

1.5 Borehole Volumes (gal): 43.97

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1124	Started Purging					
1132	24.23	29.5	7.09	23.5	9520	gray, med silt, odor
1145	dry	44	7.13	23.6	4460	"
1334	14.12	sample				

Maximum Drawdown (DTW_2) (ft) = dry / 29.75

H^2O Removal Rate (GPM) = 2.09

✗ Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1334

Depth to Water at time of sampling (DTW_3): 14.12

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(10.21) - (14.12)}{(10.21) - (29.75)} = \frac{-3.91}{-19.54}$$

$$= 80\ \%$$

80% Recharge = 14.12

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Well No:	MW- 6
Project Name	ARCO 5350
Date:	4/25/2005
Project Number:	08BP.U5350.05.4142
Sample Time:	1330
SECOR Rep:	Mat Nowak MW
Checked by:	KRM
Sample No:	MW- 6

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 1

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

pH Temp/Conductivity Meter Type / ID: 1A

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

Decontamination Method: ___ Steam / High Pressure Wash ✓ 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): 11.75

Total Well Depth (DTB) (ft): 29.95

Water Column: 18.20

Floating Product: —

Thickness (in): —

Borehole Volume (gal): 27.30

1.5 Borehole Volumes (gal): 40.95

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1216	Started Purging					
1225	25.10	27.5	6.95	23.1	4.95	sweet/low silt/clr yellow
1235	27.76	41.0	7.04	23.4	4.70	" /med silt/charcoal gray
~~1240~~ MW	14.95	Sample				
1330						

Maximum Drawdown (DTW_2) (ft) = 27.76

H^2O Removal Rate (GPM) = 2.15

✓ Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1330

Depth to Water at time of sampling (DTW_3): 14.95

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(11.75)-(14.95)}{(11.75)-(27.76)} = \frac{3.2}{16.01}$$

$$= 80\ \%$$

80% Recharge = 14.95

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name	ARCO 5350	Well No:	MW- 7
Project Number:	08BP.U5350.05.4142	Date:	4/25/2005
SECOR Rep: W Wong	Checked by: NW FRM	Sample Time:	1224
		Sample No:	MW- 7

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 5

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

pH Temp/Conductivity Meter Type / ID: 1A

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

Decontamination Method: ___ Steam / High Pressure Wash ✗ 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): 8.62 @ 1044

Total Well Depth (DTB) (ft): 25.11

Water Column: 16.49

Floating Product: —

Thickness (in): —

Borehole Volume (gal): 24.74

1.5 Borehole Volumes (gal): 37.11

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1050	Started Purging					
1055	21.23	25	7.30	22.6	2830	gray/tan, low/med silt, odorless
1103	23.86	37.5	7.31	22.7	2910	
1224	9.42	sample				

Maximum Drawdown (DTW_2) (ft) = 23.86

H^2O Removal Rate (GPM) = 2.88

✗ Fast Recharging Well

Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1224

Depth to Water at time of sampling (DTW_3): 9.42

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(8.62) - (9.42)}{(8.62) - (23.86)} = \frac{-.80}{-15.24}$$

$$= 95\ \%$$

80% Recharge = 11.67

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name	ARCO 5350	Well No:	MW- 8
Project Number:	08BP.U5350.05.4142	Date:	4/25/2005
SECOR Rep: Mat Novak	Checked by: KRW	Sample Time:	1249
		Sample No:	MW- 8

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 1

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

pH Temp/Conductivity Meter Type / ID: 1A

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

Decontamination Method: ___ Steam / High Pressure Wash ☒ 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): 11.10

Total Well Depth (DTB) (ft): 25.12

Water Column: 14.02

Floating Product: —

Thickness (in): —

Borehole Volume (gal): 21.03

1.5 Borehole Volumes (gal): 31.55

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1105	Started Purging					
1110	23.59	21.5	7.21	23.1	3.01	No odor / low silt / clear
1129	24.15	32.0	7.28	23.0	3.24	" / " / gray
1249	12.63	[illegible]				

Maximum Drawdown (DTW_2) (ft) = 24.15

H^2O Removal Rate (GPM) = 1.33

☒ Fast Recharging Well

Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1249

Depth to Water at time of sampling (DTW_3): 12.63

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(11.10) - (12.63)}{(11.10) - (24.15)} = \frac{-1.53}{-13.05}$$

$$= 88\ \%$$

80% Recharge = 13.71

SECOR

INTERNATIONAL INCORPORATED

WELL PURGING / SAMPLING LOG

Project Name	ARCO 5350	Well No:	MW- 9
Project Number:	08BP.U5350.05.4142	Date:	4/25/2005
SECOR Rep:	J. Morell	Sample Time:	1411
Checked by:	KAM	Sample No:	MW- 9

PURGING & SAMPLING EQUIPMENT / METHOD

Water Level Meter Type & ID: Solinist # 2

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

pH Temp/Conductivity Meter Type / ID: 1A

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): 15.50

Total Well Depth (DTB) (ft): 25.13

Water Column: 9.63

Floating Product:

Thickness (in):

Borehole Volume (gal): 14.45

1.5 Borehole Volumes (gal): 21.67

PURGING INFORMATION

Time	DTW (ft)	Water Volume Purged (gal)	pH	Temp (°C)	Elect. Cond. (μ mhos)	Water Description (odor, turbidity, color)
1053	Started Purging					
1058	Dry	15	7.21	24.0	4.85	Brown, odorless, cloudy
1218	22.52	22	7.18	24.0	4.74	"
1411	17.25	Sample				

Maximum Drawdown (DTW_2) (ft) = 25.13

H^2O Removal Rate (GPM) = ~~.88~~ .25 GM

X Fast Recharging Well

___ Slow Recharging Well

SAMPLING INFORMATION

Time Sampled: 1411

Depth to Water at time of sampling (DTW_3): 17.25

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

BOREHOLE VOLUME CALCULATIONS

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

Casing 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

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

$$\% \text{ of Recovery} = 1 - \frac{(15.50) - (17.25)}{(15.50) - (25.13)} = \frac{1.75}{9.63} = 82\%$$

80% Recharge = ~~1.72~~ 17.42 GM

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

May 6, 2005

STL LOT NUMBER: **E5D270342**
PO/CONTRACT: GEM-6-21909

KURT MYERS
SECOR International Inc
2655 Camino Del Rio North
Suite 302
San Diego, CA 92108-1633

Dear KURT MYERS,

This report contains the analytical results for the 11 samples received under chain of custody by STL Los Angeles on April 26, 2005. These samples are associated with your ARCO #5350 project.

STL Los Angeles certifies that the test results provided in this report meet all the 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 coolers received for this project can be found on the Project Receipt Checklist.

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

This report contains 000036 pages.

CASE NARRATIVE

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 except as noted on the following page.

If you have any questions, please feel free to call me at 714.258.8610.

Sincerely,

Sabina Sudoko
Project Manager
CC: Project File

LOT NUMBER E5D270342

Nonconformance 05-12215

Affected Samples:
E5D270342 (10): TB-5350-20050425

Affected Methods:
8260B, 8015B

Details:
The lab supplied trip blank had six vials out of six that had headspace greater than 6mm.

ESD 270342 Page 1 of 2

Chain of Custody Record

Project Name: ARCO 5350 Groundwater Monitoring
BP BU/AR Region/Enfos Segment: Retail
State or Lead Regulatory Agency: County of San Diego, DEH
Requested Due Date (mm/dd/yy): Standard TAT

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

ab Name:	STL Los Angeles	BP AR Facility No.:	5350	Consultant/Contractor:	SECOR
ddress:	1721 Grand Ave.	BP AR Facility Address:	3804 Plaza Dr., Oceanside, CA	Address:	2655 Camino Del Rio North, Suite 302
	Santa Ana, CA 92705-4808	Site Lat Long:			San Diego, CA 92108
ab PM:	Sabina Sudoko	California Global ID No.:	T0607391302	Consultant Contractor Project No.:	08BP.05350.05
ele/Fax:	714.258.8610	Enfos Project No.:	G0BNM-001	Consultant/Contractor PM:	Kurt Myers
P/AR PM Contact:	Roy Thun	Provision or RCOP:	Provision	Tele/Fax:	619.296.6195/6199
ddress:	4 Centerpointe Dr.	Phase/WBS:	Monitoring (04)	Report Type & QC Level:	Normal
	La Palma, Ca 90623	Sub Phase/Task:	Analytical	E-mail EDD To:	kmyers@secor.com
ele/Fax:	661.287.3855/222-2349	Cost Element:	Subcontracted Cost	Invoice to:	Atlantic Richfield Co.

ab Bottle Order No:

Item No.	Sample Description	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: Methanol		Requested Analysis: ~~BTEX 8021~~	Requested Analysis: ~~BTEX/TPH~~ WW	Requested Analysis: ~~BTEX/Oxy/TPH~~	Requested Analysis: ~~EPA 8260~~	Requested Analysis: ~~EPA 8270~~	Requested Analysis: 8015 M GRO Co-012	Requested Analysis: 8260 B BTEX, Oxys				Sample Point Lat/Long and Comments
1	MW-1	1213	4/25/05		X			6				X								X	X				
2	MW-2	1315						6																	
3	MW-3	1222						6																	
4	MW-4	1117						6																	
5	MW-5	1334						6																	
6	MW-6	1330						6																	
7	MW-7	1224						6																	
8	MW-8	1249						6																	
9	MW-9	1411						12																	
10																									

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: Wilson Wong	[signature]			[signature]	4/26/05	151
Sampler's Company: Secor	[signature]	4/26/05	1710	[signature]	[illegible]	1710
Shipment Date:						
Shipment Method:						
Shipment Tracking No:						

Special Instructions: *Oxys include MTBE, DIPE, TAME, TBA, ETBE, and Ethanol

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

Distribution: White Copy - Laboratory / Yellow Copy - BP/Atlantic Richfield Co. / Pink Copy - Consultant/Contractor

BP COC Rev. 4 10/1/04

ARCO SITE #5350

4

ESD270342

ARCO SITE #5350

ESD270342

Chain of Custody Record

Project Name: ARCO 5350 Groundwater Monitoring
BP BU/AR Region/Enfos Segment: Retail
State or Lead Regulatory Agency: County of San Diego, DEH
Requested Due Date (mm/dd/yy): Standard TAT

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

Lab Name:	STL Los Angeles	BP/AR Facility No.:	5350	Consultant Contractor:	SECOR
Address:	1721 Grand Ave.	BP/AR Facility Address:	3804 Plaza Dr., Oceanside, CA	Address:	2655 Camino Del Rio North, Suite 302
	Santa Ana, CA 92705-4808	Site Lat/Long:			San Diego, CA 92108
Lab PM:	Sabina Sudoko	California Global ID No.:	T0607391302	Consultant Contractor Project No.:	08BP.05350.05
Tele/Fax:	714.258.8610	Enfos Project No.:	G0BNM-001	Consultant Contractor PM:	Kurt Myers
BP/AR PM Contact:	Roy Thun	Provision or RCOP:	Provision	Tele/Fax:	619.296.6195/6199
Address:	4 Centerpointe Dr.	Phase/WBS:	Monitoring (04)	Report Type & QC Level:	Normal
	La Palma, Ca 90623	Sub Phase/Task:	Analytical	E-mail EDD To:	kmyers@secor.com
Tele/Fax:	661.287.3855/222-2349	Cost Element:	Subcontracted Cost	Invoice to:	Atlantic Richfield Co.

Lab Bottle Order No:

Item No.	Sample Description	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: Methanol	Requested Analysis: BTEX 8021	Requested Analysis: BTEX/TPH	Requested Analysis: BTEX/Oxy/TPH	Requested Analysis: EPA 8260	Requested Analysis: EPA 8270	Sample Point Lat/Long and Comments
1	TB-5350-20050425	—	4/25/05		X			6				X							HOLD
2	EB-5350-20050425	1315	4/25/05		X			6				X							HOLD
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: Wilson Wong						
Sampler's Company: Secor						
Shipment Date:		4/26/05	1710		4/26/05	1610
Shipment Method:						
Shipment Tracking No:						

Special Instructions: *Oxys include MTBE, DIPE, TAME, TBA, ETBE, and Ethanol

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

Distribution: White Copy - Laboratory / Yellow Copy - BP/Atlantic Richfield Co. / Pink Copy - Consultant/Contractor

BP COC Rev. 4 10/1/04

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ESD270342

Sudoko, Sabina

From: ssudoko@stl-inc.com
Sent: Thursday, April 28, 2005 11:30 AM
To: kmyers@secor.com; bauchard@secor.com; adouglas@secor.com
Subject: Information for E5D270342

Sample
ıfirmation for E5D27

* *

Lot ID: E5D270342
Project Number: 08BP.05350.05
Project Name/Site: ARCO #5350

Acknowledgment of samples received for ARCO 5350

Note: The lab supplied trip blk (-010) had 6 vials that had headspace > 6mm.

Please check the sample confirmation sheet.

thank you..

Sabina Sudoko
(714)258-8610
ssudoko@stl-inc.com

This message and any files transmitted with it are confidential and intended solely for the use of the addressee. If you have received this message in error please notify the sender and destroy your copies of the message and any attached files.

[00191718]
Version: 2.1.10

STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 4-27-05

LIMS Lot #: E5D270342 Quote #: 62428

Client Name: Secor S/D Project: #5350

Received by: DS Date/Time Received: 4-26-05 1110

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

****

	Initial / Date
Custody Seal Status Cooler: ☐Intact ☐Broken ☑None	YS 4/27/05
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 0.1 °C IR passed daily verification ☑Yes ☐No	
Temperature - BLANK 5.8 °C +/-0.1 CF = 5.7 °C	V.P. 4/26/05
Temperature – COOLER (___°C ___°C ___°C ___°C) = ___ avg °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 # 05-12215	
Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☐ Yes ☑N/A	
Labeled by: DS 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 DS 4/27/05

Lab ID	Container(s) #	Headspace	Lab ID	Container(s) #	Headspace
-010	#1-6	☒ > 6mm			☐ > 6mm
	(4-11-05)	☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm

STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 4-27-05

LIMS Lot #: E5D270342 Quote #: 62428

Client Name: Secor S/b Project: #5350

Received by: DS Date/Time Received: 42605 1710

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

********** **Initial / Date**

Custody Seal Status Cooler: ☐Intact ☐Broken ☑None ..... ____

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 0.1 °C IR passed daily verification ☑Yes ☐No ..... ____

Temperature - **BLANK** 4.9 °C +/- 0.1 CF = 4.8 °C ..... UP 4/26/05

Temperature – **COOLER** (____ °C ____ °C ____ °C ____ °C) = ____ avg °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: DS 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 DS 42705

Lab ID	Container(s) #	Headspace	Lab ID	Container(s) #	Headspace
-010	#1-6	☐ > 6mm			☐ > 6mm
	(11-11-05)	☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm
		☐ > 6mm			☐ > 6mm

LIMS Lot # E5D270342

PROJECT RECEIPT CHECKLIST Cont'd

Fraction	1	2	3	4	5	6	7	8	9	10	11			
VOAH/ *	6/0	6/1	6/0	6/1	6/1	6/3	6/0	6/5	12/0	6/6x6	6/0			

* VOA with headspace/bubbles < 6mm
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, znna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

Condition Upon Receipt Anomaly Form

☐ N/A JZR 42705

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking
  - ☐ Other:
- **TEMPERATURE (SPECS 4 ± 2°C)**
  - ☐ Cooler Temp(s)
  - ☐ Temperature Blank(s)
- **CONTAINERS**
  - ☐ Leaking ☐ Voa Vials with Bubbles > 6mm
  - ☐ 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: Savart 42705

PM Review/Date: 4/28 S2

SECOR International Inc

Client Sample ID: MW-1

GC/MS Volatiles

Lot-Sample #...:	E5D270342-001	Work Order #...:	G9A9Q1AA	Matrix.....:	W
Date Sampled...:	04/25/05 12:13	Date Received..:	04/26/05 17:10	MS Run #.....:	5125266
Prep Date.....:	05/04/05	Analysis Date..:	05/04/05		
Prep Batch #...:	5125475	Analysis Time..:	14:25		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	92	(75 - 120)
1,2-Dichloroethane-d4	83	(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-1

GC Volatiles

Lot-Sample #...:	E5D270342-001	Work Order #...:	G9A9Q1AC	Matrix.....:	W
Date Sampled...:	04/25/05 12:13	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/29/05		
Prep Batch #...:	5123420	Analysis Time..:	23:43		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	81	(70 - 130)

SECOR International Inc

Client Sample ID: MW-2

GC/MS Volatiles

Lot-Sample #...:	E5D270342-002	Work Order #...:	G9A931AA	Matrix.....:	W
Date Sampled...:	04/25/05 13:15	Date Received..:	04/26/05 17:10	MS Run #.....:	5125266
Prep Date.....:	05/04/05	Analysis Date..:	05/04/05		
Prep Batch #...:	5125475	Analysis Time..:	15:30		
Dilution Factor:	100				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Diisopropyl Ether (DIPE)	ND	200	ug/L
Benzene	**110**	**50**	**ug/L**
Ethanol	ND IO	50000	ug/L
Ethylbenzene	**2000**	**50**	**ug/L**
tert-Butyl alcohol	ND	2500	ug/L
Toluene	**1700**	**50**	**ug/L**
o-Xylene	**4100**	**100**	**ug/L**
Xylenes (total)	**8900**	**100**	**ug/L**
m-Xylene & p-Xylene	**4800**	**100**	**ug/L**
Methyl tert-butyl ether (MTBE)	**120**	**100**	**ug/L**
Ethyl-t-Butyl Ether (ETBE)	ND	200	ug/L
Tert-amyl methyl ether (TAME)	ND	200	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	93	(75 - 120)
1,2-Dichloroethane-d4	100	(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-2

GC Volatiles

Lot-Sample #...:	E5D270342-002	Work Order #...:	G9A931AC	Matrix.....:	W
Date Sampled...:	04/25/05 13:15	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	00:10		
Dilution Factor:	25				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	22000	2500	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	84	(70 - 130)

SECOR International Inc

Client Sample ID: MW-3

GC/MS Volatiles

Lot-Sample #...:	E5D270342-003	Work Order #...:	G9A941AA	Matrix.....:	W
Date Sampled...:	04/25/05 12:22	Date Received..:	04/26/05 17:10	MS Run #.....:	5125266
Prep Date.....:	05/04/05	Analysis Date..:	05/04/05		
Prep Batch #...:	5125475	Analysis Time..:	14:47		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	93	(75 - 120)
1,2-Dichloroethane-d4	88	(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-3

GC Volatiles

Lot-Sample #...:	E5D270342-003	Work Order #...:	G9A941AC	Matrix.....:	W
Date Sampled...:	04/25/05 12:22	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	00:37		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	84	(70 - 130)

SECOR International Inc

Client Sample ID: MW-4

GC/MS Volatiles

Lot-Sample #...:	E5D270342-004	Work Order #...:	G9A961AA	Matrix.....:	W
Date Sampled...:	04/25/05 11:17	Date Received..:	04/26/05 17:10	MS Run #.....:	5125266
Prep Date.....:	05/04/05	Analysis Date..:	05/04/05		
Prep Batch #...:	5125475	Analysis Time..:	15:09		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	95	(75 - 120)
1,2-Dichloroethane-d4	97	(65 - 130)
Toluene-d8	101	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-4

GC Volatiles

Lot-Sample #...:	E5D270342-004	Work Order #...:	G9A961AC	Matrix.....:	W
Date Sampled...:	04/25/05 11:17	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	01:03		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	80	(70 - 130)

SECOR International Inc

Client Sample ID: MW-5

GC/MS Volatiles

Lot-Sample #...:	E5D270342-005	Work Order #...:	G9A971AA	Matrix.....:	W
Date Sampled...:	04/25/05 13:34	Date Received..:	04/26/05 17:10	MS Run #.....:	5125266
Prep Date.....:	05/04/05	Analysis Date..:	05/04/05		
Prep Batch #...:	5125475	Analysis Time..:	15:52		
Dilution Factor:	10				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Diisopropyl Ether (DIPE)	ND	20	ug/L
Benzene	ND	5.0	ug/L
Ethanol	ND IO	5000	ug/L
Ethylbenzene	**42**	**5.0**	**ug/L**
tert-Butyl alcohol	ND	250	ug/L
Toluene	ND	5.0	ug/L
o-Xylene	ND	10	ug/L
Xylenes (total)	ND	10	ug/L
m-Xylene & p-Xylene	ND	10	ug/L
Methyl tert-butyl ether (MTBE)	**460**	**10**	**ug/L**
Ethyl-t-Butyl Ether (ETBE)	ND	20	ug/L
Tert-amyl methyl ether (TAME)	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	95	(75 - 120)
1,2-Dichloroethane-d4	97	(65 - 130)
Toluene-d8	94	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-5

GC Volatiles

Lot-Sample #...:	E5D270342-005	Work Order #...:	G9A971AC	Matrix.....:	W
Date Sampled...:	04/25/05 13:34	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	01:30		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	1200	100	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	99	(70 - 130)

SECOR International Inc

Client Sample ID: MW-6

GC/MS Volatiles

Lot-Sample #...:	E5D270342-006	Work Order #...:	G9CAA1AA	Matrix.....:	W
Date Sampled...:	04/25/05 13:30	Date Received..:	04/26/05 17:10	MS Run #.....:	5126164
Prep Date.....:	05/05/05	Analysis Date..:	05/05/05		
Prep Batch #...:	5126272	Analysis Time..:	10:27		
Dilution Factor:	333.3				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Diisopropyl Ether (DIPE)	ND	670	ug/L
Benzene	**2900**	**170**	**ug/L**
Ethanol	ND IO	170000	ug/L
Ethylbenzene	**1600**	**170**	**ug/L**
tert-Butyl alcohol	ND	8300	ug/L
Toluene	**1000**	**170**	**ug/L**
o-Xylene	**3000**	**330**	**ug/L**
Xylenes (total)	**7600**	**330**	**ug/L**
m-Xylene & p-Xylene	**4600**	**330**	**ug/L**
Methyl tert-butyl ether (MTBE)	**17000**	**330**	**ug/L**
Ethyl-t-Butyl Ether (ETBE)	ND	670	ug/L
Tert-amyl methyl ether (TAME)	ND	670	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	92	(75 - 120)
1,2-Dichloroethane-d4	93	(65 - 130)
Toluene-d8	95	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-6

GC Volatiles

Lot-Sample #...:	E5D270342-006	Work Order #...:	G9CAA1AC	Matrix.....:	W
Date Sampled...:	04/25/05 13:30	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	01:57		
Dilution Factor:	25				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
GRO (C6 - C12)	28000	2500	ug/L

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

SECOR International Inc

Client Sample ID: MW-7

GC/MS Volatiles

Lot-Sample #...:	E5D270342-007	Work Order #...:	G9CAD1AA	Matrix.....:	W
Date Sampled...:	04/25/05 12:24	Date Received..:	04/26/05 17:10	MS Run #.....:	5126164
Prep Date.....:	05/05/05	Analysis Date..:	05/05/05		
Prep Batch #...:	5126272	Analysis Time..:	18:13		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(75 - 120)
1,2-Dichloroethane-d4	101	(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-7

GC Volatiles

Lot-Sample #...:	E5D270342-007	Work Order #...:	G9CAD1AC	Matrix.....:	W
Date Sampled...:	04/25/05 12:24	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	02:24		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	79	(70 - 130)

SECOR International Inc

Client Sample ID: MW-8

GC/MS Volatiles

Lot-Sample #...:	E5D270342-008	Work Order #...:	G9CAE1AA	Matrix.....:	W
Date Sampled...:	04/25/05 12:49	Date Received..:	04/26/05 17:10	MS Run #.....:	5126164
Prep Date.....:	05/05/05	Analysis Date..:	05/05/05		
Prep Batch #...:	5126272	Analysis Time..:	09:44		
Dilution Factor:	1				
Analyst ID.....:	000038	Instrument ID..:	MSN		
		Method.....:	SW846 8260B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(75 - 120)
1,2-Dichloroethane-d4	100	(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-8

GC Volatiles

Lot-Sample #...:	E5D270342-008	Work Order #...:	G9CAE1AC	Matrix.....:	W
Date Sampled...:	04/25/05 12:49	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	04:11		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	79	(70 - 130)

SECOR International Inc

Client Sample ID: MW-9

GC/MS Volatiles

Lot-Sample #...: E5D270342-009 Work Order #...: G9CAF1AA Matrix.....: W
Date Sampled...: 04/25/05 14:11 Date Received..: 04/26/05 17:10 MS Run #.....: 5126164
Prep Date.....: 05/05/05 Analysis Date..: 05/05/05
Prep Batch #...: 5126272 Analysis Time..: 10:05
Dilution Factor: 1
Analyst ID.....: 000038 Instrument ID..: MSN
Method.....: SW846 8260B

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	91	(75 - 120)
1,2-Dichloroethane-d4	104	(65 - 130)
Toluene-d8	95	(80 - 130)

NOTE(S):

IO Contract limits originate from BP-GCLN Technical Requirements

SECOR International Inc

Client Sample ID: MW-9

GC Volatiles

Lot-Sample #...:	E5D270342-009	Work Order #...:	G9CAF1AC	Matrix.....:	W
Date Sampled...:	04/25/05 14:11	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	04:37		
Dilution Factor:	1				
Analyst ID.....:	001464	Instrument ID..:	G15		
		Method.....:	SW846 8015B		

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

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	78	(70 - 130)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: E5D270342
MB Lot-Sample #: E5E050000-475

Analysis Date..: 05/04/05
Dilution Factor: 1

Work Order #...: G9XN61AA

Prep Date.....: 05/04/05
Prep Batch #...: 5125475

Analyst ID.....: 000038

Matrix.....: WATER

Analysis Time..: 08:42
Instrument ID..: MSN

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	0.50	ug/L	SW846 8260B
Ethanol	ND IO	500	ug/L	SW846 8260B
Ethylbenzene	ND	0.50	ug/L	SW846 8260B
tert-Butyl alcohol	ND	25	ug/L	SW846 8260B
Toluene	ND	0.50	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	2.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	2.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(75 - 120)
1,2-Dichloroethane-d4	102	(65 - 130)
Toluene-d8	99	(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/MS Volatiles

Client Lot #...: E5D270342
MB Lot-Sample #: E5E060000-272

Analysis Date..: 05/05/05
Dilution Factor: 1

Work Order #...: G91M41AA

Prep Date.....: 05/05/05
Prep Batch #...: 5126272

Analyst ID.....: 000038

Matrix.....: WATER

Analysis Time..: 09:06
Instrument ID..: MSN

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	0.50	ug/L	SW846 8260B
Ethanol	ND IO	500	ug/L	SW846 8260B
Ethylbenzene	ND	0.50	ug/L	SW846 8260B
tert-Butyl alcohol	ND	25	ug/L	SW846 8260B
Toluene	ND	0.50	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	1.0	ug/L	SW846 8260B
Diisopropyl Ether (DIPE)	ND	2.0	ug/L	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	2.0	ug/L	SW846 8260B
Tert-amyl methyl ether (T	ND	2.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	96	(75 - 120)
1,2-Dichloroethane-d4	102	(65 - 130)
Toluene-d8	100	(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 #...: E5D270342
MB Lot-Sample #: E5E030000-420

Analysis Date..: 04/29/05
Dilution Factor: 1

Work Order #...: G9QE71AA

Prep Date.....: 04/29/05
Prep Batch #...: 5123420

Analyst ID.....: 001464

Matrix.....: WATER

Analysis Time..: 22:50
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)	78	(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 #...: E5D270342 Work Order #...: G9XN61AC Matrix.....: WATER
LCS Lot-Sample#: E5E050000-475
Prep Date.....: 05/04/05 Analysis Date..: 05/04/05
Prep Batch #...: 5125475 Analysis Time..: 08:20
Dilution Factor: 1 Instrument ID..: MSN
Analyst ID.....: 000038

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzene	10.0	10.2	ug/L	102	SW846 8260B
tert-Butyl alcohol	50.0	50.1	ug/L	100	SW846 8260B
Ethanol	2000	2030 IO	ug/L	102	SW846 8260B
Tert-amyl methyl ether (T	10.0	10.3	ug/L	103	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	10.0	10.6	ug/L	106	SW846 8260B
Ethylbenzene	10.0	9.99	ug/L	100	SW846 8260B
Diisopropyl Ether (DIPE)	10.0	10.4	ug/L	104	SW846 8260B
Methyl tert-butyl ether (MTBE)	10.0	9.82	ug/L	98	SW846 8260B
Toluene	10.0	10.2	ug/L	102	SW846 8260B
m-Xylene & p-Xylene	20.0	20.9	ug/L	104	SW846 8260B
o-Xylene	10.0	10.3	ug/L	103	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	96	(75 - 120)
1,2-Dichloroethane-d4	103	(65 - 130)
Toluene-d8	97	(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/MS Volatiles

Client Lot #...: E5D270342 Work Order #...: G91M41AC Matrix.....: WATER
LCS Lot-Sample#: E5E060000-272
Prep Date.....: 05/05/05 Analysis Date..: 05/05/05
Prep Batch #...: 5126272 Analysis Time..: 08:44
Dilution Factor: 1 Instrument ID..: MSN
Analyst ID.....: 000038

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzene	10.0	9.88	ug/L	99	SW846 8260B
tert-Butyl alcohol	50.0	56.5	ug/L	113	SW846 8260B
Ethanol	2000	1990 IO	ug/L	100	SW846 8260B
Tert-amyl methyl ether (T	10.0	10.2	ug/L	102	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	10.0	10.3	ug/L	103	SW846 8260B
Ethylbenzene	10.0	9.35	ug/L	94	SW846 8260B
Diisopropyl Ether (DIPE)	10.0	10.3	ug/L	103	SW846 8260B
Methyl tert-butyl ether (MTBE)	10.0	10.1	ug/L	101	SW846 8260B
Toluene	10.0	9.64	ug/L	96	SW846 8260B
m-Xylene & p-Xylene	20.0	19.8	ug/L	99	SW846 8260B
o-Xylene	10.0	10.2	ug/L	102	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	102	(75 - 120)
1,2-Dichloroethane-d4	112	(65 - 130)
Toluene-d8	100	(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 #...: E5D270342
LCS Lot-Sample#: E5E030000-420
Prep Date.....: 04/29/05
Prep Batch #...: 5123420
Dilution Factor: 1
Analyst ID.....: 001464

Work Order #...: G9QE71AC
Analysis Date..: 04/29/05
Analysis Time..: 23:16
Instrument ID..: G15

Matrix.....: WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
GRO (C6 - C12)	1000	942	ug/L	94	SW846 8015B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	115	(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 #...:	E5D270342	Work Order #...:	G88AA1AD-MS	Matrix.....:	WATER
MS Lot-Sample #:	E5D260335-002		G88AA1AE-MSD		
Date Sampled...:	04/25/05 16:26	Date Received..:	04/26/05 11:00	MS Run #.....:	5125266
Prep Date.....:	05/04/05	Analysis Date..:	05/04/05		
Prep Batch #...:	5125475	Analysis Time..:	16:36		
Dilution Factor:	250	Analyst ID.....:	000038	Instrument ID..:	MSN

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzene	11000	2500	14000	ug/L	141 BB		SW846 8260B
	11000	2500	14100	ug/L	145 BB	0.63	SW846 8260B
tert-Butyl alcohol	ND	12500	12400	ug/L	99		SW846 8260B
	ND	12500	13600	ug/L	109	9.1	SW846 8260B
Ethanol	ND	500000	464000	ug/L	93 IO		SW846 8260B
	ND	500000	483000	ug/L	97 IO	4.0	SW846 8260B
Tert-amyl methyl ether (T	ND	2500	2430	ug/L	97		SW846 8260B
	ND	2500	2600	ug/L	104	7.1	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	2500	2550	ug/L	102		SW846 8260B
	ND	2500	2600	ug/L	104	2.1	SW846 8260B
Ethylbenzene	3000	2500	5760	ug/L	109		SW846 8260B
	3000	2500	5750	ug/L	108	0.29	SW846 8260B
Diisopropyl Ether (DIPE)	ND	2500	2630	ug/L	105		SW846 8260B
	ND	2500	2650	ug/L	106	0.49	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	2500	2530	ug/L	101		SW846 8260B
	ND	2500	2600	ug/L	104	2.6	SW846 8260B
Toluene	3100	2500	5810	ug/L	108		SW846 8260B
	3100	2500	5860	ug/L	110	0.94	SW846 8260B
m-Xylene & p-Xylene	11000	5000	16400	ug/L	110		SW846 8260B
	11000	5000	16400	ug/L	110	0.06	SW846 8260B
o-Xylene	5300	2500	8280	ug/L	119		SW846 8260B
	5300	2500	8290	ug/L	119	0.13	SW846 8260B

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

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: E5D270342 Work Order #...: G9CAF1AD-MS Matrix.....: W
MS Lot-Sample #: E5D270342-009 G9CAF1AE-MSD
Date Sampled...: 04/25/05 14:11 Date Received..: 04/26/05 17:10 MS Run #.....: 5126164
Prep Date.....: 05/05/05 Analysis Date..: 05/05/05
Prep Batch #...: 5126272 Analysis Time..: 17:07
Dilution Factor: 1 Analyst ID.....: 000038 Instrument ID..: MSN

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzene	ND	10.0	9.19	ug/L	92		SW846 8260B
	ND	10.0	8.93	ug/L	89	2.9	SW846 8260B
tert-Butyl alcohol	ND	50.0	63.2	ug/L	126		SW846 8260B
	ND	50.0	53.0	ug/L	106	18	SW846 8260B
Ethanol	ND	2000	1660	ug/L	83 IO		SW846 8260B
	ND	2000	1700	ug/L	85 IO	1.9	SW846 8260B
Tert-amyl methyl ether (T	ND	10.0	9.21	ug/L	92		SW846 8260B
	ND	10.0	9.33	ug/L	93	1.3	SW846 8260B
Ethyl-t-Butyl Ether (ETBE	ND	10.0	9.41	ug/L	94		SW846 8260B
	ND	10.0	9.40	ug/L	94	0.10	SW846 8260B
Ethylbenzene	ND	10.0	9.37	ug/L	94		SW846 8260B
	ND	10.0	9.24	ug/L	92	1.4	SW846 8260B
Diisopropyl Ether (DIPE)	ND	10.0	9.72	ug/L	97		SW846 8260B
	ND	10.0	9.61	ug/L	96	1.1	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	10.0	9.54	ug/L	95		SW846 8260B
	ND	10.0	9.58	ug/L	96	0.41	SW846 8260B
Toluene	ND	10.0	9.07	ug/L	91		SW846 8260B
	ND	10.0	9.22	ug/L	92	1.6	SW846 8260B
m-Xylene & p-Xylene	ND	20.0	19.1	ug/L	95		SW846 8260B
	ND	20.0	19.5	ug/L	98	2.4	SW846 8260B
o-Xylene	ND	10.0	9.91	ug/L	99		SW846 8260B
	ND	10.0	10.0	ug/L	100	1.2	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Bromofluorobenzene	94	(75 - 120)
	95	(75 - 120)
1,2-Dichloroethane-d4	92	(65 - 130)
	93	(65 - 130)
Toluene-d8	98	(80 - 130)
	100	(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

MATRIX SPIKE SAMPLE DATA REPORT

GC Volatiles

Client Lot #...:	E5D270342	Work Order #...:	G9CAD1AD-MS	Matrix.....:	W
MS Lot-Sample #:	E5D270342-007		G9CAD1AE-MSD		
Date Sampled...:	04/25/05 12:24	Date Received..:	04/26/05 17:10	MS Run #.....:	5123286
Prep Date.....:	04/29/05	Analysis Date..:	04/30/05		
Prep Batch #...:	5123420	Analysis Time..:	02:51		
Dilution Factor:	1	Analyst ID.....:	001464	Instrument ID..:	G15

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
GRO (C6 - C12)	**ND**	**1000**	**937**	**ug/L**	**94**		**SW846 8015B**
	ND	**1000**	**967**	**ug/L**	**97**	**3.2**	**SW846 8015B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
a,a,a-Trifluorotoluene (TFT)	113	(70 - 130)
	115	(70 - 130)

NOTE(S):

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

Bold print denotes control parameters