AP - 011

ANNUAL MONITORING REPORT

1/18/2007

AP 11

U.S. Production Operations

Marathon Oil Company

P.O. Box 3487
5555 San Felipe Street
Houston, TX 77056-2701
Telephone 713/629-6600

January 18, 2007

Mr. Wayne Price
Environment Bureau
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87504

RE: 2006 Annual Groundwater Monitoring Report,
Former Bertha Barbar Tank Battery (BBTB) Remediation
Lea County, NM

Dear Mr. Price:

Please find enclosed Annual Groundwater Monitoring Report for former BBTB site. The annual report, which was prepared by BBC International., summarizes the groundwater monitoring and remediation activities associated with the Project in 2006.

If you have any questions or need any additional information, please contact me at (713) 296-2213.

Sincerely,

Vijay Kurki

Vijay K. Kurki, P.E.
Environmental Supervisor

File: NM-BBTB E700-115
(3236-300 months after termination of the facility)
enclosures

AP 11

FORMER BERTHA BARBER TANK BATTERY

2006 Annual Groundwater Monitoring Report

December 2006

MARATHON OIL COMPANY

HOUSTON, TEXAS

Prepared By:

BBC International, Inc.
World-Wide Environmental Specialists

TABLE OF CONTENTS

1.0 INTRODUCTION

The subject site is located in Section 5, Township 20 South, Range 37 East. The site is located approximately 1.5 miles south of Monument, New Mexico.

In November 1998, ARCADIS Geraghty & Miller, Inc. performed a preliminary soil investigation. The soil investigation consisted of 36 soil borings in the large tank bottom pit, the small tank bottom pit, the former tank pad, the location of the former oil/water separator, and the hardpan area west of the oil/water separator. In December 1998, five of the soil borings were converted into monitor wells.

Additional soil borings and monitor wells were placed to delineate the site in August 1999. Three monitor wells and three soil borings were added in December 2002 for further delineation in the saltwater evaporation pit.

The New Mexico Oil Conservation Division (NMOCD) gave permission to Marathon Oil Company (MOC) to discontinue sampling monitor well MW-10 as of March 6, 2003 due to the phase separated hydrocarbons (PSH) that were present in the up gradient well.

2.0 2006 GROUNDWATER MONITORING ACTIVITIES

Fifteen monitoring wells were gauged and sampled on April 18, 2006, by BBC International, Inc. (BBC). The livestock tank was also sampled. MW-1 is the only monitor well that had measurable free product hydrocarbons detected in 2006 at a thickness of 0.38 of a foot.

BBC followed standard sampling protocol. During the sampling event, the monitor wells were purged of three well volumes of water or until the wells were dry using a PVC bailer or electrical Grundfos Pump. Groundwater was allowed to recharge and samples were obtained using disposable Teflon samplers. Water samples were collected in clean glass containers provided by the laboratory and placed on ice in the field. Purge water was collected in polystyrene drums and disposed of by BBC utilizing the NMOCD-approved disposal facility near Eunice, NM operated by Sundance Services.

2.1 GROUNDWATER ELEVATIONS

The fifteen monitor wells are measured from the top of the casing for depth to groundwater. A groundwater gradient map of the site can be found in Figure 1.

2.2 PURGING AND SAMPLING ACTIVITIES

In April 2006, fifteen monitor wells were measured from the top of the casing for depth to groundwater, depth to LNAPL, LNAPL thickness, and corrected groundwater elevations prior to sampling (Table 1). All purged fluids were drummed, transported, and disposed of at Sundance Services NMOCD approved disposal facility near Eunice, NM for recycling and disposal.

The groundwater samples were sent to Severn Trent Services to be analyzed for BTEX (USEPA Method 8260-B). The results are summarized in Table 2 and can be viewed in Figure 2. Laboratory analytical results, QA/QC, and chain-of-custody reports for the groundwater samples collected and analyzed are included in Appendix I.

The April 18, 2006 sampling event showed detections of Benzene and Ethylbenzene at concentrations of 28.0 ug/L (0.028 mg/L) and 5.75 ug/L (0.00575 mg/L), respectively, in monitor well MW #4. The Ethylbenzene detection is below the New Mexico Water Quality Control Commission Standards of 0.75 mg/L. Monitor well MW #5 detected Benzene at a concentration of 5.11 ug/L (0.00511 mg/L).

3.0 PROPOSED REMEDIATION

MOC will excavate the site, install plastic liners in certain areas, and backfill the excavations with clean soil. See Figure 3 for a map depicting the proposed excavation. The areas shown in yellow will be excavated to 1 foot below ground surface (bgs). These areas include the area south of the pit as well as the sluice box and tank battery areas. The section outlined without color south of the pit represents various shallower excavations throughout that area. All sections in blue will be excavated to 2 feet bgs. In addition, areas shown in light blue will be lined with a 20 mil plastic liner before backfilling. These areas include the pit area and the section west of the tank battery. The total area of the proposed excavation covers approximately 50,645 square feet. The amount of soil to be excavated and hauled to a NMOCD approved landfarm is on the order of 3,214 cubic yards.

4.0 CONCLUSION

A report detailing gauging, sampling, and laboratory analytical results will be submitted to the NMOCD annually on June 1.

Sampling will be discontinued when two years of sample results indicate analyte concentrations below New Mexico Water Quality Control Commission, Title 20, Chapter 6, part 2 (20 NMAC 6.2 Standards).

5.0 LIMITATIONS

BBC has prepared this Annual Monitoring Report to the best of its ability. No other warranty, expressed or implied, is made or intended.

BBC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. BBC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. BBC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. BBC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of Marathon Oil Company. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of BBC and/or Marathon.

Tables

Table 1: Historical Fluid Level Data
Table 2: Historical BTEX Analytical Data
April 2006

Former Bertha Barber

December 2006

Marathon Oil Company
Houston, Texas

Prepared by:
BBC International, Inc.

BBC INTERNATIONAL

BBC International, Inc.

World-Wide Environmental Specialists

Phone: (505) 397-6388 * **Fax**: (505) 397-0397 * 1324 W. Marland * PO Box 805 * Hobbs, NM 88241

Table 1.
Historical Fluid Level Data, December 1998 - April 2006

Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-1	04/18/06	3561.57	32.90	32.42	0.38	3529.05
	03/03/05	3561.57	31.90	31.77	0.10	3529.77
	03/22/04	3561.57	39.23	38.22	0.81	3523.15
	12/22/03	3561.57	39.00	38.15	0.68	3523.25
	09/24/03	3561.57	38.08	38.03	0.04	3523.53
	06/16/03	3561.57	37.70	Sheen	0	3523.87
	03/05/03	3561.57	37.55	37.53	0.02	3524.04
	*12/18/2002	3561.57	37.62	37.60	0.02	3523.97
	09/25/02	3561.20	37.67	37.55	0.10	3523.63
	06/28/02	3561.20	37.38	37.37	0.01	3523.83
	03/22/02	3561.20	37.34	37.30	0.03	3523.89
	12/26/01	3561.20	37.33	37.19	0.11	3523.98
	09/27/01	3561.20	38.55	38.48	0.06	3522.71
	06/28/01	3561.20	38.15	38.14	0.01	3523.06
	03/19/01	3561.20	37.15	37.14	0.01	3524.06
	12/21/00	3561.20	37.14	37.13	0.01	3524.07
	09/27/00	3561.20	37.70	37.65	0.04	3523.54
	06/20/00	3561.20	37.77	37.70	0.06	3523.49
	03/30/00	3561.20	36.20	36.19	0.01	3525.01
	12/14/99	3561.20	36.03		0.03	3525.19
	09/22/99	3561.20	35.79		sheen	3525.41
	08/27/99	3561.20	35.66		0.02	3525.55
	07/16/99	3561.20	35.48		0.005	3525.72
	03/31/99	3561.20	35.82		0.05	3525.42
	12/30/98	3561.20	35.83		0	3525.37
MW-2	04/18/06	3562.10	32.44		0	3529.66
	03/03/05	3562.10	35.05		0	3527.05
	03/22/04	3562.10	39.02		0	3523.08
	12/22/03	3562.10	38.58		0	3523.52
	09/24/03	3562.10	38.36		0	3523.74
	06/16/03	3562.10	38.19		0	3523.91
	03/05/03	3562.10	38.05		0	3524.05
	*12/18/2002	3562.10	38.15	38.14	0.01	3523.96
	09/25/02	3561.69	38.10	38.06	0.03	3523.62
	06/28/02	3561.69	37.85		0	3523.84
	03/22/02	3561.69	38.78		0	3522.91
	12/26/01	3561.69	37.70	37.69	0.01	3524.00
	09/27/01	3561.69	37.49	37.48	0.01	3524.21
	06/28/01	3561.69	37.16	37.15	0.01	3524.54
	03/19/01	3561.69	37.61	37.60	0.01	3524.09
	12/21/00	3561.69	37.60	37.59	0.01	3524.10
	09/27/00	3561.69	38.12	38.11	0.01	3523.58
	06/20/00	3561.69	38.12	38.10	0.02	3523.59
	03/30/00	3561.69	36.60	36.59	0.01	3525.10
	12/14/99	3561.69	36.62		0	3525.07
	09/22/99	3561.69	36.27		0	3525.42
	08/27/99	3561.69	36.13		0.01	3525.57
	07/16/99	3561.69	35.95		0	3525.74
	03/31/99	3561.69	36.33		0	3525.36
	12/30/98	3561.69	36.34		0	3525.35

***New survey data**

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl=Ft above mean sea level

feet bmp=Ft below measuring point

BBC INTERNATIONAL

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Table 1.
Historical Fluid Level Data, December 1998 - April 2006

Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-3	04/18/06	3563.40	33.57		0	3529.83
	03/03/05	3563.40	33.60		0	3529.80
	03/22/04	3563.40	40.08		0	3523.32
	12/22/03	3563.40	40.07		0	3523.33
	09/24/03	3563.40	39.88		0	3523.52
	06/16/03	3563.40	39.53		0	3523.87
	03/05/03	3563.40	39.39		0	3524.01
	*12/18/2002	3563.40	39.49		0	3523.91
	09/25/02	3563.00	39.42	39.41	0.01	3523.59
	06/28/02	3563.00	39.19		0	3523.81
	03/22/02	3563.00	39.11		0	3523.89
	12/26/01	3563.00	39.05		0	3523.95
	09/27/01	3563.00	38.95		0	3524.05
	06/28/01	3563.00	38.63		0	3524.37
	03/19/01	3563.00	38.19		0	3524.81
	12/21/00	3563.00	38.11		0	3524.89
	09/27/00	3563.00	37.88		0	3525.12
	06/20/00	3563.00	38.56		0	3524.44
	03/30/00	3563.00	38.10		0	3524.90
	12/14/99	3563.00	38.10		0	3524.90
	09/22/99	3563.00	37.59		0	3525.41
	08/27/99	3563.00	37.48		0	3525.52
	07/16/99	3563.00	37.31		0	3525.69
	03/31/99	3563.00	37.67		0	3525.33
	12/30/98	3563.00	37.65		0	3525.35
MW-4	04/18/06	3563.43	34.32		0	3529.11
	03/03/05	3563.43	33.61		0	3529.82
	03/22/04	3563.43	40.09		0	3523.34
	12/22/03	3563.43	39.95		0	3523.48
	09/24/03	3563.43	39.73		0	3523.70
	06/16/03	3563.43	39.52		0	3523.91
	03/05/03	3563.43	39.39		0	3524.04
	*12/18/2002	3563.43	39.45		0	3523.98
	09/25/02	3563.01	38.65	38.61	0.03	3524.39
	06/28/02	3563.01	38.66	38.63	0.02	3524.37
	03/22/02	3563.01	39.11	39.10	0.01	3523.91
	12/26/01	3563.01	39.05	39.03	0.02	3523.98
	09/27/01	3563.01	38.92	38.82	0.08	3524.17
	06/28/01	3563.01	38.60		0	3524.41
	03/19/01	3563.01	38.16		0	3524.85
	12/21/00	3563.01	38.10		0	3524.91
	09/27/00	3563.01	37.86		0	3525.15
	06/20/00	3563.01	38.26		0	3524.75
	03/30/00	3563.01	38.10		0	3524.91
	12/14/99	3563.01	37.85		0	3525.16
	09/22/99	3563.01	37.57		0	3525.44
	08/27/99	3563.01	37.46		0	3525.55
	07/16/99	3563.01	37.28		0	3525.73
	03/31/99	3563.01	37.66		0	3525.35
	12/30/98	3563.01	37.66		0	3525.35

***New survey data**

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl=Ft above mean sea level

feet bmp=Ft below measuring point

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Table 1.
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Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-5	04/18/06	3561.49	32.40		0	3529.09
	03/03/05	3561.49	32.73		0	3528.76
	03/22/04	3561.49	38.20		0	3523.29
	12/22/03	3561.49	38.12		0	3523.37
	09/24/03	3561.49	37.95		0	3523.54
	06/16/03	3561.49	37.60	Sheen	0	3523.89
	03/05/03	3561.49	37.46	Sheen	0	3524.03
	*12/18/2002	3561.49	37.56	37.54	0.02	3523.95
	09/25/02	3561.10	37.52	37.48	0.03	3523.61
	06/28/02	3561.10	37.31	37.29	0.02	3523.81
	03/22/02	3561.10	37.20		0	3523.90
	12/26/01	3561.10	37.21	37.10	0.09	3523.98
	09/27/01	3561.10	36.98	36.47	0.41	3524.53
	06/28/01	3561.10	36.69		0	3524.41
	03/19/01	3561.10	36.13		0	3524.97
	12/21/00	3561.10	36.15		0	3524.95
	09/27/00	3561.10	35.98		0	3525.12
	06/20/00	3561.10	36.34		0	3524.76
	03/30/00	3561.10	36.10		0	3525.00
	12/14/99	3561.10	35.95		0	3525.15
	09/22/99	3561.10	35.68		0	3525.42
	08/27/99	3561.10	35.56		0	3525.54
	07/16/99	3561.10	35.38		0	3525.72
	03/31/99	3561.10	35.75		0	3525.35
	12/30/98	3561.10	35.73		0	3525.37
MW-6	04/18/06	3561.65	32.39		0	3529.26
	03/03/05	3561.65	34.42		0	3527.23
	03/22/04	3561.65	38.30		0	3523.35
	12/22/03	3561.65	38.29		0	3523.36
	09/24/03	3561.65	38.10		0	3523.55
	06/16/03	3561.65	37.76		0	3523.89
	03/05/03	3561.65	37.61		0	3524.04
	*12/18/2002	3561.65	37.70		0	3523.95
	09/25/02	3561.25	37.63		0	3523.62
	06/28/02	3561.25	37.40		0	3523.85
	03/22/02	3561.25	37.32		0	3523.93
	12/26/01	3561.25	37.25		0	3524.00
	09/27/01	3561.25	37.02		0	3524.23
	06/28/01	3561.25	36.54		0	3524.71
	03/19/01	3561.25	36.80		0	3524.45
	12/21/00	3561.25	36.13		0	3525.12
	09/27/00	3561.25	36.06		0	3525.19
	06/20/00	3561.25	36.39		0	3524.86
	03/30/00	3561.25	36.29		0	3524.96
	12/14/99	3561.25	36.10		0	3525.15
	09/22/99	3561.25	35.75		0	3525.50
	08/27/99	3561.25	35.69		0	3525.56

***New survey data**

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl=Ft above mean sea level

feet bmp=Ft below measuring point

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Table 1.
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Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-7	04/18/06	3562.70	33.69		0	3529.01
	03/04/05	3562.70	33.43		0	3529.27
	03/22/04	3562.70	39.78		0	3522.92
	12/22/03	3562.70	39.75		0	3522.95
	09/24/03	3562.70	39.60		0	3523.10
	06/16/03	3562.70	39.16		0	3523.54
	03/05/03	3562.70	38.97		0	3523.73
	*12/18/2002	3562.70	39.07		0	3523.63
	09/25/02	3562.44	39.01	38.99	0.02	3523.45
	06/28/02	3562.44	38.76		0	3523.68
	03/22/02	3562.44	38.65	38.64	0.01	3523.80
	12/26/01	3562.44	38.62	38.61	0.01	3523.83
	09/27/01	3562.44	38.43	38.42	0.01	3524.02
	06/28/01	3562.44	37.90	37.89	0.01	3524.55
	03/19/01	3562.44	37.58	37.57	0.01	3524.87
	12/21/00	3562.44	37.70	37.65	0.04	3524.79
	09/27/00	3562.44	37.76	37.75	0.01	3524.69
	06/20/00	3562.44	37.91	37.73	0.14	3524.67
	03/30/00	3562.44	37.60	37.55	0.04	3524.88
	12/14/99	3562.44	37.51		0	3524.93
	09/22/99	3562.44	38.20		0	3524.24
	08/27/99	3562.44	38.15		0	3524.29
MW-8	04/18/06	3561.82	33.74		0	3528.08
	04/22/05	3561.82	32.43		0	3529.39
	03/22/04	3561.82	38.96		0	3522.86
	12/22/03	3561.82	38.92		0	3522.90
	09/24/03	3561.82	38.71		0	3523.11
	06/16/03	3561.82	38.30		0	3523.52
	03/05/03	3561.82	38.10		0	3523.72
	*12/18/2002	3561.82	38.20		0	3523.62
	09/25/02	3561.39	38.15		0	3523.24
	06/28/02	3561.39	37.87		0	3523.52
	03/22/02	3561.39	37.80		0	3523.59
	12/26/01	3561.39	37.74		0	3523.65
	09/27/01	3561.39	37.51		0	3523.88
	06/28/01	3561.39	36.98		0	3524.41
	03/19/01	3561.39	36.51		0	3524.88
	12/21/00	3561.39	36.50		0	3524.89
	09/27/00	3561.39	36.61		0	3524.78
	06/20/00	3561.39	36.88		0	3524.51
	03/30/00	3561.39	36.65		0	3524.74
	12/14/99	3561.39	36.44		0	3524.95
	09/22/99	3561.39	37.26		0	3524.13
	08/27/99	3561.39	37.21		0	3524.18

***New survey data**

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl=Ft above mean sea level

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Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-9	04/18/06	3563.95	31.80		0	3532.15
	03/03/05	3563.95	31.80		0	3532.15
	03/22/04	3563.95	40.45		0	3523.50
	12/22/03	3563.95	40.84		0	3523.11
	09/24/03	3563.95	40.62		0	3523.33
	06/16/03	3563.95	40.22		0	3523.73
	03/05/03	3563.95	40.04		0	3523.91
	*12/18/2002	3563.95	40.15		0	3523.80
	09/25/02	3561.59	41.11	41.09	0.02	3520.50
	06/28/02	3561.59	39.87	39.85	0.02	3521.74
	03/22/02	3563.59	39.39	39.37	0.02	3524.22
	12/26/01	3563.59	39.82	39.65	0.14	3523.91
	09/27/01	3563.59	39.62	39.40	0.18	3524.15
	06/28/01	3563.59	38.99		0	3524.60
	03/19/01	3563.59	38.65		0	3524.94
	12/21/00	3563.59	38.60		0	3524.99
	09/27/00	3563.59	38.60		0	3524.99
	06/20/00	3563.59	38.89		0	3524.70
	03/30/00	3563.59	38.70		0	3524.89
	12/14/99	3563.59	38.48		0	3525.11
	09/22/99	3563.59	36.23		0	3527.36
	08/27/99	3563.59	36.14		0	3527.45
****MW-10**	04/22/05	3560.88	31.22		0	3529.66
	12/22/03	3560.88				
	09/24/03	3560.88				
	06/16/03	3560.88				
	03/05/03	3560.88	36.83	36.82	0.01	3524.06
	*12/18/2002	3560.88	36.92	36.91	0.01	3523.97
	09/25/02	3560.51	36.84	36.82	0.02	3523.69
	06/28/02	3560.51	36.61	36.60	0.01	3523.91
	03/22/02	3560.51	36.55	36.53	0.01	3523.98
	12/26/01	3560.51	36.98	36.34	0.48	3524.01
	09/27/01	3560.51	36.75	36.12	0.47	3524.23
	06/28/01	3560.51	36.26	35.63	0.47	3524.72
	03/19/01	3560.51	35.52	35.48	0.03	3525.02
	12/21/00	3560.51	35.53	35.52	0.01	3524.99
	09/27/00	3560.51	35.56	35.55	0.01	3524.96
	06/20/00	3560.51	35.55	35.54	0.01	3524.97
	03/30/00	3560.51	35.50	35.49	0.01	3525.02
	12/14/99	3560.51	35.33		0	3525.18
	09/22/99	3560.51	34.96		0	3525.55
	08/27/99	3560.51	34.87		0	3525.64

***New survey data**

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl=Ft above mean sea level

feet bmp=Ft below measuring point

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Table 1.
Historical Fluid Level Data, December 1998 - April 2006
Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-11	04/18/06	3565.81	36.64		0	3529.17
	03/03/05	3565.81	36.68		0	3529.13
	03/22/04	3565.81	43.12		0	3522.69
	12/22/03	3565.81	43.08		0	3522.73
	09/24/03	3565.81	42.90		0	3522.91
	06/16/03	3565.81	42.47		0	3523.34
	03/05/03	3565.81	42.26		0	3523.55
	*12/18/2002	3565.81	42.34		0	3523.47
	09/25/02	3565.44	42.32		0	3523.12
	06/28/02	3565.44	42.04		0	3523.40
	03/22/02	3565.44	41.95		0	3523.49
	12/26/01	3565.44	41.91		0	3523.53
	09/27/01	3565.44	41.71		0	3523.73
	06/28/01	3565.44	41.16		0	3524.28
	03/19/01	3565.44	39.76		0	3525.68
	12/21/00	3565.44	40.01		0	3525.43
	09/27/00	3565.44	39.82		0	3525.62
	06/20/00	3565.44	40.10		0	3525.34
	03/30/00	3565.44	39.80		0	3525.64
	12/14/99	3565.44	40.61		0	3524.83
	09/22/99	3565.44	40.37		0	3525.07
	08/27/99	3565.44	40.34		0	3525.10
MW-12 (PZ-2)	04/18/06	3562.46	33.62		0	3528.84
	04/22/05	3562.46	33.23		0	3529.23
	03/22/04	3562.46	39.25		0	3523.21
	12/22/03	3562.46	39.22		0	3523.24
	09/24/03	3562.46	39.03		0	3523.43
	06/16/03	3562.46	38.68		0	3523.78
	03/05/03	3562.46	38.54		0	3523.92
	*12/18/2002	3562.46	38.62		0	3523.84
	09/25/02	3562.11	38.53		0	3523.58
	06/28/02	3562.11	38.30		0	3523.81
	03/22/02	3562.11	38.22		0	3523.89
	12/26/01	3562.11	37.15		0	3524.96
	09/27/01	3562.11	37.90		0	3524.21
	06/28/01	3562.11	37.45		0	3524.66
	03/19/01	3562.11	37.26		0	3524.85
	12/21/00	3562.11	37.23		0	3524.88
	09/27/00	3562.11	37.09		0	3525.02
	06/20/00	3562.11	37.34		0	3524.77
	03/30/00	3562.11	37.23		0	3524.88
	12/14/99	3562.11	36.95		0	3525.16
	09/22/99	3562.11	36.69		0	3525.42
	08/27/99	3562.11	36.65		0	3525.46

***New survey data**
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl=Ft above mean sea level
feet bmp=Ft below measuring point

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Table 1.
Historical Fluid Level Data, December 1998 - April 2006

Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-13 (PZ-1)	04/18/06	3560.05	44.03		0	3516.02
	03/03/05	3560.05	30.20		0	3529.85
	03/22/04	3560.05	36.78		0	3523.27
	12/22/03	3560.05	36.72		0	3523.33
	09/24/03	3560.05	36.51		0	3523.54
	06/16/03	3560.05	36.17		0	3523.88
	03/05/03	3560.05	36.03		0	3524.02
	*12/18/2002	3560.05	36.12		0	3523.93
	09/25/02	3559.67	36.05		0	3523.62
	06/28/02	3559.67	35.82		0	3523.85
	03/22/02	3559.67	35.76		0	3523.91
	12/26/01	3559.67	35.67		0	3524.00
	09/27/01	3559.67	35.52		0	3524.15
	06/28/01	3559.67	34.95		0	3524.72
	03/19/01	3559.67	34.84		0	3524.83
	12/21/00	3559.67	34.75		0	3524.92
	09/27/00	3559.67	34.49		0	3525.18
	06/20/00	3559.67	34.90		0	3524.77
	03/30/00	3559.67	34.80		0	3524.87
	12/14/99	3559.67	34.96		0	3524.71
	09/22/99	3559.67	34.20		0	3525.47
	08/27/99	3559.67	34.09		0	3525.58
MW-14	04/18/06	3562.15	33.08		0	3529.07
	03/03/05	3562.15	32.53		0	3529.62
	03/22/04	3562.15	39.25		0	3522.90
	12/22/03	3562.15	39.20		0	3522.95
	09/24/03	3562.15	39.00		0	3523.15
	06/16/03	3562.15	38.58		0	3523.57
	03/05/03	3562.15	38.38		0	3523.77
	*12/18/2002	3562.15	38.47		0	3523.68
MW-15	04/18/06	3562.19	33.20		0	3528.99
	03/03/05	3562.19	32.93		0	3529.26
	03/22/04	3562.19	39.43		0	3522.76
	12/22/03	3562.19	39.39		0	3522.80
	09/24/03	3562.19	39.19		0	3523.00
	06/16/03	3562.19	38.78		0	3523.41
	03/05/03	3562.19	38.55		0	3523.64
	*12/18/2002	3562.19	38.65		0	3523.54
MW-16	04/18/06	3566.51	37.60		0	3528.91
	03/03/05	3566.51	37.40		0	3529.11
	03/22/04	3566.51	43.64		0	3522.87
	12/22/03	3566.51	43.58		0	3522.93
	09/24/03	3566.51	43.38		0	3523.13
	06/16/03	3566.51	42.99		0	3523.52
	03/05/03	3566.51	42.80		0	3523.71
	*12/18/2002	3566.51	42.87		0	3523.64

***New survey data**

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl=Ft above mean sea level

feet bmp=Ft below measuring point

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	**30**
MW-1	4/9/1999	**5**	<5	<5	NS	NS	<10	
	7/15/1999	<500	<500	<500	NS	NS	<1000	
	4/18/2006	ND	ND	ND			ND	
MW-2	4/9/1999	<5	<5	<5	NS	NS	<10	
	7/15/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	3/5/2003	<5	<5	<5			<5	
(Duplicate)	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
(Duplicate)	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			1.2	
(Duplicate)	3/22/2004	<1	<1	<1			1	
	3/4/2005	<1	<1	<1	<1	<1		1.37
	4/18/2006	ND	ND	ND			ND	
MW-3	4/9/1999	**100**	**14**	<5	NS	NS	<10	
	7/15/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	**11**	<5	<10	ND	
(Duplicate)**	3/30/2000	**54**	**8.6**	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5.0	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	**10**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<5	<5	<5	NS	NS	<5	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	**30**
MW-4	4/9/1999	**121**	**77**	**43**	NS	NS	**60**	
	7/15/1999	**43**	**28**	<5	NS	NS	<10	
	9/23/1999	**18**	**12**	<5	NS	NS	<10	
	3/30/2000	**54**	**7.5**	**8.7**	<5	<10	ND	
	6/20/2000	**19**	<5.0	<5	<5	<10	<10	
	9/28/2000	**66**	**13**	<5	<5	<10	<10	
(Duplicate)	9/28/2000	**51**	<5.0	<5	<5	<10	11	
	12/21/2000	**46**	**10**	<5	NS	NS	20	
	3/19/2001	**37**	<5	**5.2**	<5	<10	<10	
	6/28/2001	**14**	<5	<5	NS	NS	<10	
	3/5/2003	**5**	<5	<5			<5	
	6/16/2003		<5	<5			<5	
	9/24/2003	**5**	<5	<5			<5	
	12/22/2003	**1**	<1	<1			<1	
	3/22/2004	<1	<1	<1			3.7	
	3/4/2005	**15.2**	**1.71**	<1	<1	<1		**3.69**
	4/18/2006	**28**	**5.75**	ND			ND	
MW-5	4/9/1999	**53**	<5	<5	NS	NS	<10	
	7/15/1999	**470**	**43**	<5	NS	NS	10	
	9/22/1999	**156**	**6**	<5	NS	NS	<10	
	3/30/2000	**50**	<5	**9.7**	<5	<10	ND	
	6/20/2000	**140**	<5	<5	<5	<10	<10	
	9/28/2000	**110**	<5	<5	<5	<10	<10	
	12/21/2000	**169**	**5**	<5	NS	NS	**20**	
	3/19/2001	**32**	<5	<5	<5	<10	<10	
	6/28/2001	**96**	<5	<5	NS	NS	<10	
	9/24/2003	**71**	<5	<5			<5	
	12/22/2003	**17.9**	<5	<5			<5	
(Duplicate)	12/22/2003	**19.8**	<5	<5			<5	
	3/22/2004	**11.5**	<10	<10			22.2	
	3/4/2005	**25.5**	**6.78**	<1	<1	<1		**1.52**
	4/18/2006	**5.11**	ND	ND			ND	
MW-6	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/22/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	**11**	<5	<5	<5	<10	<10	
	12/21/2000	**14**	<5	<5	NS	NS	**10**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
Duplicate	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
Duplicate	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	**30**
MW-7	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/22/1999	<5	<5	<5	NS	NS	<10	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/4/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	
MW-8	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	**11**	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	<10	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<5	<5	<5	NS	NS	<5	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<5	<5	<5			<5	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	4/22/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	
MW-9	8/17/1999	**20**	<5	<5	NS	NS	<10	
	9/23/1999	**8**	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	9.3	<5	<5	ND	
	6/20/00*	<5	<5	<5	<5	<10	<10	
	9/28/00*	<5	<5	<5	<5	<10	<10	
	12/21/00*	<5	<5	<5	NS	NS	<10	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	**28**	<5	NS	NS	<10	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<5	<5	<5			<5	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<5	<5	<5			<5	
	3/22/2004	<5	<5	<5			<5	
	3/3/2005	<1	<1	<1	<2	<1		<1
	4/18/2006	ND	ND	ND			ND	

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	**30**
MW-10	8/17/1999	**12100**	**160**	**1730**	NS	NS	400	
	9/22/1999	**2900**	**520**	**800**	NS	NS	600	
MW-11	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	<5	<10	<10	
	3/30/2000	<5	<5	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
(Duplicate)	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	**20**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
(Duplicate)	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<5	<5	<5	NS	NS	<5	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003							
	9/24/2003							
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	
MW-12 (PZ-2)	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/22/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	<5	<5	<10	ND	
	6/20/2000	**7.3**	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	**20**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001^	NS	NS	NS	NS	NS	NS	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	4/22/2005	<1	<1	<1			<1	<1
	4/18/2006	ND	ND	ND			ND	

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	**30**
MW-13 (PZ-1)	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	**5**	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	<10	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<200	<200	<200	NS	NS	<200	
	9/25/2002	<1	<1	<1	NS	NS	<1	
(Duplicate)	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
(Duplicate)	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	
MW-14	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	
MW-15	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	
MW-16	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<5	<5	<5			<5	
	3/22/2004	<5	<5	<5			<5	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006	ND	ND	ND			ND	

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	**30**
Livestock WW	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<5	<5	<5	NS	NS	<5	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
	4/18/2006							
Rinsate	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	

Footnotes:

WQCC - New Mexico Water Quality Control Commission Ground Water Standards.
BTEX - Benzene, Toluene, Ethylbenzene and Total Xylenes.
ug/L - micrograms per liter.
NS - Constituent not speciated.
ND - Constituent was not detected during laboratory testing, and laboratory reporting limits are variable.
* - Data was originally labeled as MW-7, but is actually MW-9.
MW-7 was not sampled in 2000 due to the presence of phase separate hydrocarbon (PSH).
** - Question data because it appears to be more representative of the sample for MW-4 for the same event.
^ - Sample containers were all broken.

FIGURES

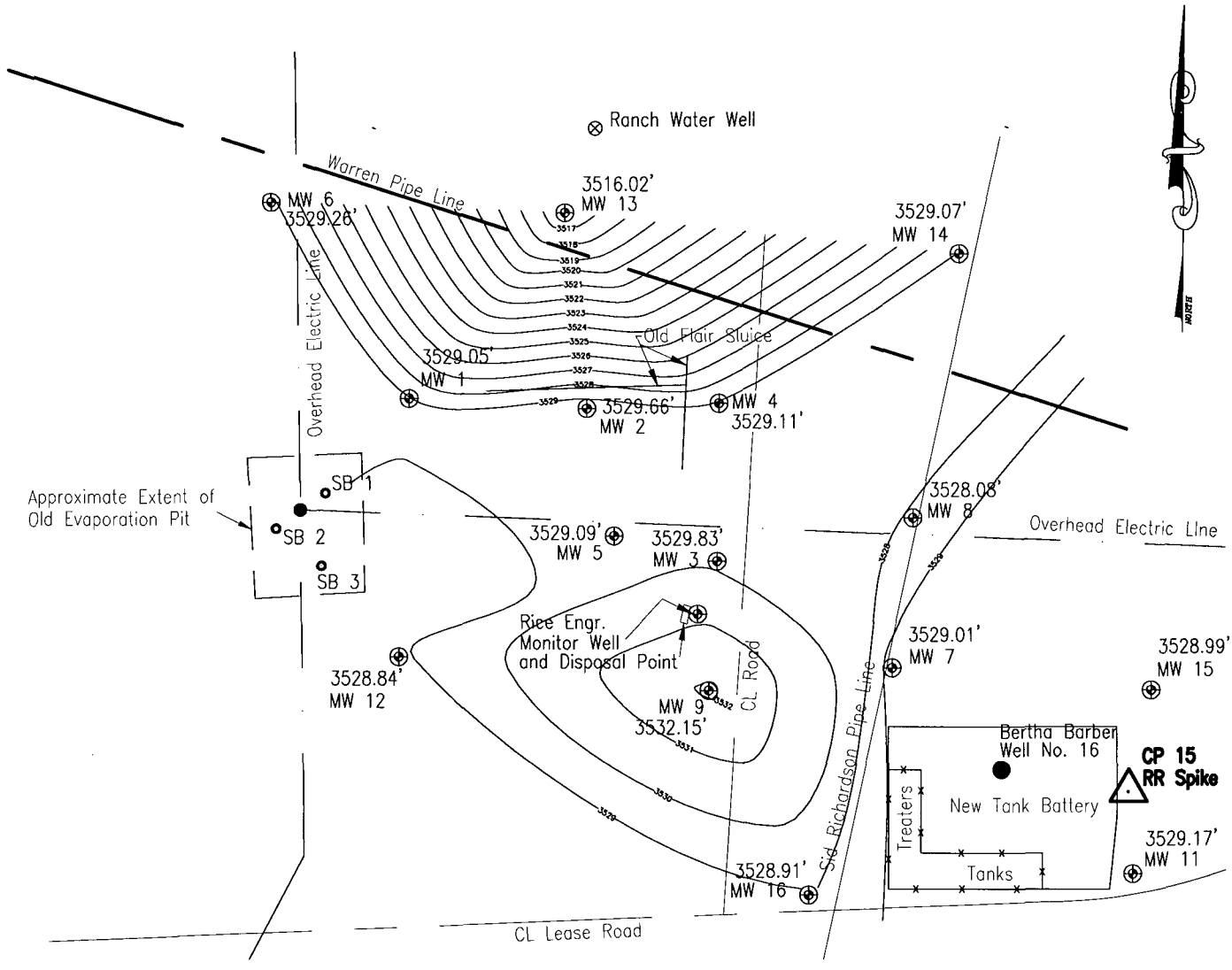
Figure 1: Groundwater Gradient Map
Figure 2: BTEX Concentration Map
April 2006
Figure 3: Proposed Excavation Map
November 2006

Former Bertha Barber

December 2006

Marathon Oil Company
Houston, Texas

Prepared by:
BBC International, Inc.



LEGEND

- Monitoring Well
- Soil Boring
- Water Well
- Electric Pole
- * Shot on Top of Lid

1000 0 1000 2000 FEET

Scale:1"=1000'

Monitor well numbering was taken from plat map "MT749102.dwg" dated 7-07-2002 furnished by Marathon Oil Co. and may not reflect markings found on site.

NOTE: BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

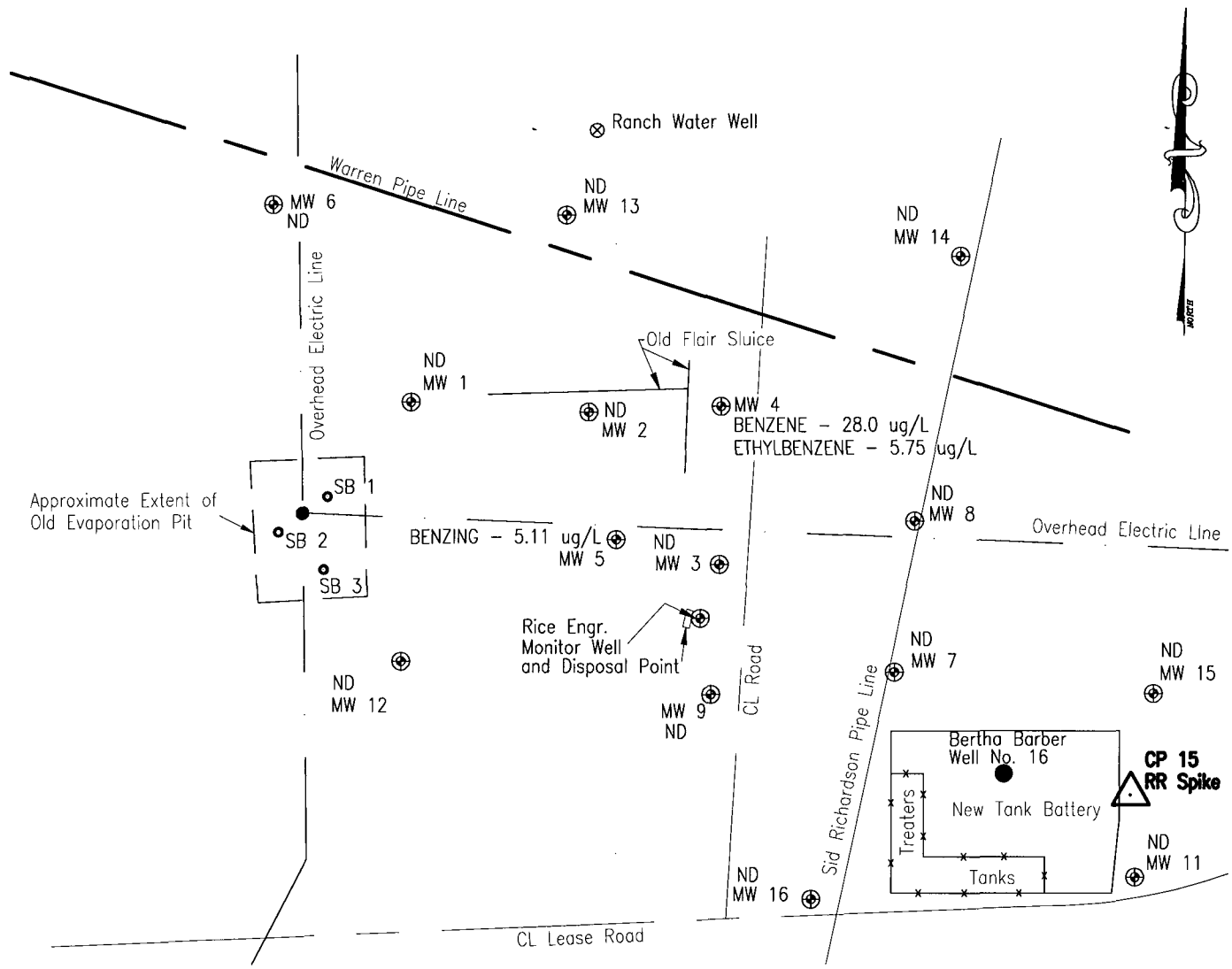
PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

BBC INTERNATIONAL

GRADIENT FIGURE 1

MONITORING WELLS AND SOIL BORING LOCATIONS IN FORMER BERTHA BARBER TANK BATTERY SECTION 5, TOWNSHIP 20 SOUTH, RANGE 37 EAST, LEA COUNTY, NEW MEXICO

Survey Date: 12/16/2002		Sheet 1 of 1 Sheets	
W.O. Number: 06.13.1104		Drawn By: L.A.	
Date: 6/28/06	DISK: CD#5	-------	



LEGEND

- Monitoring Well
- Soil Boring
- Water Well
- Electric Pole
- * Shot on Top of Lid

1000 0 1000 2000 FEET

Scale: 1"=1000'

Monitor well numbering was taken from plat map "MT749102.dwg" dated 7-07-2002 furnished by Marathon Oil Co. and may not reflect markings found on site.

NOTE: BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

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(505) 393-3117

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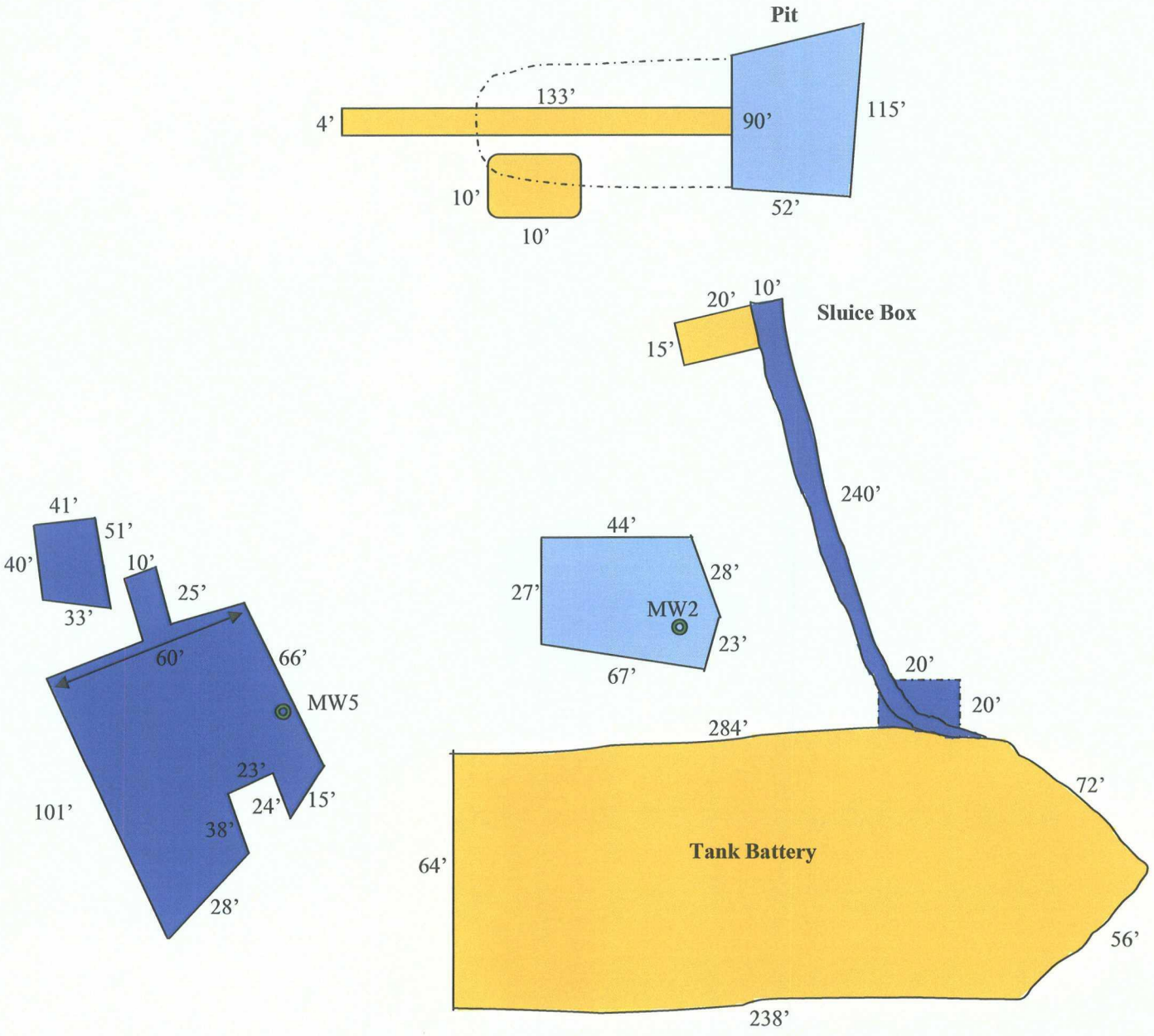
BTEX FIGURE 2

MONITORING WELLS AND SOIL BORING LOCATIONS IN FORMER BERTHA BARBER TANK BATTERY SECTION 5, TOWNSHIP 20 SOUTH, RANGE 37 EAST, LEA COUNTY, NEW MEXICO

Survey Date: 12/16/2002		Sheet 1 of 1 Sheets	
W.O. Number: 06.13.1104		Drawn By: L.A.	
Date: 6/28/06	DISK: CD#5	------	

Figure 3. MARATHON OIL COMPANY BERTHA BARBER TANK BATTERY
Proposed Excavation



LEGEND

- 2' Excavation & 20 mil Liner
- 2' Maximum Excavation
- 1' Excavation
- Monitor Well
- Various Shallow Excavations

BBC INTERNATIONAL, INC.	
MARATHON OIL COMPANY FORMER BERTHA BARBER TB	
Date: 10-27-06	Drawn By: JG
Disk:	Sheet 1 of 1 Sheets
Scale: Not to Scale	File Name

APPENDIX

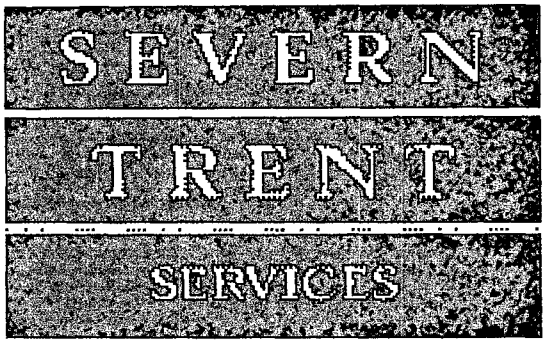
Severn Trent.
Laboratory Results
April 2006

Former Bertha Barber

December 2006

Marathon Oil Company
Houston, Texas

Prepared by:
BBC International, Inc.



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PRELIMINARY REPORT

STL – Houston 6310 Rothway Street Houston, TX. 77040 (713) 690-4444

ANALYTICAL REPORT

JOB NUMBER: 314779
Project ID: ANALYSIS

Prepared For:

Marathon Oil Company
Southern Business Unit
P.O. Box 3487
Houston, TX 77253-3487

Attention: Vijay Kurki

Date: 04/27/2006

Signature

Name: Sachin G. Kudchadkar

Title: Project Manager III

E-Mail: skudchadkar@stl-inc.com

Date

Severn Trent Laboratories
6310 Rothway Drive
Houston, TX 77040

PHONE: 713-690-4444

SAMPLE INFORMATION
Date: 04/27/2006

Job Number.: 314779
Customer...: Marathon Oil Company
Attn.....: Vijay Kurki

Project Number.....: 99006730
Customer Project ID....: ANALYSIS
Project Description....: Analysis

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
314779-1	MW# 11	Water	04/18/2006	14:20	04/20/2006	09:29
314779-2	MW# 15	Water	04/18/2006	14:42	04/20/2006	09:29
314779-3	MW# 14	Water	04/18/2006	15:00	04/20/2006	09:29
314779-4	MW# 6	Water	04/18/2006	15:15	04/20/2006	09:29
314779-5	MW# 9	Water	04/18/2006	15:31	04/20/2006	09:29
314779-6	MW# 3	Water	04/18/2006	15:43	04/20/2006	09:29
314779-7	MW# 16	Water	04/18/2006	16:01	04/20/2006	09:29
314779-8	MW# 7	Water	04/18/2006	16:15	04/20/2006	09:29
314779-9	MW# 8	Water	04/18/2006	16:31	04/20/2006	09:29
314779-10	MW# 12	Water	04/18/2006	16:43	04/20/2006	09:29
314779-11	MW# 2	Water	04/18/2006	17:02	04/20/2006	09:29
314779-12	MW# 13	Water	04/18/2006	17:13	04/20/2006	09:29
314779-13	MW# 4	Water	04/18/2006	17:27	04/20/2006	09:29
314779-14	MW# 5	Water	04/18/2006	17:40	04/20/2006	09:29
314779-15	MW# 1	Water	04/18/2006	18:00	04/20/2006	09:29
314779-16	TRIP BLANK	Trip Blank	04/18/2006	00:00	04/20/2006	09:29
314779-17	TRIP BLANK	Trip Blank	04/18/2006	00:00	04/20/2006	09:29

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 11
Date Sampled.....: 04/18/2006
Time Sampled.....: 14:20
Sample Matrix.....: Water

Laboratory Sample ID: 314779-1
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/24/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/24/06	ydy
	Toluene, Water	ND		5	ug/L	04/24/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/24/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 15
Date Sampled.....: 04/18/2006
Time Sampled.....: 14:42
Sample Matrix.....: Water

Laboratory Sample ID: 314779-2
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/24/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/24/06	ydy
	Toluene, Water	ND		5	ug/L	04/24/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/24/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 14
Date Sampled.....: 04/18/2006
Time Sampled.....: 15:00
Sample Matrix.....: Water

Laboratory Sample ID: 314779-3
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/24/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/24/06	ydy
	Toluene, Water	ND		5	ug/L	04/24/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/24/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 6
Date Sampled.....: 04/18/2006
Time Sampled.....: 15:15
Sample Matrix.....: Water

Laboratory Sample ID: 314779-4
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/24/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/24/06	ydy
	Toluene, Water	ND		5	ug/L	04/24/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/24/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 9
Date Sampled.....: 04/18/2006
Time Sampled.....: 15:31
Sample Matrix.....: Water

Laboratory Sample ID: 314779-5
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/24/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/24/06	ydy
	Toluene, Water	ND		5	ug/L	04/24/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/24/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 3
Date Sampled.....: 04/18/2006
Time Sampled.....: 15:43
Sample Matrix.....: Water

Laboratory Sample ID: 314779-6
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 16
Date Sampled.....: 04/18/2006
Time Sampled.....: 16:01
Sample Matrix.....: Water

Laboratory Sample ID: 314779-7
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/24/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/24/06	ydy
	Toluene, Water	ND		5	ug/L	04/24/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/24/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 7
Date Sampled.....: 04/18/2006
Time Sampled.....: 16:15
Sample Matrix.....: Water

Laboratory Sample ID: 314779-8
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 8
Date Sampled.....: 04/18/2006
Time Sampled.....: 16:31
Sample Matrix.....: Water

Laboratory Sample ID: 314779-9
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 12
Date Sampled.....: 04/18/2006
Time Sampled.....: 16:43
Sample Matrix.....: Water

Laboratory Sample ID: 314779-10
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 2
Date Sampled.....: 04/18/2006
Time Sampled.....: 17:02
Sample Matrix.....: Water

Laboratory Sample ID: 314779-11
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 13
Date Sampled.....: 04/18/2006
Time Sampled.....: 17:13
Sample Matrix.....: Water

Laboratory Sample ID: 314779-12
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779

Date: 04/27/2006

CUSTOMER: Marathon Oil Company

PROJECT: ANALYSIS

ATTN: Vijay Kurki

Customer Sample ID: MW# 4
Date Sampled.....: 04/18/2006
Time Sampled.....: 17:27
Sample Matrix.....: Water

Laboratory Sample ID: 314779-13
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	28.0		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	5.75		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 5
Date Sampled.....: 04/18/2006
Time Sampled.....: 17:40
Sample Matrix.....: Water

Laboratory Sample ID: 314779-14
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	5.11		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: MW# 1
Date Sampled.....: 04/18/2006
Time Sampled.....: 18:00
Sample Matrix.....: Water

Laboratory Sample ID: 314779-15
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: TRIP BLANK
Date Sampled.....: 04/18/2006
Time Sampled.....: 00:00
Sample Matrix.....: Trip Blank

Laboratory Sample ID: 314779-16
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Customer Sample ID: TRIP BLANK
Date Sampled.....: 04/18/2006
Time Sampled.....: 00:00
Sample Matrix.....: Trip Blank

Laboratory Sample ID: 314779-17
Date Received.....: 04/20/2006
Time Received.....: 09:29

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	FLAGS	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 8260B	Volatile Organics						
	Benzene, Water	ND		5	ug/L	04/25/06	ydy
	Ethylbenzene, Water	ND		5	ug/L	04/25/06	ydy
	Toluene, Water	ND		5	ug/L	04/25/06	ydy
	Xylenes (total), Water	ND		15	ug/L	04/25/06	ydy

* In Description = Dry Wgt.

QUALITY CONTROL RESULTS

Job Number.: 314779 — Report Date.: 04/27/2006

CUSTOMER: Marathon Oil Company — PROJECT: ANALYSIS — ATTN: Vijay Kurki

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date Time

Test Method.....: SW-846 8260B — Units.....: ug/L — Analyst...: ydy
Method Description.: Volatile Organics — Batch(s)...: 153441 153521

LCS	Laboratory Control Sample	VS041806E			04/24/2006 1043

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, Water	46.9062		50.00	ND	93.8		68-127	
Ethylbenzene, Water	47.9835		50.00	ND	96.0		64-132	
Toluene, Water	49.3237		50.00	ND	98.6		63-127	
Xylenes (total), Water	143.921		150.0	ND	95.9		37-161	

MB	Method Blank	VS041806C			04/24/2006 1222

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, Water	ND							
Ethylbenzene, Water	ND							
Toluene, Water	ND							
Xylenes (total), Water	ND							

MS	Matrix Spike	VS041806E	314854-2	20.00000	04/24/2006 1631

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, TCLP	48.3522		50.00	ND	97		63-123	

MSD	Matrix Spike Duplicate	VS041806E	314854-2	20.00000	04/24/2006 1656

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, TCLP	46.4403	48.3522	50.00	ND	93		63-123	
					4.0		30.0	

PB	Prep. Blank	VS041806C			04/24/2006 1722

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, TCLP	ND							
Ethylbenzene, TCLP	ND							
Toluene, TCLP	1.27461							
Xylenes (total), TCLP	8.64793							

PB	Prep. Blank	VS041806C			04/24/2006 1747

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, TCLP	ND							
Ethylbenzene, TCLP	ND							
Toluene, TCLP	ND							
Xylenes (total), TCLP	5.39691							

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

QUALITY CONTROL RESULTS

Job Number.: 314779

Report Date.: 04/27/2006

CUSTOMER: Marathon Oil Company | PROJECT: ANALYSIS | ATTN:

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
LCS	Laboratory Control Sample	VS041806E			04/25/2006	1240

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, Water	46.8278		50.00	ND	93.7		68-127	
Ethylbenzene, Water	46.1405		50.00	ND	92.3		64-132	
Toluene, Water	47.9291		50.00	ND	95.9		63-127	
Xylenes (total), Water	140.663		150.0	ND	93.8		37-161	

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MB	Method Blank	VS041806C			04/25/2006	1305

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, Water	ND							
Ethylbenzene, Water	ND							
Toluene, Water	ND							
Xylenes (total), Water	ND							

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MS	Matrix Spike	VS041806E	314753-5		04/25/2006	1717

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, TCLP	52.8502		50.00	ND	106		63-123	

QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time
MSD	Matrix Spike Duplicate	VS041806E	314753-5		04/25/2006	1743

Parameter/Test Description	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	F
Benzene, TCLP	61.9912	52.8502	50.00	ND	124		63-123	A
					15.9		30.0	

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

SURROGATE RECOVERIES REPORT

Job Number.: 314779 Report Date.: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Method.....: Volatile Organics Method Code...: 8260 Prep Batch....:
Batch(s).....: 153441 153521 Test Matrix...: Water Equipment Code: GCMSVOA05

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
153441--21	LCS		04/24/2006	87.0	118.4	85.7	97.5
153441--21	MB		04/24/2006	98.4	119.4	93.1	99.9
153521--21	LCS		04/25/2006	91.3	127.9	90.6	101.9
153521--21	MB		04/25/2006	97.8	119.5	93.4	97.2
314779- 1		MW# 11	04/24/2006	93.6	120.4	88.1	94.4
314779- 2		MW# 15	04/24/2006	97.5	124.2	89.6	97.1
314779- 3		MW# 14	04/24/2006	97.8	121.8	91.6	96.8
314779- 4		MW# 6	04/24/2006	98.0	118.7	89.7	98.4
314779- 5		MW# 9	04/24/2006	98.5	120.3	92.6	97.4
314779- 6		MW# 3	04/25/2006	89.3	97.0	82.6	84.9
314779- 7		MW# 16	04/24/2006	99.4	121.5	94.1	100.1
314779- 8		MW# 7	04/25/2006	90.8	95.5	82.9	86.2
314779- 9		MW# 8	04/25/2006	92.3	94.1	84.5	84.2
314779- 10		MW# 12	04/25/2006	91.1	88.2	83.6	81.8
314779- 11		MW# 2	04/25/2006	92.2	94.6	84.7	84.1
314779- 12		MW# 13	04/25/2006	94.4	94.8	86.4	85.2
314779- 13		MW# 4	04/25/2006	79.0	98.5	70.7	88.0
314779- 14		MW# 5	04/25/2006	84.0	92.9	80.3	83.5
314779- 15		MW# 1	04/25/2006	90.3	105.0	85.7	84.9
314779- 16		TRIP BLANK	04/25/2006	92.6	95.2	85.2	86.2
314779- 17		TRIP BLANK	04/25/2006	92.1	95.9	83.4	84.6

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4	70 - 130
BRFLBE	4-Bromofluorobenzene	70 - 130
DBRFLM	Dibromofluoromethane	70 - 130
TOLD8	Toluene-d8	70 - 130

Method.....: Volatile Organics Method Code...: 8260 Prep Batch....:
Batch(s).....: 153441 153521 Test Matrix...: TCLP Equipment Code: GCMSVOA05

Lab ID	DT	Sample ID	Date	12DCED	BRFLBE	DBRFLM	TOLD8
153441--21	PB		04/24/2006	96.1	123.6	90.8	96.1
314753- 5	MS	SS03 SED A TCLP	04/25/2006	83.9	99.4	80.2	86.9
314753- 5	MSD	SS03 SED A TCLP	04/25/2006	84.5	101.2	80.3	88.3
314854- 2	MS	#1 PACKING FROM GAS FRAC	04/24/2006	87.5	119.3	85.8	94.7
314854- 2	MSD	#1 PACKING FROM GAS FRAC	04/24/2006	86.1	120.3	84.2	92.5
153441--21	PB		04/24/2006	98.5	123.9	90.1	97.1

Test	Test Description	Limits
12DCED	1,2-Dichloroethane-d4	70 - 130
BRFLBE	4-Bromofluorobenzene	70 - 130
DBRFLM	Dibromofluoromethane	70 - 130
TOLD8	Toluene-d8	70 - 130

QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 04/27/2006

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
3) According to 40CFR Part 136.3, pH, Chlorine Residual, and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field, (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.
4) For all USACE projects, the QC limits are based on "mean +/- 2 sigma", which are the warning limits.

General Information:

- Cresylic Acid is the combination of o,m and p-Cresol. The combination is reportesd as the final result.
- m-Cresol and p-Cresol co-elute. The result of the two is reported as either m&p-cresol or as p-cresol.
- m-Xylene and p-Xylene co-elute. The result of the two is reported as m,p-Xylene.
- N-Nitrosodiphenylamine decomposes in the gas chromatograph inlet forming dipheylamine and, consequently, may be detected as diphenylamine.
- Methylene Chloride and Acetone are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
- Trimethysilyl(Diazomethane) is used to esterify acid herbicides in Method SW-846 8151A.
- For Inorganic analyses, duplicate QC limits are determined as follows: If the sample result is less than or equal to 5 times the reporting limit, the RPD limit is equal to the reporting limit. If the sample result is greater than 5 times the reporting limit, the RPD limit is the method defined RPD.
- For TRRP reports, the header on the column RL is equivalent to a MQL/PQL.

Explanation of Qualifiers:

U - This qualifier indicates that the analyte was analyzed but not detected.
J - (Organics only) This qualifier indicates that the analyte is an estimated value between the RL and the MDL.
B - (Inorganics only) This Qualifier indicates that the analyte is an estimated value between the RL and the MDL.
N - (Organics only) This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic charachterization of a TIC, such as "chlorinated hydrocarbon", the "N" flag is not used.

Explanation of General QC Outliers:

A - Matrix interference present in sample.
a - MS/MSD analyses yielded comparable poor recoveries, indicating a possible matrix interference. Method perfonnance is demonstrated by acceptable LCS recoveries.
b - Target analyte was found in the method blank.
M - QC sample analysis yielded recoveries outside QC acceptance criteria. This sample was reanalyzed.
L - LCS analysis yielded high recoveries, indicating a potential high bias. No target analytes were observed above the RL in the associated samples.
G - Marginal outlier within 1% of acceptance criteria.
r - RPD value is outside method acceptance criteria.
C - Poor RPD values observed due to the non-homogenous nature of the sample.
O - Sample required dilution due to matrix interference.
D - Sample reported from a dilution.
d - Spike and/or surrogate diluted.
P - The recovery of this analyte is outside default QC limits. The data is accepted and will be used to calculate in-house statistical limits.
E - The reported concentration exceeds the instrument calibration.
F - The analyte is outside QC limits. The sample data is accepted since this analyte is not reported in associated samples.
H - Continuing Calibration Verification (CCV) standard is not associated with the samples reported.

q - See the subcontract final report for qualifier explanation.
W - The MS/MSD recoveries are outside QC acceptance criteria because the amount spiked is much less than the amount found in the sample.
K - High recovery will not affect the quality of reported results.
Z - See case narrative.

Explanation of Organic QC Outliers:

e - Method blank analysis yielded phthalate concentrations above the RL. Phthlates are recognized potential laboratory contaminants. Its presence in the sample up to five times the amount reported in the blank may be attributed to laboratory contamination.
S - Sample reanalyzed/reextracted due to poor surrogate recovery. Reanalysis confirmed original analysis indicating a possible matrix interference.
T - Sample analysis yielded poor surrogate recovery.
R - The RPD between the two GC columns is greater than 40% and no anomalies are present. The higher result is reported as per EPA Method 8000B.
I - The RPD between the two GC columns is greater than 40% and anomalies are present. The lower of the two results has been reported.
X - Gaseous compound. In-house QC limits are advisory.
Y - Ketone compounds have poor purge efficiency. In-house QC limits are advisory.
f - Surrogate not associated with reported analytes.

Explanation of Inorganic QC Outliers:

Q - Method blank analysis yielded target analytes above the RL. Associated sample results are greater than 10 times the concentrations observed in the method blank.
V - The RPD control limit for sample results less than 5 times the RL is +/- the RL value. Sample and duplicate results are within method acceptance criteria.
e - Serial dilution failed due to matrix interference.
g - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficent for the MSA is greater than or equal to 0.995.
s - BOD/cBOD seed value is not within method acceptance criteria. Due to the nature of the test method, the sample cannot be reanalyzed.
l - BOD/cBOD LCS value is not within method acceptance criteria. Due to the nature of the test method, sample cannot be reanalyzed.
N - Spiked sample recovery is not within control limits.
n - Sample result quantitated by Method of Standard Additions (MSA) due to the analytical spike recovery being below 85 percent. The correlation coefficient for the MSA is less than 0.995.
* - Duplicate analysis is not within control limits.

Abbreviations:

Batch - Designation given to identify a specific extraction, digestion, preparation, or analysis set.
CCV - Continuing Calibration Verification
CRA - Low level standard check - GFAA, Mercury
CRI - Low level standard check - ICP
Dil Fac - Dilution Factor - Secondary dilution analysis
DLFac - Detection Limit Factor
DU - Duplicate
EB - Extraction Blank (TCLP, SPLP, etc.)
ICAL - Initial Calibration
ICB - Initial Calibration Blank
ICV - Initial Calibration Verification
ISA - Interference Check Sample A - ICP
ISB - Interference Check Sample B - ICP
LCD - Laboratory Control Duplicate
LCS - Laboratory Control Sample

MB - Method Blank
MD - Method Duplicate
MDL - Method Detection Limit
MQL - Method Quantitation Limit (TRRP)
MS - Matrix Spike
MSD - Matrix Spike Duplicate
ND - Not Detected
PB - Preparation Blank
PREPF - Preparation Factor
RL - Reporting Limit
RPD - Relative Percent Difference
RRF - Relative Response Factor
RT - Retention Time
SQL - Sample Quantitation Limit (TRRP)
TIC - Tentatively Identified Compound

Method References:

(1) EPA 600/4-79-020 Methods for the Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-94-111 Methods for the Determination of MEtals in Environmental Samples, Supplement I, May 1994.
(3) EPA SW846 Test Methods for Evaluating Solid Waste, Third Edition, September 1986; Update I July 1992; Update II, September 1994, Update IIA August 1993; Update IIB, January 1995; Update III, December 1996, Update IVA January 1998, Update IVB November 2000.
(4) Standard Methods for the Examination of Water and Wastewater, 16th Edition (1985), 17th Edition (1989), 18th Edition (1992), 19th Edition (1995), 20th Edition (1998).
(5) HACH Water Analysis Handbook 3rd Edition (1997).
(6) Federal Register, July 1, 1990 (40 CFR Part 136 Appendix A).
(7) Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, January 1997.

(9) Diagnosis and Improvement of Saline and Alkali Soils, Agriculture Handbook No. 60, United States Department of Agriculture, 1954.

LABORATORY CHRONICLE

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Lab ID	Client ID	Date Recvd	Sample Date
314779-1	MW# 11	04/20/2006	04/18/2006
314779-2	MW# 15	04/20/2006	04/18/2006
314779-3	MW# 14	04/20/2006	04/18/2006
314779-4	MW# 6	04/20/2006	04/18/2006
314779-5	MW# 9	04/20/2006	04/18/2006
314779-6	MW# 3	04/20/2006	04/18/2006
314779-7	MW# 16	04/20/2006	04/18/2006
314779-8	MW# 7	04/20/2006	04/18/2006
314779-9	MW# 8	04/20/2006	04/18/2006
314779-10	MW# 12	04/20/2006	04/18/2006
314779-11	MW# 2	04/20/2006	04/18/2006
314779-12	MW# 13	04/20/2006	04/18/2006
314779-13	MW# 4	04/20/2006	04/18/2006
314779-14	MW# 5	04/20/2006	04/18/2006
314779-15	MW# 1	04/20/2006	04/18/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT	#(S)	DATE/TIME ANALYZED	DILUTION
SW-846 8260B	Volatile Organics	1	153441			04/24/2006 1837	1.00000
SW-846 8260B	Volatile Organics	1	153441			04/24/2006 1902	1.00000
SW-846 8260B	Volatile Organics	1	153441			04/24/2006 1927	1.00000
SW-846 8260B	Volatile Organics	1	153441			04/24/2006 1951	1.00000
SW-846 8260B	Volatile Organics	1	153441			04/24/2006 2016	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 1808	1.00000
SW-846 8260B	Volatile Organics	1	153441			04/24/2006 2041	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 1833	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 1948	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 2013	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 2038	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 2103	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 2128	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 2153	1.00000
SW-846 8260B	Volatile Organics	1	153521			04/25/2006 2218	1.00000

LABORATORY CHRONICLE

Job Number: 314779 Date: 04/27/2006

CUSTOMER: Marathon Oil Company PROJECT: ANALYSIS ATTN: Vijay Kurki

Lab ID: 314779-16 Client ID: TRIP BLANK Date Recvd: 04/20/2006 Sample Date: 04/18/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 8260B	Volatile Organics	1	153521		04/25/2006 1858	1.00000

Lab ID: 314779-17 Client ID: TRIP BLANK Date Recvd: 04/20/2006 Sample Date: 04/18/2006

METHOD	DESCRIPTION	RUN#	BATCH#	PREP BT #(S)	DATE/TIME ANALYZED	DILUTION
SW-846 8260B	Volatile Organics	1	153521		04/25/2006 1923	1.00000