AECOM
8320 Guilford Road, Suite L
Columbia, MD 21046

240.565.6501 tel
410.884.9271 fax

November 7, 2013

Ms. Jeannette DeBartolomeo
Maryland Department of Environment
Oil Control Program
1800 Washington Blvd., Suite 620
Baltimore, Maryland 21230-1719

AECOM Project #: 60144763

Subject: Revised Bio-Injection Testing
7-Eleven Store No.22281
2400 Pleasantville Road
Fallston, Maryland
Facility ID No. 0006365
MDE Case No. 2005-0120HA

Dear Ms. DeBartolomeo,

On behalf of 7-Eleven, Inc. (7-Eleven), AECOM is submitting a request to modify the bio-injection testing procedure at the above-referenced site. Laboratory data indicates a strong relationship between groundwater DO levels and nutrient levels (mainly nitrate and orthophosphate) and reduction of dissolved-phase petroleum hydrocarbon concentrations in the shallow water-bearing zone in the areas of monitoring wells HW-3, MW-6, MW-9, MW-10, MW-11 and MW-13. A site map showing the location of these wells is included as **Figure 1**. Sufficient concentrations of bio-augmentation compounds (nutrients) were present in the groundwater at the site during the nine-month bio-augmentation pilot test period that began on September 12, 2012 and was concluded on June 6, 2013 (**Table 1, Attachment A**), however; dissolved oxygen (DO) concentrations leveled off and remained below 1 milligram-per-liter (mg/L) from April 11, 2013 through June 6, 2013 (**Table 2**). Over the course of the nine-month bio-augmentation pilot study, an overall reduction of petroleum-related hydrocarbon concentrations followed increases in nutrient levels stimulated by the injection of Petrozyme™ products into the shallow aquifer. However, DO may be the limiting factor in further reduction of MTBE and petroleum hydrocarbons at this site. Graphs illustrating the decline in MTBE concentrations with relation to the DO levels since the beginning of the bio-augmentation can be seen in **Attachment B**. In addition, graphs illustrating the decline in MTBE concentrations with relation to nitrate levels and to orthophosphate levels are included as **Attachment C** and **Attachment D**, respectively. Historical groundwater analytical data is included as **Table 3**. Laboratory analytical reports have previously been submitted to the MDE.

AECOM is requesting to install Regenesis Oxygen Release Compound (ORC®) filter socks in treatment/monitoring wells MW-6, MW-9, MW-10, MW-13 and HW-3. ORC® filter socks have shown to be an effective method for the delivery of dissolved oxygen into groundwater, thereby increasing aerobic bioremediation of MTBE and dissolved hydrocarbons. After the ORC ® filter socks are installed; AECOM will collect field measurements of DO every two weeks during the testing period. Information from the ORC ® manufacturer is included as **Attachment E**.

If the revised bio-injection request is approved, AECOM would like to initiate the extension of the nine-month bio-augmentation pilot test in December 2013, after the fourth quarter groundwater sampling event.

Thank you for your consideration in this matter. Please contact either of the undersigned at (240) 565-6501 if you should have any questions or require any additional information.

Sincerely yours,

John J. Canzeri
Project Manager
John.canzeri@aecom.com

Marie Treiber
Regional Senior Project Manager
Marie.treiber@aecom.com

cc: Harford County Health Department
Project File

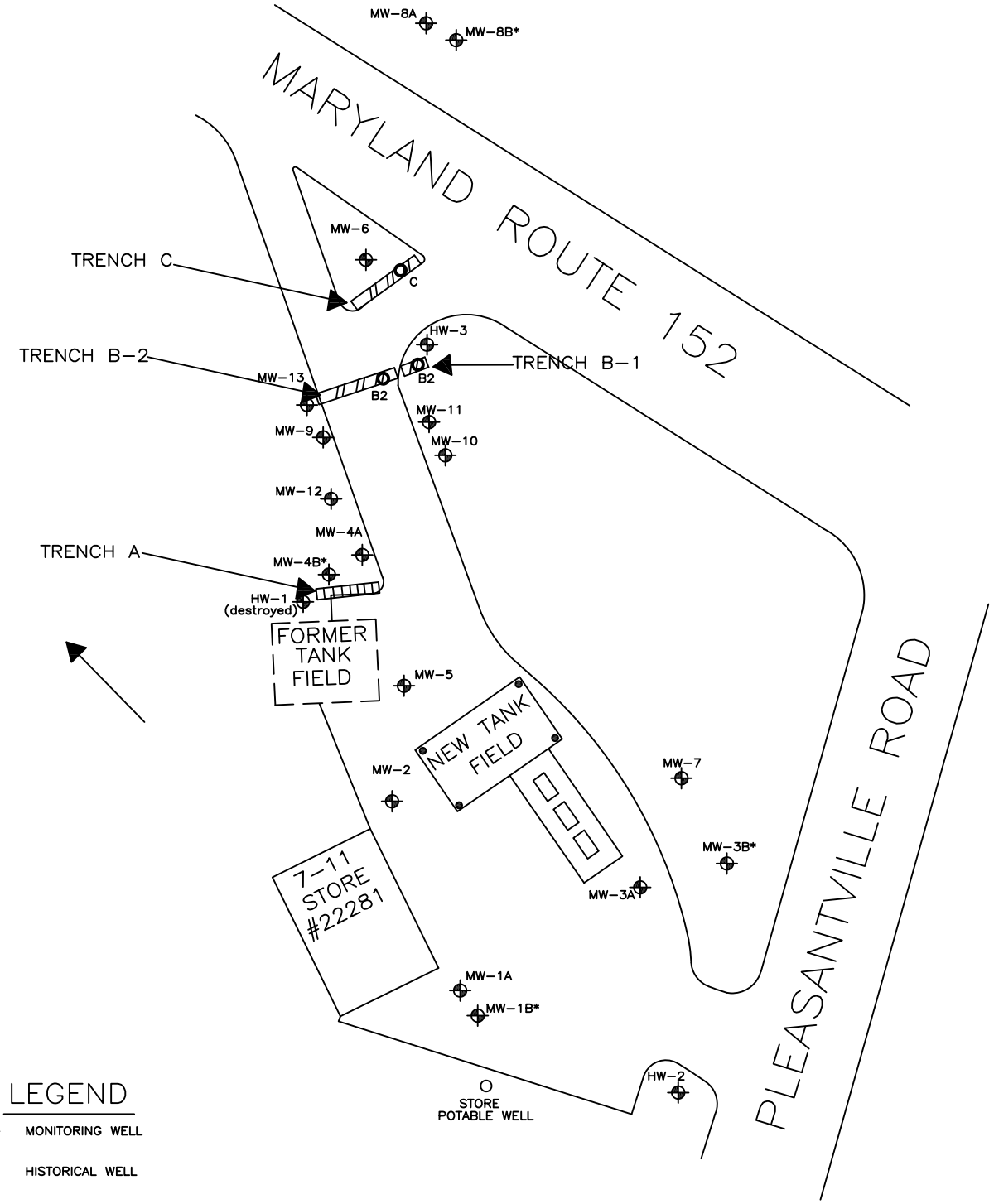
ATTACHMENTS

FIGURE

TABLES

ATTACHMENTS

FIGURE



LEGEND

- MONITORING WELL
- HW HISTORICAL WELL
- TANK FIELD WELL
- * DEEP WELL (NOT INCLUDED IN CONTOURS)
- GROUNDWATER FLOW DIRECTION
- TRENCH INSTALLED AUGUST 20, 2012
- EXISTING TRENCH
- Injection Point

N

APPROX. SCALE: FT

40 0 40

SITE PLAN

August 2013

Drawn By: JLT | Reviewed By: NP

7-ELEVEN Inc.
STORE No. 22281
2400 PLEASANTVILLE ROAD
FALLSTON, MARYLAND

Project No.: 60144763

FIGURE 1

AECOM

TABLES

Table 1
Monitoring Well Groundwater
Nutrient Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Nitrate (mg/L)	Nitrite (mg/L)	Orthophoshate (mg/L)
MW-6	2/14/2013	73	0.21	BDL
	3/11/2013	74	0.26	2.02
	6/6/2013	190	0.14	BDL
MW-9	2/14/2013	15	0.15	1.42
	3/11/2013	17	0.2	0.32
	6/6/2013	23	BDL	2.32
MW-11	2/14/2013	7.8	0.17	0.17
	3/11/2013	8.3	0.18	2.19
	6/6/2013	7.9	BDL	0.15
MW-13	2/14/2013	28	0.19	2.44
	3/11/2013	19	0.22	1.02
	6/6/2013	28	BDL	1.87
HW-3	2/14/2013	850	3.3	745
	3/11/2013	880	7.9	746
	6/6/2013	960	3.3	764

mg/L - milligrams per liter
BDL - Below Laboratory Detection Limits

Table 2
Monitoring Well Groundwater Dissolved Oxygen Levels
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Dissolved Oxygen (mg/L)
MW-6	3/1/12	1.34
	9/12/12	1.44
	1/31/2013	0.94
	2/7/2013	0.7
	2/14/2013	4.31
	3/1/2013	2.93
	3/11/2013	0.9
	3/14/2013	5.9
	4/11/2013	0.25
	4/26/2013	0.28
	5/10/2013	0.32
	5/24/2013	0.58
	6/6/2013	0.77
MW-9	3/1/2012	0.46
	9/12/2012	1.15
	1/31/2013	1.32
	2/7/2013	3.9
	2/14/2013	4.94
	3/1/2013	2.09
	3/11/2013	0.8
	3/14/2013	2.32
	4/11/2013	0.3
	4/26/2013	0.44
	5/10/2013	0.24
	5/24/2013	0.57
	6/6/2013	0.81
MW-10	3/1/2012	4.03
	9/12/2012	1.09
	1/31/2013	1.78
	2/7/2013	1.7
	2/14/2013	1.01
	3/1/2013	2.22
	3/11/2013	0.9
	3/14/2013	1.77
	4/11/2013	0.1
	4/26/2013	0.28
	5/10/2013	0.34
	5/24/2013	0.58
	6/6/2013	0.58

Sample ID	Date	Dissolved Oxygen (mg/L)
MW-11	3/1/2012	9.9
	9/12/2012	1.11
	1/31/2013	1.3
	2/7/2013	1.1
	2/14/2013	1.11
	3/1/2013	2.01
	3/11/2013	0.6
	3/14/2013	10.56
	4/11/2013	0.11
	4/26/2013	0.2
	5/10/2013	0.22
	5/24/2013	0.46
	6/6/2013	0.49
MW-13	3/1/2012	0.48
	9/12/2012	1.11
	1/31/2013	1.71
	2/7/2013	3.1
	2/14/2013	1.38
	3/1/2013	1.78
	3/11/2013	1
	3/14/2013	2.24
	4/11/2013	0.14
	4/26/2013	0.26
	5/10/2013	0.25
	5/24/2013	0.63
	6/6/2013	0.59
HW-3	9/12/2012	1.75
	1/31/2013	4.43
	2/7/2013	0.9
	2/14/2013	4.16
	3/1/2013	2.24
	3/11/2013	0.4
	3/14/2013	8.07
	4/11/2013	0.14
	4/26/2013	0.28
	5/10/2013	0.31
	5/24/2013	0.59
	6/6/2013	0.6

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-1A	7/26/05	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.56
	11/22/05	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	NA	NA
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.50
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@1	ND@3	ND	1	ND@10	ND@10	ND@100	ND@0.5
	3/28/07	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	1	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
MW-1B	7/26/05	ND@1	ND@1	ND@1	ND@3	ND	11	ND@25	ND@25	ND@100	ND@0.5
	11/22/05	ND@1	ND@1	ND@1	ND@3	ND	12	ND@25	ND@25	NA	NA
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	6	ND@25	ND@25	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	3	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	6	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@1	ND@3	ND	6	ND@10	ND@10	ND@100	ND@0.5
	3/28/07	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-2	7/26/05	ND@1	ND@1	ND@1	ND@3	ND	3	ND@25	ND@25	ND@100	ND@0.56
	11/22/05	ND@1	ND@1	ND@1	ND@3	ND	**37**	ND@25	ND@25	NA	NA
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	**49**	28	ND@25	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	**52**	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	**31**	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@1	ND@3	ND	**27**	ND@10	ND@10	ND@100	ND@0.5
	3/28/07	ND@1	ND@1	ND@1	ND@3	ND	12	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	9	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	5	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@1	ND@3	ND	5	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	5	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	4	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	12/23/09	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	1.2	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
MW-3A	7/26/05	ND@1	ND@1	ND@1	ND@3	ND	**2400**	1700	110	**2700**	ND@0.5
	11/22/05	ND@1	ND@1	ND@1	ND@3	ND	**260**	120	ND@25	NA	NA
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	**37**	ND@25	ND@25	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	3	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@1	ND@3	ND	2	ND@10	ND@10	ND@100	ND@0.5
	3/28/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-3B	2/16/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	2/22/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	**2.5**
	3/28/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-4A	7/26/05	**11**	ND@1	ND@1	10	21	**31,000**	25,000	E 2,200	**30,000**	ND@0.5
	11/22/05	**15**	ND@1	ND@1	10	25	**42,000**	29,000	3,200	NA	NA
	3/16/06	ND@5	ND@5	ND@5	ND@10	0	**20,000**	9,900	940	**2,100**	ND@0.5
	6/30/06	**14**	3	ND@1	12	29	**E 3,300**	E 3,400	E 560	**2,000**	LF 0.52
	9/12/06	**34**	9	ND@1	25	68	**20,000**	E 21,000	E 630	**2,900**	ND@0.5
	12/7/06	**30**	ND@5	ND@5	11	41	**27,000**	32000	780	**3,000**	LF 0.72
	3/28/07	**8**	ND@1	ND@1	6	14	**E 37,000**	E 41,000	E 490	**2,500**	**0.7**
	6/22/07	**8**	ND@1	ND@1	10	18	**E 12,000**	E 5,300	E 480	**2,500**	ND@0.5
	9/25/07	**7**	ND@1	ND@1	6	13	**E 11,000**	E 4,500	E 560	**1,500**	ND@0.5
	12/14/07	**7**	ND@1	ND@1	6	13	**E 7,600**	ND@10	E 460	**1,700**	ND@0.5
	3/14/08	ND@100	ND@100	ND@100	ND@300	ND	**15,000**	11,000	ND@1,000	**20,000**	ND@0.5
	6/18/08	ND@50	ND@50	ND@50	ND@150	ND	**8,100**	4,500	ND@500	**1,500**	ND@0.5
	9/3/08	**7**	ND@1	ND@1	ND@3	7	**8,200**	11,000	460	**4,400**	ND@0.5
	12/23/08	ND@100	ND@100	ND@100	ND@300	ND	**15,000**	9,500	ND@1,000	**6,000**	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	**4,900**	4,100	130	**720**	NA
	6/8/09	2	ND@1	ND@1	ND@3	2	**5,100**	2,900	150	**1,600**	NA
	9/27/09	3	ND@1	ND@1	1	4	**6,600**	3,700	220	**9,100**	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	**1,500**	660	54	**1,900**	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	**1,500**	470	55	**1,400**	NA
	5/6/10	ND@1	ND@1	ND@1	ND@3	ND	**150**	61	ND@10	**120**	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	**23**	ND@20	ND@10	ND@100	NA
	7/31/10	ND@1	ND@1	ND@1	ND@3	ND	**35**	ND@20	ND@10	ND@100	NA
	8/16/10	ND@1	ND@1	ND@1	ND@3	ND	**55**	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	`	ND@1	ND@3	ND	**740**	340	36	**1,100**	NA
	10/26/10	ND@1	ND@1	ND@1	ND@3	ND	**730**	210	ND@10	**810**	NA
	11/23/10	ND@1	ND@1	ND@1	ND@3	ND	**870**	210	41	**850**	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	**1,400**	420	56	**1,400**	NA
	2/28/11	ND@1	ND@1	ND@1	ND@3	ND	**860**	90	45	**850**	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**370**	86	15	**280**	NA
	4/26/11	ND@1	ND@1	ND@1	ND@3	ND	**390**	82	18	**530**	NA
	5/25/11	ND@1	ND@1	ND@1	ND@3	ND	**220**	ND@20	ND@10	**200**	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	**1,100**	ND@20	48	**1,100**	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	**210**	39	ND@10	**150**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**150**	ND@20	ND@10	**150**	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**560**	120	33	**870**	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	**410**	58	17	**460**	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	**400**	110	18	**490**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**390**	97	22	**490**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**770**	180	28	**690**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**660**	210	30	**760**	NA

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Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-4B	2/16/06	ND@1	ND@1	ND@1	ND@3	ND	16	ND@25	ND@25	ND@100	ND@0.5
	2/22/06	ND@1	ND@1	ND@1	ND@3	ND	16	ND@25	ND@25	ND@100	ND@0.5
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	13	ND@25	ND@25	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	7	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	6	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@1	ND@3	ND	**21**	ND@10	ND@10	ND@100	ND@0.5
	3/28/07	ND@1	ND@1	ND@1	ND@3	ND	7	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	3	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	8	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@1	ND@3	ND	6	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@1	ND@3	ND	5	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	12	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	13	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	18	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	4	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	4	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	5	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	11	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	6	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	13	ND@20	ND@10	ND@100	NA
	7/31/10	ND@1	ND@1	ND@1	ND@3	ND	11	ND@20	ND@10	ND@100	NA
	8/16/10	ND@1	ND@1	ND@1	ND@3	ND	11	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	12	ND@20	ND@10	ND@100	NA
	10/26/10	ND@1	ND@1	ND@1	ND@3	ND	14	ND@20	ND@10	ND@100	NA
	11/23/10	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	2/28/11	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	4	ND@20	ND@10	ND@100	NA
	4/26/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	5/25/11	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	5	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	5.3	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	3.3	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	3.3	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	1.7	21	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	2.1	ND@20	ND@10	ND@100	NA

Table 3
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Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-5	7/26/05	ND@1	ND@1	ND@1	ND@3	ND	10	ND@25	ND@25	ND@100	ND@0.5
	11/22/05	ND@1	ND@1	ND@1	ND@3	ND	15	ND@25	ND@25	NA	NA
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	**76**	44	ND@25	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	11	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	**27**	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@1	ND@3	ND	15	ND@10	ND@10	ND@100	ND@0.5
	3/28/07	ND@1	ND@1	ND@1	ND@3	ND	3	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	3	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	4	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@1	ND@3	ND	5	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@1	ND@3	ND	7	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	9	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	7	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	**32**	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	15	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	8	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	5	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	5	24	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	4	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	3	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	1.7	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	1.5	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	1.4	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	1.5	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	1.1	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	1.1	ND@20	ND@10	ND@100	NA

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Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-6	7/26/05	ND@1	ND@1	ND@1	ND@3	ND	**760**	560	28	**840**	ND@0.5
	11/22/05	ND@1	ND@1	ND@1	ND@3	ND	**1,900**	990	77	NA	NA
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	**1,300**	650	48	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	**E 860**	59	48	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	78	52	ND@100	ND@0.5
	12/7/06	ND@10	ND@10	ND@10	ND@30	ND	**2,400**	140	110	**140**	ND@0.5
	3/28/07	ND@100	ND@100	ND@100	ND@300	ND	**1,100**	ND@1,000	ND@1,000	**110**	ND@0.5
	6/22/07	ND@1	ND@1	ND@1	ND@3	ND	**E 1,000**	78	62	**130**	ND@0.5
	9/25/07	ND@1	ND@1	ND@1	ND@3	ND	**E 1,200**	120	65	**150**	ND@0.5
	12/14/07	2	ND@1	ND@1	ND@3	2	**E 3,800**	E 330	E 350	**600**	ND@0.5
	3/14/08	ND@50	ND@50	ND@50	ND@350	ND	**3,000**	ND@500	ND@500	**3,700**	ND@0.5
	6/18/08	ND@10	ND@10	ND@10	ND@30	ND	**2,200**	ND@200	120	**510**	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	210	84	**300**	ND@0.5
	12/27/08	ND@10	ND@10	ND@10	ND@30	ND	**3,600**	320	260	**1,700**	ND@0.5
	3/24/09	ND@10	ND@10	ND@10	ND@30	ND	**2,100**	230	120	**360**	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	**2,600**	230	170	**810**	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	**1,600**	170	99	**2,300**	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	190	78	**1,500**	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	**330**	87	18	**330**	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	**670**	210	29	**590**	NA
	7/31/10	ND@1	ND@1	ND@1	ND@3	ND	**1,400**	290	71	**1,800**	NA
	8/16/10	ND@1	ND@1	ND@1	ND@3	ND	**1,700**	310	84	**2,300**	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	**1,700**	750	78	**2,000**	NA
	10/26/10	ND@1	ND@1	ND@1	ND@3	ND	**2,400**	900	130	**2,800**	NA
	11/23/10	ND@1	ND@1	ND@1	ND@3	ND	**2,400**	940	130	**3,400**	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	**2,200**	920	87	**2,100**	NA
	2/28/11	ND@1	ND@1	ND@1	ND@3	ND	**2,400**	1,200	130	**2,400**	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**2,300**	1,000	99	**1,800**	NA
	4/26/11	ND@1	ND@1	ND@1	ND@3	ND	**2,500**	800	120	**3,500**	NA
	5/25/11	ND@1	ND@1	ND@1	ND@3	ND	**2,200**	390	100	**2,900**	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	**1,700**	ND@20	75	**2,000**	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	350	50	**850**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**2,300**	630	110	**1,600**	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**1,300**	320	60	**1,700**	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	**1,300**	330	53	**1,300**	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	**1,600**	490	68	**1,400**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**1,400**	230	65	**1,500**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**810**	78	34	**660**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**750**	48	35	**820**	NA

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-7	7/26/05	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.56
	11/22/05	ND@1	ND@1	ND@1	ND@3	ND	ND@1	34	ND@25	NA	NA
	3/16/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	6/30/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	9/12/06	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@25	ND@25	ND@100	ND@0.5
	12/7/06	ND@1	ND@1	ND@100	ND@3	ND	ND@1	ND@10	ND@10	ND@100	**0.94**
	3/28/07	ND@1	ND@1	ND@100	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@100	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@100	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@100	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@100	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	12/23/08	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	1	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	13	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	ND@1	ND@20	ND@10	ND@100	NA

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-8A	3/28/07	ND@1	1	ND@100	ND@3	1	**44**	ND@10	ND@10	ND@100	ND@0.5
	6/22/07	ND@1	ND@1	ND@100	ND@3	ND	9	ND@10	ND@10	ND@100	ND@0.5
	9/25/07	ND@1	ND@1	ND@100	ND@3	ND	3	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@100	ND@3	ND	ND@1	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@100	ND@3	ND	3	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	ND@0.5
	12/27/08	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	4	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	2	ND@20	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	5	ND@20	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	7	ND@20	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	17	ND@20	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	13	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	**24**	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	9	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**21**	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	**30**	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	**30**	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**33**	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**32**	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	19	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	2.1	ND@1	ND@3	2.1	**43**	ND@20	ND@10	ND@100	NA
	12/612	ND@1	ND@1	ND@1	ND@3	ND	**38**	ND@20	ND@10	ND@100	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**32**	ND@20	ND@10	ND@100	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**28**	ND@20	ND@10	ND@100	NA
MW-8B	10/15/07	ND@1	1	ND@1	ND@3	1	14	ND@10	ND@10	ND@100	ND@0.5
	12/14/07	ND@1	ND@1	ND@100	ND@3	ND	15	ND@10	ND@10	ND@100	ND@0.5
	3/14/08	ND@1	ND@1	ND@100	ND@3	ND	16	ND@10	ND@10	ND@100	ND@0.5
	6/18/08	ND@1	ND@1	ND@1	ND@3	ND	**24**	ND@20		ND@100	ND@0.5
	9/3/08	ND@1	ND@1	ND@1	ND@3	ND	**28**	ND@20	ND@10	ND@100	ND@0.5
	12/27/08	ND@1	ND@1	ND@1	ND@3	ND	**23**	ND@20	ND@10	ND@100	ND@0.5
	3/24/09	ND@1	ND@1	ND@1	ND@3	ND	**39**	ND@20	ND@10	ND@100	NA
	6/8/09	ND@1	ND@1	ND@1	ND@3	ND	**64**	25	ND@10	ND@100	NA
	9/27/09	ND@1	ND@1	ND@1	ND@3	ND	**77**	31	ND@10	ND@100	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	**93**	31	ND@10	ND@100	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	**100**	33	ND@10	ND@100	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	**56**	ND@20	ND@10	ND@100	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	**65**	ND@20	ND@10	ND@100	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	**56**	ND@20	ND@10	ND@100	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**34**	ND@20	ND@10	ND@100	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	**29**	ND@20	ND@10	ND@100	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	**22**	ND@20	ND@10	ND@100	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**28**	ND@20	ND@10	ND@100	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**22**	ND@20	ND@10	ND@100	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	12	ND@20	ND@10	ND@100	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	18	ND@20	ND@10	ND@100	NA
	12/6/12	ND@1	280	ND@1	ND@3	280	15	ND@20	ND@10	**670**	NA
	3/11/13	ND@1	75	ND@1	ND@3	75	17	ND@20	ND@10	**150**	NA
	6/6/13	ND@1	2.1	ND@1	ND@3	2.1	17	ND@20	ND@10	ND@100	NA

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-9	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	**1,800**	490	75	**1,600**	NA
	5/6/10	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	330	52	**1,300**	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	**990**	290	33	**910**	NA
	7/31/10	ND@1	ND@1	ND@1	ND@3	ND	**1,600**	480	71	**2,100**	NA
	8/16/10	ND@1	ND@1	ND@1	ND@3	ND	**1,300**	350	49	**1,600**	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	**990**	340	34	**1,100**	NA
	10/26/10	ND@1	ND@1	ND@1	ND@3	ND	**1,300**	500	52	**1,400**	NA
	11/23/10	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	360	50	**1,300**	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	**1,400**	470	48	**1,400**	NA
	2/28/11	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	190	57	**1,300**	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**1,100**	340	42	**850**	NA
	4/26/11	ND@1	ND@1	ND@1	ND@3	ND	**1,300**	320	59	**1,800**	NA
	5/25/11	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	150	53	**1,500**	NA
	6/29/11	ND@1	ND@1	ND@1	ND@3	ND	**1,600**	200	68	**1,700**	NA
	9/22/11	ND@1	ND@1	ND@1	ND@3	ND	**2,200**	690	ND@100	**1,300**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**2,000**	560	95	**1,500**	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**1,800**	790	81	**2,300**	NA
	6/5/12	1.3	ND@1	ND@1	ND@3	ND	**3,900**	1,600	160	**3,800**	NA
	9/12/12	1.1	ND@1	ND@1	ND@3	1.1	**2,500**	1,200	130	**2,700**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**1,600**	840	90	**1,900**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**2,500**	1,100	97	**2,000**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**2,000**	920	83	**2,100**	NA
MW-10	3/10/10	6	ND@1	ND@1	11	17	**17,000**	5,400	810	**18,000**	NA
	5/6/10	3	ND@1	1	4	8	**8,300**	2,800	350	**10,000**	NA
	6/7/10	1	ND@1	ND@1	1	2	**4,700**	1,700	350	**5,200**	NA
	7/31/10	1	ND@1	ND@1	2	3	**6,600**	4,200	330	**8,500**	NA
	8/16/10	2	ND@1	ND@1	2	4	**6,600**	3,600	330	**9,200**	NA
	9/20/10	1	ND@1	ND@1	1	2	**5,600**	5,700	250	**6,900**	NA
	10/26/10	1	ND@1	ND@1	1	2	**6,100**	6,600	280	**7,100**	NA
	11/23/10	2	ND@1	ND@1	3	5	**7,700**	4,800	410	**9,400**	NA
	12/20/10	2	ND@1	ND@1	4	6	**11,000**	9,600	470	**12,000**	NA
	2/28/11	ND@1	ND@1	ND@1	ND@3	ND	**8,300**	5,200	530	**11,000**	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**5,700**	4,600	240	**5,900**	NA
	4/26/11	2	ND@1	ND@1	3	5	**5,600**	6,000	290	**8,000**	NA
	5/25/11	2	ND@1	ND@1	3	5	**5,800**	6,000	270	**7,500**	NA
	6/29/11	ND@5	ND@5	ND@5	ND@15	ND	**4,100**	4,400	180	**4,800**	NA
	9/22/11	ND@20	ND@20	ND@20	ND@60	ND	**2,700**	1,700	180	**1,800**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**2,700**	2,900	120	**1,900**	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**1,100**	1,100	51	**1,500**	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	**1,000**	920	34	**1,100**	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	**1,000**	1,000	41	**1,100**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**1,000**	1,500	50	**1,100**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**880**	1,300	37	**750**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**520**	810	23	**660**	NA

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Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
MW-11	1/5/11	6	ND@1	ND@1	14	20	**11,000**	14,000	660	**16,000**	NA
	3/22/11	4	ND@1	ND@1	7	11	**8,800**	9,600	440	**10,000**	NA
	4/26/11	2	ND@1	ND@1	3	5	**5,800**	7,200	300	**7,600**	NA
	5/25/11	1	ND@1	ND@1	1	2	**3,900**	3,500	200	**5,200**	NA
	6/29/11	ND@5	ND@5	ND@5	ND@15	ND	**4,000**	4,300	170	**4,400**	NA
	9/22/11	ND@20	ND@20	ND@20	ND@60	ND	**3,300**	2,300	ND@200	**1,900**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**2,200**	2,700	91	**1,500**	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**1,100**	1,300	51	**1,500**	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	**900**	1,100	30	**950**	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	**1,400**	2,400	61	**1,500**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**1,400**	2,800	76	**1,500**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**1,100**	3,700	47	**940**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**590**	1,700	25	**690**	NA
MW-12	1/5/11	ND@1	ND@1	ND@1	ND@3	ND	**560**	56	20	**670**	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**420**	84	13	**340**	NA
	4/26/11	ND@1	ND@1	ND@1	ND@3	ND	**530**	94	18	**700**	NA
	5/25/11	ND@1	ND@1	ND@1	ND@3	ND	**520**	390	17	**660**	NA
	6/29/11	ND@5	ND@5	ND@5	ND@15	ND	**540**	110	ND@50	**610**	NA
	9/22/11	ND@5	ND@5	ND@5	ND@15	ND	**380**	ND@100	ND@50	**270**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**490**	88	14	**400**	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**380**	120	12	**490**	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	**240**	46	ND@10	**300**	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	**220**	61	ND@10	**240**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**160**	32	ND@10	**170**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**160**	72	ND@10	**130**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**140**	ND@20	ND@10	**150**	NA
MW-13	1/5/11	ND@1	ND@1	ND@1	ND@3	ND	**590**	70	25	**660**	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**510**	96	19	**410**	NA
	4/26/11	ND@1	ND@1	ND@1	ND@3	ND	**560**	99	24	**730**	NA
	5/25/11	ND@1	ND@1	ND@1	ND@3	ND	**700**	42	28	**880**	NA
	6/29/11	ND@5	ND@5	ND@5	ND@15	ND	**770**	ND@100	ND@50	**750**	NA
	9/22/11	ND@5	ND@5	ND@5	ND@15	ND	**850**	170	ND@50	**530**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**1,100**	92	47	**840**	NA
	3/1/12	ND@1	ND@1	ND@1	ND@3	ND	**1,600**	210	82	**2,000**	NA
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	**1,200**	130	53	**1,400**	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	**1,000**	150	44	**1,100**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**770**	450	40	**900**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**1,000**	180	50	**940**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**860**	290	39	**1,000**	NA
HW-1	3/16/06	100	880	ND@5	1,690	2,670	**3,700**	1,800	ND@130	**41,000**	**3.6**
	6/30/06	**8**	E 380	170	E 790	178	**62**	56	ND@25	**2,700**	LF/DF 2
	9/12/06	*Not Sampled, Well Dry									
	12/7/06	*Not Sampled, Well Dry									
	3/28/07	*Not Sampled, Well Dry									
	6/13/07	*Not Sampled, Well Dry									
	9/25/07	*Not Sampled, Well Dry									
	12/14/07	*Not Sampled, Well Dry									
	3/14/08	*Not Sampled, Well Dry									
	6/18/08	*Not Sampled, Well Dry									
	9/3/08	*Not Sampled, Well Dry									
	12/23/08	*Not Sampled; well destroyed during 10/08 UST excavation activities									

Table 3
Monitoring Well Groundwater Analytical Results
7-Eleven Store No. 22281
Fallston, Maryland

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	BTEX (µg/L)	MTBE (µg/L)	TBA (µg/L)	TAME (µg/L)	TPH-GRO (µg/L)	TPH-DRO (mg/L)
HW-2	3/16/06	*Not Sampled, Well Dry									
	6/30/06	*Not Sampled, Well Dry									
	9/12/06	*Not Sampled, Well Dry									
	12/7/06	*Not Sampled, Well Dry									
	3/28/07	*Not Sampled, Well Dry									
	6/13/07	*Not Sampled, Well Dry									
	9/25/07	*Not Sampled, Well Dry									
	12/14/07	*Not Sampled, Well Dry									
	3/14/08	*Not Sampled, Well Dry									
	6/18/08	*Not Sampled, Well Dry									
	9/3/08	*Not Sampled, Well Dry									
	12/23/08	*Not Sampled, Well Dry									
	3/24/09	*Not Sampled, Well Dry									
	6/8/09	*Not Sampled, Well Dry									
	9/27/09	*Not Sampled, Well Dry									
	12/23/09	*Not Sampled, Well Dry									
	3/10/10	*Not Sampled, Well Dry									
	6/7/10	*Not Sampled, Well Dry									
HW-3	1/23/07	2	ND@1	ND@1	ND@3	2	**6,600**	230	250	**510**	ND@0.5
	3/28/07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	6/22/07	4	ND@1	ND@1	3	7	**5,800**	440	380	**900**	ND@0.5
	9/25/07	**6**	ND@1	ND@1	4	10	**E 7,200**	E 730	E 660	**1,600**	ND@0.5
	12/14/07	4	ND@1	ND@1	2	6	**E 6,300**	E 470	E600	**1,100**	ND@0.5
	3/14/08	ND@50	ND@50	ND@50	ND@350	ND	**7,100**	ND@500	ND@500	**9,000**	ND@0.5
	6/18/08	ND@50	ND@50	ND@50	ND@350	ND	**7,700**	ND@1000	ND@500	**1,500**	ND@0.5
	9/3/08	5	ND@1	ND@1	3	8	**6,500**	E 750	E 750	**3,100**	ND@0.5
	12/27/08	ND@10	ND@10	ND@10	ND@30	ND	**7,600**	530	590	**2,700**	ND@0.5
	3/24/09	2	ND@1	ND@1	1	3	**9,000**	790	660	**1,500**	NA
	6/8/09	2	ND@1	ND@1	ND@3	2	**7,000**	490	600	**2,500**	NA
	9/27/09	1	ND@1	ND@1	ND@3	1	**6,600**	380	510	**10,000**	NA
	12/23/09	ND@1	ND@1	ND@1	ND@3	ND	**3,800**	230	310	**4,700**	NA
	3/10/10	ND@1	ND@1	ND@1	ND@3	ND	**3,400**	880	240	**4,300**	NA
	5/6/10	ND@1	ND@1	ND@1	ND@3	ND	**3,000**	900	230	**4,000**	NA
	6/7/10	ND@1	ND@1	ND@1	ND@3	ND	**1,400**	370	110	**1,400**	NA
	7/31/10	ND@1	ND@1	ND@1	ND@3	ND	**4,900**	580	420	**7,000**	NA
	8/16/10	1	ND@1	ND@1	ND@3	ND	**5,900**	740	490	**8,600**	NA
	9/20/10	ND@1	ND@1	ND@1	ND@3	ND	**490**	54	34	**590**	NA
	10/26/10	ND@1	ND@1	ND@1	ND@3	ND	**3,900**	580	330	**4,500**	NA
	11/23/10	ND@1	ND@1	ND@1	ND@3	ND	**4,400**	760	350	**5,200**	NA
	12/20/10	ND@1	ND@1	ND@1	ND@3	ND	**6,500**	1,200	440	**7,400**	NA
	2/28/11	ND@1	ND@1	ND@1	ND@3	ND	**4,600**	930	410	**5,900**	NA
	3/22/11	ND@1	ND@1	ND@1	ND@3	ND	**4,500**	1,400	290	**4,200**	NA
	6/29/11	ND@5	ND@5	ND@5	ND@15	ND	**5,600**	1,000	330	**7,300**	NA
	9/22/11	ND@20	ND@20	ND@20	ND@60	ND	**3,200**	940	ND@200	**2,700**	NA
	12/8/11	ND@1	ND@1	ND@1	ND@3	ND	**3,100**	1,100	170	**2,800**	NA
	3/1/12	Inadvertently Not Sampled*									
	6/5/12	ND@1	ND@1	ND@1	ND@3	ND	**3,600**	1,200	210	**3,900**	NA
	9/12/12	ND@1	ND@1	ND@1	ND@3	ND	**3,600**	1,800	160	**3,600**	NA
	12/6/12	ND@1	ND@1	ND@1	ND@3	ND	**940**	460	49	**960**	NA
	3/11/13	ND@1	ND@1	ND@1	ND@3	ND	**500**	190	24	**510**	NA
	6/6/13	ND@1	ND@1	ND@1	ND@3	ND	**1100**	450	52	**1,200**	NA
MDE CLEANUP STD		**5**	**1,000**	**700**	**10,000**	**--**	**20**	--	--	**47**	**0.047**

BTEX - Total Benzene, Toluene, Ethylbenzene and Xylenes
MTBE - methyl tert-butyl ether
µg/L - micrograms-per-liter
mg/L - milligrams-per-liter
* Well not sampled due to insufficient amount of water
ND@x - not detected above laboratory detection level of x
ND - not detected
NA - not analyzed
E - estimated value, exceeds calibration range of laboratory equipment
LF - lighter fuel/oil pattern observed in sample

ATTACHMENT A

Laboratory Analytical Reports (Nutrients)

Analytical Report for

AECOM

Certificate of Analysis No.: 13021411

Project Manager: John Canzeri
Project Name : 7-11 Store 22281
Project Location: Fallston, MD
Project ID : 60144763

February 22, 2013

Phase Separation Science, Inc.
6630 Baltimore National Pike
Baltimore, MD 21228
Phone: (410) 747-8770
Fax: (410) 788-8723

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

February 22, 2013

John Canzeri
AECOM
8320 Guilford Road, Ste. L
Columbia, MD 21046

Reference: PSS Work Order(s) No: **13021411**
Project Name: 7-11 Store 22281
Project Location: Fallston, MD
Project ID.: 60144763

Dear John Canzeri :

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Work Order(s) numbered **13021411**.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on March 21, 2013. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt , the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Cathy Thompson
QA Officer

Sample Summary

Client Name: AECOM

Project Name: 7-11 Store 22281

Work Order Number(s): 13021411

Project ID: 60144763

The following samples were received under chain of custody by Phase Separation Science (PSS) on 02/14/2013 at 04:55 pm

Lab Sample Id	Sample Id	Matrix	Date/Time Collected
13021411-001	MW6	GROUND WATER	02/14/13 14:40
13021411-002	MW9	GROUND WATER	02/14/13 13:45
13021411-003	MW11	GROUND WATER	02/14/13 14:15
13021411-004	MW13	GROUND WATER	02/14/13 13:55
13021411-005	HW3	GROUND WATER	02/14/13 14:20

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
2. The following analytical results are never reported on a dry weight basis: pH, flashpoint, moisture and paint filter test.
3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
5. The analyses of chlorine, pH, dissolved oxygen, temperature and sulfite for non-potable water samples tested for compliance for Virginia Pollution Discharge Elimination System (VDPES) permits and Virginia Pollutant Abatement (VPA) permits, have a maximum holding time of 15 minutes established by 40CFR136.3.

Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- J The target analyte was positively identified below the reporting limit but greater than the LOD.
- LOD Limit of Detection. An estimate of the minimum amount of a substance that an analytical process can reliably detect**.** An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

Case Narrative Summary

Client Name: AECOM

Project Name: 7-11 Store 22281

Work Order Number(s): 13021411
Project ID: 60144763

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

Sample Receipt:

All sample receipt conditions were acceptable.

Analyses associated with analyst code 4005 were performed by Enviro-Chem Laboratories, Inc.

Analytical:

Nitrate, Nitrite

Batch: 104168
Samples -001 and -005 required dilution for nitrate. Analysis of the dilutions was performed past the recommended holding time.

Batch: 104179
Samples -002 and -004 required dilution for nitrate. Analysis of the dilutions was performed past the recommended holding time.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.
EPA 365.3

OFFICES:
6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13021411
AECOM, Columbia, MD
February 22, 2013

Project Name: 7-11 Store 22281
Project Location: Fallston, MD
Project ID: 60144763

Sample ID: MW6 **Date/Time Sampled: 02/14/2013 14:40** **PSS Sample ID: 13021411-001**
Matrix: GROUND WATER **Date/Time Received: 02/14/2013 16:55**

Nitrate, Nitrite — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrate (as N)	**73**	mg/L	1.0		10	02/15/13	02/21/13 16:30	1044
Nitrite (as N)	**0.21**	mg/L	0.10		1	02/15/13	02/15/13 17:06	1044

Orthophoshate — Analytical Method: EPA 365.3

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Orthophosphate (as PO4)	ND	mg/L	0.15		02/15/13	02/15/13 13:51	4005

Sample ID: MW9 **Date/Time Sampled: 02/14/2013 13:45** **PSS Sample ID: 13021411-002**
Matrix: GROUND WATER **Date/Time Received: 02/14/2013 16:55**

Nitrate, Nitrite — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrate (as N)	**15**	mg/L	0.50		5	02/15/13	02/22/13 11:53	1044
Nitrite (as N)	**0.15**	mg/L	0.10		1	02/15/13	02/15/13 17:33	1044

Orthophoshate — Analytical Method: EPA 365.3

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Orthophosphate (as PO4)	**1.42**	mg/L	0.15		02/15/13	02/15/13 13:51	4005

Sample ID: MW11 **Date/Time Sampled: 02/14/2013 14:15** **PSS Sample ID: 13021411-003**
Matrix: GROUND WATER **Date/Time Received: 02/14/2013 16:55**

Nitrate, Nitrite — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrate (as N)	**7.8**	mg/L	0.10		1	02/15/13	02/15/13 18:01	1044
Nitrite (as N)	**0.17**	mg/L	0.10		1	02/15/13	02/15/13 18:01	1044

Orthophoshate — Analytical Method: EPA 365.3

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Orthophosphate (as PO4)	**0.17**	mg/L	0.15		02/15/13	02/15/13 13:51	4005

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6630 BALTIMORE NATIONAL PIKE
ROUTE 40 WEST
BALTIMORE, MD 21228
410-747-8770
800-932-9047
FAX 410-788-8723

PHASE SEPARATION SCIENCE, INC.

CERTIFICATE OF ANALYSIS

No: 13021411

AECOM, Columbia, MD

February 22, 2013

Project Name: 7-11 Store 22281
Project Location: Fallston, MD
Project ID: 60144763

Sample ID: MW13 **Date/Time Sampled: 02/14/2013 13:55** **PSS Sample ID: 13021411-004**
Matrix: GROUND WATER **Date/Time Received: 02/14/2013 16:55**

Nitrate, Nitrite — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrate (as N)	**28**	mg/L	0.50		5	02/15/13	02/22/13 12:21	1044
Nitrite (as N)	**0.19**	mg/L	0.10		1	02/15/13	02/15/13 18:28	1044

Orthophoshate — Analytical Method: EPA 365.3

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Orthophosphate (as PO4)	**2.44**	mg/L	0.15		02/15/13	02/15/13 13:51	4005

Sample ID: HW3 **Date/Time Sampled: 02/14/2013 14:20** **PSS Sample ID: 13021411-005**
Matrix: GROUND WATER **Date/Time Received: 02/14/2013 16:55**

Nitrate, Nitrite — Analytical Method: EPA 300.0 — Preparation Method: E300.0P

	Result	Units	RL	Flag	Dil	Prepared	Analyzed	Analyst
Nitrate (as N)	**850**	mg/L	50		500	02/15/13	02/21/13 16:02	1044
Nitrite (as N)	**3.3**	mg/L	0.10		1	02/15/13	02/15/13 18:55	1044

Orthophoshate — Analytical Method: EPA 365.3

	Result	Units	RL	Flag	Prepared	Analyzed	Analyst
Orthophosphate (as PO4)	**745**	mg/L	76.6		02/15/13	02/15/13 13:51	4005

SAMPLE CHAIN OF CUSTODY/AGREEMENT FORM

PHASE SEPARATION SCIENCE, INC.

www.phaseonline.com
email: info@phaseonline.com

(1) *CLIENT: AECOM *OFFICE LOC. Columbia, MD
*PROJECT MGR: J. Canzeri *PHONE NO.: (249 5656516
EMAIL: John.Canzeri@aecom FAX NO.: ( )
*PROJECT NAME: 7-11 Store 22281 PROJECT NO. 60144763
SITE LOCATION: Fallston, MD P.O. NO.:
SAMPLER(S): Mike Parsons DW CERT NO.:

PSS Work Order #: 1302141 1 PAGE 1 OF 1

Matrix Codes: SW=Surface Wtr DW=Drinking Wtr GW=Ground Wtr WW=Waste Wtr O=Oil S=Soil L=Liquid SOL=Solid A=Air WI=Wipe

(2)

LAB NO.	*SAMPLE IDENTIFICATION	*DATE (SAMPLED)	*TIME (SAMPLED)	MATRIX (See Codes)	No. CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used	Analysis/ Method Required (3) * Phosphorus 365.1	Inorganic Anion 300.0	REMARKS
1	MW6	2/14/13	1440	GW	2	G		✓	✓	365.1 = o-PO4 (as PO4)
2	MW9		1345		2			✓	✓	300.0 = NO3, NO2
3	MW11		1415		2			✓	✓	
4	MW13		1355		2			✓	✓	
5	HW3		1420		2			✓	✓	

(5)

Relinquished By: (1)	Date	Time	Received By:
	2/14/13	1655	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

*Requested TAT (One TAT per COC)
☑ 5-Day ☐ 3-Day ☐ 2-Day ☐ Next Day ☐ Emergency ☐ Other

Data Deliverables Required: COA QC SUMM CLP LIKE OTHER
☑ ☐ ☐ ☐ _____

# of Coolers: 1
Custody Seal: ABS
Ice Present: YES Temp: 1°C
Shipping Carrier: CLIENT

Special Instructions:

DW COMPLIANCE? YES ☐
EDD FORMAT TYPE: AECOM
STATE RESULTS REPORTED TO: MD ☐ DE ☐ PA ☐ VA ☐ WV ☐ OTHER _____

6630 Baltimore National Pike • Route 40 West • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047 • Fax (410) 788-8723

Phase Separation Science, Inc

Sample Receipt Checklist

Work Order #	13021411	**Received By**	Rachel Davis
Client Name	AECOM	**Date Received**	02/14/2013 04:55:00 PM
Project Name	7-11 Store 22281	**Delivered By**	Client
Project Number	60144763	**Tracking No**	Not Applicable
Disposal Date	03/21/2013	**Logged In By**	Rachel Davis

Shipping Container(s)

No. of Coolers	1	Ice	Present
		Temp (deg C)	1
Custody Seal(s) Intact?	N/A	Temp Blank Present	No
Seal(s) Signed / Dated?	N/A		

Documentation

		Sampler Name	Mike Parsons
		MD DW Cert. No.	N/A
COC agrees with sample labels?	Yes		
Chain of Custody	Yes		

Sample Container

		Custody Seal(s) Intact?	Not Applicable
Appropriate for Specified Analysis?	Yes	Seal(s) Signed / Dated	Not Applicable
Intact?	Yes		
Labeled and Labels Legible?	Yes		

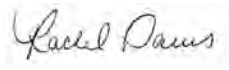
Total No. of Samples Received	5	Total No. of Containers Received	10

Preservation

Metals	(pH<2)	N/A
Cyanides	(pH>12)	N/A
Sulfide	(pH>9)	N/A
TOC, COD, Phenols	(ph<2)	N/A
TOX, TKN, NH3, Total Phos	(pH<2)	N/A
VOC, BTEX (VOA Vials Rcvd Preserved)	(pH<2)	N/A
Do VOA vials have zero headspace?		N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

Samples Inspected/Checklist Completed By:  Date: 02/14/2013

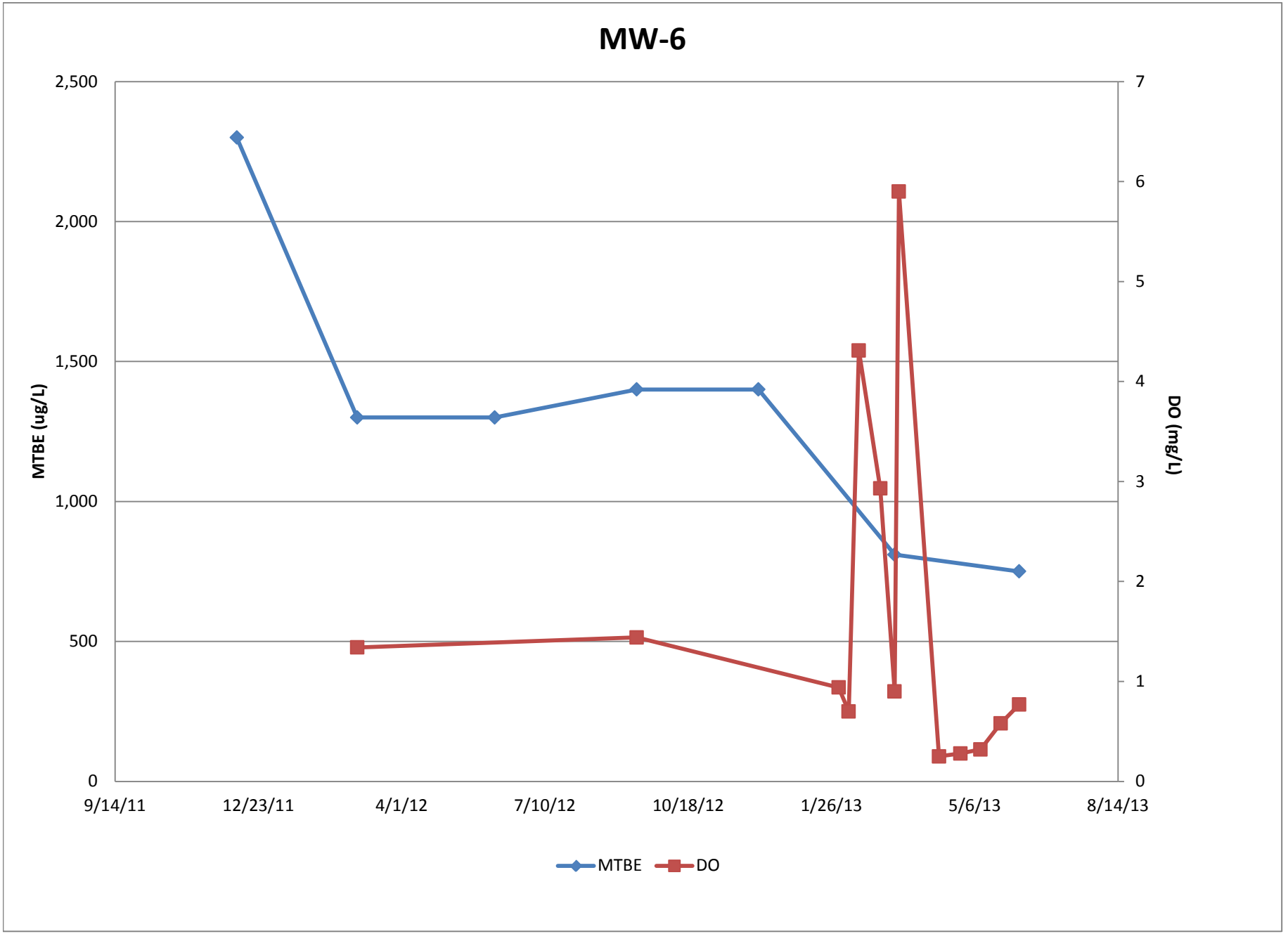
Rachel Davis

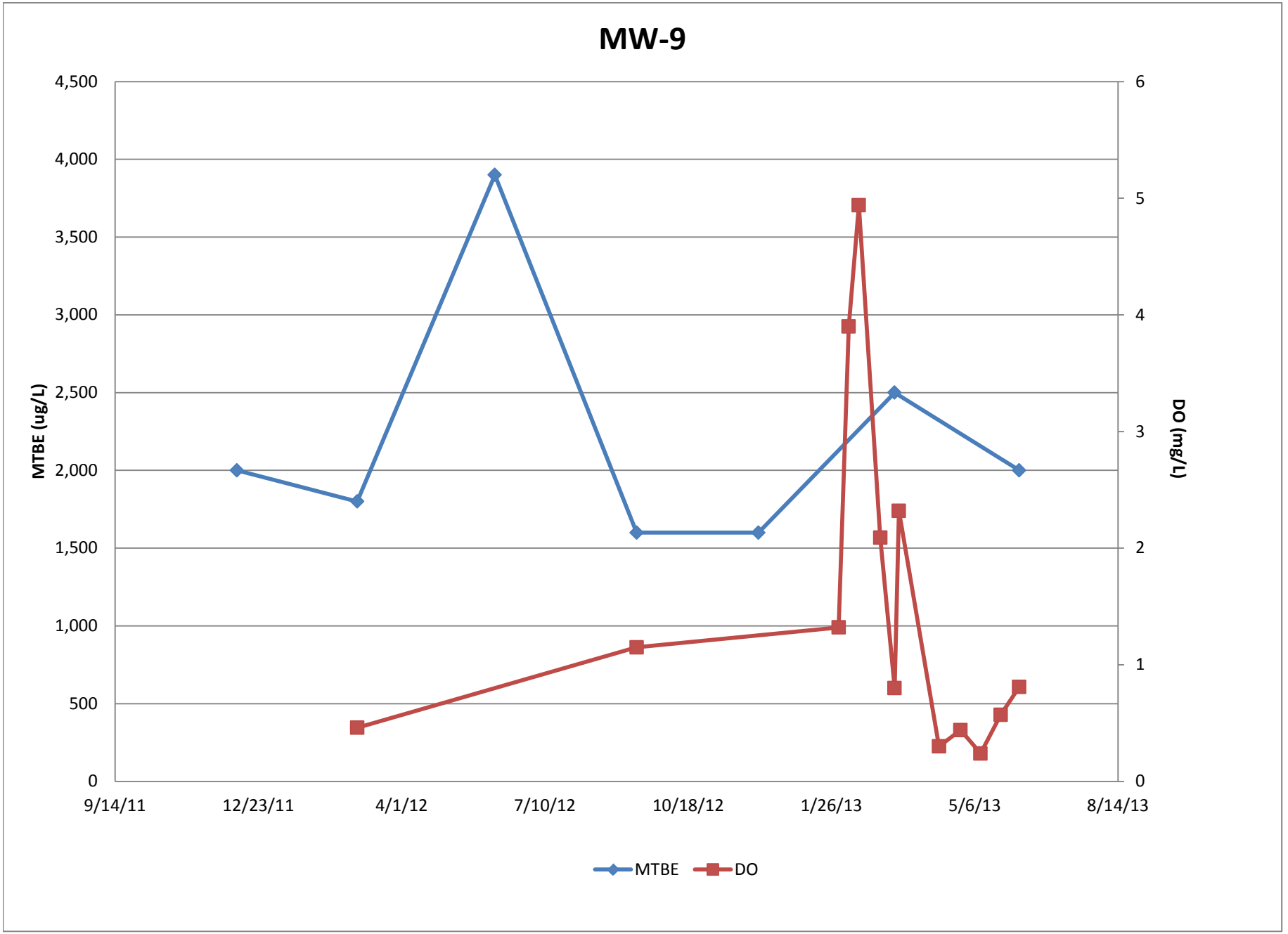
PM Review and Approval:  Date: 02/15/2013

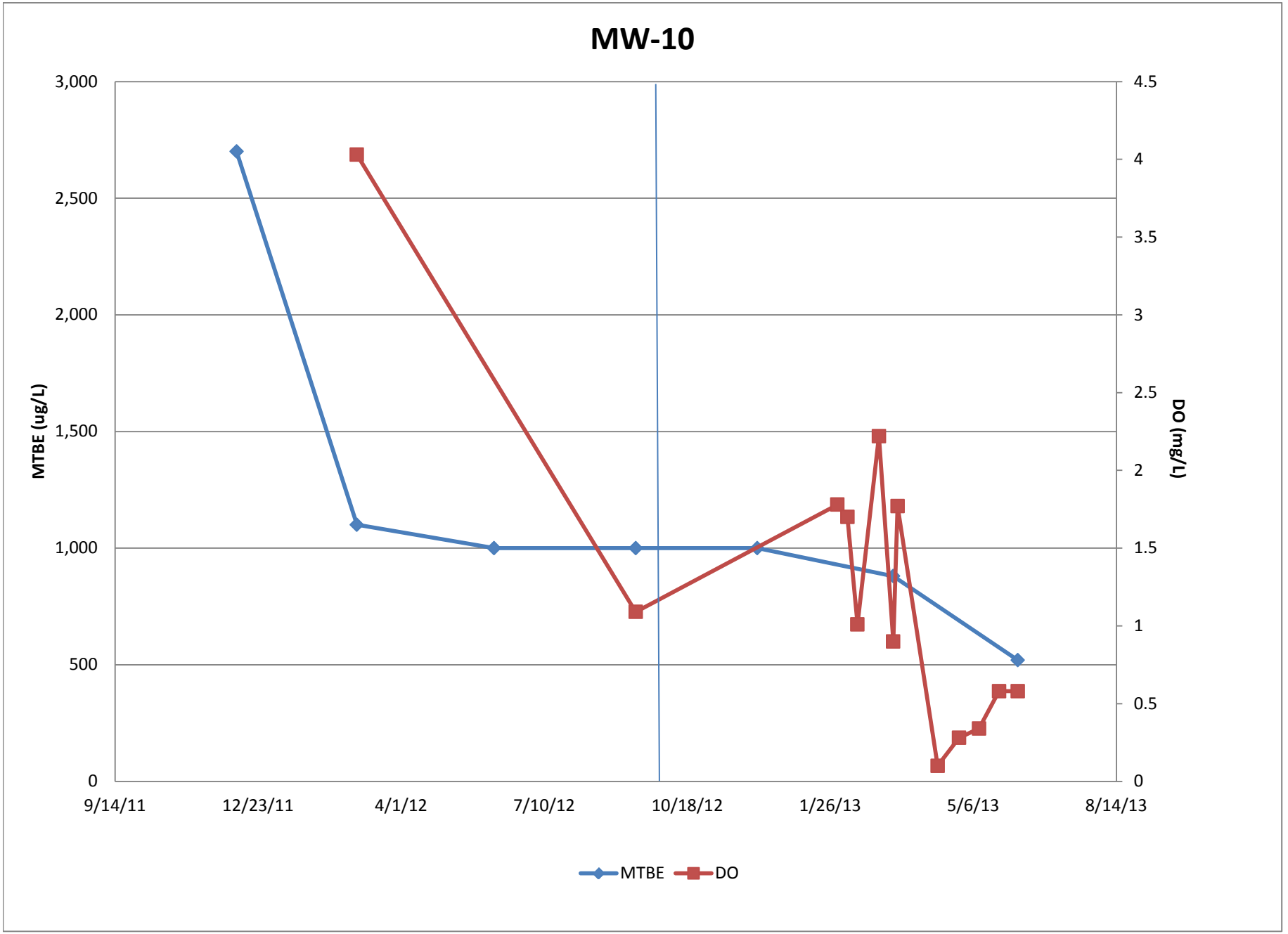
Amy Friedlander

ATTACHMENT B

MTBE Concentration vs. Dissolved Oxygen Graphs


MW-6
2,500
2,000
1,500
1,000
500
0
MTBE (ug/L)
7
6
5
4
3
2
1
0
DO (mg/L)
9/14/11
12/23/11
4/1/12
7/10/12
10/18/12
1/26/13
5/6/13
8/14/13
MTBE
DO


MW-9
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
MTBE (ug/L)
6
5
4
3
2
1
0
DO (mg/L)
9/14/11
12/23/11
4/1/12
7/10/12
10/18/12
1/26/13
5/6/13
8/14/13
MTBE
DO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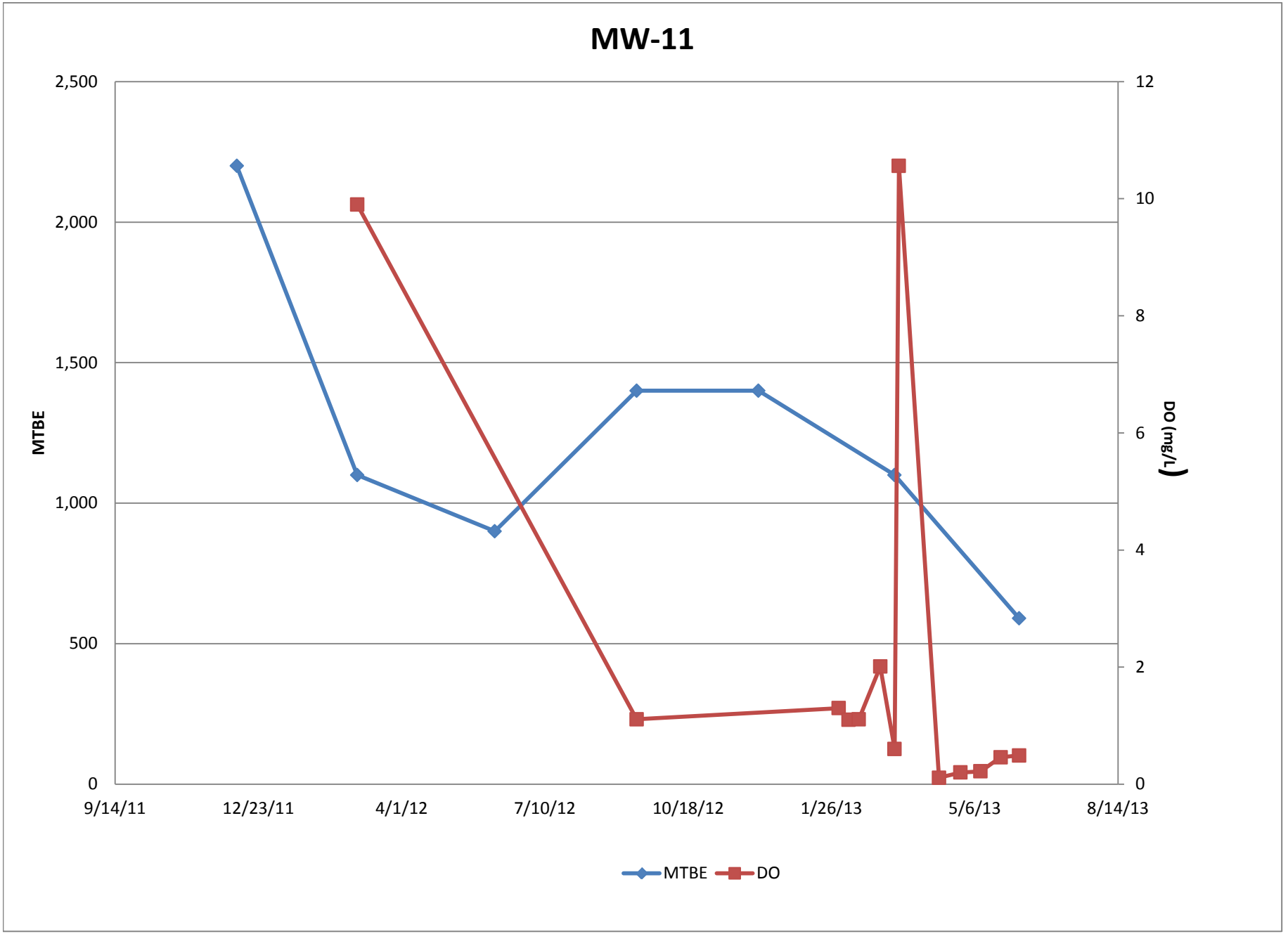
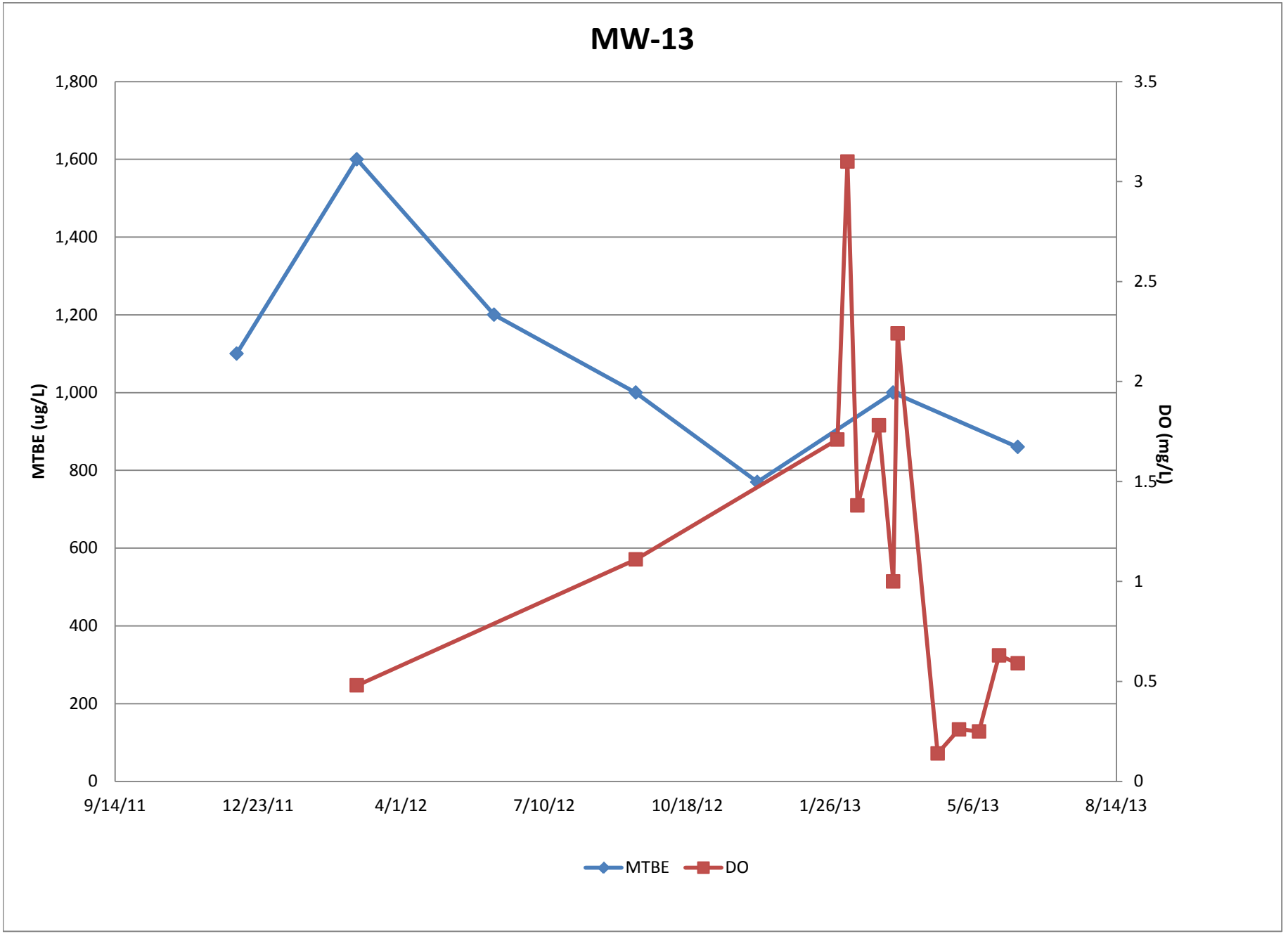
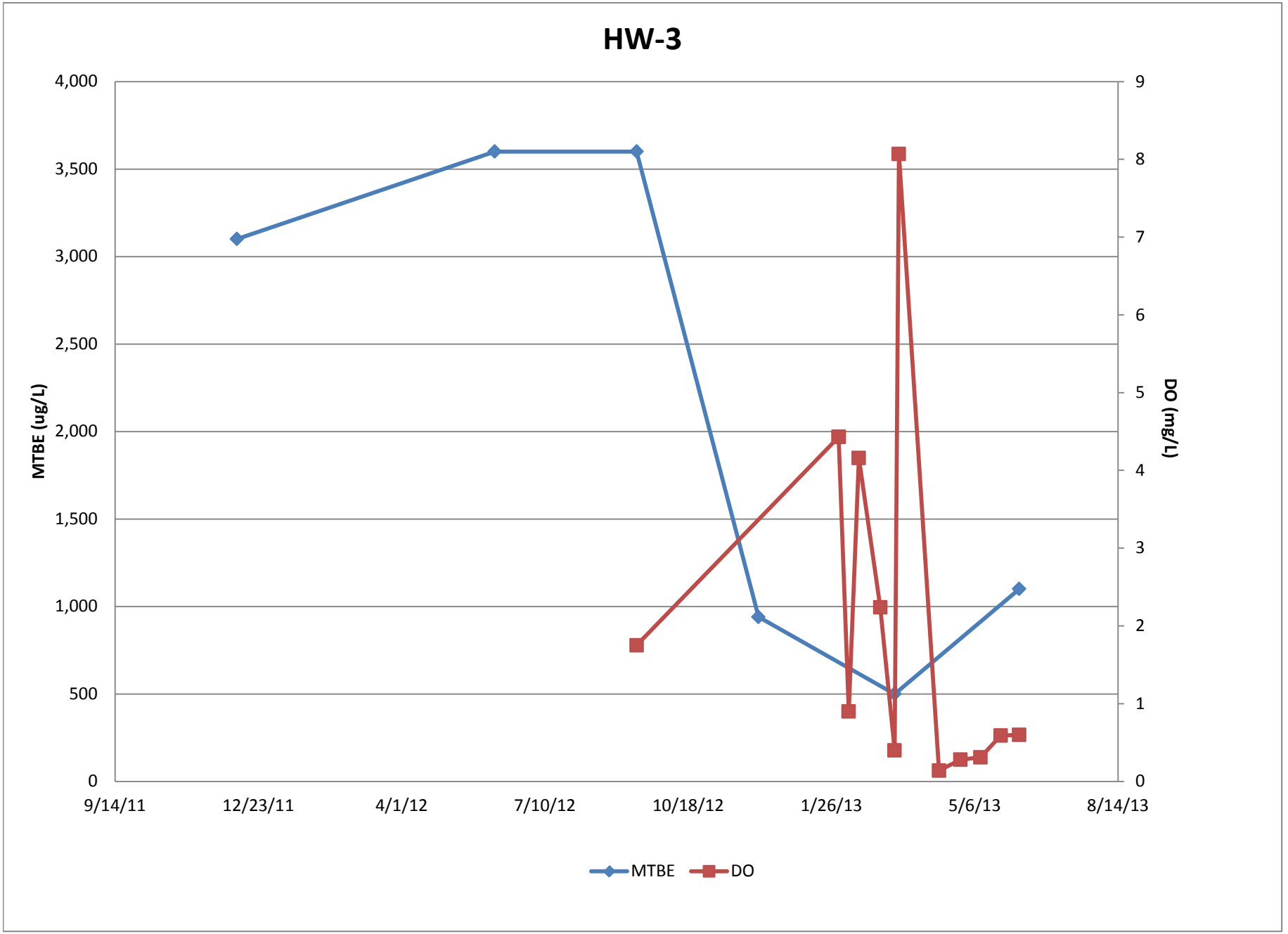
2,500
2,000
1,500
1,000
500
0
MTBE (ug/L)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
DO (mg/L)
9/14/11
12/23/11
4/1/12
7/10/12
10/18/12
1/26/13
5/6/13
8/14/13
MTBE
DO

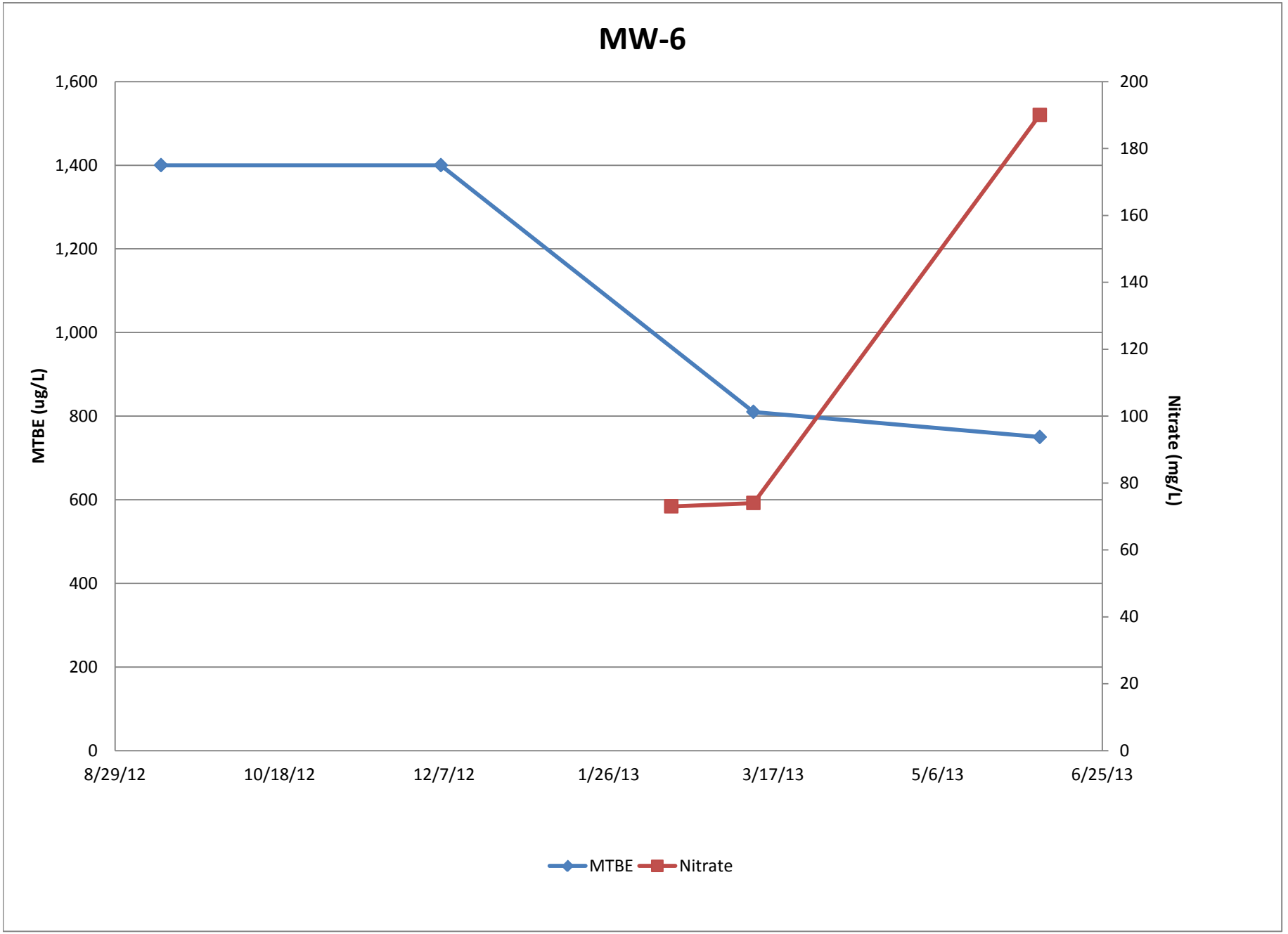

MW-11
2,500
2,000
1,500
1,000
500
0
MTBE
12
10
8
6
4
2
0
DO (mg/L)
9/14/11
12/23/11
4/1/12
7/10/12
10/18/12
1/26/13
5/6/13
8/14/13
MTBE
DO

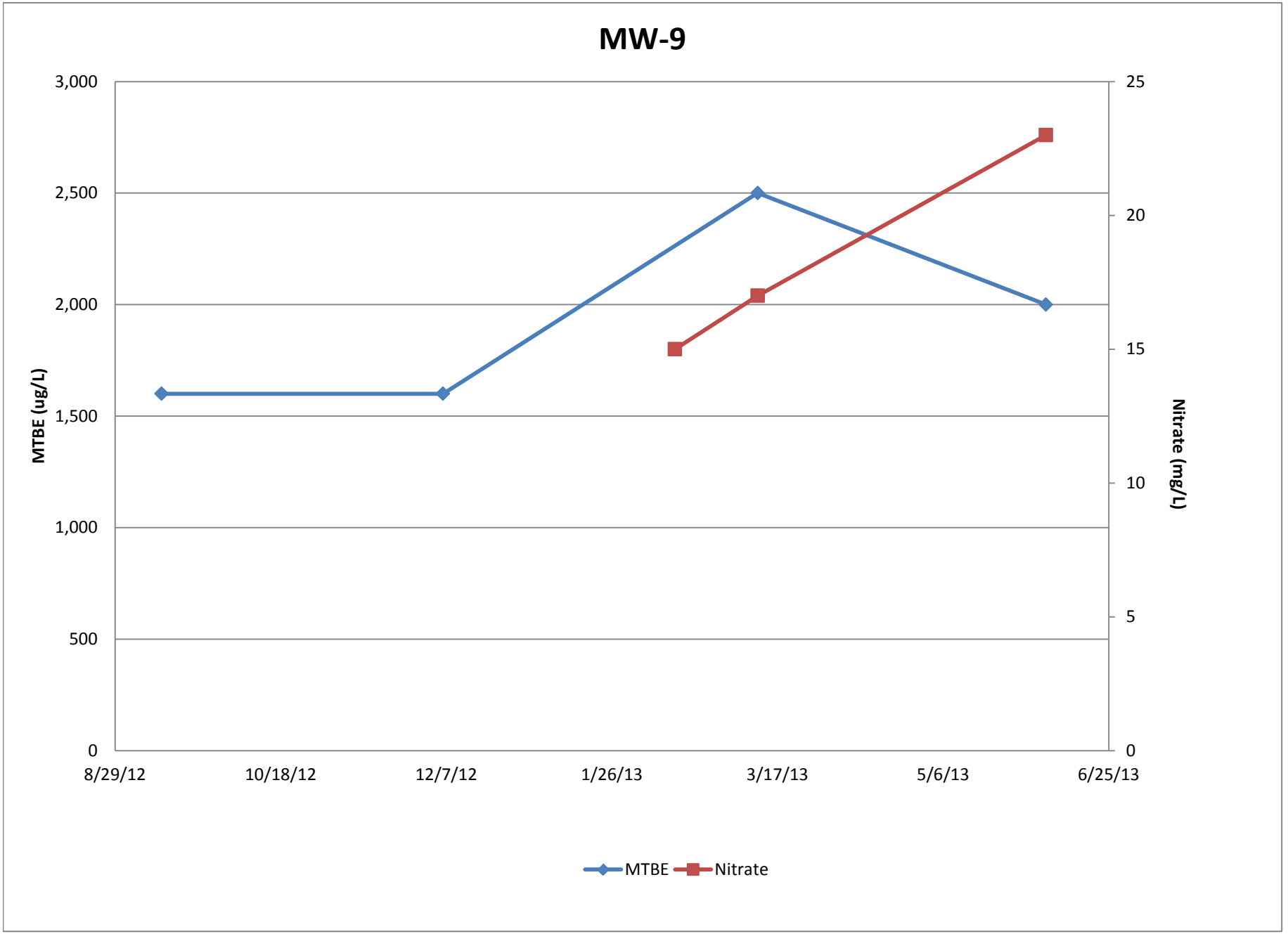

MW-13
MTBE (ug/L)
DO (mg/L)
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
3.5
3
2.5
2
1.5
1
0.5
0
9/14/11
12/23/11
4/1/12
7/10/12
10/18/12
1/26/13
5/6/13
8/14/13
MTBE
DO

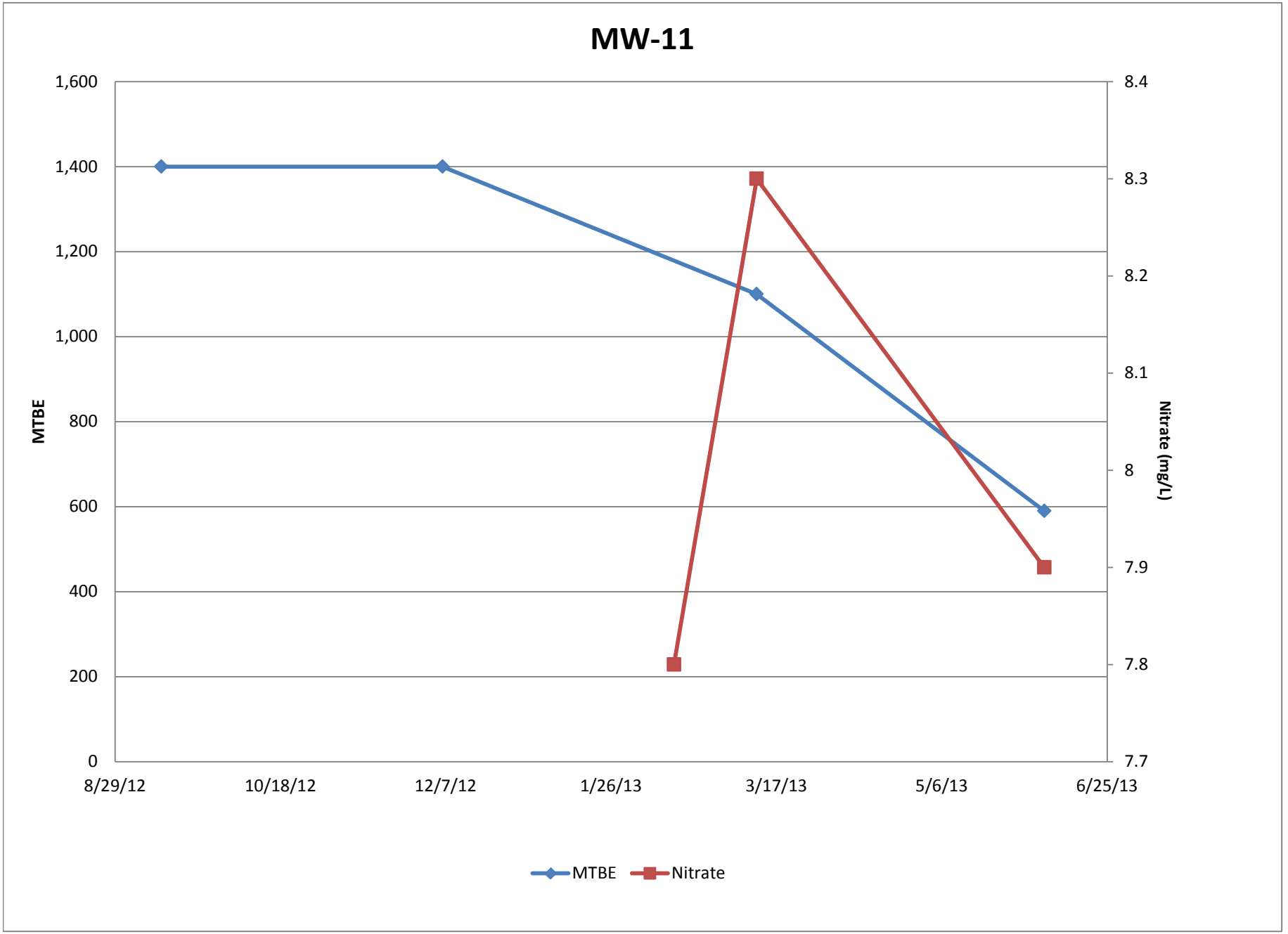

HW-3
MTBE (ug/L)
DO (mg/L)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
9
8
7
6
5
4
3
2
1
0
9/14/11
12/23/11
4/1/12
7/10/12
10/18/12
1/26/13
5/6/13
8/14/13
MTBE
DO

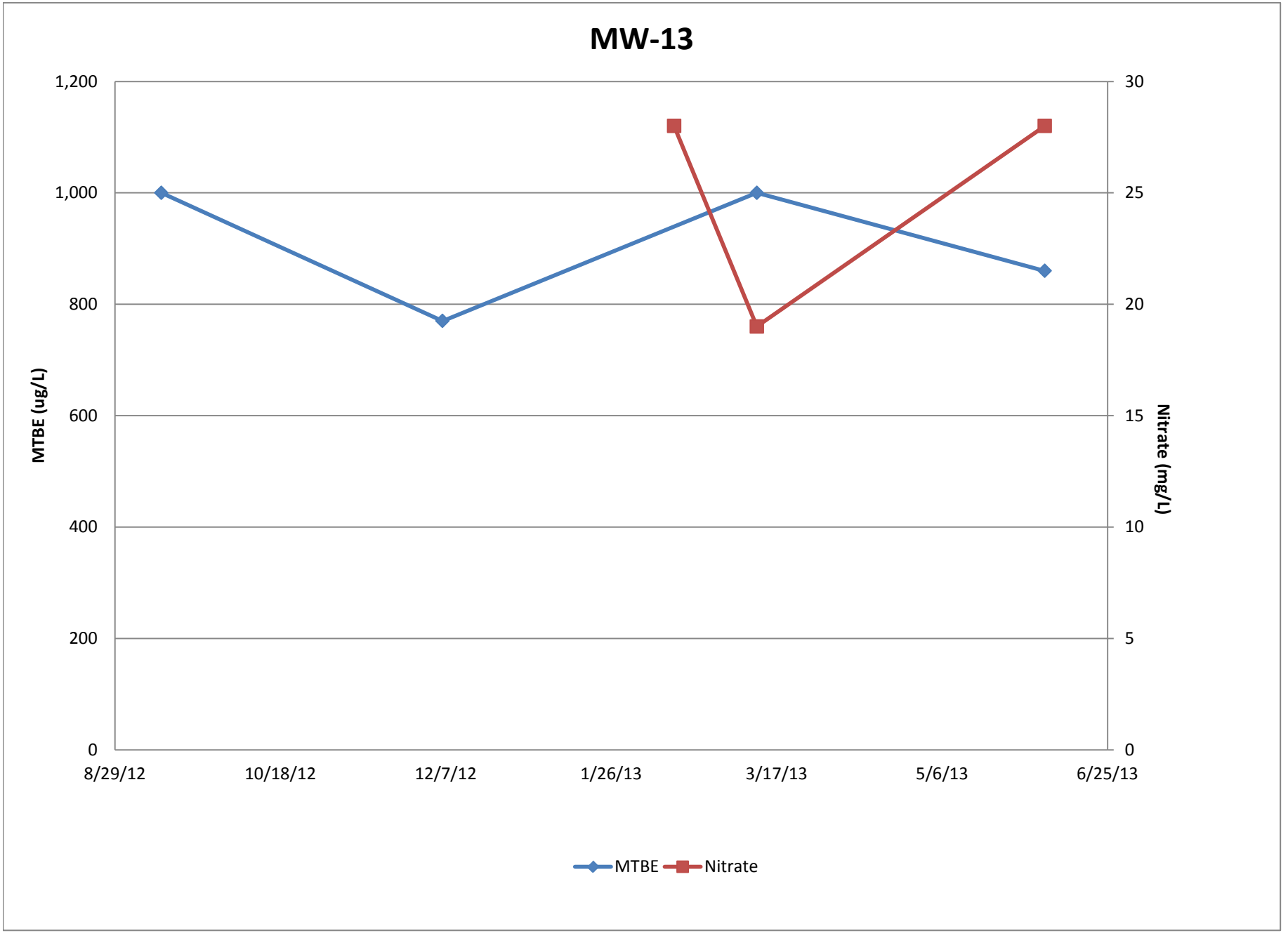
ATTACHMENT C

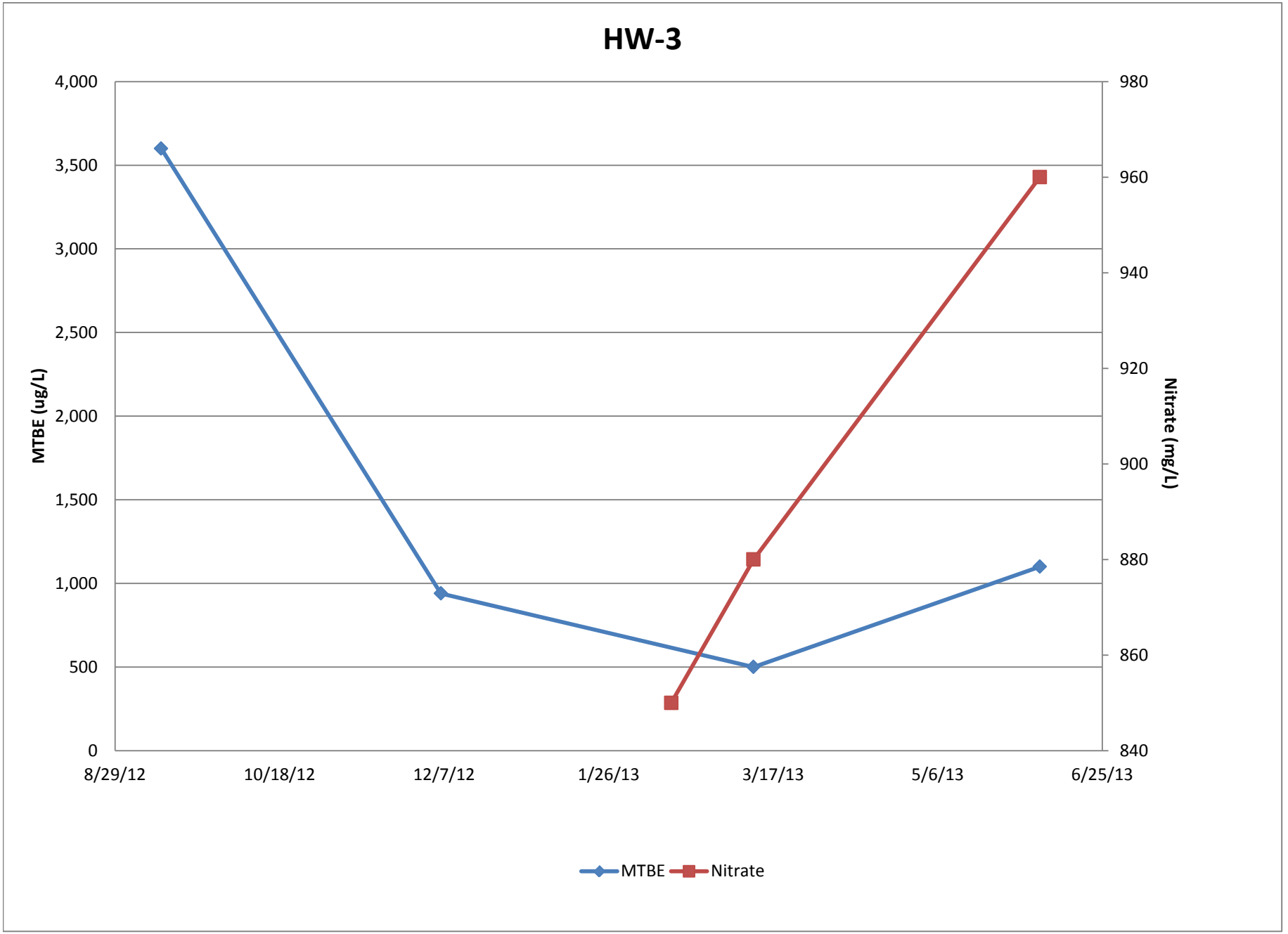
MTBE Concentrations vs. Nitrate Levels Graphs


MW-6
1,600
1,400
1,200
1,000
800
600
400
200
0
MTBE (ug/L)
200
180
160
140
120
100
80
60
40
20
0
Nitrate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Nitrate


MW-9
3,000
2,500
2,000
1,500
1,000
500
0
MTBE (ug/L)
25
20
15
10
5
0
Nitrate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Nitrate

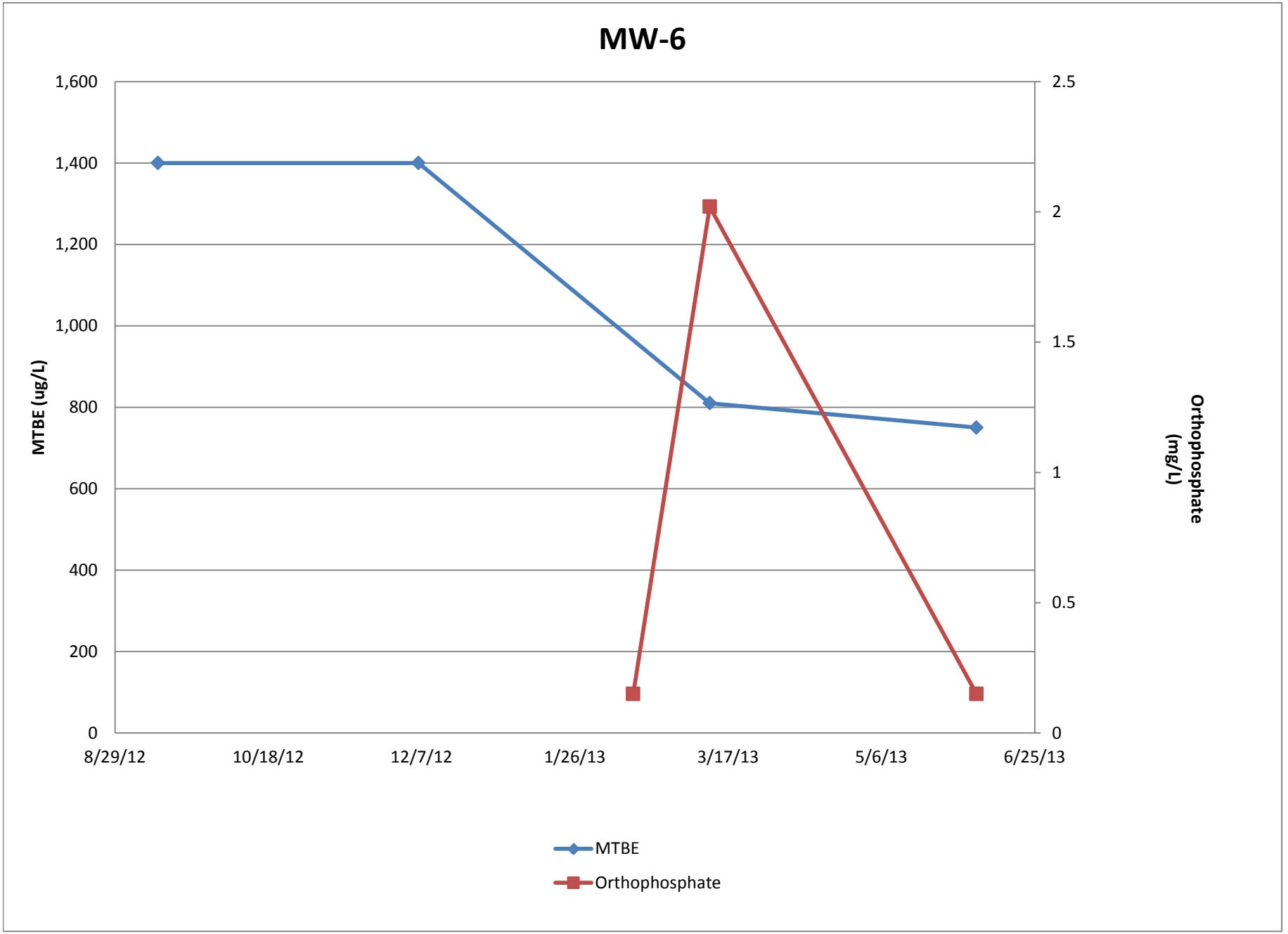

MW-11
1,600
1,400
1,200
1,000
800
600
400
200
0
MTBE
8.4
8.3
8.2
8.1
8
7.9
7.8
7.7
Nitrate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Nitrate

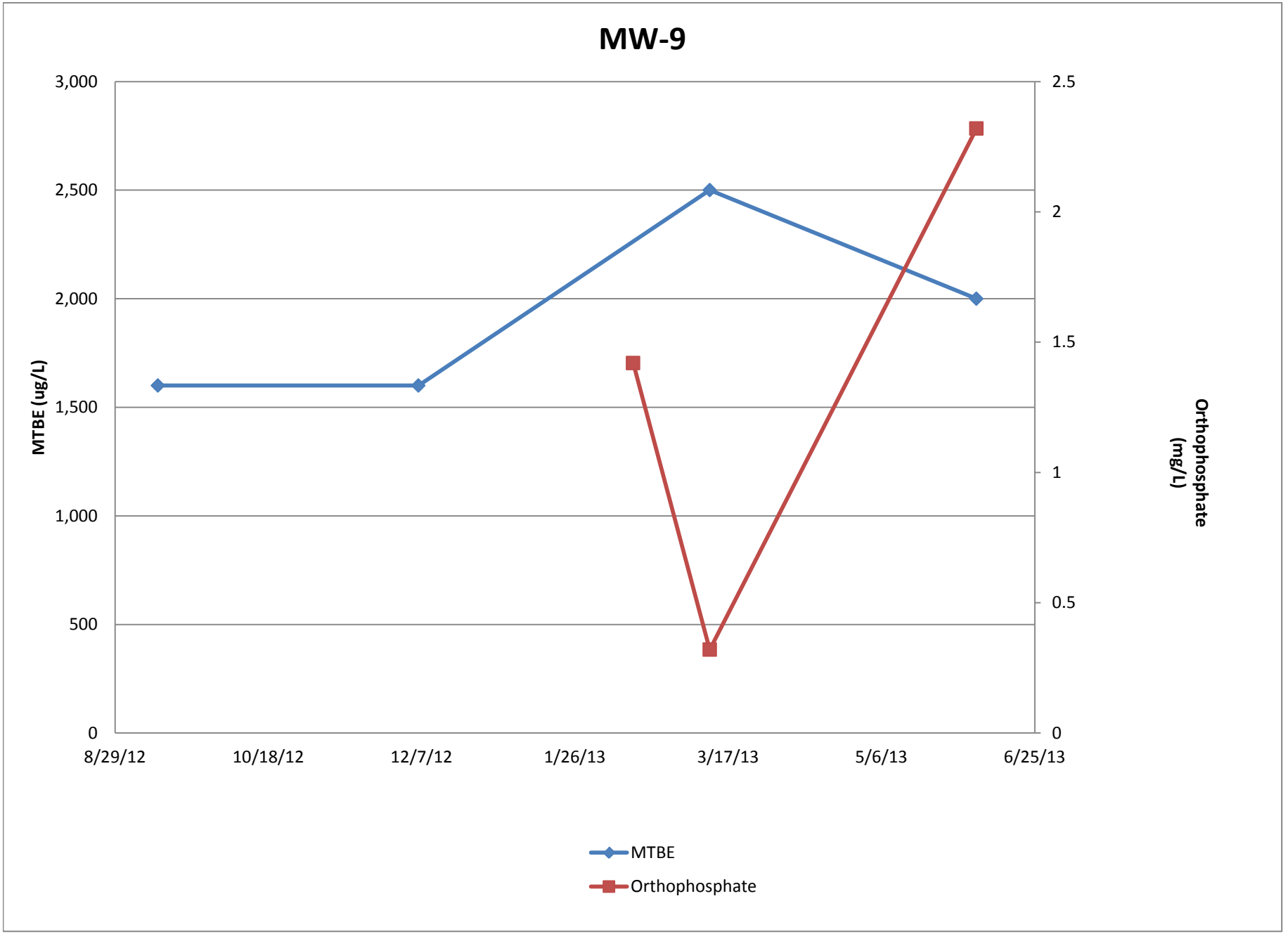

MW-13
1,200
1,000
800
600
400
200
0
MTBE (ug/L)
30
25
20
15
10
5
0
Nitrate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Nitrate

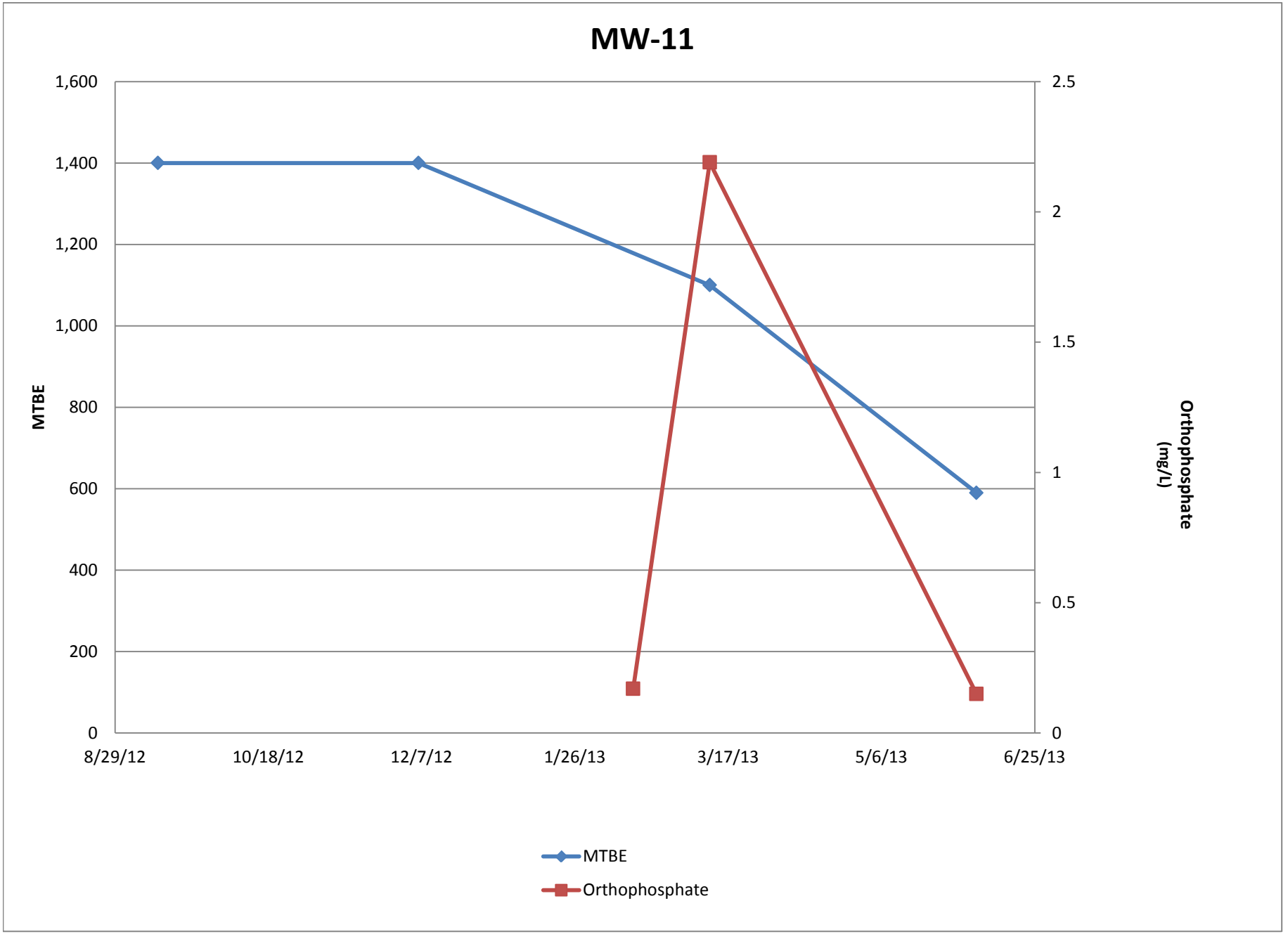

HW-3
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
MTBE (ug/L)
980
960
940
920
900
880
860
840
Nitrate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Nitrate

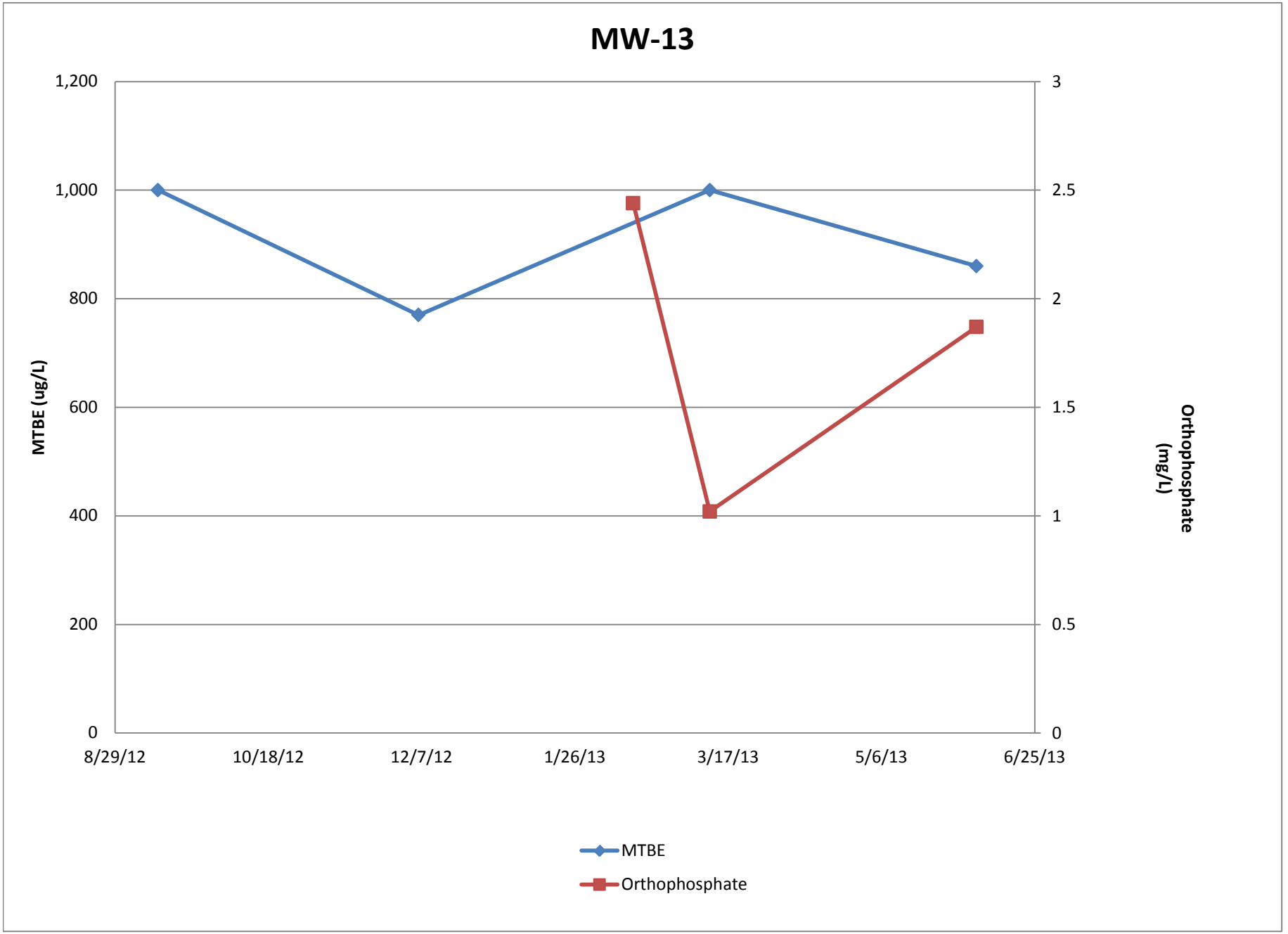
ATTACHMENT D

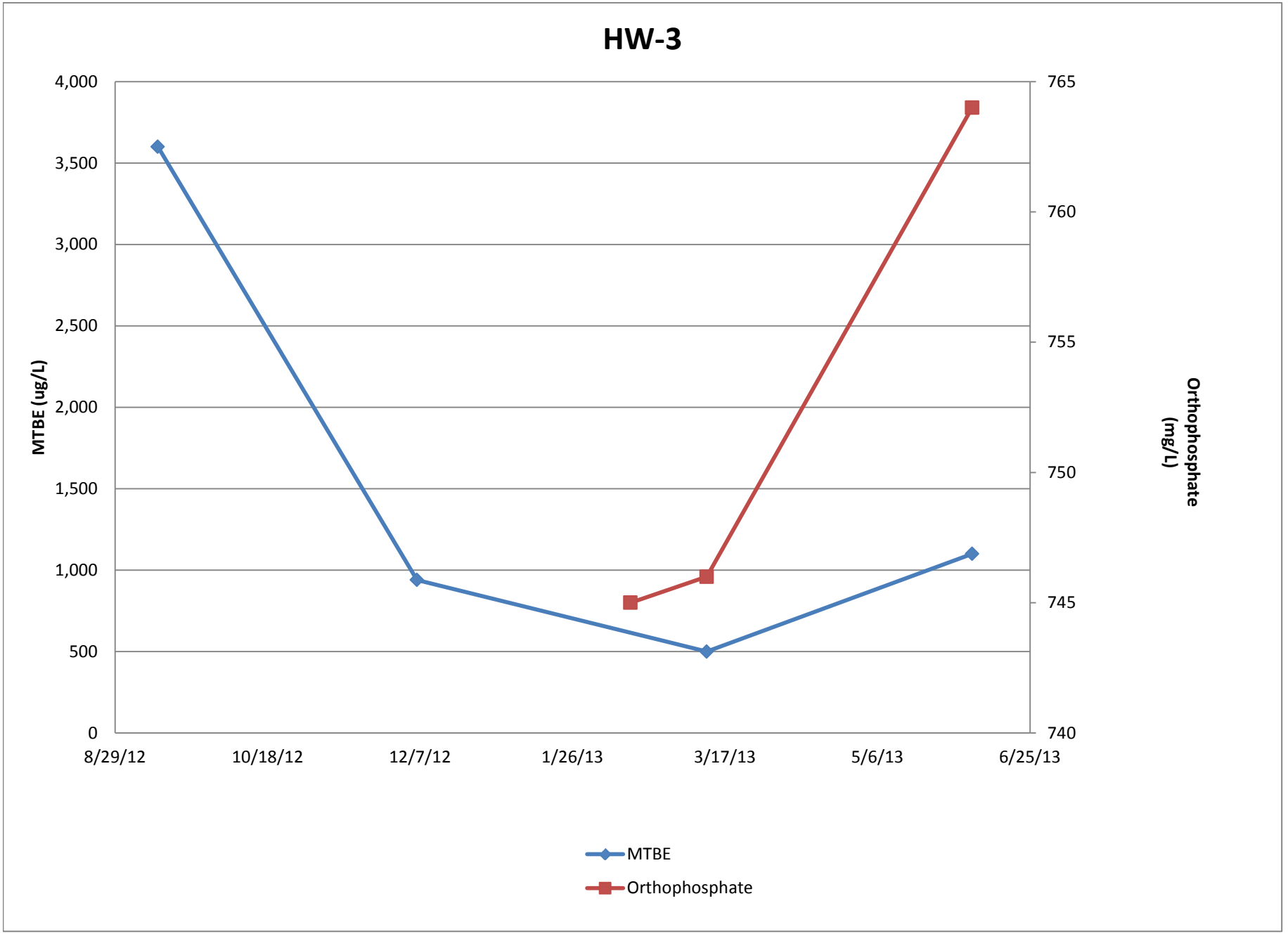
MTBE Concentrations vs. Orthophosphate Levels Graphs


MW-6
1,600
1,400
1,200
1,000
800
600
400
200
0
MTBE (ug/L)
2.5
2
1.5
1
0.5
0
Orthophosphate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Orthophosphate


MW-9
3,000
2,500
2,000
1,500
1,000
500
0
MTBE (ug/L)
2.5
2
1.5
1
0.5
0
Orthophosphate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Orthophosphate


MW-11
1,600
1,400
1,200
1,000
800
600
400
200
0
MTBE
2.5
2
1.5
1
0.5
0
Orthophosphate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Orthophosphate


MW-13
1,200
1,000
800
600
400
200
0
MTBE (ug/L)
3
2.5
2
1.5
1
0.5
0
Orthophosphate (mg/L)
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Orthophosphate


HW-3
MTBE (ug/L)
Orthophosphate (mg/L)
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
765
760
755
750
745
740
8/29/12
10/18/12
12/7/12
1/26/13
3/17/13
5/6/13
6/25/13
MTBE
Orthophosphate

ATTACHMENT E

Regenesis ORC® Brochure

The original controlled-release oxygen compound, since 1994

FIGURE 1: OXYGEN RELEASE COMPOUND (ORC®) POWDER

PRODUCT OVERVIEW

The original Oxygen Release Compound (ORC®) is a fine, powdery material comprised of a patented formulation of phosphate-intercalated magnesium peroxide. The intercalation or embedding of phosphates within the magnesium peroxide is Regenesis' patented, controlled-release mechanism.

Upon hydration, ORC is designed to produce a controlled-release of oxygen (10% by weight) into the subsurface in accordance with the following reaction:

$$MgO_2 + H_2O \rightarrow \tfrac{1}{2} O_2 + Mg(OH)_2$$

This process can proceed for periods of up to one year depending on site conditions. In the presence of this long-lasting oxygen source, aerobic microbes flourish - accelerating the naturally slow rates of aerobic biodegradation.

PRODUCT BENEFITS

By enhancing bioremediation using ORC, *in-situ* treatment of contaminants can result in an efficient, simple and cost-effective alternative to traditional technologies. With low capital costs, no operations and maintenance, minimal site disturbance and proven effectiveness, ORC can restore water quality and property values at a reasonable cost.

PRODUCT APPLICATION

MATERIAL APPLICATION

Most contaminated sites are treated using ORC slurry which is a prescribed and easily injectable water and ORC mixture (Figure 2). The direct - injection of ORC slurry maximizes ORC and oxygen distribution in the subsurface increasing the range of enhanced biodegradation. ORC is dosed in pounds per vertical foot of material treated. The amount of ORC recommended depends greatly on various factors such as contaminant concentrations, oxygen sinks, groundwater flow rates and subsurface geology. It is recommended that a Regenesis Technical Services Representative be contacted for detailed design information.

ORC treatment approaches or designs may consist of one, or combinations of the following: Source Area Grids, Plume Area Grids or Barriers, Excavations and Biopiles.

SUBSURFACE EMPLACEMENT

- Direct – Push Injection
- Hollow Stem Augers
- Existing Wells
- Recirculating Wells
- Replaceable Filter Socks (existing wells)
- Excavations
- Trenches

CRT

DEFINING THE SCIENCE BEHIND CONTROLLED-RELEASE TECHNOLOGY (CRT™)

Early on, Regenesis researchers noted that in order to optimally stimulate the natural attenuation of aerobically degradable contaminants, biologically usable oxygen was best supplied in low but constant concentrations. Big bursts of oxygen are wasteful and simply "bubble off", often generating undesirable foaming and producing unwanted preferential flow paths in the subsurface. Regenesis sought to solve this problem by controlling the rate of oxygen release from solid oxygen sources.

The answer was provided by the development of CRT. The CRT process involves intercalating (embedding) phosphates into the crystal structure of solid peroxygen molecules. This patented feature, now available in the ORC Advanced® formulation, slows the reaction that yields oxygen within the crystal, minimizing "bubble off" which can waste the majority of oxygen available in common solid peroxygen chemicals.

FIGURE 2: ORC SLURRY

CRT provides "balance" – it slows down the rate of oxygen release while at the same time preventing "lock-up". Commodity solid peroxygen chemicals, when in contact with water, will produce an initial rapid and uncontrolled-release of oxygen. Then, as hydroxides form, a significant portion of the oxygen deeper in the crystal is made unavailable or becomes "locked-up." This undesirable effect is inefficient and costly. CRT prevents lock-up and controls the rate of oxygen release, representing the state-of-the-art technology in passive oxygen delivery.

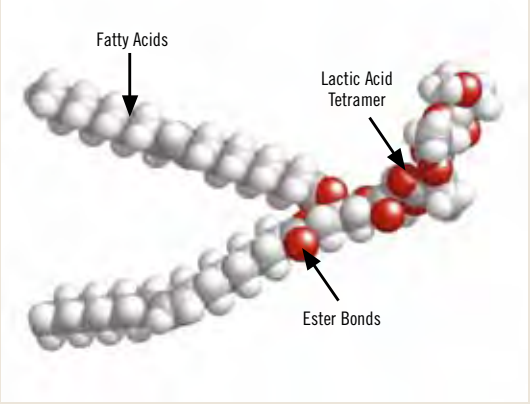
3-D MicroEmulsion®

Achieve wide-area, rapid and sustained reductive dechlorination with continuous distribution and staged hydrogen release

PRODUCT FEATURES

- **Three Stage Electron Donor Release – Immediate, Mid-Range and Long-Term Hydrogen Production**
  - Provides free lactic acid, controlled-release lactic acid and long release fatty acids for effective hydrogen production for periods of up to 3 to 5 years.
- **Maximum and Continuous Distribution via Micellar Transport**
  - Unlike oil products, 3DMe forms micelles which are mobile in groundwater and significantly enhance electron donor distribution after injection.
- **Wide-Area/High Volume Microemulsion Application**
  - High volume application increases contact with contaminants and reduces number of injection points required for treatment – minimizes overall project cost.

FIGURE 1: THE 3-D MICROEMULSION MOLECULAR STRUCTURE



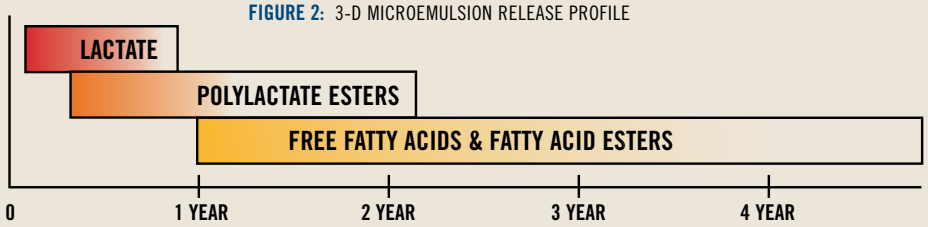
PRODUCT COMPOSITION

3-D Microemulsion® has a molecular structure specifically designed to maximize the cost-effective anaerobic treatment of contaminants in subsurface soils and groundwater. This patented structure is composed of free lactic acid, controlled-release lactic acid (polylactate) and certain fatty acid components which are esterified to a carbon backbone molecule of glycerin (Figure 1).

3-D Microemulsion produces a sequential, staged release of its electron donor components. The immediately available free lactic acid is fermented rapidly while the controlled-release lactic acid is metabolized at a more controlled rate. The fatty acids are converted to hydrogen over a mid to long-range timeline giving 3-D Microemulsion an exceptionally long electron donor release profile (Figure 2). This staged fermentation provides an immediate, mid-range and very long-term, controlled-release supply of hydrogen (electron donor) to fuel the reductive dechlorination process.

Typical 3-D Microemulsion single application longevity is rated at periods of up to 3 to 5 years. With 5 years occurring under optimal conditions, e.g. low permeability, low consumption environments.

FIGURE 2: 3-D MICROEMULSION RELEASE PROFILE



APPLICATION AND DISTRIBUTION

3-D Microemulsion applications can be configured in several different ways including: **grids, barriers** and **excavations**. The material itself can be applied to the subsurface through the use of **direct-push injection, hollow-stem auger, existing wells or re-injection wells**.

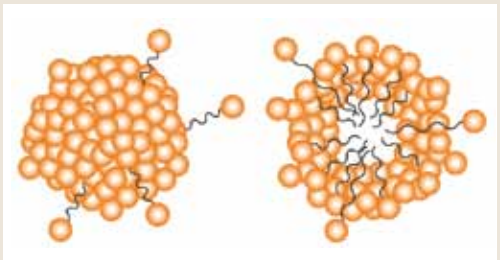
3-D Microemulsion is typically applied in high-volumes as an emulsified, micellar suspension (microemulsion). The microemulsion is easily pumped into the subsurface and is produced on-site by mixing specified volumes of water and delivered 3-D Microemulsion concentrate. Detailed preparation and installation instructions are available at www.regenesis.com.

3-D Microemulsion is usually applied throughout the entire vertical thickness of the determined treatment area. Once injected, the emulsified material moves out into the subsurface pore spaces via micellar transport, eventually coating most all available surfaces. Over time the released soluble components of 3-D Microemulsion are distributed within the aquifer via the physical process of advection and the concentration driven forces of diffusion.

MORE ON MICELLES

Micelles (Figure 3) are groups (spheres) of molecules with the hydrophilic group facing out to the water and the "tails" or lipophilic moiety facing in. They are formed during the 3-D Microemulsion emulsification process and provide the added benefit of increased distribution via migration to areas of lower concentration.

FIGURE 3: MICELLE REPRESENTATION



Staged release, pH neutral, factory emulsified electron donor

3-D MicroEmulsion® FACTORY EMULSIFIED

DESCRIPTION

Factory emulsified 3-D Microemulsion® is a unique electron donor material that offers an engineered, 3 stage electron donor release profile, pH neutral chemistry and is delivered on-site as a factory emulsified material. This new molecule also exhibits a novel hydrophile-lipophile balance (HLB) which provides maximum subsurface distribution well beyond that of emulsified vegetable oils.

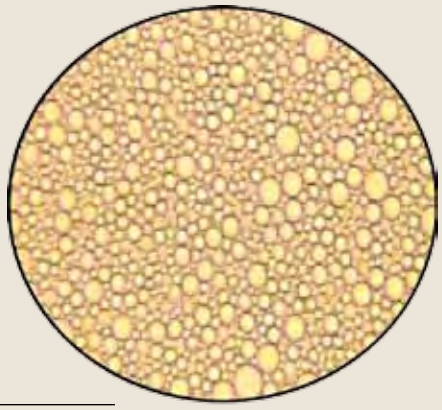


FIGURE 1: MICROSCOPIC VIEW OF FACTORY EMULSIFIED 3-D MICROEMULSION.

FIGURE 2: 3-D MICROEMULSION IS TYPICALLY APPLIED THROUGH PERMANENT WELLS OR BY USING DIRECT-PUSH INJECTION

FIGURE 3: THE MATERIAL CAN BE DELIVERED IN DRUMS, TOTES OR TANKER TRUCKS.

FEATURES & BENEFITS

• HIGHLY EFFICIENT APPLICATION DESIGNS

When designing an *in situ* remediation project with factory emulsified 3-D Microemulsion, application designs are based on mass balance and stoichiometric demand from the contaminant, competing electron acceptors and a minimum total organic carbon (TOC) loading. This often results in a more efficient dosing requirement compared to design methods employed by other electron donor suppliers.

• NEUTRAL pH

Neutral pH minimizes potentially harmful impacts to beneficial biodegrading microorganisms required to metabolize chlorinated contaminants. This feature can be highly valuable when the microemulsion is used in conjunction with pH-sensitive commercial bioaugmentation cultures

• INJECTION-READY FORMULATION, SIMPLE AND EASY APPLICATION

3D Microemulsion is delivered on-site as a factory emulsified, injection-ready product. It can be applied as delivered or further diluted and mixed with additional site water to form a higher-volume ready-to-inject microemulsion. This material can be applied through a variety of application techniques including permanent or temporary injection wells and direct-push points (Figure 2).

• CHOOSE FROM A RANGE OF PACKAGING OPTIONS

Factory emulsified 3-D Microemulsion can be delivered in 400 lb. drums, 2000 lb. totes and large volume tanker trucks making shipping, receiving and application on any site simple and convenient (Figure 3).