



October 27, 2016

Mr. Rogelo Riojas  
Sea Mar Community Health Centers  
1040 South Henderson Street  
Seattle, Washington 98108

**RE: 3rd Quarter 2016 Groundwater Monitoring Report  
Sea Mar Community Health Center  
9635 Des Moines Memorial Drive South, Seattle, Washington 98108  
RGI Project No. 2016-023A**

Dear Mr. Riojas:

The Riley Group, Inc. (RGI) has completed the Third Quarter 2016 Groundwater Monitoring Report pertaining to the Sea Mar Community Health Center, located at 9635 Des Moines Memorial Drive South, Seattle, Washington (hereafter referred to as the Site, Figure 1).

#### **SCOPE OF WORK AND PROJECT OBJECTIVES**

The objectives for this project were to perform the following:

- Perform groundwater compliance monitoring for 14 existing groundwater monitoring wells located throughout the Site.
- Perform groundwater compliance monitoring for three existing groundwater monitoring wells located on the west-adjointing property, Beckwith and Kuffel.

#### **GROUNDWATER SAMPLING EVENT**

September 12, 2016, RGI sampled eleven groundwater monitoring wells (MW-2, MW-3, MW-11, MW-12 and MW-14 through MW-20), located throughout the Site. RGI also attempted to sample MW-4, MW-8 and MW-13 although they appeared to be buried or destroyed during construction activities.

The locations of all groundwater monitoring wells are illustrated on Figure 1.

The September 12, 2016 groundwater sampling event was performed following the installation of two additional groundwater monitoring wells (MW-19 and MW-20).

September 30, 2016, RGI sampled three groundwater monitoring wells (BK-MW6, BK-MW7 and BK-MW8) on the west-adjointing property. The locations of the groundwater monitoring wells are illustrated on Figure 1.

#### **GROUNDWATER ELEVATIONS AND FLOW DIRECTION**

Prior to purging each groundwater monitoring well, depth to static groundwater was measured using an electronic water level meter in all 0.75- to 1.5-inch-diameter monitoring wells located on the Site. Depth to groundwater ranged from 2.24 to 6.90 feet below top of casing (TOC).

*Corporate Office  
17522 Bothell Way Northeast  
Bothell, Washington 98011  
Phone 425.415.0551 ♦ Fax 425.415.0311*

*www.riley-group.com*

Groundwater elevations ranged from 4.20 feet (MW-12) to 19.79 feet (MW-16) (Table 1 and Figure 1).

Groundwater flow direction was determined to be north-northwest beneath the Site. This groundwater flow data is generally consistent with previous groundwater sampling events.

#### **GROUNDWATER SAMPLE COLLECTION**

Prior to sampling, groundwater monitoring wells were purged using a peristaltic pump and new polyethylene tubing. Well purging continued until at least three well volumes were purged, until field parameters stabilized, or the well pumped dry. During the September 2016 events, water quality parameters (for example, water temperature, dissolved oxygen, pH, and conductivity) were obtained using a Horiba U-52 water quality meter with a flow-through cell. Groundwater was transferred to laboratory-supplied containers using standard low-flow sampling methodology. Sample containers were placed in an ice-chilled cooler and transported to the analytical laboratory using standard chain-of-custody protocols. Groundwater recovery, startup time, and duration of the purging operations were recorded on field data sheets. These field documents are maintained in a permanent project file and are available upon written request.

Purge water was placed in a labeled 55-gallon drum and left on the Site pending profiling and disposal.

#### **LABORATORY ANALYSIS**

Groundwater samples were submitted to Friedman and Bruya, Inc. of Seattle, Washington and analyzed for one or more of the following:

- Gasoline-range total petroleum hydrocarbons (TPH) using the Northwest Test Method NWTPH-Gx.
- Diesel-range TPH using Northwest Test Method NWTPH-Dx.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B.
- Halogenated Volatile Organic Compounds (HVOCs) using EPA Method 8260C.

Copies of the analytical laboratory report and associated sample chain-of-custody are included in Appendix A.

#### **GROUNDWATER CLEANUP LEVELS (CULs)**

Groundwater analytical results obtained during this project were compared to the following groundwater screening levels:

- Washington State Department of Ecology Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) for Ground Water (WAC 173-340-900, Table 720-1).

When no MTCA Method A CULs for Ground Water had been established for a given compound, the most stringent of the following groundwater screening levels were referenced:

- MTCA Method B Standard Formula Values for Ground Water obtained from the Cleanup Levels and Risk Calculations (CLARC) database.

## FINDINGS

### ANALYTICAL RESULTS

Analytical results and groundwater screening levels for monitoring wells on the Site and selected wells on the west adjoining property are summarized on Table 1. Analytical results for the Site are also summarized on Figure 1.

Gasoline-range TPH and BTEX were not detected above laboratory detection limits (non-detect) in either of the two samples submitted for analysis (MW-11 and MW-12).

Diesel- and oil-range TPH were either non-detect or detected at concentrations below the MTCA Method A CUL of 500 µg/L in the nine samples submitted for analysis (MW-2, MW-3, MW-11, MW-12, and MW-16 through MW-20).

Cis-1,2-Dichloroethene (Cis -1,2-DCE) and vinyl chloride (VC) were either non-detect or detected at a concentration below the applicable MTCA Cleanup Level in the six samples from wells on the Site, MW-14, MW-15, MW-17 through MW-20, and BKMW-6 and BKMW-8, both located on the west-adjoining property. Cis-1,2-DCE and VC were detected in BKMW-7 on the west-adjoining property at concentrations of 50 µg/L and 3.3 µg/L, respectively. These concentrations exceed the applicable CULs of 16 µg/L and 0.2 µg/L, respectively.

Trichloroethene (TCE) was either non-detect or at a concentration below the MTCA Method A CUL of 5 µg/L in six of the nine samples submitted for analysis (MW-14, MW-15 and MW-17-MW-20). The wells on the west-adjoining property (BKMW-6, BKMW-7, and BKMW-8) contained concentrations of TCE of 16 µg/L, 300 µg/L, and 62 µg/L, respectively, that all exceeded the MTCA Method A CUL.

1,2-Dichloroethane (EDC) was either non-detect or detected at a concentration below the applicable CUL in eight of the nine samples submitted for analysis. EDC was detected in BKMW-7 on the west-adjoining property at a concentration of 5.6 µg/L, which exceeds the MTCA Method A CUL of 5.0 µg/L.

Other HVOCs were either non-detect or detected at a concentration below the applicable MTCA CUL in all nine samples submitted for analysis.

## PROJECT LIMITATIONS


Work for this project was performed, and prepared, in accordance with generally accepted professional practices for the nature and conditions of work completed in same or similar locations at the present time. RGI's results and findings from the select area do not necessarily reflect soil or groundwater conditions underlying other areas of the Site not investigated. RGI reserves the right to modify its conclusions and/or recommendations as new data and information is made available. No legal or other warranty, expressed or implied, is made.

This report is the property of RGI, Sea Mar Community Health Centers, and their representatives and was prepared in a manner consistent with the level of skill and care ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. This report is intended for specific application to 9635 Des Moines Memorial Drive South in Seattle, Washington. No other warranty, expressed or implied, is made.


If you have any questions or need additional information, please contact the undersigned at (425) 415-0551.

Respectfully submitted,

**THE RILEY GROUP, INC.**

  
Amelia C. Oates, GIT  
Staff Geologist

  
Anna J. Jordan, LG  
Project Geologist

  
Paul D. Riley, LG, LHG  
Principal

*Figures*      *Figure 1, Site Vicinity Map*  
*Figure 2, Site Plan with Groundwater Elevation Contours and Analytical Laboratory Results*  
*Results*      *Table 1, Summary of Groundwater Sample Analytical Results*

*Attachments*   *Appendix A, Analytical Laboratory Report*

*Distribution*   *Mr. Rogelio Riojas, Sea Mar Community Health Centers (PDF)*

MW-5					
Date	Gas	BTEX	DSL	Oil	HVOCs
03/07/16	---	---	---	---	ND
05/22/14	---	---	---	---	ND
02/20/14	---	---	---	---	ND
05/16/13	---	---	---	---	ND
01/11/08	ND	ND	ND*	ND*	---

MW-9								
Date	Gas	DSL	Oil	HVOCs	Dissolved MTCA 5 Metals			
					Cd	Cr	Pb	Hg
03/07/16	ND	<b>730x</b>	ND	ND	ND	ND	ND	ND

MW-13									
Date	PCE	TCE	cis-1,2-DCE	VC	HVOCs	Total		Dissolved	
						Cd	Pb	Cd	Pb
6/30/16	ND	ND	ND	ND	ND	---	---	ND	ND
5/6/16	ND	ND	ND	ND	ND	ND	<b>5.32</b>	ND	ND

SP-05-H2O							
Date	Gas	B	T	E	X	DSL*	Oil*
10/26/07	<b>250</b>	ND	ND	<b>2</b>	<b>10</b>	<b>410</b>	ND

SP-06-H2O							
Date	Gas	B	T	E	X	DSL*	Oil*
10/26/07	ND	ND	ND	ND	ND	ND	<b>4</b>

MW-6						
Date	Gas	BTEX	DSL	Oil	HVOCs	VOCs
03/07/16	---	---	<b>200x</b>	ND	---	---
02/20/14	---	ND	---	---	ND	---
08/16/13	---	ND	---	---	ND	---
01/16/08	---	---	ND	ND	---	---
01/11/08	ND	ND	---	---	ND	<b>Acetone=22</b>

MW-17									
Date	Gas	BTEX	DSL	Oil	TCE	Cis-1,2-DCE	1,1-DCE	Other HVOCs	Other VOCs
09/12/16	---	---	<b>76x</b>	<b>310</b>	ND	ND	ND	ND	ND
07/14/16	ND	ND	<b>230x</b>	ND	ND	ND	ND	ND	ND

P1-H2O				
Date	Gas	DSL	Oil	HVOCs
03/04/16	ND	<b>300x</b>	ND	ND

P2-H2O	
Date	HVOCs
03/04/16	ND

SP-04-H2O											
Date	Gas	B	T	E	X	DSL*	Oil*	TCE	VC	cis-1,2-DCE	Other HVOCs
10/26/07	<b>370</b>	ND	ND	<b>3</b>	<b>15</b>	<b>3,700</b>	<b>2,900</b>	<b>1.9</b>	<b>3.8</b>	<b>18</b>	ND

MW-4														
Date	Gas	BTEX	DSL	Oil	TCE	VC	cis-1,2-DCE	Other HVOCs	Other VOCs	Total MTCA 5 Metals				
										As	Cd	Cr	Pb	Hg
06/30/16	---	---	ND	ND	<b>3.9</b>	<b>4.9</b>	<b>16</b>	ND	ND	---	---	---	---	---
03/07/16	---	---	<b>52x</b>	ND	<b>4.6</b>	<b>7.4</b>	ND	---	---	---	---	---	---	---
08/21/14	---	---	---	---	<b>7.02</b>	<b>6.43</b>	<b>31.9</b>	ND	ND	---	---	---	---	---
05/22/14	---	---	---	---	<b>5.35</b>	<b>7.26</b>	<b>16.8</b>	ND	ND	---	---	---	---	---
02/14/14	---	---	---	---	<b>5.31</b>	ND	<b>15.3</b>	ND	ND	---	---	---	---	---
08/16/13	---	---	---	---	<b>9.05</b>	<b>14.6</b>	<b>38</b>	ND	ND	---	---	---	---	---
01/16/08	---	---	---	---	<b>140</b>	<b>9.8</b>	<b>63</b>	ND	EDC=1.0 EC=7.3 1,1-DCA=1.6	<b>2.88</b>	ND	<b>2.44</b>	<b>8.98</b>	ND
01/11/08	ND	ND	ND*	ND*	<b>150ve</b>	<b>12</b>	<b>70</b>	ND	EDC=1.1	---	---	---	---	---

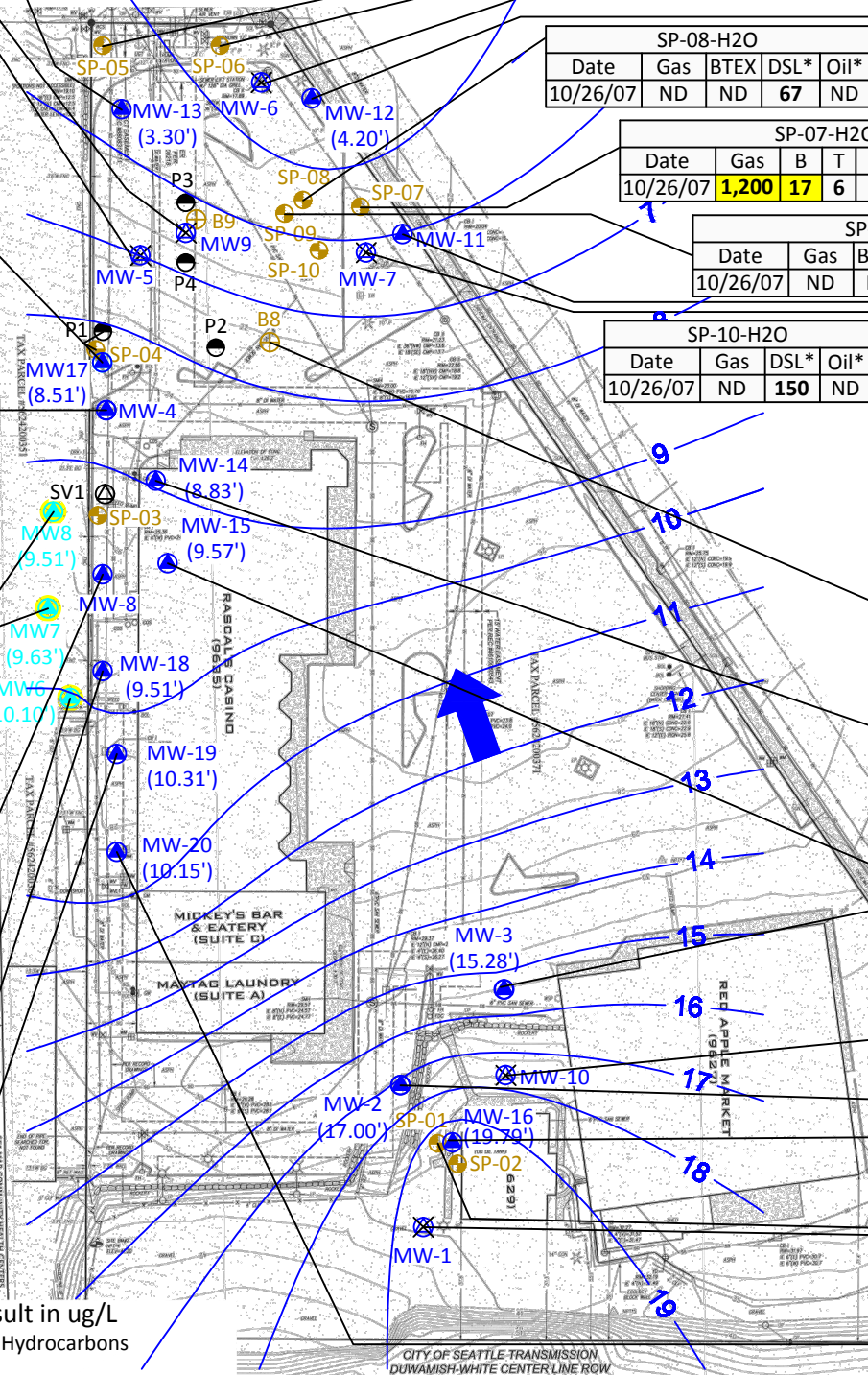
BK-MW8 (On Adjoining Property)							
Date	Depth	PCE	TCE	cis-1,2-DCE	VC	Other HVOCs	Other VOCs
09/30/16	4.13'	ND	<b>62</b>	<b>8.3</b>	ND	ND	---
08/22/14	---	ND	<b>615</b>	<b>22.1</b>	ND	EDC=4.87 1,1-DCE=1.05	ND
05/21/14	---	ND	<b>558</b>	<b>23.1</b>	ND	ND	ND
02/14/14	---	ND	<b>878</b>	<b>32.0</b>	ND	EDC=7.19 1,1-DCE=1.97	ND

BK-MW7 (On Adjoining Property)							
Date	Depth	PCE	TCE	cis-1,2-DCE	VC	Other HVOCs	Other VOCs
09/30/16	8.31'	ND	<b>300</b>	<b>50</b>	<b>3.3</b>	EDC=5.6	---
08/22/14	---	ND	ND	<b>30.0</b>	<b>8.19</b>	EDC=1.76	ND
05/21/14	---	ND	ND	<b>143</b>	<b>34.5</b>	EDC=2.79	ND
02/14/14	---	ND	<b>1.94</b>	<b>297</b>	<b>95.8</b>	EDC=15.7	ND

MW-8							
Date	DSL	Oil	TCE	Cis-1,2-DCE	1,1-DCA	Other HVOCs	Other VOCs
06/30/16	<b>100x</b>	ND	<b>33</b>	<b>7.0</b>	<b>1.7</b>	---	ND
03/07/16	<b>80x</b>	ND	<b>20</b>	<b>5.5</b>	<b>1.9</b>	ND	---

MW-18									
Date	Gas	BTEX	DSL	Oil	TCE	Cis-1,2-DCE	1,1-DCE	Other HVOCs	Other VOCs
9/12/16	---	---	ND	ND	<b>2.1</b>	ND	ND	ND	---
7/14/16	ND	ND	<b>63x</b>	ND	<b>130</b>	<b>15</b>	<b>1.9</b>	ND	ND

MW-19						
Date	DSL	Oil	TCE	Cis-1,2-DCE	1,1-DCA	Other HVOCs
9/12/16	<b>81x</b>	ND	ND	ND	<b>1.6</b>	ND



SP-08-H2O							
Date	Gas	BTEX	DSL*	Oil*			
10/26/07	ND	ND	<b>67</b>	ND			

MW-12				
Date	Gas	BTEX	DSL	Oil
09/12/16	ND	ND	<b>80x</b>	ND
6/30/16	ND	ND	<b>220x</b>	ND
05/06/16	ND	ND	<b>200x</b>	ND

SP-07-H2O							
Date	Gas	B	T	E	X	DSL*	Oil*
10/26/07	<b>1,200</b>	<b>17</b>	<b>6</b>	<b>6</b>	<b>30</b>	<b>740</b>	ND

SP-09-H2O							
Date	Gas	BTEX	DSL*	Oil*	HVOCs		
10/26/07	ND	ND	<b>76</b>	ND	ND		

MW-11							
Date	Gas	B	T	E	X	DSL	Oil
09/12/16	ND	ND	ND	ND	ND	<b>69x</b>	ND
6/30/16	ND	ND	ND	ND	ND	<b>190x</b>	ND
05/06/16	ND	ND	<b>1.7</b>	ND	ND	<b>200x</b>	ND

SP-10-H2O			
Date	Gas	DSL*	Oil*
10/26/07	ND	<b>150</b>	ND

MW-7													
Date	Gas	B	T	E	X	DSL	Oil	HVOCs	Total MTCA 5 Metals				
									As	Cd	Cr	Pb	Hg
03/07/16	<b>2,500</b>	<b>11</b>	ND	<b>3.6</b>	<b>3.8</b>	<b>1,500x</b>	ND	ND	---	---	---	---	
02/20/14	---	---	---	---	---	---	---	ND	---	---	---	---	
08/16/13	---	---	---	---	---	---	---	ND	---	---	---	---	
01/25/08	<b>4,000</b>	<b>43</b>	<b>20</b>	<b>34</b>	<b>27</b>	---	---	---	---	---	---	---	
01/16/08	<b>5,500</b>	<b>61</b>	<b>29</b>	<b>46</b>	<b>45</b>	---	---	---	<b>10.8</b>	ND	<b>2.12</b>	<b>2.83</b>	
01/11/08	---	---	---	---	---	---	---	<b>890x*</b>	ND*	---	---	---	

B8-H2O										
Date	Gas	BTEX	DSL*	Oil*	HVOCs	Total MTCA 5 Metals				
						As	Cd	Cr	Pb	Hg
01/03/08	ND	ND	ND	ND	ND	<b>6.08</b>	ND	<b>1.23</b>	ND	ND

MW-14							
Date	PCE	TCE	cis-1,2-DCE	Trans-1,2-DCE	VC	1,1-DCE	HVOCs
9/12/16	ND	ND	ND	ND	ND	ND	ND
6/30/16	ND	ND	ND	ND	ND	ND	ND
5/6/16	ND	ND	ND	ND	ND	ND	ND

MW-3		
Date	DSL	Oil
09/12/16	ND	ND
01/11/08	ND*	ND*

MW-15							
Date	PCE	TCE	cis-1,2-DCE	Trans-1,2-DCE	VC	1,1-DCE	HVOCs
9/12/16	ND	ND	ND	ND	ND	ND	ND
6/30/16	ND	ND	ND	ND	ND	ND	ND
5/6/16	ND	ND	ND	ND	ND	ND	ND

BK-MW6 (On Adjoining Property)									
Date	Depth	PCE	TCE	cis-1,2-DCE	Trans-1,2-DCE	VC	1,1-DCE	Other HVOCs	Other VOCs
09/30/16	6.46'	ND	<b>16</b>	ND	ND	ND	ND	ND	---
08/22/14	---	ND	<b>88.6</b>	<b>2.99</b>	ND	ND	ND	ND	ND
05/21/14	---	ND	<b>18.9</b>	ND	ND	ND	ND	ND	ND
02/20/14	---	ND	<b>85</b>	<b>2.17</b>	ND	ND	ND	ND	ND

MW-18									
Date	Gas	BTEX	DSL	Oil	TCE	Cis-1,2-DCE	1,1-DCE	Other HVOCs	Other VOCs
9/12/16	---	---	ND	ND	<b>2.1</b>	ND	ND	ND	---
7/14/16	ND	ND	<b>63x</b>	ND	<b>130</b>	<b>15</b>	<b>1.9</b>	ND	ND

MW-19						
Date	DSL	Oil	TCE	Cis-1,2-DCE	1,1-DCA	Other HVOCs
9/12/16	<b>81x</b>	ND	ND	ND	<b>1.6</b>	ND

MW-10		
Date	DSL	Oil
03/07/16	<b>56x</b>	ND

MW-16		
Date	DSL	Oil
9/12/16	<b>110x</b>	ND
07/14/16	<b>150x</b>	ND

MW-2		
Date	DSL	Oil
09/12/16	<b>200x</b>	ND
06/30/16	<b>290x</b>	ND
03/07/16	<b>340x</b>	ND
01/11/08	ND*	ND*

SP-01-H2O		
Date	DSL	Oil
10/26/07	<b>1,500,000</b>	<b>37,000</b>

MW-20							
Date	DSL	Oil	TCE	Cis-1,2-DCE	1,1-DCE	Other HVOCs	Other VOCs
9/12/16	ND	ND	ND	ND	ND	ND	ND

MW-1		
Date	DSL	Oil
03/07/16	ND	ND
01/11/08	ND*	ND*

- = Decommissioned well
- = Soil vapor sample location by RGI in 2016
- = Monitoring well by RGI [MW1 to MW7 in 2008, MW8 to MW20 in 2016]
- = Monitoring well by others [MW6 to MW8, off-site]
- = Test probe by RGI in 2016 [

Table 1, Page 1 of 4. Summary of Groundwater Analytical Laboratory Results

Sea Mar Community Health Center

9635 Des Moines Memorial Drive South, Seattle, Washington 98108

The Riley Group, Inc. Project No. 2016-023A

Sample Number	Sample Date	Top of Casing (TOC) Elevation	Depth to Water (below TOC)	Groundwater Elevation	Gasoline TPH	BTEX				Diesel TPH w/o silica gel	Oil TPH	Diesel TPH w/ silica gel	Oil TPH	PCE	TCE	cis-1,2-DCE	Trans-1,2-DCE	VC	1,1-DCE	Other HVOCs	Other VOCs	SVOCs	Total Metals					Dissolved Metals								
						B	T	E	X														As	Cd	Cr	Pb	Hg	As	Cd	Cr	Pb	Hg				
<b>Monitoring Wells</b>																																				
<b>MW-1 Screened Interval 5 - 10 ft bgs, Total boring depth 10 ft bgs, MW-1 decommissioned 06/15/16.</b>																																				
MW1	05/06/16	28.3	5.40	22.9	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----			
MW1-H2O	03/07/16	28.3	4.65	23.6	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----			
MW-1	01/11/08	28.3	5.70	22.59	----	----	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----			
<b>MW-2 Screened Interval 5 - 10 ft bgs, Total boring depth 8 ft bgs.</b>																																				
MW2	09/12/16	19.30	2.30	17.00	----	----	----	----	200 x	ND<300	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----			
MW2	07/15/16	19.30	2.05	17.25	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
MW2	06/30/16	19.30	2.02	17.28	----	----	----	----	290x	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
MW2-H2O	03/07/16	19.30	1.81	17.5	----	----	----	----	340x	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
MW-2	01/11/08	19.30	2.10	17.20	----	----	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
<b>MW-3 Screened Interval 5 - 10 ft bgs, Total boring depth 12 ft bgs.</b>																																				
MW3	09/12/16	20.3	5.04	15.28	----	----	----	----	ND<60	ND<300	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
MW-3	01/11/08	20.3	3.66	16.66	----	----	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----		
<b>MW-4 Screened Interval 5 - 10 ft bgs, Total boring depth 12 ft bgs.</b>																																				
MW4	09/12/16	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW4	07/15/16	13.13	5.88	7.25	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW4	06/30/16	13.13	5.84	7.29	----	----	----	----	ND<50	ND<250	----	----	ND<1	3.9	16	ND<1	4.9	ND<1	ND	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW4	05/06/16	13.13	5.28	7.85	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW4-H2O	03/07/16	13.13	4.56	8.57	----	----	----	----	52x	ND<250	----	----	ND<1	ND<1	7.4	ND<1	4.6	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
82114OS-1:GW	08/21/14	13.13	----	----	----	----	----	----	----	----	----	----	ND<1	7.02	31.9	ND<1	6.43	ND<1	ND	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
52214OS-1:GW	05/22/14	13.13	----	----	----	----	----	----	----	----	----	----	ND<1	5.35	16.8	ND<1	7.26	ND<1	ND	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
21414OS-1:GW	02/14/14	13.13	----	----	----	----	----	----	----	----	----	----	ND<1	5.31	15.3	ND<1	ND<0.20	ND<1	ND	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
OS-1-81613	08/16/13	13.13	----	----	----	----	----	----	----	----	----	----	ND<1	9.05	38.0	ND<1	14.6	ND<1	ND	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW-4	01/16/08	13.13	6.81	6.32	----	----	----	----	----	----	----	----	ND<1	140	63	ND<1	9.8	ND<1	----	EDC=1.0 CE=7.3 1,3-DB=1.6	ND<0.1	2.88	ND<1	2.44	8.98	ND<0.2	----	----	----	----	----	----	----	----		
MW-4	01/11/08	13.13	6.81	6.32	ND<100	ND<1	ND<1	ND<3	----	----	ND<50	ND<250	ND<1	150ve	70	ND<1	12	ND<1	ND	EDC=1.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
<b>MW-5 Screened Interval 5 - 10 ft bgs, Total boring depth 10 ft bgs, MW-5 decommissioned 06/08/16.</b>																																				
MW5	05/06/16	10.00	2.65	7.35	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW5-H2O	03/07/16	10.00	2.31	7.69	----	----	----	----	----	----	----	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
52214OS-2:GW	05/22/14	10.00	----	----	----	----	----	----	----	----	----	----	ND<1	ND<0.5	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
022014OS-2:GW	02/20/14	10.00	----	----	----	----	----	----	----	----	----	----	ND<1	ND<0.5	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
OS-2-81613	05/16/13	10.00	----	----	----	----	----	----	----	----	----	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MW-5	01/11/08	10.00	2.02	7.98	ND<100	ND<1	ND<1	ND<3	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
<b>MW-6 Screened Interval 5 - 10 ft bgs, Total boring depth 10 ft bgs, MW-6 decommissioned 06/08/16.</b>																																				
MW6	05/06/16	6.78	1.89	4.89	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW6-H2O	03/07/16	6.78	2.695	4.09	----	----	----	----	200x	ND<250	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
022014OS-4:GW	02/20/14	6.78	----	----	----	----	----	----	----	----	----	----	ND<1	ND<0.5	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
OS-4-81613	08/16/13	6.78	----	----	----	----	----	----	----	----	----	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MW-6	01/16/08	6.78	2.84	3.94	----	----	----	----	----	----	ND<93	ND<460	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW-6	01/11/08	6.78	2.84	3.94	ND<100	ND<1	ND<1	ND<3	----	----	----	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	Acetone=22	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
<b>MW-7 Screened Interval 5 - 10 ft bgs, Total boring depth 10 ft bgs, MW-7 decommissioned 06/08/16.</b>																																				
MW7	05/06/16	9.17	0	9.17	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
MW7-H2O	03/07/16	9.17	0.0	----	2,500	11	ND<1	3.6	3.8	1,500x	ND<250	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	
022014OS-3:GW	02/20/14	9.17	----	----	----	----	----	----	----	----	----	----	ND<1	ND<0.5	ND<1	ND<1	ND<0.2	ND<1	ND	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MTCA Method A Cleanup Levels for Ground Water					800/1,000 <sup>1</sup>	5	1,000	700	1,000	500	500	500	500	5	5	----	----	0.2	----	Analyte Specific	EDC = 5	Analyte Specific	5	5	50	15	2	5	5	50	15	2	----	----		
MTCA Method B Cleanup Levels for Ground Water <sup>2</sup>					----	----	----	----	----	----	----	----	----	----	----	16	160	----	400	----	Acetone = 7,200	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----



**Table 1, Page 3 of 4. Summary of Groundwater Analytical Laboratory Results**  
**Sea Mar Community Health Center**  
**9635 Des Moines Memorial Drive South, Seattle, Washington 98108**  
**The Riley Group, Inc. Project No. 2016-023A**

Sample Number	Sample Date	Top of Casing (TOC) Elevation	Depth to Water (below TOC)	Groundwater Elevation	Gasoline TPH	BTEX				Diesel TPH w/o silica gel	Oil TPH	Diesel TPH w/ silica gel	Oil TPH	PCE	TCE	cis-1,2-DCE	Trans-1,2-DCE	VC	1,1-DCE	Other HVOCs	Other VOCs	SVOCs	Total Metals					Dissolved Metals				
						B	T	E	X														As	Cd	Cr	Pb	Hg	As	Cd	Cr	Pb	Hg
<b>MW17 Screened Interval 5-15 ft bgs, Total boring depth 15 ft bgs</b>																																
MW17	09/12/16	11.52	3.01	8.51	---	---	---	---	---	76x	310	---	---	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	---
MW17-W	07/14/16	11.52	3.01	8.51	ND<100	ND<0.35	ND<1	ND<1	ND<3	230x	ND<260	---	---	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	ND	---	---	---	---	---	---	---	---	---	---	
<b>MW18 Screened Interval 10 - 20 ft bgs, Total boring depth 20 ft bgs</b>																																
MW18	09/12/16	16.41	6.90	9.51	---	---	---	---	---	ND<50	ND<250	---	---	ND<1	2.1	ND<1	ND<1	ND<0.2	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	
MW18-W	07/14/16	16.41	6.27	10.14	ND<100	ND<0.35	ND<1	ND<1	ND<3	63x	ND<250	---	---	ND<1	130	15	ND<1	ND<0.2	1.9	ND	ND	---	---	---	---	---	---	---	---	---	---	
<b>MW19 Screened Interval 10 - 20 ft bgs, Total boring depth 20 ft bgs</b>																																
MW19	09/12/16	15.85	5.54	10.31	---	---	---	---	---	81x	ND<250	---	---	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	DCA=1.6	---	---	---	---	---	---	---	---	---	---	---	
MW19	09/08/16	15.85	8.00	7.85	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
<b>MW20 Screened Interval 10 - 20 ft bgs, Total boring depth 23 ft bgs</b>																																
MW20	09/12/16	16.7	6.55	10.15	---	---	---	---	---	ND<50	ND<250	---	---	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	
MW20	09/08/16	16.7	8.00	8.70	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
<b>Monitoring Wells on West-Adjoining Property</b>																																
<b>MW6</b>																																
BK MW-6	09/30/16	16.55	6.46	10.09	---	---	---	---	---	---	---	---	---	ND<1	16	ND<1	ND<1	ND<0.2	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	
82114MW-6:GW	08/22/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	88.6	2.99	ND<1.00	ND<0.200	ND<1.00	ND	ND	---	---	---	---	---	---	---	---	---	---	
52114-MW-6:6W	05/21/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	18.9	ND<1.00	ND<1.00	ND<0.200	ND<1.00	ND	ND	---	---	---	---	---	---	---	---	---	---	
022014MW-6:GW	02/20/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	85.0	2.17	ND<1.00	ND<0.200	ND<1.00	ND	ND	---	---	---	---	---	---	---	---	---	---	
<b>MW7</b>																																
BK MW-7	09/30/16	14.38	4.45	9.93	---	---	---	---	---	---	---	---	---	ND<1	300	50	ND<1	3.3	ND<1	EDC=5.6	---	---	---	---	---	---	---	---	---	---	---	
82114MW-7:GW	08/22/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	ND<0.500	30.0	ND<1.00	8.19	ND<1.00	EDC=1.76	ND	---	---	---	---	---	---	---	---	---	---	
52114-MW-7:6W	05/21/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	ND<0.500	143	1.97	34.5	ND<1.00	EDC=2.79	ND	---	---	---	---	---	---	---	---	---	---	
21414MW-7:GW	02/14/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	1.94	297	3.44	95.8	ND<1.00	EDC=15.7	ND	---	---	---	---	---	---	---	---	---	---	
<b>MW8</b>																																
BK MW-8	09/30/16	13.86	4.13	9.73	---	---	---	---	---	---	---	---	---	ND<1	62	8.3	ND<1	ND<0.2	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	
82114MW-8:GW	08/22/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	615	22.1	ND<1.00	ND<0.200	1.05	EDC=4.87	ND	---	---	---	---	---	---	---	---	---	---	
52114-MW-8:6W	05/21/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	558	23.1	ND<1.00	ND<0.200	ND<1.00	ND	ND	---	---	---	---	---	---	---	---	---	---	
21414MW-8:GW	02/14/14	---	---	---	---	---	---	---	---	---	---	---	---	ND<1.00	878	32.0	ND<1.00	ND<0.200	1.97	EDC=7.19	ND	---	---	---	---	---	---	---	---	---	---	
<b>Groundwater Grab Samples</b>																																
3H2O-1	06/14/16	---	---	---	ND<100	ND<1	ND<1	ND<1	ND<3	190x	ND<250	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
P1-H2O	03/04/16	---	3	---	ND<100	---	---	---	---	300x	ND<250	---	---	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	
P2-H2O	03/04/16	---	7	---	---	---	---	---	---	---	---	---	---	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	
P3-H2O	03/04/16	---	7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
P4-H2O	03/04/16	---	7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
B8-H2O	01/03/08	---	7.00	---	ND<100	ND<1	ND<1	ND<1	ND<3	---	---	ND<54	ND<270	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND	ND	ND<0.1	---	---	---	---	---	---	---	---	---	
B8-H2O-f	01/03/08	---	6.50	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SP-01-H2O	10/26/07	---	7.5	---	---	---	---	---	---	---	---	1,500,000	37,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SP-04-H2O	10/26/07	---	6.0	---	370	ND<1	ND<1	3	15	---	---	3,700	2,900	ND<1	1.9	18	ND<1	3.8	ND<1	ND	---	---	---	---	---	---	---	---	---	---	---	
SP-05-H2O	10/26/07	---	8.0	---	250	ND<1	ND<1	2	10	---	---	410	ND<360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SP-06-H2O	10/26/07	---	8.5	---	ND<100	ND<1	ND<1	ND<1	4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SP-07-H2O	10/26/07	---	3.0	---	1,200	17	6	6	30	---	---	740x	ND<250	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SP-08-H2O	10/26/07	---	3.5	---	ND<100	ND<1	ND<1	ND<1	ND<3	---	---	67	ND<250	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
SP-09-H2O	10/26/07	---	3.5	---	ND<100	ND<1	ND<1	ND<1	ND<3	---	---	76	ND<250	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND<1	---	---	---	---	---	---	---	---	---	---	---	
SP-10-H2O	10/26/07	---	3.5	---	ND<200*	---	---	---	---	---	---	150	ND<250	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
<b>MTCA Method A Cleanup Levels for Ground Water</b>					800/1,000 <sup>1</sup>	5	1,000	700	1,000	500	500	500	500	5	5	---	---	0.2	---	Analyte Specific	Analyte Specific	Analyte Specific	5	5	50	15	2	5	5	50	15	2
<b>MTCA Method B Cleanup Levels for Ground Water<sup>2</sup></b>					---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

**Table 1, Page 4 of 4. Summary of Groundwater Analytical Laboratory Results**

**Sea Mar Community Health Center**

**9635 Des Moines Memorial Drive South, Seattle, Washington 98108**

**The Riley Group, Inc. Project No. 2016-023A**

Notes:

Samples collected by RGI field staff using a peristaltic pump under low-flow conditions.

Unless otherwise noted, all analytical results are given in micrograms per liter (ug/L), equivalent to parts per billion (ppb).

Gasoline TPH (total petroleum hydrocarbons) determined using Northwest Test Method NWTPH-Gx

BTEX (benzene, toluene, ethylbenzene, and xylenes) determined using EPA Test Method 8021B or 8260C.

Diesel and Oil TPH (total petroleum hydrocarbons) determined using Northwest Test Method NWTPH-Dx with and without silica gel cleanup.

PCE (tetrachloroethene), TCE (trichloroethene), cis-1,2-DCE (cis-1,2-dichloroethene), trans-1,2-DCE (trans-1,2-dichloroethene), VC (vinyl chloride), 1,1-DCE (1,1-dichloroethene), EDC (1,2-dichloroethane), and other HVOCs (halogenated volatile organic compounds) determined using EPA Test Method 8260C.

Other VOCs (volatile organic compounds) determined using EPA Test Method 8260C.

Dissolved Metals (As = arsenic, Cd = cadmium, Cr = chromium, Pb = lead, Hg = mercury) determined using EPA Method 200.8 and 1631E.

CE = Chloroethane, EDC = 1,2-Dichloroethane, 1,3-DB = 1,3-Dichlorobenzene, DCA = 1,1-dichloroethane

ND = Not detected above the noted analytical detection limit.

---- = Not analyzed or not applicable.

x = The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water (WAC 173-340-900, Table 720-1). MTCA Method B Standard Formula Values for Ground Water from Ecology's Cleanup Level and Risk Calculation (CLARC) database.

<sup>1</sup> The higher cleanup level is applicable if no benzene is detected in groundwater.

<sup>2</sup> No MTCA Method A Cleanup Level has been established. Therefore, the MTCA Method B Non-Carcinogenic Standard Formula Value is listed for reference.

\*TPH results based on Ecology's petroleum hydrocarbon qualitative test method NWTPH-HCID.

**Bold** results indicated concentrations above laboratory detection limits.

**Bold and yellow highlighted** results indicate concentrations (if any) that exceed MTCA Method A or B Cleanup Levels for Ground Water.

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Yelena Aravkina, M.S.  
Michael Erdahl, B.S.  
Arina Podnozova, B.S.  
Eric Young, B.S.

3012 16th Avenue West  
Seattle, WA 98119-2029  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

September 16, 2016

Anna Jordan, Project Manager  
The Riley Group, Inc.  
17522 Bothell Way NE  
Bothell, WA 98011

Dear Ms Jordan:

Included are the results from the testing of material submitted on September 12, 2016 from the 2016-023A Sea Mar, F&BI 609193 project. There are 14 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
TRG0916R.DOC

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 12, 2016 by Friedman & Bruya, Inc. from the The Riley Group 2016-023A Sea Mar, F&BI 609193 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>The Riley Group</u>
609193 -01	MW2
609193 -02	MW3
609193 -03	MW11
609193 -04	MW12
609193 -05	MW14
609193 -06	MW15
609193 -07	MW16
609193 -08	MW17
609193 -09	MW18
609193 -10	MW19
609193 -11	MW20

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/16  
Date Received: 09/12/16  
Project: 2016-023A Sea Mar, F&BI 609193  
Date Extracted: 09/13/16  
Date Analyzed: 09/13/16

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES AND TPH AS GASOLINE  
USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 52-124)
MW11 609193-03	<1	<1	<1	<3	<100	92
MW12 609193-04	<1	<1	<1	<3	<100	93
Method Blank 06-1864 MB	<1	<1	<1	<3	<100	94

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/16  
 Date Received: 09/12/16  
 Project: 2016-023A Sea Mar, F&BI 609193  
 Date Extracted: 09/13/16  
 Date Analyzed: 09/13/16

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
 FOR TOTAL PETROLEUM HYDROCARBONS AS  
 DIESEL AND MOTOR OIL  
 USING METHOD NWTPH-Dx**  
 Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Motor Oil Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> (% Recovery) (Limit 47-140)
MW2 609193-01 1/1.2	200 x	<300	67
MW3 609193-02 1/1.2	<60	<300	84
MW11 609193-03	69 x	<250	68
MW12 609193-04	80 x	<250	72
MW16 609193-07	110 x	<250	77
MW17 609193-08	76 x	310	71
MW18 609193-09	<50	<250	65
MW19 609193-10	81 x	<250	69
MW20 609193-11	<50	<250	78
Method Blank 06-1883 MB2	<50	<250	69

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW14	Client:	The Riley Group
Date Received:	09/12/16	Project:	2016-023A Sea Mar, F&BI 609193
Date Extracted:	09/13/16	Lab ID:	609193-05
Date Analyzed:	09/13/16	Data File:	091309.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW15	Client:	The Riley Group
Date Received:	09/12/16	Project:	2016-023A Sea Mar, F&BI 609193
Date Extracted:	09/13/16	Lab ID:	609193-06
Date Analyzed:	09/13/16	Data File:	091310.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW17	Client:	The Riley Group
Date Received:	09/12/16	Project:	2016-023A Sea Mar, F&BI 609193
Date Extracted:	09/13/16	Lab ID:	609193-08
Date Analyzed:	09/13/16	Data File:	091311.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW18	Client:	The Riley Group
Date Received:	09/12/16	Project:	2016-023A Sea Mar, F&BI 609193
Date Extracted:	09/13/16	Lab ID:	609193-09
Date Analyzed:	09/13/16	Data File:	091312.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	2.1
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW19	Client:	The Riley Group
Date Received:	09/12/16	Project:	2016-023A Sea Mar, F&BI 609193
Date Extracted:	09/13/16	Lab ID:	609193-10
Date Analyzed:	09/13/16	Data File:	091313.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	1.6
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW20	Client:	The Riley Group
Date Received:	09/12/16	Project:	2016-023A Sea Mar, F&BI 609193
Date Extracted:	09/13/16	Lab ID:	609193-11
Date Analyzed:	09/13/16	Data File:	091314.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	The Riley Group
Date Received:	Not Applicable	Project:	2016-023A Sea Mar, F&BI 609193
Date Extracted:	09/13/16	Lab ID:	06-1848 mb
Date Analyzed:	09/13/16	Data File:	091307.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	104	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/16

Date Received: 09/12/16

Project: 2016-023A Sea Mar, F&BI 609193

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE,  
XYLENES, AND TPH AS GASOLINE  
USING EPA METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 609162-05 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	
			Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	91	65-118
Toluene	ug/L (ppb)	50	90	72-122
Ethylbenzene	ug/L (ppb)	50	86	73-126
Xylenes	ug/L (ppb)	150	87	74-118
Gasoline	ug/L (ppb)	1,000	98	69-134

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/16

Date Received: 09/12/16

Project: 2016-023A Sea Mar, F&BI 609193

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	77	84	63-142	9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/16/16

Date Received: 09/12/16

Project: 2016-023A Sea Mar, F&BI 609193

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 609193-11 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	101	36-166
Chloroethane	ug/L (ppb)	50	<1	115	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	105	60-136
Methylene chloride	ug/L (ppb)	50	<5	104	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	103	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	103	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	103	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	98	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	104	60-146
Trichloroethene	ug/L (ppb)	50	<1	101	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	97	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	108	107	50-154	1
Chloroethane	ug/L (ppb)	50	129	124	58-146	4
1,1-Dichloroethene	ug/L (ppb)	50	113	109	67-136	4
Methylene chloride	ug/L (ppb)	50	108	104	39-148	4
trans-1,2-Dichloroethene	ug/L (ppb)	50	109	105	68-128	4
1,1-Dichloroethane	ug/L (ppb)	50	106	104	79-121	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	108	105	80-123	3
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	95	95	73-132	0
1,1,1-Trichloroethane	ug/L (ppb)	50	108	106	83-130	2
Trichloroethene	ug/L (ppb)	50	100	99	80-120	1
Tetrachloroethene	ug/L (ppb)	50	97	96	76-121	1

# FRIEDMAN & BRUYA, INC.

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## ENVIRONMENTAL CHEMISTS

### **Data Qualifiers & Definitions**

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

609193

SAMPLE CHAIN OF CUSTODY

ME 09/12/16 V3/BOY 7 of 2

Report To Anna Jordan

Company RGI

Address 15722 Bothell Way NE

City, State, ZIP Bothell, WA 98011

Phone 425 415 0551 Email ajordan@niley-grump.com

SAMPLERS (signature) [Signature]

PROJECT NAME 2016-023A SEA MAR PO # \_\_\_\_\_

REMARKS \_\_\_\_\_ INVOICE TO \_\_\_\_\_

Page # 7 of 2

TURNAROUND TIME  
 Standard Turnaround  
 RUSH  
 Rush charges authorized by: \_\_\_\_\_

SAMPLE DISPOSAL  
 Dispose after 30 days  
 Archive Samples  
 Other \_\_\_\_\_

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes	
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	X	HVOCs			
MW 2	01	9/12/16	950	Water	1		X										
MW 3	02	9/12/16	900		1		X										
MW 11	03 A-D	9/12/16	1315		4		X	X	X								
MW 12	04 A-D	9/12/16	1205		4		X	X	X								
MW 14	05 A-D	9/12/16	1351		4								X				
MW 15	06 A-D	9/12/16	1415		4								X				
MW 16	07	9/12/16	1021		1		X										
MW 17	08 A-E	9/12/16	1130		5		X						X				
MW 18	09 A-E	9/12/16	1435		5		X						X				
MW 19	10 A-E	9/12/16	1500		5		X						X				

Samples received at: 4

Friedman & Bruya, Inc.  
 3012 16<sup>th</sup> Avenue West  
 Seattle, WA 98119-2029  
 Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>[Signature]</u>	AMELIA C. OATES	RGI	9/12/16	4:15 pm
Received by: <u>[Signature]</u>	KEVIN [Signature]	FE B	9/12/16	4:15 pm
Relinquished by: _____				
Received by: _____				

609193

SAMPLE CHAIN OF CUSTODY

ME 09/12/16 U3/BOY

Report To Anna Jordan  
 Company RGI  
 Address 1572 Bethell Way NE  
 City, State, ZIP Bethell WA 98011  
 Phone 425-415-0551 Email ajordan@riley-group.com

SAMPLERS (signature) an CO

PROJECT NAME 2016-023A PO #

REMARKS INVOICE TO

Page # 2 of 2

TURNAROUND TIME  
 Standard Turnaround  
 RUSH  
 Rush charges authorized by:

SAMPLE DISPOSAL  
 Dispose after 30 days  
 Archive Samples  
 Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes				
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	HVOCs							
MW 20	11 A-E	9/12/16	1510	water	5		X							X						

Samples received at 4 °C

Friedman & Bruya, Inc.  
 3012 16<sup>th</sup> Avenue West  
 Seattle, WA 98119-2029  
 Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>[Signature]</u>	AMELIA C OATES	RGI	415 9/12/16	415
Received by: <u>[Signature]</u>	Eric [Signature]	FB	9/12/16	415
Relinquished by:				
Received by:				

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Yelena Aravkina, M.S.  
Michael Erdahl, B.S.  
Arina Podnozova, B.S.  
Eric Young, B.S.

3012 16th Avenue West  
Seattle, WA 98119-2029  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

October 6, 2016

Anna Jordan, Project Manager  
The Riley Group, Inc.  
17522 Bothell Way NE  
Bothell, WA 98011

Dear Ms Jordan:

Included are the results from the testing of material submitted on September 30, 2016 from the 2016-023A, F&BI 609548 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
TRG1006R.DOC

FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 30, 2016 by Friedman & Bruya, Inc. from the The Riley Group 2016-023A, F&BI 609548 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>The Riley Group</u>
609548 -01	BK MW-6
609548 -02	BK MW-7
609548 -03	BK MW-8
609548 -04	Test Blank

All quality control requirements were acceptable.

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	BK MW -6	Client:	The Riley Group
Date Received:	09/30/16	Project:	2016-023A, F&BI 609548
Date Extracted:	10/03/16	Lab ID:	609548-01
Date Analyzed:	10/03/16	Data File:	100318.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	16
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	BK MW -7	Client:	The Riley Group
Date Received:	09/30/16	Project:	2016-023A, F&BI 609548
Date Extracted:	10/03/16	Lab ID:	609548-02
Date Analyzed:	10/03/16	Data File:	100330.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	3.3
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	50
1,2-Dichloroethane (EDC)	5.6
1,1,1-Trichloroethane	<1
Trichloroethene	310 ve
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	BK MW -7	Client:	The Riley Group
Date Received:	09/30/16	Project:	2016-023A, F&BI 609548
Date Extracted:	10/03/16	Lab ID:	609548-02 1/10
Date Analyzed:	10/04/16	Data File:	100409.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	97	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	5.7
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	<10
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	75
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	300
Tetrachloroethene	<10

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	BK MW-8	Client:	The Riley Group
Date Received:	09/30/16	Project:	2016-023A, F&BI 609548
Date Extracted:	10/03/16	Lab ID:	609548-03
Date Analyzed:	10/03/16	Data File:	100331.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	8.3
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	62
Tetrachloroethene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	The Riley Group
Date Received:	Not Applicable	Project:	2016-023A, F&BI 609548
Date Extracted:	10/03/16	Lab ID:	06-2049 mb
Date Analyzed:	10/03/16	Data File:	100308.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	98	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/06/16

Date Received: 09/30/16

Project: 2016-023A, F&BI 609548

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 609548-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	103	36-166
Chloroethane	ug/L (ppb)	50	<1	115	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	103	60-136
Methylene chloride	ug/L (ppb)	50	<5	102	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	97	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	88	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	99	60-146
Trichloroethene	ug/L (ppb)	50	16	93 b	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	99	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	95	98	50-154	3
Chloroethane	ug/L (ppb)	50	108	110	58-146	2
1,1-Dichloroethene	ug/L (ppb)	50	98	99	67-136	1
Methylene chloride	ug/L (ppb)	50	95	93	39-148	2
trans-1,2-Dichloroethene	ug/L (ppb)	50	94	94	68-128	0
1,1-Dichloroethane	ug/L (ppb)	50	92	92	79-121	0
cis-1,2-Dichloroethene	ug/L (ppb)	50	94	95	80-123	1
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	85	84	73-132	1
1,1,1-Trichloroethane	ug/L (ppb)	50	95	95	83-130	0
Trichloroethene	ug/L (ppb)	50	91	91	80-120	0
Tetrachloroethene	ug/L (ppb)	50	95	97	76-121	2

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## ENVIRONMENTAL CHEMISTS

### **Data Qualifiers & Definitions**

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

