



**THE RILEY GROUP INC.**

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August 23, 2013

LDII, LLC  
704 Northeast Northlake Way, Suite 100  
Seattle, Washington 98105

**RE: Groundwater Monitoring Well Sampling Report – 3<sup>rd</sup> Quarter 2013  
Skyway Property  
12536 Renton Avenue South  
Renton, Washington  
Project No. 2013-303**

Dear John:

This Groundwater Monitoring Well Sampling Report documents The Riley Group Inc. (RGI) field protocols and findings associated with the sampling of groundwater monitoring wells HC-1, HC-2, HC-3 and HC-15 located at the Skyway Plaza, 12536 Renton Avenue South, Renton, King County, Washington (hereafter referred to as the Site, Figure 1).

LDII, LLC (hereafter referred to as the Client) authorized RGI to perform this sampling event on July 26, 2013 to document current groundwater quality underlying the Site at these existing monitoring well locations.

**PROJECT BACKGROUND**

The Site is located at 12536 Renton Avenue South, Renton, King County, Washington (Figure 1). The Site is currently occupied by a single-story strip mall building containing a convenience store, a food bank, a salon, a fellowship hall, and associated asphalt-paved parking lot. Historically, the Site was occupied by a dry cleaners facility (Figure 2). The Site is situated at an elevation of approximately 410 feet above mean sea level.

The existing groundwater monitoring wells (HC-1, HC-2, HC-3, and HC-15) were installed in January 2001 by Hart Crowser. Monitoring wells HC-2, HC-3, and HC-15 were reportedly installed above the underlying very dense glacial till, within the shallow perched water-bearing zone. Monitoring wells HC-2, HC-3, and HC-15 were screened at depths of 15 feet to 5 feet below grade. Well HC-1 was reportedly installed within a deeper water-bearing zone (screened at depths of 30 feet to 20 feet below grade). Hart Crowser reported a groundwater flow direction (for the shallow perched water bearing zone) towards the southwest. Hart Crowser did not include in their report their surveyed top on monitoring well casing elevations.

Previous groundwater monitoring events were performed by Hart Crowser in 2001 and RGI in 2007.

Hart Crowser's 2001 analytical results are provided in the attached Table 1 and Figure 2 and are summarized as follows:

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**SERVING THE PACIFIC NORTHWEST**

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*Corporate Office  
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Bothell, Washington 98011  
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*Kennewick, Washington  
Phone 509.586.4840*

- Shallow groundwater monitoring wells HC-2, HC-3, and HC-15 had tetrachloroethene (PCE) concentrations ranging from 3,300 µg/L to 9,100 µg/L and trichloroethene (TCE) concentrations ranging from 9.1 µg/L to 42 µg/L. Vinyl chloride was detected in groundwater at monitoring well HC-2 at a concentration of 28 µg/L.
- The deeper groundwater monitoring well HC-1 had a PCE concentration of 1.6 µg/L and non-detectable concentrations of TCE and vinyl chloride.

RGI's 2007 analytical results are provided in the attached Table 1 and Figure 2 and are summarized as follows:

- Shallow groundwater monitoring wells HC-2, HC-3, and HC-15 had PCE concentrations ranging from 120 µg/L to 1,700 µg/L and TCE concentrations ranging from 5 µg/L to 20 µg/L. Vinyl chloride was detected in groundwater at monitoring well HC-2 at a concentration of 16 µg/L.
- The deeper groundwater monitoring well HC-1 had non-detectable concentrations of PCE, TCE, and vinyl chloride.

The Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water for PCE/TCE and vinyl chloride is 5 µg/L and 0.2 µg/L, respectively.

#### MTCA CLEANUP REGULATIONS

Washington's toxic waste cleanup law, the Model Toxics Control Act (RCW 70.105D), mandates that site cleanups protect human health and the environment. The MTCA Cleanup Regulation (WAC 173-340) defines the approach for establishing cleanup requirements for individual sites, including the establishment of cleanup standards and selection of cleanup actions.

The MTCA regulation provides three options for establishing generic and site-specific cleanup levels for soil and groundwater. Method A cleanup levels have been adopted for specific purposes and are intended to provide conservative cleanup levels for sites undergoing routine site characterization or cleanup actions or those sites with relatively few hazardous substances. Method B and C cleanup levels are set using a site risk assessment, which focus on the use of "reasonable maximum exposure" assumptions based on site-specific characteristics and toxicity of the contaminants of concern.

For purposes of comparison, groundwater analytical results were compared to the following regulation:

- Ecology Model MTCA Method A Cleanup Levels for Ground Water (WAC 173-340-900, Table 720-1).

### 3RD QUARTER 2013 GROUNDWATER SAMPLING EVENT

#### STATIC WATER LEVELS

Static groundwater field measurements were collected August 8, 2013. Depth to groundwater ranged from 5.62 to 13.49 feet below top of well casing (TOC). Depth to water measurements were recorded using an electronic water level indicator. Water levels recorded at each well location are summarized in Table 1.

Top of well casing (TOC) elevations (relative to an arbitrary datum) are unknown, therefore groundwater elevations and corresponding flow direction were not obtained from our well gauging data.

#### GROUNDWATER WELL PURGE AND SAMPLE COLLECTION

On August 8, 2013, RGI purged and sampled monitoring wells HC-1, HC-2, HC-3, and HC-15 at the Site (Figure 2). Well purging and sampling protocols for this project are discussed below.

The groundwater-monitoring wells were purged using a submersible pump. At least three well-volumes were purged from each well prior to sampling. Well development water was placed in one 55-gallon steel drum, labeled as "Haz-Waste" and left on the Site pending profiling and disposal.

Following purging activities, wells were left to recharge to at least 80 percent of their original water level prior to sampling. Wells were sampled using a peristaltic pump.

Groundwater samples were collected in laboratory-supplied 40-milliliter vials with Teflon caps (no headspace). Sample containers were placed in an ice-chilled cooler and transported to the analytical laboratory under proper chain-of-custody documentation.

#### LABORATORY ANALYSIS

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

- Halogenated volatile organic compounds (HVOCs) using EPA Test Method 8260.

A copy of the laboratory report and sample chain-of-custody are included in Appendix A.

#### FINDINGS

The analytical results and the Ecology MTCA Method A Cleanup Levels for Ground Water are summarized in Table 1, Figure 2 and are discussed below. In addition, charts for each monitoring well showing HVOC concentrations versus time (logarithmic scale) are included in Appendix B.

RGI's 2013 analytical results are summarized as follows:

- Shallow groundwater monitoring wells HC-2, HC-3, and HC-15 had PCE concentrations ranging from 160 µg/L to 370 µg/L and TCE concentrations ranging from 9.1 µg/L to 17 µg/L. Vinyl chloride was detected in groundwater at monitoring well HC-2 at a concentration of 2.5 µg/L.
- The deeper groundwater monitoring well HC-1 had a PCE and TCE concentration of 1.3 µg/L and 9.3 µg/L, respectively. Vinyl chloride was not detected..

The Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water for PCE/TCE and vinyl chloride is 5 µg/L and 0.2 µg/L, respectively.

### LIMITATIONS

Work for this project was performed, and this report 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, LDII, LLC, 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 12536 Renton Avenue South, Renton, 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.

Sincerely,

THE RILEY GROUP, INC.

*Mike Gini* for Stafford Larsen

Stafford Larsen  
Staff Geologist

*Anna Jordan*

Anna Jordan, LG  
Project Geologist



ANNA J. JORDAN

*Paul D. Riley*

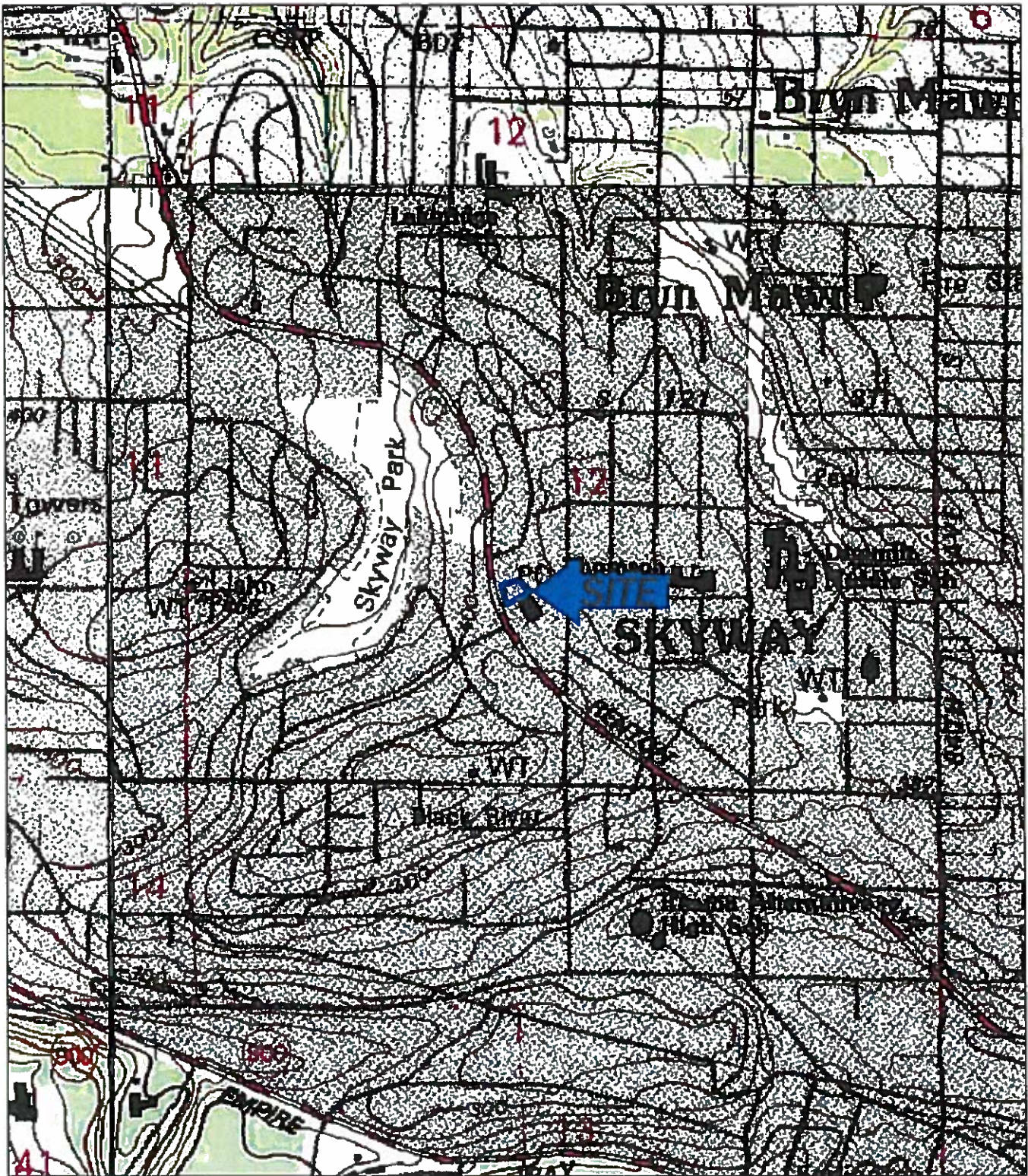
Paul D. Riley, LG, LHG  
Principal

**Attachments:** *Figure 1, Site Vicinity Map*  
*Figure 2, Site Plan*  
*Table 1, Summary of Groundwater Sample Analytical Results*  
*Appendix A, Analytical Laboratory Reports and Chain of Custody*  
*Appendix B, Charts Showing Monitoring Well HVOC Concentrations versus Time*

**Distribution:** *LDII, LLC (one bound copy and PDF)*  
*Mr. Keith Moxon, Buck and Gordon (PDF)*

THE RILEY GROUP, INC.





USGS, 1994, Renton, Washington  
7.5-Minute Quadrangle

Approximate Scale: 1"=1000'



**The Riley Group, Inc.**  
17522 Bothell Way Northeast  
Bothell, Washington 98011  
Phone: 425.415.0551 ♦ Fax: 425.415.0311

Skyway Plaza		Figure 1
RGI Project Number 2013-303	Site Vicinity Map	Date Drawn: 08/2013
Address: 12536 Renton Avenue South, Renton, Washington 98078		

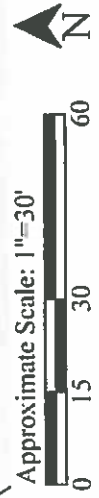
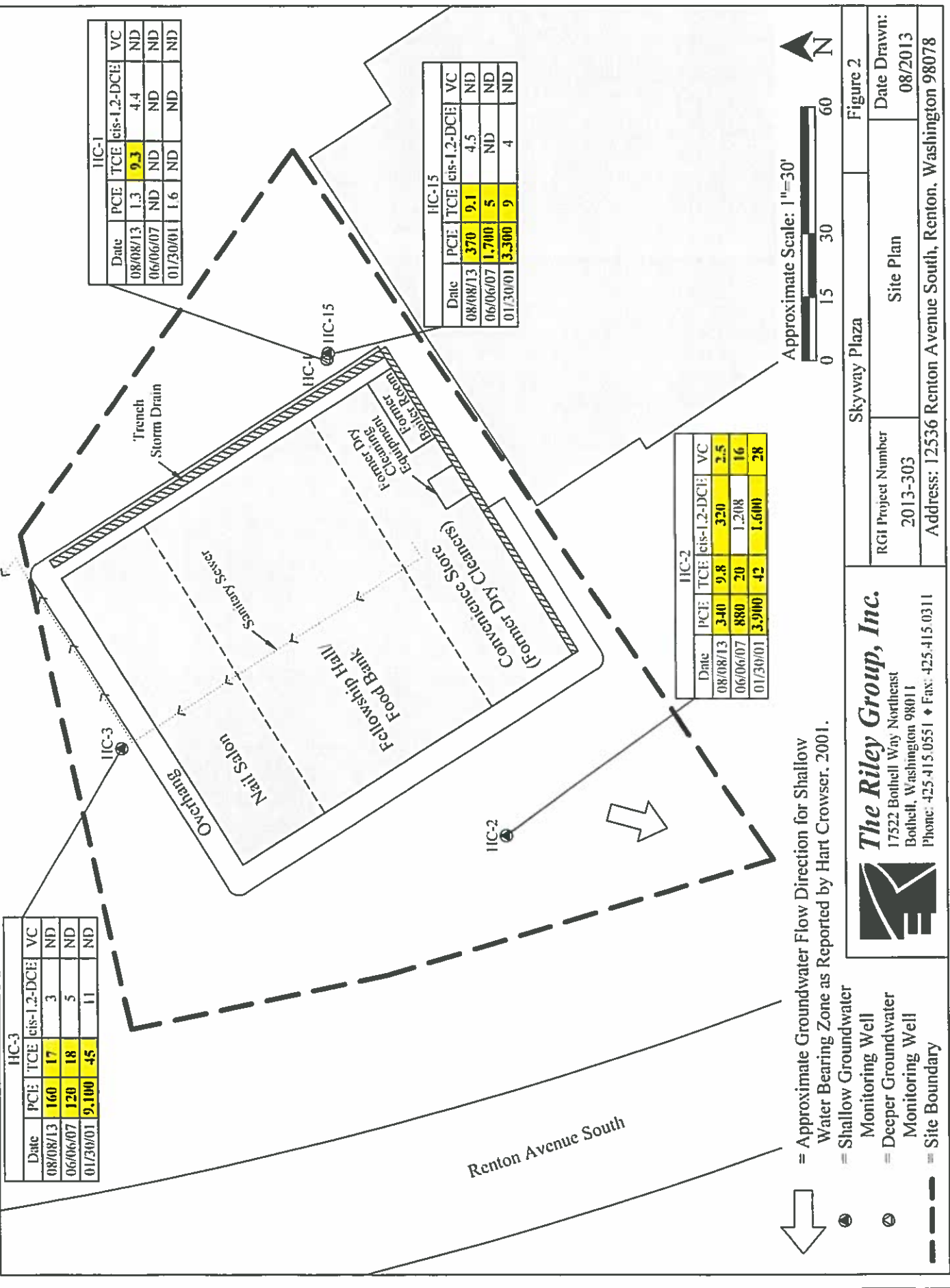


IIC-3				
Date	PCE	TCE	cis-1,2-DCE	VC
08/08/13	160	17	3	ND
06/06/07	120	18	5	ND
01/30/01	9,100	45	11	ND

IIC-1				
Date	PCE	TCE	cis-1,2-DCE	VC
08/08/13	1.3	9.3	4.4	ND
06/06/07	ND	ND	ND	ND
01/30/01	1.6	ND	ND	ND

IIC-15				
Date	PCE	TCE	cis-1,2-DCE	VC
08/08/13	370	9.1	4.5	ND
06/06/07	1,700	5	ND	ND
01/30/01	3,300	9	4	ND

IIC-2				
Date	PCE	TCE	cis-1,2-DCE	VC
08/08/13	340	9.8	320	2.5
06/06/07	880	20	1,208	16
01/30/01	3,900	42	1,600	28



- = Approximate Groundwater Flow Direction for Shallow Water Bearing Zone as Reported by Hart Crowser, 2001.
- = Shallow Groundwater Monitoring Well
- = Deeper Groundwater Monitoring Well
- = Site Boundary

**The Riley Group, Inc.**  
 17522 Bothell Way Northeast  
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Skyway Plaza		Figure 2
RGI Project Number	2013-303	Date Drawn: 08/2013
Site Plan		Address: 12536 Renton Avenue South, Renton, Washington 98078

**Table 1. Summary of Groundwater Grab Sample Analytical Laboratory Results**

**Skyway Plaza  
12536 Renton Avenue South, Renton, Washington  
The Riley Group, Inc. Project No. 2013-303**

Sample Number	Sample Date	Consultant	Depth to Water (below TOC)	PID	HVOCs			
					PCE	TCE	cis-1,2-DCE	VC
HC-1								
HC-1	08/08/13	RGI	13.49	0.4	1.3	<b>9.3</b>	4.4	ND<0.2
HC-1	06/06/07	RGI	13.52	0.0	ND<2	ND<2	ND<2	ND<0.2
HC-1	01/30/01	Hart Crowser	---	---	1.6	ND<2	ND<2	ND<0.2
HC-2								
HC-2	08/08/13	RGI	6.24	12.2	<b>340</b>	<b>9.8</b>	<b>320</b>	<b>2.5</b>
HC-2	06/06/07	RGI	5.23	7.1	<b>880</b>	<b>20</b>	<b>1200</b>	<b>16</b>
HC-2	01/30/01	Hart Crowser	---	---	<b>3900</b>	<b>42</b>	<b>1600</b>	<b>28</b>
HC-3								
HC-3	08/08/13	RGI	5.62	4.6	<b>160</b>	<b>17</b>	3	ND<0.2
HC-3	06/06/07	RGI	4.62	3.3	<b>120</b>	<b>18</b>	5	ND<0.2
HC-3	01/30/01	Hart Crowser	---	---	<b>9100</b>	<b>45</b>	11	ND<0.2
HC-15								
HC-15	08/08/13	RGI	7.33	156.3	<b>370</b>	3.1	1.9	ND<0.2
HC-15	06/06/07	RGI	6.31	15.8	<b>1700</b>	<b>5</b>	ND<0.2	ND<0.2
HC-15	01/30/01	Hart Crowser	---	---	<b>3300</b>	<b>9.1</b>	4.5	ND<0.2
MTCA Method A Cleanup Levels for Ground Water					5	5	80 <sup>1</sup>	0.2

**Notes:**

Wells HC-2, HC-3 and HC-15 were reportedly installed above the dense underlying glacial till, within the shallow water-bearing zone. Well HC-1 was installed deeper within the till.

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).

Depth to groundwater = Groundwater depth measured in feet from top of casing to static water table.

Top of well casing elevations are not known and were not reported in previous reports on file at RGI.

PID = Photoionization Detector. Volatile organic compound result measured using photoionization detector (PID). Measurement taken inside well casing immediately following removal of well cap (result given in parts per million per volume, ppmv).

HVOCs (halogenated volatile organic compounds) determined using Test Method 8260B. Not all HVOCs detected are shown in Table.

PCE = Tetrachloroethylene, TCE = Trichloroethene, cis 1,2 DCE = cis-1,2-Dichloroethene, VC = Vinyl Chloride

ND = Not detected at noted analytical detection limit.

---- = Not analyzed or not applicable.

<sup>1</sup> Since no MTCA Method A cleanup level is reported by Ecology, the MTCA Method B Cleanup Level is referenced.

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).

**Bold and yellow highlighted** results indicate concentrations (if any) that exceed MTCA Method A 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.  
Kurt Johnson, B.S.  
Eric Young, B.S.

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www.friedmanandbruya.com

August 15, 2013

Stafford Larsen, Project Manager  
The Riley Group, Inc.  
17522 Bothell Way NE  
Bothell, WA 98011

Dear Ms. Larsen:

Included are the results from the testing of material submitted on August 8, 2013 from the 2013-303, F&BI 308150 project. There are 11 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  
TRG0815R.DOC



FRIEDMAN & BRUYA, INC.

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ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 8, 2013 by Friedman & Bruya, Inc. from the The Riley Group 2013-303, F&BI 308150 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>The Riley Group</u>
308150 -01	HC-1
308150 -02	HC-3
308150 -03	HC-2
308150 -04	HC-15

Several 8260C compounds failed below the acceptance criteria in the matrix spike samples. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC-1	Client:	The Riley Group
Date Received:	08/08/13	Project:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	308150-01
Date Analyzed:	08/09/13	Data File:	080908.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	100	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	4.4
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	9.3
Tetrachloroethene	1.3

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

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

Client Sample ID:	HC-3	Client:	The Riley Group
Date Received:	08/08/13	Project:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	308150-02
Date Analyzed:	08/09/13	Data File:	080909.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	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	3.0
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	17
Tetrachloroethene	160 ve

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

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

Client Sample ID:	HC-3	Client:	The Riley Group
Date Received:	08/08/13	Project:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	308150-02 1/10
Date Analyzed:	08/12/13	Data File:	081212.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	101	51	121
4-Bromofluorobenzene	100	32	146

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<2
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	<10
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	<10
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	17
Tetrachloroethene	160



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC-2	Client:	The Riley Group
Date Received:	08/08/13	Project:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	308150-03
Date Analyzed:	08/09/13	Data File:	080910.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	99	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	2.5
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	2.2
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	310 ve
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	9.8
Tetrachloroethene	350 ve

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

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

Client Sample ID:	HC-2	Client:	The Riley Group
Date Received:	08/08/13	Project:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	308150-03 1/10
Date Analyzed:	08/12/13	Data File:	081213.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	100	51	121
4-Bromofluorobenzene	102	32	146

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<2
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	<10
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	320
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	<10
Tetrachloroethene	340

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC-15	Client:	The Riley Group
Date Received:	08/08/13	Project:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	308150-04
Date Analyzed:	08/12/13	Data File:	081215.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	100	51	121
4-Bromofluorobenzene	101	32	146

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	1.9
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	3.1
Tetrachloroethene	350 ve

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC-15	Client:	The Riley Group
Date Received:	08/08/13	Project:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	308150-04 1/10
Date Analyzed:	08/12/13	Data File:	081214.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	101	51	121
4-Bromofluorobenzene	102	32	146

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<2
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	<10
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	<10
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	<10
Tetrachloroethene	370



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:	2013-303, F&BI 308150
Date Extracted:	08/09/13	Lab ID:	03-1547 mb
Date Analyzed:	08/09/13	Data File:	080907.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	106	57	121
Toluene-d8	94	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: 08/15/13

Date Received: 08/08/13

Project: 2013-303, F&BI 308150

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

Laboratory Code: 308150-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	102	36-166
Chloroethane	ug/L (ppb)	50	<1	107	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	58 vo	60-136
Methylene chloride	ug/L (ppb)	50	<5	59 vo	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	107	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	106	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	4.4	108	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	109	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	112	60-146
Trichloroethene	ug/L (ppb)	50	9.3	107	66-135
Tetrachloroethene	ug/L (ppb)	50	1.3	93	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	113	113	50-154	0
Chloroethane	ug/L (ppb)	50	119	117	58-146	2
1,1-Dichloroethene	ug/L (ppb)	50	122	122	67-136	0
Methylene chloride	ug/L (ppb)	50	87	91	39-148	4
trans-1,2-Dichloroethene	ug/L (ppb)	50	104	117	68-128	12
1,1-Dichloroethane	ug/L (ppb)	50	102	118	79-121	15
cis-1,2-Dichloroethene	ug/L (ppb)	50	105	115	80-123	9
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	103	104	73-132	1
1,1,1-Trichloroethane	ug/L (ppb)	50	109	109	83-130	0
Trichloroethene	ug/L (ppb)	50	103	104	80-120	1
Tetrachloroethene	ug/L (ppb)	50	91	93	76-121	2

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

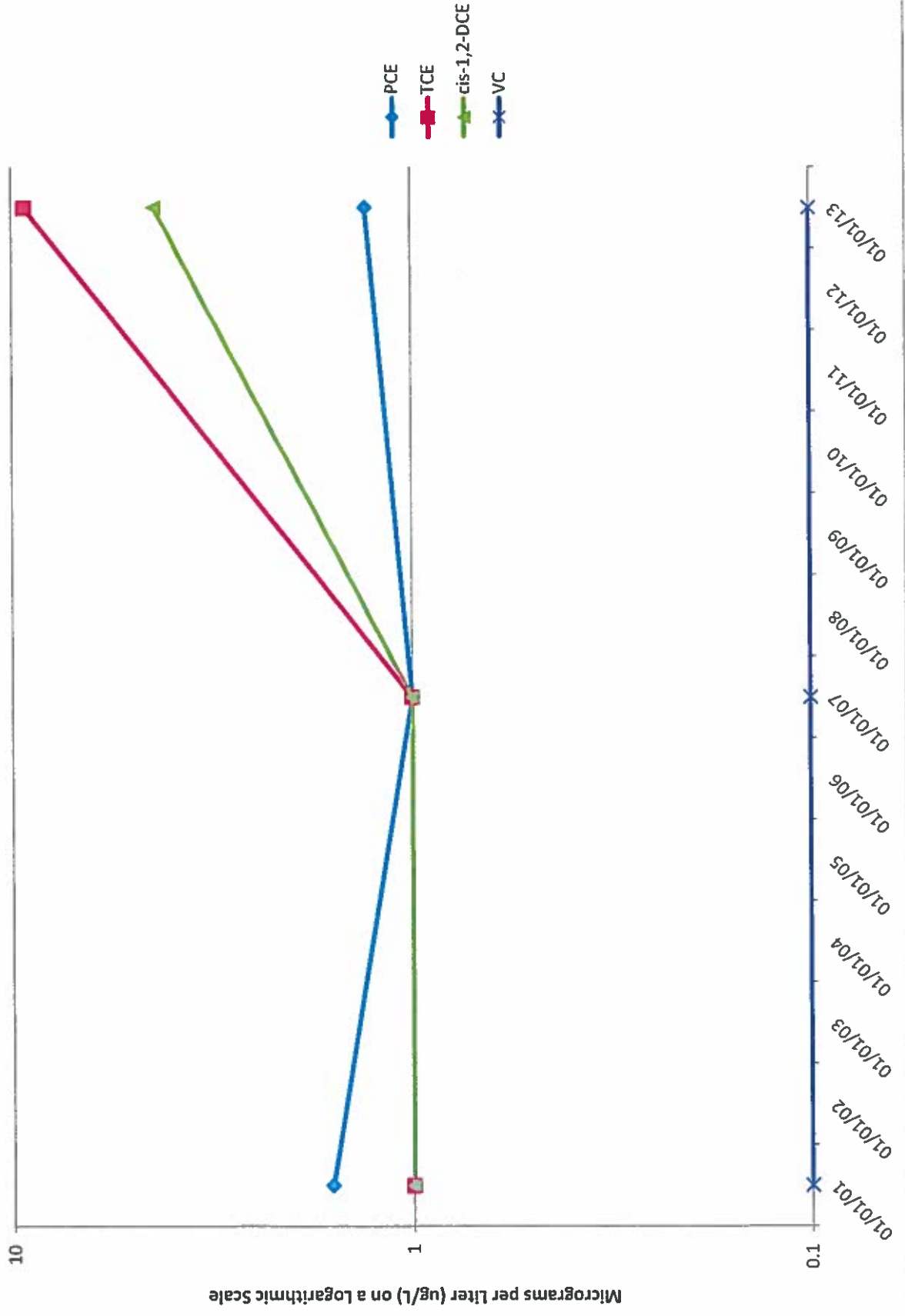
### Data Qualifiers & Definitions

- 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.
- A1 - More than one compound of similar molecule structure was identified with equal probability.
- 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 this range fell outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte indicated may be due to carryover from previous sample injections.
- d - The sample was diluted. Detection limits may be raised due to dilution.
- ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb - Analyte present in the blank and the sample.
- 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. The variability is attributed to sample inhomogeneity.
- ht - Analysis performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The result is below normal reporting limits. 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 analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr - The rpd result in laboratory control sample associated with the analyte is 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 compound indicated 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 in a container not approved by the method. The value reported should be considered an estimate.
- pr - The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- 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.

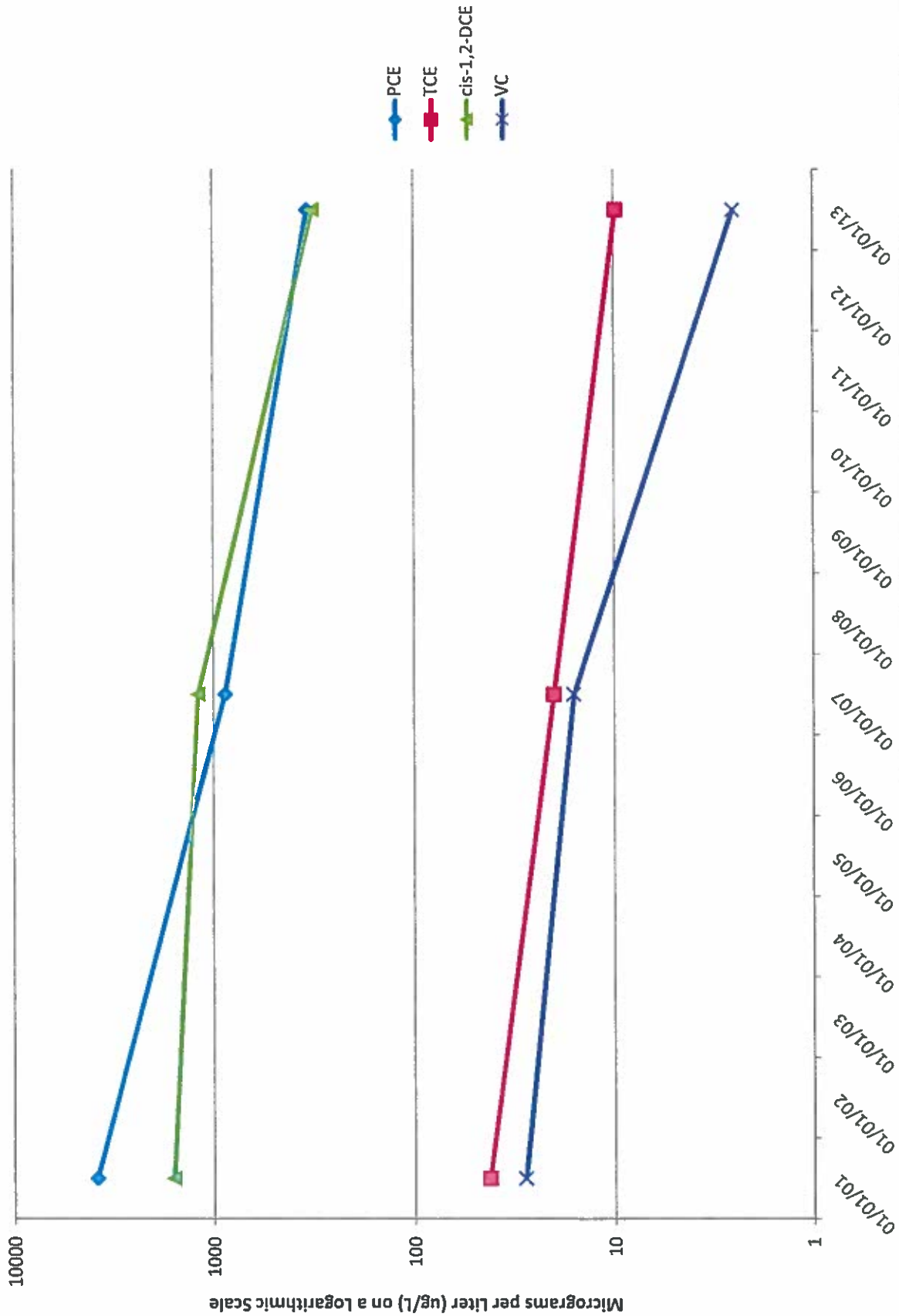




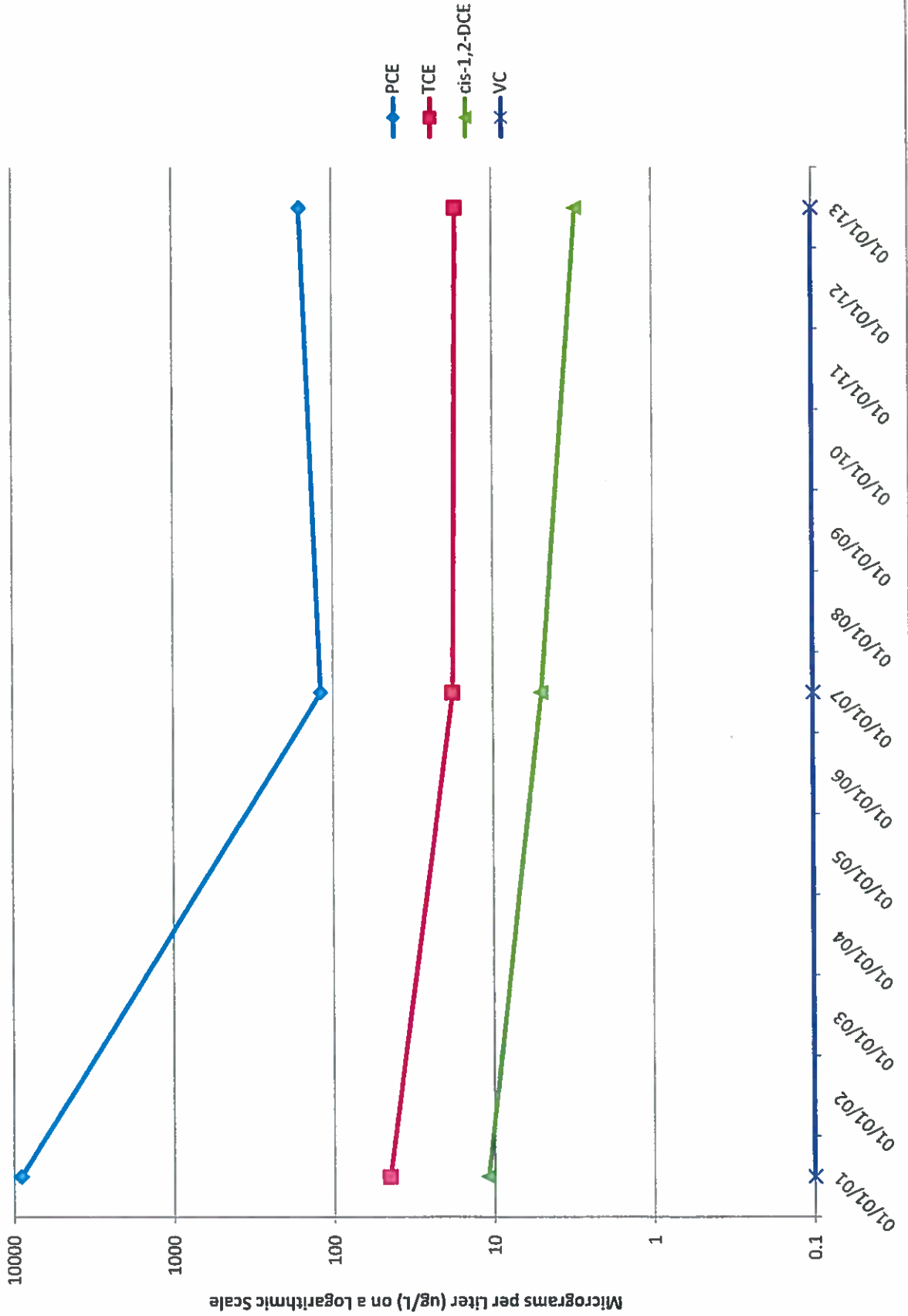
# HC-1



# HC-2



# HC-3



# HC-4

