



TECHNICAL MEMORANDUM

Date: January 18, 2016

To: Mr. Eran Fields
Fields Holdings, LLC

From: Jerry Sawetz and Paul Riley
The Riley Group, Inc.

Subject: Summary of Recent Groundwater Sampling and Summary of Groundwater Data
Chevron Station No. 9-0129
4700 Brooklyn Avenue Northeast
Seattle, Washington 98105
RGI Project No: 2015-006E

This memorandum summarizes the groundwater sampling performed on January 6, 2016 to document groundwater quality underlying the Chevron Station No. 9-0129 Property – specifically in regards to halogenated volatile organic compounds (HVOCs). HVOCs include chlorinated solvents that are commonly associated dry cleaner operations. HVOCs include tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride (VC), cis-1, 2 Dichloroethene (cis-1, 2 DCE), and others.

The purpose for sampling and testing groundwater from these four monitoring wells (MW3, MW6, MW9, and MW13) was to determine whether or not the off-property and upgradient dry cleaners had adversely affected soil and/or shallow groundwater quality underlying the Property. These four wells were selected for groundwater sampling and analysis since they are located along or near the western Property boundary and down-gradient of a former off-property dry cleaners. The Property monitoring well locations and former dry cleaners location are illustrated on the attached Figure 1.

In the case of soil, elevated PCE and TCE concentrations in soil typically designate, and are handled/disposed of, as a *hazardous waste* or *contained-in hazardous waste* (both scenarios result in increased handling, treatment, and/or disposal costs). The same potential concerns pertain to elevated HVOC concentrations in groundwater (more specifically for PCE, TCE, cis-1,2 DCE, and VC).

The existing groundwater monitoring wells located on the Property have never been sampled, or tested for HVOCs, by the previous consultants (on behalf of Chevron et. al), since the early 1990s to date.

Groundwater Monitoring Well Installation and Sampling

On January 6, 2015 The Riley Group, Inc. (RGI) collected groundwater samples from four monitoring wells (MW3, MW6, MW9, and MW13) located on the Property. Well locations are illustrated on the attached Figure 1. Each well was purged of approximately three well volumes prior to groundwater sample collections. Waste water from sampling and decontamination was stored on the Property in a 55-gallon drum placed at along the northern edge of the building.

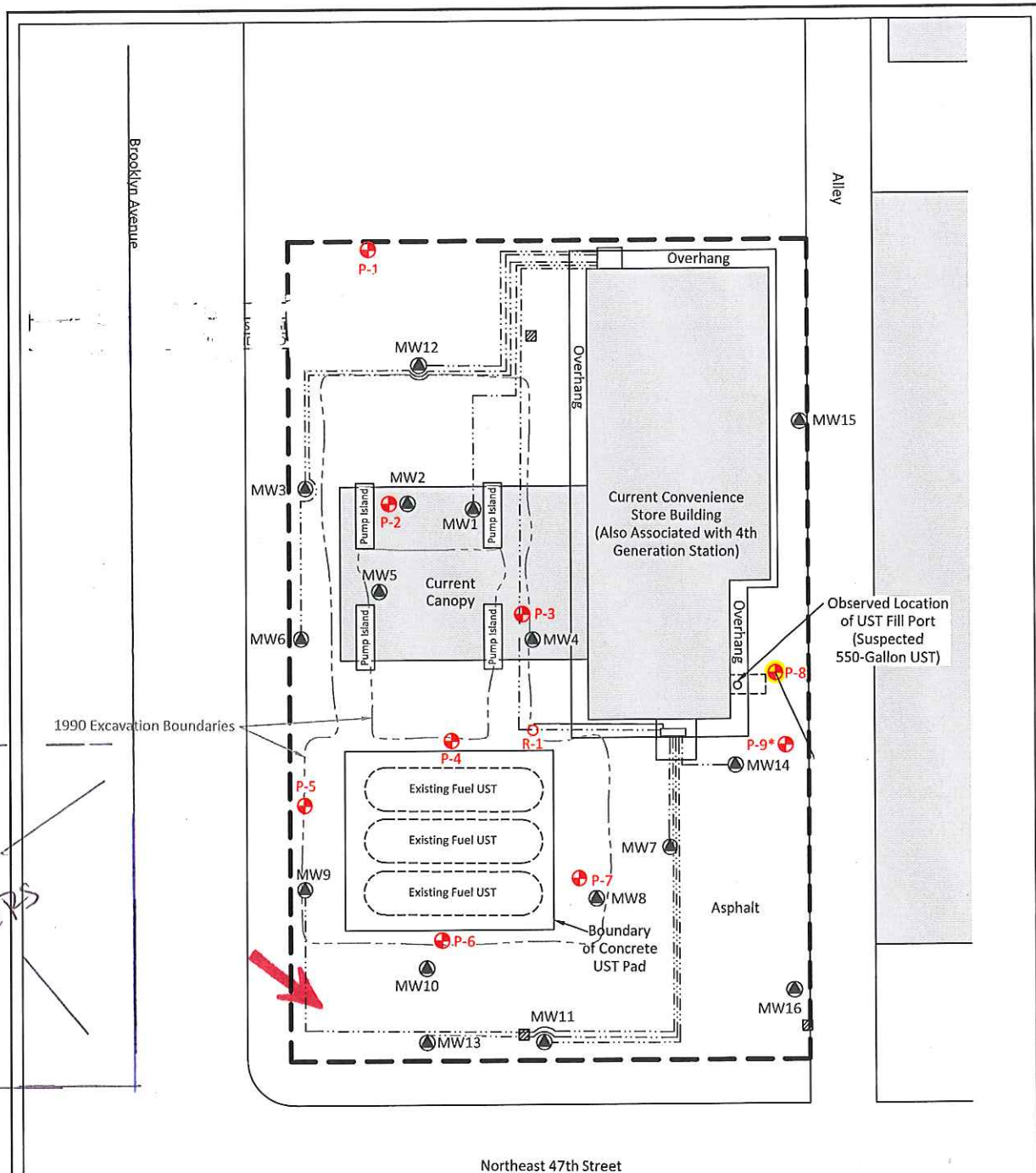
The results are summarized below on the attached Figure 1.

- (a) Depth to groundwater beneath the western portion of the Property ranged from approximately 16 feet to 18 feet below top of well casing (see attached Table 1).
- (b) Groundwater samples collected from monitoring wells MW3 and MW6 were non-detect for HVOCs (see Table 1).
- (c) Monitoring wells MW9 and MW13 had non-detectable concentrations of tetrachloroethene (PCE) and trichloroethene (TCE). However, concentrations of cis-1,2 Dichloroethene (cis-1,2 DCE) and/or vinyl chloride (VC) were detected at concentrations up to 24 µg/L (at MW13) and 0.67 µg/L (at MW13), respectively. The cis-1,2 DCE concentrations at wells MW9 and MW13 exceeded the MTCA Method B Groundwater Cleanup Level of 16 µg/L. The VC concentration detected at well MW13 exceeded the MTCA Method A Groundwater Cleanup Level of 0.2 µg/L.
- (d) The likely source of the contaminants cis-1,2 DCE and VC is from the off-property former dry cleaners. The contaminants cis-1,2 DCE and VC are indicative of naturally occurring degradation, over time, of the common dry cleaning solvent PCE.

In regards to dewatering during the proposed excavation/cleanup action, the detected VC (0.67 µg/L) and cis-1,2 DCE (16 µg/L) concentrations are below King County Industrial Waste Program's (KCIW) typical allowable discharge limits to sanitary sewer of 12 µg/L and 2,000 µg/L, respectively. Note: KCIW establishes discharge limits to the sanitary sewer on a case-by case basis. However, these discharge limits are what we have seen KCIW establish for similar projects in the Seattle area. These discharge limits pertain to discharge to the sanitary sewer (and not to storm sewer).

The absence of PCE and TCE in groundwater underlying the western portion of the Property suggest that PCE- and/or TCE-contaminated soil will not be encountered during future cleanup and excavations for the one to two level underground parking garage. Both PCE and TCE are highly water soluble. Hence, if PCE and TCE are present in soil beneath the Property (in this case, along the western Property boundary- and down-gradient of the former off-site dry cleaners), PCE and/or TCE would have been detected in groundwater during this sampling event.

In our opinion, the relatively low concentrations of VC (0.67 µg/L) and cis-1,2 DCE (16 µg/L) in groundwater at MW13 and MW9 (albeit, above MTCA Method Cleanups) does not imply these compounds will be detected during redevelopment of the Property. However, it is likely that the landfill/treatment facility will require some soil sampling and testing for VC (and other HVOCs) in the southwest portion of the Property for the acceptance of the solid waste.



Farmer
DRY
CLEANERS

= REQUIRED GROUNDWATER FLOW DIRECTION

- = Groundwater analytical laboratory results in ug/L
 Gas/DSL/Oil = Gasoline/diesel/oil total petroleum hydrocarbons
 BTEX = Benzene, toluene, ethylbenzene, xylenes
 VOCs = Volatile organic compounds
 ND = Not detected above the laboratory detection limit
 Bold and yellow highlighted results exceed MTCA Cleanup Levels.
 x = The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- = (in red) Test probe location by RGI on 02/24/15
- = (in red) Product recovery well
- = (in black) Current monitoring well location
- = Test probe P9 was relocated to location P8 in order to drill closer to the observed UST.
- = (in black) Approximate location of lines associated with air sparge/soil vapor extraction (AS/SVE) system
- = (in black) Catch basin
- = Site boundary

Approximate Scale: 1"=20'
 0 10 20 40 N

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

Chevron Station No. 9-0129		Figure 4
RGI Project Number 2015-006A	Site Plan with Test Probes Locations and Groundwater Analytical Laboratory Results	Date Drawn: 03/2015
Address: 4700 Brooklyn Avenue, Seattle, Washington 98105		

Table 1. Summary of Groundwater Analytical Laboratory Results - Brooklyn Chevron Station
4700 Brooklyn Avenue NE, Seattle, Washington
The Riley Group, Inc. Project #2015-006E

Sample Number	Depth to H2O	HVOCs				Other HVOCs
		PCE	TCE	cis 1,2 DCE	VC	
MW 3	18.15	ND<1	ND<1	ND<1	ND<0.2	ND<1
MW 6	18.07	ND<1	ND<1	ND<1	ND<0.2	ND<1
MW 9	16.80	ND<1	ND<1	22	ND<0.2	ND<1
MW 13	15.92	ND<1	ND<1	24	0.67	BSL
MTCA Method A Groundwater Screening Levels		5	5	----	0.2	Analyte Specific
MTCA Method B Groundwater Screening Levels		20.8	0.54	16	0.029	Analyte Specific

Samples were collected by RGI on January 6, 2016

All results and detection limits are given in ug/L; equivalent to parts per billion (ug/L)

Depth to H2O = Depth to groundwater measured from top of well casing.

PID = Photoionization Detector

HVOCs = Halogenated Volatile Organic Compounds determined using EPA Test Method 8260C.

ND = Not Detected at noted analytical detection limit.

---- = Not analyzed or not applicable.

BSL = All other concentrations below screening levels.

Ecology Model Toxics Control Act Method A and B Cleanup Levels for Ground Water obtained from CLARC database on January 20, 2016.

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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January 19, 2016

Jerry Sawetz, Project Manager
The Riley Group, Inc.
17522 Bothell Way NE
Bothell, WA 98011

Dear Mr. Sawetz:

Included are the results from the testing of material submitted on January 8, 2016 from the 2015-006E, F&BI 601070 project. There are 9 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
TRG0119R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 8, 2015 by Friedman & Bruya, Inc. from the The Riley Group 2015-006E, F&BI 601070 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>The Riley Group</u>
601070 -01	MW 13
601070 -02	MW 9
601070 -03	MW 6
601070 -04	MW 3

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW 13	Client:	The Riley Group
Date Received:	01/08/16	Project:	2015-006E, F&BI 601070
Date Extracted:	01/08/16	Lab ID:	601070-01
Date Analyzed:	01/08/16	Data File:	010811.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	109	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	0.67
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	2.1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	24
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

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ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW 9	Client:	The Riley Group
Date Received:	01/08/16	Project:	2015-006E, F&BI 601070
Date Extracted:	01/08/16	Lab ID:	601070-02
Date Analyzed:	01/08/16	Data File:	010812.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	104	76	126

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	22
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:	MW 6	Client:	The Riley Group
Date Received:	01/08/16	Project:	2015-006E, F&BI 601070
Date Extracted:	01/08/16	Lab ID:	601070-03
Date Analyzed:	01/08/16	Data File:	010813.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	101	76	126

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:	MW 3	Client:	The Riley Group
Date Received:	01/08/16	Project:	2015-006E, F&BI 601070
Date Extracted:	01/08/16	Lab ID:	601070-04
Date Analyzed:	01/08/16	Data File:	010814.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	102	76	126

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

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ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	The Riley Group
Date Received:	Not Applicable	Project:	2015-006E, F&BI 601070
Date Extracted:	01/08/16	Lab ID:	06-023 mb
Date Analyzed:	01/08/16	Data File:	010807.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	101	76	126

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: 01/19/16

Date Received: 01/08/16

Project: 2015-006E, F&BI 601070

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

Laboratory Code: 601013-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent	Acceptance
				Recovery MS	Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	91	61-139
Chloroethane	ug/L (ppb)	50	<1	112	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	90	71-123
Methylene chloride	ug/L (ppb)	50	<5	93	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	93	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	94	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	93	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	81	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	90	75-121
Trichloroethene	ug/L (ppb)	50	<1	93	75-109
Tetrachloroethene	ug/L (ppb)	50	<1	93	72-113

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 01/19/16

Date Received: 01/08/16

Project: 2015-006E, F&BI 601070

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

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	96	95	70-119	1
Chloroethane	ug/L (ppb)	50	108	108	66-149	0
1,1-Dichloroethene	ug/L (ppb)	50	92	93	75-119	1
Methylene chloride	ug/L (ppb)	50	94	94	63-132	0
trans-1,2-Dichloroethene	ug/L (ppb)	50	94	92	76-118	2
1,1-Dichloroethane	ug/L (ppb)	50	98	97	80-116	1
cis-1,2-Dichloroethene	ug/L (ppb)	50	95	93	80-112	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	84	83	79-109	1
1,1,1-Trichloroethane	ug/L (ppb)	50	93	93	80-116	0
Trichloroethene	ug/L (ppb)	50	95	95	77-108	0
Tetrachloroethene	ug/L (ppb)	50	91	91	78-109	0

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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.

601070

SAMPLE CHAIN OF CUSTODY

NE 01-08-16 of 1 U2

Send Report To SELY SAWETZ
 Company THE FLYER GROUP
 Address 17522 BATHUR WAY NE
 City, State, ZIP BATHUR, WA 98011
 Phone # 425-415-0551 Fax # _____

SAMPLERS (signature) [Signature]
 PROJECT NAME/NO. _____
 2015-006E
 REMARKS _____
 PO # _____

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____
 SAMPLE DISPOSAL
 Dispose after 90 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	ANALYSES REQUESTED						Notes		
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS		HVOCs	
MW 13	01 A-D	1/06/16	1255	H ₂ O	4							X		
MW 9	02		1305									X		
MW 6	03		1345									X		
MW 3	04		1425									X		

Friedman & Bryna, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044
 FORMS\COC\COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>[Signature]</u>	CHESTERPHEL FEENCH	REL	1/08/16	16:31:25
<u>[Signature]</u>	Bill Gleason	LED EX ORO	1/08/16	1:36
<u>[Signature]</u>	Rhan Phan	FEB I	1/16/16	14:10

Samples received at _____ °C