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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

December 9, 2014

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 5, 2014 from the North Edge KV030772B, F&BI 412121 project. There are 6 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 c: Frank Mocker AE11209R.DOC

## ENVIRONMENTAL CHEMISTS

## CASE NARRATIVE

This case narrative encompasses samples received on December 5, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412121 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Associated Earth Sciences
412121 -01	PC-37 4-8
412121 -02	PC-37 8-12
412121 -03	PC-56 0-4
412121 -04	PC-56 4-8
412121 -05	PC-49 4-8
412121 -06	PC-498-12
412121 -07	PC-38 4-8
412121 -08	PC-38 8-12
412121 -09	PC-55 4-8
412121 -10	PC-55 8-12

All quality control requirements were acceptable.

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/09/14 Date Received: 12/05/14 Project: North Edge KV030772B, F&BI 412121 Date Extracted: 12/05/14 Date Analyzed: 12/05/14, 12/06/14 and 12/08/14

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

			Ethyl	Total	Gasoline	Surrogate
Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Benzene</u>	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery</u> ) (Limit 50-150)
PC-37 4-8 412121-01	<0.02	<0.02	< 0.02	<0.06	<2	79
PC-37 8-12 412121-02 1/10	<0.02 j	1.4	6.4	9.2	1,600	90
PC-56 0-4 412121-03	0.042	0.11	< 0.02	<0.06	<2	79
PC-56 4-8 412121-04 1/5	0.04 j	0.37	<0.1	4.4	690	90
PC-49 4-8 412121-05	<0.02	<0.02	< 0.02	<0.06	<2	80
PC-49 8-12 412121-06	<0.02	< 0.02	0.087	0.087	27	91
PC-38 4-8 412121-07	<0.02	< 0.02	< 0.02	<0.06	<2	79
PC-38 8-12 412121-08	< 0.02	< 0.02	0.39	0.33	100	99
PC-55 4-8 412121-09	< 0.02	< 0.02	< 0.02	< 0.06	<2	78
PC-55 8-12 412121-10	<0.02	1.4	< 0.02	6.9	1,100	ip
Method Blank 04-2433 MB	< 0.02	< 0.02	< 0.02	< 0.06	<2	79

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/09/14 Date Received: 12/05/14 Project: North Edge KV030772B, F&BI 412121 Date Extracted: 12/05/14 Date Analyzed: 12/05/14

### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

<u>Sample ID</u> Laboratory ID	Diesel Range (C <sub>10</sub> -C <sub>25</sub> )	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 56-165)
PC-37 4-8 412121-01	<50	<250	102
PC-37 8-12 412121-02	1,400	<250	95
PC-56 0-4 412121-03	<50	<250	96
PC-56 4-8 412121-04	620	<250	93
PC-49 4-8 412121-05	<50	<250	96
PC-49 8-12 412121-06	<50	<250	101
PC-38 4-8 412121-07	<50	<250	90
PC-38 8-12 412121-08	<50	<250	90
PC-55 4-8 412121-09	<50	<250	89
PC-55 8-12 412121-10	1,600	<250	90
Method Blank 04-2449 MB	<50	<250	95

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/09/14 Date Received: 12/05/14 Project: North Edge KV030772B, F&BI 412121

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

Laboratory Code: 412121-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

		Percent					
		Spike	Recovery	Acceptance			
Analyte	Reporting Units	Level	LCS	Criteria			
Benzene	mg/kg (ppm)	0.5	77	69-120			
Toluene	mg/kg (ppm)	0.5	78	70-117			
Ethylbenzene	mg/kg (ppm)	0.5	79	65-123			
Xylenes	mg/kg (ppm)	1.5	79	66-120			
Gasoline	mg/kg (ppm)	20	95	71-131			

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/09/14 Date Received: 12/05/14 Project: North Edge KV030772B, F&BI 412121

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412121-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	96	95	63-146	1
Laboratory Code: La	aboratory Control	l Sample					
			Percent				
	Reporting	Spike	Recovery	Accept	tance		
Analyte	Units	Level	LCS	Crite	eria		
Diesel Extended	mg/kg (ppm)	5,000	95	79-1	.44		

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.

 ${\bf b}$  - 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.

 $\ensuremath{\mathsf{ca}}$  - 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.

 $\ensuremath{\text{ip}}$  - 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.

 ${\rm J}$  - 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.

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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

December 11, 2014

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 10, 2014 from the North Edge KV030772B, F&BI 412187 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 c: Frank Mocker AE11211R.DOC

## ENVIRONMENTAL CHEMISTS

## CASE NARRATIVE

This case narrative encompasses samples received on December 10, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412187 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Associated Earth Sciences
412187 -01	PC-21 24-28
412187 -02	PC-21 28-32
412187 -03	PC-22 24-28
412187 -04	PC-22 28-32
412187 -05	PC-23 24-28
412187 -06	PC-23 28-32
412187 -07	PC-30 24-28
412187 -08	PC-30 28-32
412187 -09	PC-28 24-28
412187 -10	PC-28 28-32
412187 -11	PC-24 24-28
412187 -12	PC-24 28-32
412187 -13	PC-18 24-28
412187 -14	PC-18 28-32
412187 -15	PC-32 24-28
412187 -16	PC-32 28-32
412187 -17	PC-27 24-28
412187 -18	PC-27 28-32

All quality control requirements were acceptable.

## ENVIRONMENTAL CHEMISTS

Date of Report: 12/11/14 Date Received: 12/10/14 Project: North Edge KV030772B, F&BI 412187 Date Extracted: 12/10/14 Date Analyzed: 12/10/14 and 12/11/14

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

			Ethyl	Total	Gasoline	Surrogate
Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Benzene	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery</u> ) (Limit 50-150)
PC-21 24-28 412187-01	< 0.02	<0.02	< 0.02	<0.06	<2	93
PC-21 28-32 412187-02	<0.02	<0.02	< 0.02	<0.06	<2	93
PC-22 24-28 412187-03	<0.02	<0.02	< 0.02	<0.06	<2	94
PC-22 28-32 412187-04	<0.02	<0.02	< 0.02	<0.06	<2	93
PC-23 24-28 412187-05	< 0.02	<0.02	< 0.02	< 0.06	<2	93
PC-23 28-32 412187-06	<0.02	<0.02	< 0.02	<0.06	<2	93
PC-30 24-28 412187-07	<0.02	<0.02	< 0.02	<0.06	<2	92
PC-30 28-32 412187-08	< 0.02	<0.02	< 0.02	<0.06	<2	95
PC-28 24-28 412187-09	< 0.02	<0.02	< 0.02	<0.06	<2	93
PC-28 28-32 412187-10	< 0.02	<0.02	< 0.02	<0.06	<2	92
PC-24 24-28 412187-11	< 0.02	< 0.02	<0.02	< 0.06	<2	93

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/11/14 Date Received: 12/10/14 Project: North Edge KV030772B, F&BI 412187 Date Extracted: 12/10/14 Date Analyzed: 12/10/14 and 12/11/14

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

Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate ( <u>% Recovery</u> ) (Limit 50-150)
PC-24 28-32 412187-12	< 0.02	< 0.02	< 0.02	<0.06	<2	92
PC-18 24-28 412187-13	< 0.02	< 0.02	0.13	0.11	44	98
PC-18 28-32 412187-14	< 0.02	< 0.02	< 0.02	< 0.06	<2	94
PC-32 24-28 412187-15	< 0.02	< 0.02	< 0.02	< 0.06	<2	94
PC-32 28-32 412187-16	< 0.02	< 0.02	< 0.02	< 0.06	<2	94
PC-27 24-28 412187-17	< 0.02	< 0.02	< 0.02	< 0.06	7.2	82
PC-27 28-32 412187-18	<0.02	<0.02	<0.02	<0.06	<2	93
Method Blank	< 0.02	< 0.02	< 0.02	<0.06	<2	93

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/11/14 Date Received: 12/10/14 Project: North Edge KV030772B, F&BI 412187 Date Extracted: 12/10/14 Date Analyzed: 12/10/14

### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

<u>Sample ID</u> Laboratory ID	Diesel Range	Motor Oil Range	( <u>% Recovery</u> )
PC-21 24-28 412187-01	<50	<250	116
PC-21 28-32 412187-02	<50	<250	102
PC-22 24-28 412187-03	<50	<250	105
PC-22 28-32 412187-04	<50	<250	108
PC-23 24-28 412187-05	<50	<250	107
PC-23 28-32 412187-06	<50	<250	107
PC-30 24-28 412187-07	<50	<250	110
PC-30 28-32 412187-08	<50	<250	110
PC-28 24-28 412187-09	<50	<250	107
PC-28 28-32 412187-10	<50	<250	108
PC-24 24-28 412187-11	<50	<250	107
PC-24 28-32	<50	<250	101

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/11/14 Date Received: 12/10/14 Project: North Edge KV030772B, F&BI 412187 Date Extracted: 12/10/14 Date Analyzed: 12/10/14

### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

Sample ID Laboratory ID	$\frac{\text{Diesel Range}}{(C_{10}-C_{25})}$	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 56-165)
PC-18 24-28 412187-13	140	<250	117
PC-18 28-32 412187-14	<50	<250	104
PC-32 24-28 412187-15	<50	<250	103
PC-32 28-32 412187-16	<50	<250	122
PC-27 24-28 412187-17	<50	<250	105
PC-27 28-32 412187-18	<50	<250	101
Method Blank 04-2475 MB	<50	<250	110

## ENVIRONMENTAL CHEMISTS

Date of Report: 12/11/14 Date Received: 12/10/14 Project: North Edge KV030772B, F&BI 412187

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

Laboratory Code: 412187-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

		Percent	
	Spike	Recovery	Acceptance
<b>Reporting Units</b>	Level	LCS	Criteria
mg/kg (ppm)	0.5	89	69-120
mg/kg (ppm)	0.5	89	70-117
mg/kg (ppm)	0.5	91	65-123
mg/kg (ppm)	1.5	90	66-120
mg/kg (ppm)	20	95	71-131
	Reporting Units mg/kg (ppm) mg/kg (ppm) mg/kg (ppm) mg/kg (ppm) mg/kg (ppm)	Spike       Reporting Units     Level       mg/kg (ppm)     0.5       mg/kg (ppm)     0.5       mg/kg (ppm)     0.5       mg/kg (ppm)     1.5       mg/kg (ppm)     20	Percent       Spike     Recovery       Reporting Units     Level     LCS       mg/kg (ppm)     0.5     89       mg/kg (ppm)     0.5     89       mg/kg (ppm)     0.5     91       mg/kg (ppm)     1.5     90       mg/kg (ppm)     20     95

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/11/14 Date Received: 12/10/14 Project: North Edge KV030772B, F&BI 412187

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412187-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	96	110	63-146	14
Laboratory Code: La	boratory Control	l Sample					
			Percent				
	Reporting	Spike	Recovery	Accep	tance		
Analyte	Units	Level	LCS	Crite	eria		
Diesel Extended	mg/kg (ppm)	5,000	98	79-1	44		

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.

 ${\bf b}$  - 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.

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

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

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

 ${\rm ip}$  - 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.

 ${\rm J}$  - 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.

MG 12/10/14 US3/203	PO# TURNAROUND TIME	Rush charges authorized hy E.S. Wacle &	SAMPLE DISPOSAL	U Keturn samples U Will call with instructions	ES REQUESTED	Notes										Samples raceived at 4 °C	COMPANY DATE TIME	VEST NYWE (1352	FRT 14/10/14/1352			
SAMPLE CHAIN OF CUSTODY	PROJECT NAME/NO.	5/2 100 Northelyc/ (20030772/13	A 98033 REMARKS		ANALYSE	HES SVOCs by 8270 SVOCs by 8270 TPH-Gasoline Sample TPH-Casoline containes containes Containes Sample TPH-Casoline	In 0826 Sout Nim KKK	· 0832 ( , XXX	) o839 ( ) XXX	) 0845 ) ( XX X	1 09100 ( / XXX	XXX / 80408	/ 1108 / / XXX		1 LI 29 ( XXX )	133 1 V XXX	JGNATURE, PRINT NAME	the Frank Mocked	1 A S The # Laword			
413187	Send Report To <u>t</u> cumber Woels Company ASE	Address 911 F.S.H. Lve	City, State, ZIP Kytel , UM	Phone # 125766 5112 Fax #		Sample ID Lab Date ID Sampl	PC-21 24-28 01 # 124 w	PC-21 28-32 02 1	PC-22 24-23 03	R-22 28-32 ay 1	PC-23 24-28 05 1	PC-23 28-32 06	PC-30 24-28 07 /	PC-30 29-32 04 )	PC-28 24-29 04 >	PC-28 28-32 101 V	Friedman & Bruya, Inc.	3012 16th Avenue West Relingented by	Seattle, WA 98119-2029 Received by: $N$	Fn. (200) 203-6262 Returned by E (706) 702 5044 Received hu	- (0 puton) ++00C-CO2 (007) YPJ	HORMS/COC/COC/DOC

ME 12/10/14 2 2 2	PO# Distant (2 Weeks)	Bush Charges authorized by	Dispose after 30 days Etturn samples	Will call with instructions	KSES REQUESTED	Notes Parallel Para									Samples receited at 7 °C	COMPANY DATE TIME	1255 12/14/1352	FBIN 12/10/17/352		
SAMPLE CHAIN OF CUSTODY	PROJECT NAME/NO.	100 Marthalse/KU030772	12033 MANANA		(TIVAL)	HEZ SVOCs by 8270 STPH-Gasoline TPH-Gasoline Containess Containess TPH-Gasoline Containess Con	It's Sal Nin XXX		222 ( / XAA	231 ) XXX	xxx ( ) 2m	Rog ( XX)	-5- V XXX	-ST & XXX		JRE PRINT NAME	L Par Maria	> Mr. It try dec		
413187	Send Report To Trank Mocher Company MESE	Address of 1 1 K.S.M. Me St-	City, State, ZIP K-VX (curd) U.A. 9 Denne #1 2 C 7Kh C112 - "			Sample ID Lab Date Ti ID Sampled Sam	PL-24 24-28 11-1-12/24 11	PC-24 28-32 W/ ) H	PC-18 24-28 B 12	PC-18 28-32 14 (12	PC-32 24-28 15 ) 12	PC-32 28-32 6 ( 13	PC-27 24-28 17 12	PC-27 23-32 12 V 12		Friedman & Bruya, Inc.	3012 10th Avenue West Keunquistand	Ph. (206) 285-8282 Relinquished by	Fax (206) 283-5044 Received by:	FORMS/COC/COC.DOC

#### 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

December 12, 2014

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 11, 2014 from the North Edge KV030772B, F&BI 412210 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 c: Frank Mocker AE11212R.DOC

## ENVIRONMENTAL CHEMISTS

# CASE NARRATIVE

This case narrative encompasses samples received on December 11, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412210 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Associated Earth Sciences
412210 -01	PC-5 7-11
412210 -02	PC-5 11-15
412210 -03	PC-39 11-15
412210 -04	PC-39 15-19
412210 -05	PC-55 11-15
412210 -06	PC-55 15-19
412210 -07	PC-56 7-11
412210 -08	PC-56 11-15
412210 -09	PC-53 7-11
412210 -10	PC-53 11-15
412210 -11	PC-57 11-15
412210 -12	PC-57 15-19
412210 -13	PC-38 11-15
412210 -14	PC-38 15-19
412210 -15	PC-46 7-11
412210 -16	PC-46 11-15

All quality control requirements were acceptable.

## ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/14 Date Received: 12/11/14 Project: North Edge KV030772B, F&BI 412210 Date Extracted: 12/11/14 Date Analyzed: 12/11/14 and 12/12/14

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

			Ethyl	Total	Gasoline	Surrogate
Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Benzene	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery</u> ) (Limit 50-150)
PC-5 7-11 412210-01 1/2	<0.02 j	0.11	0.89	0.72	190	103
PC-5 11-15 412210-02	< 0.02	< 0.02	< 0.02	<0.06	<2	93
PC-39 11-15 412210-03	<0.02	<0.02	0.15	0.087	52	96
PC-39 15-19 412210-04	<0.02	<0.02	< 0.02	<0.06	<2	92
PC-55 11-15 412210-05 1/2	<0.02 j	0.10	0.80	0.66	180	98
PC-55 15-19 412210-06	<0.02	<0.02	< 0.02	<0.06	5.7	93
PC-56 7-11 412210-07 1/2	<0.02 j	0.077	0.75	0.65	180	101
PC-56 11-15 412210-08	<0.02	<0.02	< 0.02	<0.06	3.0	92
PC-53 7-11 412210-09	<0.02	<0.02	< 0.02	<0.06	<2	92
PC-53 11-15 412210-10	<0.02	<0.02	< 0.02	<0.06	<2	93
PC-57 11-15 412210-11	< 0.02	< 0.02	<0.02	< 0.06	<2	91

## ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/14 Date Received: 12/11/14 Project: North Edge KV030772B, F&BI 412210 Date Extracted: 12/11/14 Date Analyzed: 12/11/14 and 12/12/14

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

Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate ( <u>% Recovery</u> ) (Limit 50-150)
PC-57 15-19 412210-12	< 0.02	<0.02	< 0.02	<0.06	<2	80
PC-38 11-15 412210-13	<0.02	< 0.02	< 0.02	<0.06	<2	91
PC-38 15-19 412210-14	< 0.02	< 0.02	< 0.02	< 0.06	<2	92
PC-46 7-11 412210-15	< 0.02	< 0.02	< 0.02	< 0.06	<2	79
PC-46 11-15 412210-16 1/2	<0.02 j	0.15	0.93	0.72	220	91
Method Blank 04-2481 MB	< 0.02	<0.02	< 0.02	<0.06	<2	91

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/14 Date Received: 12/11/14 Project: North Edge KV030772B, F&BI 412210 Date Extracted: 12/11/14 Date Analyzed: 12/11/14 and 12/12/14

### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Sample ID Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	Surrogate (% Recovery) (Limit 48-168)
PC-5 7-11 412210-01	420	<250	118
PC-5 11-15 412210-02	<50	<250	125
PC-39 11-15 412210-03	210	<250	115
PC-39 15-19 412210-04	<50	<250	117
PC-55 11-15 412210-05	610	<250	97
PC-55 15-19 412210-06	82	<250	99
PC-56 7-11 412210-07	270	<250	95
PC-56 11-15 412210-08	<50	<250	93
PC-53 7-11 412210-09	<50	<250	98
PC-53 11-15 412210-10	<50	<250	96
PC-57 11-15 412210-11	<50	<250	99

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/14 Date Received: 12/11/14 Project: North Edge KV030772B, F&BI 412210 Date Extracted: 12/11/14 Date Analyzed: 12/11/14 and 12/12/14

### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

Sample ID Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 48-168)
PC-57 15-19 412210-12	<50	<250	97
PC-38 11-15 412210-13	<50	<250	97
PC-38 15-19 412210-14	<50	<250	91
PC-46 7-11 412210-15	<50	<250	98
PC-46 11-15 412210-16	1,200	<250	90
Method Blank 04-2490 MB	<50	<250	123

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/14 Date Received: 12/11/14 Project: North Edge KV030772B, F&BI 412210

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

Laboratory Code: 412210-13 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	77	69-120
Toluene	mg/kg (ppm)	0.5	78	70-117
Ethylbenzene	mg/kg (ppm)	0.5	81	65-123
Xylenes	mg/kg (ppm)	1.5	80	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/14 Date Received: 12/11/14 Project: North Edge KV030772B, F&BI 412210

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

Laboratory Code: 412210-12 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	98	106	73-135	8
Laboratory Code: I	Laboratory Control	Sample					
			Percent				
	<b>Reporting Units</b>	Spike	Recovery	Acceptan	ice		
Analyte		Level	LCS	Criteria	1		
Diesel Extended	mg/kg (ppm)	5,000	108	74-139			

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.

 ${\bf b}$  - 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.

 $\ensuremath{\mathsf{ca}}$  - 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.

 ${\rm ip}$  - 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.

 ${\rm J}$  - 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.

Page # of Standard (2 Weeks) Rush charges authorized by Rush charges authorized by SAMPLE DISPOSAL Dispose after 30 days Return samples Will call with instructions		Notes											Y DATE TIME	- 12/11/11/11/12	V V	1 3 C	
253 20#	SES REQUESTEI												COMPAN	NEST	FBI	mpline received	r
E CHAIN OF CUSTODY PLERS (signature) FLERS (signature) FECT NAME/NO.	ANALY	HFS SVOCs by 8270 TPH-Gasoline BTEX by 8021B YOCs by8260	XXX	XXX									* PRINT NAME	FankMachee	HONTS NT-WARN	<b>.</b>	
Ne Wweber SAMPLE F A were Stated PROJ A, were Stated PROJ A, were Stated REM		Lab Date Time Sample Tyr ID Sampled Sampled	01 E 12/1,4 10+3 5al	3 [2 c s o 1 ] / [10	23 ) II39 {	04 ( 11+7 /	os / u s7 /	06 1 1211 /	סא ( ואנ אין	13+4 \	M / 1222 /	0 t V 1231 V	SIGNATURE	linquished by C.C.	CEIVED DY JALL	unquisnea by: V C	
412210 Send Report To FUZA Company AES Address 911 Fiftur City, State, ZIP Firtur		Sample ID	PC-5 7-11	PC-5 11-15	PC-39 11-15	PC-39 15-19	لحرحكم الساح	61-22 12-10	bc-53 7-11 (	PC-56 11-15 6	PC-53 7-11 (	65-23 11-12	Friedman & Bruya, Inc. 🗌	3012 16th Avenue West Re	Seattle, WA 98119-2029 Re	<i>Fax</i> (206) 283-5044 <b>Re</b>	FORMS/COC/COC.DOC

				SAMPLE (	CHAIN OF	, CUST	ODY	MEIZ	11   11	VS	3/AD4
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Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	2AOC <sup>2</sup> P <sup>A</sup> 8530 AOC <sup>2</sup> P <sup>A</sup> 8590	SJH			Notes .
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PC-46 11-15		>	1323	3	$\geq$	X X					
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Fax (206) 283-5044	Received	by:						7 1.		ية م	
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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

December 23, 2014

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 15, 2014 from the North Edge KV030772B, F&BI 412254 project. There are 6 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 c: Frank Mocker AE11223R.DOC

## ENVIRONMENTAL CHEMISTS

## CASE NARRATIVE

This case narrative encompasses samples received on December 15, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412254 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Associated Earth Sciences
412254 -01	SW-8 @ 10'
412254 -02	SW-9 @ 10'
412254 -03	SW-10 @ 10'

All quality control requirements were acceptable.

## ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/15/14 Project: North Edge KV030772B, F&BI 412254 Date Extracted: 12/16/14 Date Analyzed: 12/16/14 and 12/17/14

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

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate ( <u>% Recovery)</u> (Limit 50-150)
SW-8 @ 10' 412254-01	<0.02	<0.02	< 0.02	<0.06	<2	86
SW-9 @ 10' 412254-02 1/5	<0.02 j	0.29	2.5	2.3	680	102
SW-10 @ 10' 412254-03 1/5	<0.02 j	<0.1	0.19	<0.3	200	88
Method Blank 04-2488 MB	< 0.02	< 0.02	< 0.02	< 0.06	<2	82

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/15/14 Project: North Edge KV030772B, F&BI 412254 Date Extracted: 12/15/14 Date Analyzed: 12/15/14

### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

			Surrogate
Sample ID	<b>Diesel Range</b>	<u>Motor Oil Range</u>	<u>(% Recovery)</u>
Laboratory ID	$(C_{10}-C_{25})$	$(C_{25}-C_{36})$	(Limit 56-165)
SW-8 @ 10' 412254-01	<50	<250	102
SW-9 @ 10' 412254-02	1,800	<250	93
SW-10 @ 10' 412254-03	890 x	390	99
Method Blank 04-2494 MB	<50	<250	101
### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/15/14 Project: North Edge KV030772B, F&BI 412254

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

Laboratory Code: 412254-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	79	69-120
Toluene	mg/kg (ppm)	0.5	81	70-117
Ethylbenzene	mg/kg (ppm)	0.5	82	65-123
Xylenes	mg/kg (ppm)	1.5	82	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/15/14 Project: North Edge KV030772B, F&BI 412254

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412231-10 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	111	111	73-135	0
Laboratory Code: I	Laboratory Control	Sample					
			Percent				
	D	<b>O</b> 11	D	<b>.</b> .			

	<b>Reporting Units</b>	Spike	Recovery	Acceptance
Analyte		Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	110	74-139

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.

 ${\bf b}$  - 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.

 ${\rm ip}$  - 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.

 ${\rm J}$  - 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.

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4/2254 Send Report To FC Company Company Address 911 K-74 City, State, ZIP K-1-4 Phone #1257665	Sample ID Sur B Color Sur J Color	Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044 Formsvcoccocc.Doc

#### 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

December 23, 2014

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 17, 2014 from the North Edge KV030772B, F&BI 412290 project. There are 6 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 c: Frank Mocker AE11223R.DOC

### ENVIRONMENTAL CHEMISTS

### CASE NARRATIVE

This case narrative encompasses samples received on December 17, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412290 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Associated Earth Sciences
412290 -01	SW-11 @ 10'
412290 -02	SW-12 @ 10'
412290 -03	SW-13 @ 10'
412290 -04	SW-14 @ 10'
412290 -05	SW-15 @ 10'

All quality control requirements were acceptable.

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412290 Date Extracted: 12/18/14 Date Analyzed: 12/18/14, 12/19/14, and 12/22/14

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

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

			Ethyl	Total	Gasoline	Surrogate
Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Benzene	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery</u> ) (Limit 50-132)
SW-11 @ 10' 412290-01	<0.02	< 0.02	<0.02	<0.06	<2	85
SW-12 @ 10' 412290-02	< 0.02	< 0.02	< 0.02	<0.06	<2	102
SW-13 @ 10' 412290-03	< 0.02	< 0.02	< 0.02	0.10	<2	102
SW-14 @ 10' 412290-04 1/10	1.9	40	21	130	2,700	ip
SW-15 @ 10' 412290-05 1/5	<0.02 j	<0.1	1.8	6.0	780	132
Method Blank 04-2513 MB	< 0.02	< 0.02	< 0.02	< 0.06	<2	107

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412290 Date Extracted: 12/17/14 Date Analyzed: 12/17/14

#### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

Sample ID Laboratory ID	Diesel Range (C <sub>10</sub> -C <sub>25</sub> )	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 53-144)
SW-11 @ 10' 412290-01	<50	<250	111
SW-12 @ 10' 412290-02	<50	<250	115
SW-13 @ 10' 412290-03	<50	<250	112
SW-14 @ 10' 412290-04	9,900	300 x	108
SW-15 @ 10' 412290-05	6,900	<250	114
Method Blank 04-2522 MB	<50	<250	115

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412290

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

Laboratory Code: 412312-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	90	66-121
Toluene	mg/kg (ppm)	0.5	96	72-128
Ethylbenzene	mg/kg (ppm)	0.5	97	69-132
Xylenes	mg/kg (ppm)	1.5	98	69-131
Gasoline	mg/kg (ppm)	20	95	61-153

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412290

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412280-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	114	116	64-133	2
Laboratory Code: La	boratory Control	Sample					
			Percent				
	Reporting	Spike	Recovery	Accep	tance		
Analyte	Units	Level	LCS	Crite	eria		
Diesel Extended	mg/kg (ppm)	5,000	117	58-1	47		

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.

 ${\bf b}$  - 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.

 $\ensuremath{\mathsf{ca}}$  - 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.

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

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.

 ${\rm J}$  - 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.

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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

December 23, 2014

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 17, 2014 from the North Edge KV030772B, F&BI 412300 project. There are 6 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 c: Frank Mocker AE11223R.DOC

### ENVIRONMENTAL CHEMISTS

### CASE NARRATIVE

This case narrative encompasses samples received on December 17, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412300 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Associated Earth Sciences
412300 -01	SW-5 @ 25'
412300 -02	SW-16 @ 15'
412300 -03	SW-1 @ 35'
412300 -04	SW-2 @ 34'

All quality control requirements were acceptable.

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412300 Date Extracted: 12/18/14 Date Analyzed: 12/18/14

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

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

			Ethyl	Total	Gasoline	Surrogate
Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Benzene</u>	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery</u> ) (Limit 50-132)
SW-5 @ 25' 412300-01	< 0.02	< 0.02	< 0.02	< 0.06	<2	100
SW-16 @ 15' 412300-02	< 0.02	< 0.02	0.024	<0.06	4.6	102
SW-1 @ 35' 412300-03	<0.02	< 0.02	<0.02	<0.06	<2	103
SW-2 @ 34' 412300-04	<0.02	<0.02	<0.02	<0.06	<2	96
Method Blank 04-2513 MB	< 0.02	< 0.02	< 0.02	<0.06	<2	107

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412300 Date Extracted: 12/18/14 Date Analyzed: 12/18/14

#### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

Sample ID Laboratory ID	Diesel Range (C <sub>10</sub> -C <sub>25</sub> )	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 48-168)
SW-5 @ 25' 412300-01	<50	<250	101
SW-16 @ 15' 412300-02	<50	<250	93
SW-1 @ 35' 412300-03	<50	<250	99
SW-2 @ 34' 412300-04	<50	<250	97
Method Blank 04-2534 MB	<50	<250	95

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412300

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

Laboratory Code: 412312-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	90	66-121
Toluene	mg/kg (ppm)	0.5	96	72-128
Ethylbenzene	mg/kg (ppm)	0.5	97	69-132
Xylenes	mg/kg (ppm)	1.5	98	69-131
Gasoline	mg/kg (ppm)	20	95	61-153

### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/17/14 Project: North Edge KV030772B, F&BI 412300

mg/kg (ppm)

5,000

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412309-01 (Matrix Spike)

Diesel Extended

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	260	115	109	73-135	5
Laboratory Code:	Laboratory Control	Sample					
·	•	-	Percent				
	<b>Reporting Units</b>	Spike	Recovery	Acceptanc	ce		
Analyte		Level	LCS	Criteria			

124

74-139

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.

 ${\bf b}$  - 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.

 $\ensuremath{\mathsf{ca}}$  - 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.

 ${\rm J}$  - 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.

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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

December 23, 2014

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 19, 2014 from the North Edge KV030772B, F&BI 412339 project. There are 6 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 c: Frank Mocker AE11223R.DOC

### ENVIRONMENTAL CHEMISTS

### CASE NARRATIVE

This case narrative encompasses samples received on December 19, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412339 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Associated Earth Sciences
412339 -01	PC-34 16-20'
412339 -02	PC-34 20-24'
412339 -03	PC-14 16-20'
412339 -04	PC-14 20-24'

All quality control requirements were acceptable.

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/19/14 Project: North Edge KV030772B, F&BI 412339 Date Extracted: 12/19/14 Date Analyzed: 12/19/14

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

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50, 150)
PC-34 16-20' 412339-01	<0.02	<0.02	0.026	<0.06	13	(Linit 30-130) 97
PC-34 20-24' 412339-02	<0.02	<0.02	< 0.02	<0.06	3.0	97
PC-14 16-20' 412339-03	< 0.02	< 0.02	< 0.02	< 0.06	<2	97
PC-14 20-24' 412339-04	<0.02	<0.02	< 0.02	< 0.06	<2	101
Method Blank 04-2514 MB	<0.02	<0.02	< 0.02	<0.06	<2	98

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/19/14 Project: North Edge KV030772B, F&BI 412339 Date Extracted: 12/19/14 Date Analyzed: 12/19/14

#### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

Sample ID	Diesel Range	Motor Oil Range	(% Recovery)
PC-34 16-20' 412339-01	<50	<250	(Emilt 36-163) 90
PC-34 20-24' 412339-02	<50	<250	105
PC-14 16-20' 412339-03	<50	<250	93
PC-14 20-24' 412339-04	<50	<250	98
Method Blank 04-2544 MB	<50	<250	99

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/19/14 Project: North Edge KV030772B, F&BI 412339

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

Laboratory Code: 412318-02 (Duplicate)

Laboratory Coue. II	2010 02 (Duplicut	)		
			Duplicate	
		Sample Result	Result	RPD
Analyte	<b>Reporting Units</b>	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	4	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	96	66-121
Toluene	mg/kg (ppm)	0.5	98	72-128
Ethylbenzene	mg/kg (ppm)	0.5	102	69-132
Xylenes	mg/kg (ppm)	1.5	101	69-131
Gasoline	mg/kg (ppm)	20	100	61-153

#### ENVIRONMENTAL CHEMISTS

Date of Report: 12/23/14 Date Received: 12/19/14 Project: North Edge KV030772B, F&BI 412339

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412339-03 (Matrix Spike)

		Sample	Percent	Percent			
Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD	
Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)	
mg/kg (ppm)	5,000	<50	112	111	63-146	1	
Laboratory Code: Laboratory Control Sample							
		Percent					
Reporting	Spike	Recovery	Accep	tance			
Units	Level	LCS	Crit	eria			
mg/kg (ppm)	5,000	102	79-1	144			
	Reporting Units mg/kg (ppm) aboratory Control Reporting Units mg/kg (ppm)	Reporting UnitsSpike Levelmg/kg (ppm)5,000.aboratory ControlSampleReporting UnitsSpike Levelmg/kg (ppm)5,000	Sample Reporting Spike Result Units Level (Wet Wt) mg/kg (ppm) 5,000 <50 aboratory Control Sample Reporting Spike Recovery Units Level LCS mg/kg (ppm) 5,000 102	SamplePercentReportingSpikeResultRecoveryUnitsLevel(Wet Wt)MSmg/kg (ppm)5,000<50	SamplePercentPercentReporting UnitsSpike LevelResultRecovery MSRecovery MSDmg/kg (ppm)5,000<50	SamplePercentPercentReporting UnitsSpike LevelResultRecovery MSRecovery MSDAcceptance Criteriamg/kg (ppm)5,000<50	

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.

 ${\bf b}$  - 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.

 $\ensuremath{\text{ip}}$  - 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.

 ${\rm J}$  - 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.

#### 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

January 6, 2015

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 31, 2014 from the North Edge KV030772B, F&BI 412450 project. There are 6 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 c: Frank Mocker AE10106R.DOC

### ENVIRONMENTAL CHEMISTS

### CASE NARRATIVE

This case narrative encompasses samples received on December 31, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412450 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Associated Earth Sciences
412450 -01	Com1
412450 -02	SW-7@25'
412450 -03	Com2
412450 -04	PC-51 11-15
412450 -05	PC-51 15-19
412450 -06	PC-58 11-15
412450 -07	PC-58 15-19
412450 -08	PC-56 15-19
412450 -09	PC-55 19-23
412450 -10	PC-55 23-27

All quality control requirements were acceptable.

### ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412450 Date Extracted: 12/31/14 Date Analyzed: 12/31/14

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

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

			Ethyl	Total	Gasoline	Surrogate
Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Benzene</u>	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery</u> ) (Limit 50-132)
Com1 412450-01	< 0.02	< 0.02	< 0.02	<0.06	<2	104
SW-7@25' 412450-02	<0.02	< 0.02	<0.02	<0.06	<2	98
Com2 412450-03	< 0.02	< 0.02	< 0.02	<0.06	<2	106
PC-51 11-15 412450-04	< 0.02	< 0.02	< 0.02	<0.06	<2	105
PC-51 15-19 412450-05	<0.02	< 0.02	< 0.02	<0.06	<2	109
PC-58 11-15 412450-06	< 0.02	< 0.02	< 0.02	<0.06	<2	112
PC-58 15-19 412450-07	<0.02	< 0.02	< 0.02	<0.06	<2	107
PC-56 15-19 412450-08	< 0.02	< 0.02	< 0.02	<0.06	<2	107
PC-55 19-23 412450-09	< 0.02	< 0.02	< 0.02	<0.06	<2	107
PC-55 23-27 412450-10	<0.02	< 0.02	< 0.02	<0.06	<2	105
Method Blank 04-2584 MB	< 0.02	< 0.02	< 0.02	< 0.06	<2	108

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412450 Date Extracted: 12/31/14 Date Analyzed: 12/31/14 and 01/02/15

#### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

<u>Sample ID</u> Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 56-165)
Com1 412450-01	<50	<250	107
SW-7@25' 412450-02	<50	<250	101
Com2 412450-03	<50	<250	97
PC-51 11-15 412450-04	<50	<250	111
PC-51 15-19 412450-05	<50	<250	112
PC-58 11-15 412450-06	<50	<250	113
PC-58 15-19 412450-07	<50	<250	108
PC-56 15-19 412450-08	<50	<250	106
PC-55 19-23 412450-09	<50	<250	107
PC-55 23-27 412450-10	<50	<250	112
Method Blank 04-2585 MB	<50	<250	106

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412450

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

Laboratory Code: 412450-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

		Percent			
		Spike	Recovery	Acceptance	
Analyte	Reporting Units	Level	LCS	Criteria	
Benzene	mg/kg (ppm)	0.5	90	66-121	
Toluene	mg/kg (ppm)	0.5	91	72-128	
Ethylbenzene	mg/kg (ppm)	0.5	92	69-132	
Xylenes	mg/kg (ppm)	1.5	92	69-131	
Gasoline	mg/kg (ppm)	20	95	61-153	

### ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412450

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412450-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	90	90	63-146	0
Laboratory Code: La	boratory Control	l Sample					
			Percent				
	Reporting	Spike	Recovery	Accep	tance		
Analyte	Units	Level	LCS	Crite	eria		
Diesel Extended	mg/kg (ppm)	5,000	90	79-1	44		

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.

 ${\bf b}$  - 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.

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

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

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

 ${\rm ip}$  - 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.

 ${\rm J}$  - 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.


#### 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

January 6, 2015

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on December 31, 2014 from the North Edge KV030772B, F&BI 412456 project. There are 6 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 c: Frank Mocker AE10106R.DOC

## ENVIRONMENTAL CHEMISTS

## CASE NARRATIVE

This case narrative encompasses samples received on December 31, 2014 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 412456 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Associated Earth Sciences
412456 -01	SW-13 @ 19'
412456 -02	SW-14 @ 19'
412456 -03	SW-15 @ 19'
412456 -04	Com 3
412456 -05	SW-8 @ 25'

All quality control requirements were acceptable.

## ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412456 Date Extracted: 12/31/14 Date Analyzed: 01/01/15

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

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 50-132)
SW-13 @ 19' 412456-01	0.071	0.077	< 0.02	0.12	<2	106
SW-14 @ 19' 412456-02	< 0.02	< 0.02	< 0.02	<0.06	<2	109
SW-15 @ 19' 412456-03	< 0.02	< 0.02	< 0.02	<0.06	2.4	112
Com 3 412456-04	< 0.02	< 0.02	<0.02	<0.06	<2	105
SW-8 @ 25' 412456-05	< 0.02	< 0.02	< 0.02	< 0.06	<2	109
Method Blank 04-2584 MB	<0.02	<0.02	<0.02	<0.06	<2	108

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412456 Date Extracted: 01/02/15 Date Analyzed: 01/02/15

#### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

Sample ID Laboratory ID	Diesel Range (C <sub>10</sub> -C <sub>25</sub> )	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 48-168)
SW-13 @ 19' 412456-01	<50	<250	101
SW-14 @ 19' 412456-02	<50	<250	99
SW-15 @ 19' 412456-03	<50	<250	92
Com 3 412456-04	<50	<250	98
SW-8 @ 25' 412456-05	<50	<250	100
Method Blank 05-008 MB	<50	<250	98

### ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412456

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

Laboratory Code: 412450-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	90	66-121
Toluene	mg/kg (ppm)	0.5	91	72-128
Ethylbenzene	mg/kg (ppm)	0.5	92	69-132
Xylenes	mg/kg (ppm)	1.5	92	69-131
Gasoline	mg/kg (ppm)	20	95	61-153

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/06/15 Date Received: 12/31/14 Project: North Edge KV030772B, F&BI 412456

mg/kg (ppm)

5,000

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 412456-01 (Matrix Spike)

Diesel Extended

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	93	95	73-135	2
Laboratory Code:	Laboratory Control	Sample					
			Percent				
	Reporting Units	Spike	Recovery	Acceptanc	ce .		
Analyte		Level	LCS	Criteria			

95

74-139

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.

 ${\bf b}$  - 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.

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

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

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

 $\ensuremath{\text{ip}}$  - 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.

 ${\rm J}$  - 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.

te-31-14 AD2/181	Page #	Zandard (2 Weeks) 2 5 4	Rush charges authorized by	SAMPLE DISPOSAL	□ Return samples		Notes		SPUSA	) est hour					NY DATE TIME	5761762	11, 13 4]		
CHAIN OF CUSTODY ME 12-A	PLERS (signature)	ECT NAME/NO, PO#	1×4-24- /1-10307728	ARKS		ANALYSES REQUESTE	م HFS SVOCs by 8270 TPH-Diesel TPH-Diesel TPH-Diesel TPH-Diesel TPH-Diesel	1 Icut XX X	XXX XXX X	XXX X		× × ×			PRINT NAME COMPAN	JEAN LYNGEN ANEAL	D & W F832		
412456 SAMPLE	Send Report To French Wacker SAMP	Commany A-CAT	Address 911 FISHA MIC 512 (UD	City, State, ZIP Liveland wh 98033 REMA	Phone # 42 5 766 5112 Fax #		Sample ID Lab Date Time Sample TD Sampled Sample Type	5 w-13 @ 19' 011E 12/4 0730 501)	3-14@19' 027 / 0737 <	> 02 co ( 80 , b1 @ 21-ms	Com 3 04 ( 0840 )	52-8025' 05 V 1050 V			Friedman & Bruya, Inc. SIGNATURE 3012 16th Avenue West Relinquished by:	Seattle WA 98119-2029 Received by:	Ph. (206) 285-8282 Relinquished &:	Fax (206) 283-5044 Received by:	FORMSICOCICOCIDOC

#### 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

January 8, 2015

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on January 2, 2015 from the North Edge KV030772B, F&BI 501009 project. There are 6 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 c: Frank Mocker AE10108R.DOC

## ENVIRONMENTAL CHEMISTS

## CASE NARRATIVE

This case narrative encompasses samples received on January 2, 2015 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 501009 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Associated Earth Sciences
501009 -01	Com 4
501009 -02	SW-9 @ 25

All quality control requirements were acceptable.

## ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/02/15 Project: North Edge KV030772B, F&BI 501009 Date Extracted: 01/06/15 Date Analyzed: 01/06/15

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

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

			Ethyl	Total	Gasoline	Surrogate
<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Benzene</u>	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery)</u> (Limit 50-132)
Com 4 501009-01	< 0.02	< 0.02	< 0.02	<0.06	<2	95
SW-9 @ 25 501009-02	<0.02	<0.02	<0.02	<0.06	<2	96
Method Blank 05-0014 MB	< 0.02	< 0.02	< 0.02	< 0.06	<2	100

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/02/15 Project: North Edge KV030772B, F&BI 501009 Date Extracted: 01/05/15 Date Analyzed: 01/05/15

#### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	Surrogate <u>(% Recovery)</u> (Limit 53-144)
Com 4 501009-01	<50	<250	92
SW-9 @ 25 501009-02	<50	<250	105
Method Blank	<50	<250	105

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/02/15 Project: North Edge KV030772B, F&BI 501009

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

Laboratory Code: 501008-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

			Percent	
		Spike	Recovery	Acceptance
Analyte	Reporting Units	Level	LCS	Criteria
Benzene	mg/kg (ppm)	0.5	86	66-121
Toluene	mg/kg (ppm)	0.5	89	72-128
Ethylbenzene	mg/kg (ppm)	0.5	91	69-132
Xylenes	mg/kg (ppm)	1.5	90	69-131
Gasoline	mg/kg (ppm)	20	90	61-153

### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/02/15 Project: North Edge KV030772B, F&BI 501009

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 501004-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	108	98	64-133	10
Laboratory Code: Laboratory Control Sample							
			Percent				
	Reporting	Spike	Recovery	Accep	tance		
Analyte	Units	Level	LCS	Crite	eria		
Diesel Extended	mg/kg (ppm)	5,000	108	58-1	147		

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.

 ${\bf b}$  - 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.

 $\ensuremath{\mathsf{ca}}$  - 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.

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

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

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

 ${\rm ip}$  - 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.

 ${\rm J}$  - 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.

501000	SA	AMPLE CHAIN OF CUST	TODY ME	dr-02-15 VS1/
Send Report To	rule Wacher	SAMPLERS (signature) PROJECT NAME/NO.	Le L L L L	Page # of 00 TURNAROUND TIME
Address 211 C.A.	the first stated	Martuedse/IC	2030772B	D RUSH Rush charges authorized by
City, State, ZIP K.VK	1 mg 93033	REMARKS		SAMPLE DISPOSAL
Phone # 1257665	112 Fax #			□ Return samples
			ANALYSES REQUEST	ED
Sample ID	Lab Date Time S ID Sampled Sampled S	ample Type containers TPH-Diesel TPH-Gasoline	HE2 RAOC <sup>2</sup> P <sup>A</sup> 8520 AOC <sup>2</sup> P <sup>A</sup> 8520 BLEX P <sup>A</sup> 8051B	Notes
Cont	01 A-1/2/15 1346	Soil 11 in KK		
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Friedman & Bruya, Inc. 3012 16th Avenue West	SIGNATURE Relinquished by	PRINT NAM	ME COMP	NY DATE TIME
Seattle, WA 98119-2029	Received by:	VINH	There I'ver	50 1/5/12 1902
Рћ. (206) 285-8282	Relinquished by:			
Fax (206) 283-5044	Received by:			
FORMS/COC/COC.DOC				

#### 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

January 8, 2015

Jon Sondergaard, Project Manager Associated Earth Sciences, Inc. 911 5th Avenue, Suite 100 Kirkland, WA 98033

Dear Mr. Sondergaard:

Included are the results from the testing of material submitted on January 5, 2015 from the North Edge KV030772B, F&BI 501017 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 c: Frank Mocker AE10108R.DOC

## ENVIRONMENTAL CHEMISTS

## CASE NARRATIVE

This case narrative encompasses samples received on January 5, 2015 by Friedman & Bruya, Inc. from the Associated Earth Sciences North Edge KV030772B, F&BI 501017 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Associated Earth Sciences
501017 -01	Com 14
501017 -02	Com 22 @ 41
501017 -03	Com 24 @ 47
501017 -04	Com 15
501017 -05	Com 23 @ 44'

All quality control requirements were acceptable.

### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/05/15 Project: North Edge KV030772B, F&BI 501017 Date Extracted: 01/05/15 Date Analyzed: 01/05/15

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

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

			Ethyl	Total	Gasoline	Surrogate
Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Benzene</u>	<u>Xylenes</u>	<u>Range</u>	( <u>% Recovery</u> ) (Limit 50-132)
Com 14 501017-01	< 0.02	< 0.02	< 0.02	<0.06	<2	101
Com 22 @ 41 501017-02	< 0.02	< 0.02	< 0.02	<0.06	<2	94
Com 24 @ 47 501017-03	< 0.02	< 0.02	< 0.02	<0.06	<2	98
Com 15 501017-04	< 0.02	< 0.02	< 0.02	< 0.06	<2	97
Com 23 @ 44' 501017-05	<0.02	< 0.02	< 0.02	<0.06	<2	101
Method Blank 05-0014 MB	< 0.02	< 0.02	< 0.02	<0.06	<2	100

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/05/15 Project: North Edge KV030772B, F&BI 501017 Date Extracted: 01/05/15 Date Analyzed: 01/05/15

#### RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis Results Reported as mg/kg (ppm)

Surrogato

Sample ID Laboratory ID	Diesel Range (C10-C25)	Motor Oil Range (C25-C36)	<u>(% Recovery)</u> (Limit 48-168)
Com 14 501017-01	<50	<250	100
Com 22 @ 41 501017-02	<50	<250	108
Com 24 @ 47 501017-03	<50	<250	95
Com 15 501017-04	<50	<250	93
Com 23 @ 44' 501017-05	<50	<250	98
Method Blank <sup>05-024 MB</sup>	<50	<250	108

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	Com 14 01/05/15 01/05/15 01/05/15 Soil mg/kg (ppm	ı) Dry Weight	Client: Project: Lab ID: Data File: Instrument: Operator:	Associated Earth Sciences North Edge KV030772B, F&BI 501017 501017-01 1/5 010515.D GCMS6 VM
Surrogates: Anthracene-d10 Benzo(a)anthracene-	d12	% Recovery: 118 127	Lower Limit: 50 35	Upper Limit: 150 159
Compounds:		Concentration mg/kg (ppm)		
Naphthalene		< 0.01		
Acenaphthylene		< 0.01		
Acenaphthene		< 0.01		
Fluorene		< 0.01		
Phenanthrene		< 0.01		
Anthracene		< 0.01		
Fluoranthene		< 0.01		
Pyrene		< 0.01		
Benz(a)anthracene		< 0.01		
Chrysene		< 0.01		
Benzo(a)pyrene		< 0.01		
Benzo(b)fluoranthen	e	< 0.01		
Benzo(k)fluoranthen	e	< 0.01		
Indeno(1,2,3-cd)pyre	ne	< 0.01		
Dibenz(a,h)anthrace	ene	< 0.01		
Benzo(g,h,i)perylene	:	< 0.01		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	Com 15 01/05/15 01/05/15 01/05/15 Soil mg/kg (ppm	) Dry Weight	Client: Project: Lab ID: Data File: Instrument: Operator:	Associated Earth Sciences North Edge KV030772B, F&BI 501017 501017-04 1/5 010516.D GCMS6 VM
Surrogates: Anthracene-d10 Benzo(a)anthracene-	-d12	% Recovery: 123 123	Lower Limit: 50 35	Upper Limit: 150 159
Compounds:		Concentration mg/kg (ppm)		
Naphthalene		< 0.01		
Acenaphthylene		< 0.01		
Acenaphthene		< 0.01		
Fluorene		< 0.01		
Phenanthrene		< 0.01		
Anthracene		< 0.01		
Fluoranthene		< 0.01		
Pyrene		< 0.01		
Benz(a)anthracene		< 0.01		
Chrysene		< 0.01		
Benzo(a)pyrene		< 0.01		
Benzo(b)fluoranthen	e	< 0.01		
Benzo(k)fluoranthen	ie	< 0.01		
Indeno(1,2,3-cd)pyre	ene	< 0.01		
Dibenz(a,h)anthrace	ene	< 0.01		
Benzo(g,h,i)perylene	•	< 0.01		

# ENVIRONMENTAL CHEMISTS

Client Sample ID: Date Received: Date Extracted: Date Analyzed: Matrix: Units:	Com 23 @ 44' 01/05/15 01/05/15 01/05/15 Soil mg/kg (ppm)	Dry Weight	Client: Project: Lab ID: Data File: Instrument: Operator:	Associated Earth Sciences North Edge KV030772B, F&BI 501017 501017-05 1/5 010517.D GCMS6 VM
Surrogates: Anthracene-d10 Benzo(a)anthracene-	d12	% Recovery: 120 118	Lower Limit: 50 35	Upper Limit: 150 159
Compounds:		Concentration mg/kg (ppm)		
Naphthalene		< 0.01		
Acenaphthylene		< 0.01		
Acenaphthene		< 0.01		
Fluorene		< 0.01		
Phenanthrene		< 0.01		
Anthracene		< 0.01		
Fluoranthene		< 0.01		
Pyrene		< 0.01		
Benz(a)anthracene		< 0.01		
Chrysene		< 0.01		
Benzo(a)pyrene		< 0.01		
Benzo(b)fluoranthene	9	< 0.01		
Benzo(k)fluoranthen	e	< 0.01		
Indeno(1,2,3-cd)pyre	ne	< 0.01		
Dibenz(a,h)anthrace	ne	< 0.01		
Benzo(g,h,i)perylene		< 0.01		

# ENVIRONMENTAL CHEMISTS

Date Extracted:01/05/15Lab ID:05-010 mb 1/5Date Analyzed:01/05/15Data File:010505.DMatrix:SoilInstrument:GCMS6Units:mg/kg (ppm) Dry WeightOperator:VM	
Surrogates:% Recovery:Limit:UpperAnthracene-d1010450150Benzo(a)anthracene-d1210635159	
Concentration Compounds: mg/kg (ppm)	
Naphthalene <0.01	
Acenaphthylene <0.01	
Acenaphthene <0.01	
Fluorene <0.01	
Phenanthrene <0.01	
Anthracene <0.01	
Fluoranthene <0.01	
Pyrene <0.01	
Benz(a)anthracene <0.01	
Chrysene <0.01	
Benzo(a)pyrene <0.01	
Benzo(b)fluoranthene <0.01	
Benzo(k)fluoranthene <0.01	
Indeno(1,2,3-cd)pyrene <0.01	
Dibenz(a,h)anthracene <0.01	
Benzo(g,h,i)perylene <0.01	

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/05/15 Project: North Edge KV030772B, F&BI 501017

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

Laboratory Code: 501008-01 (Duplicate)

		Sample	Duplicate	
		Result	Result	RPD
Analyte	Reporting Units	(Wet Wt)	(Wet Wt)	(Limit 20)
Benzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Toluene	mg/kg (ppm)	< 0.02	< 0.02	nm
Ethylbenzene	mg/kg (ppm)	< 0.02	< 0.02	nm
Xylenes	mg/kg (ppm)	< 0.06	< 0.06	nm
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

		Percent			
		Spike	Recovery	Acceptance	
Analyte	Reporting Units	Level	LCS	Criteria	
Benzene	mg/kg (ppm)	0.5	86	66-121	
Toluene	mg/kg (ppm)	0.5	89	72-128	
Ethylbenzene	mg/kg (ppm)	0.5	91	69-132	
Xylenes	mg/kg (ppm)	1.5	90	69-131	
Gasoline	mg/kg (ppm)	20	90	61-153	

### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/05/15 Project: North Edge KV030772B, F&BI 501017

### QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 501017-01 (Matrix Spike)

			Sample	Percent	Percent		
	Reporting	Spike	Result	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	(Wet Wt)	MS	MSD	Criteria	(Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	99	100	73-135	1
Laboratory Code: Laboratory Control Sample							
			Percent				
	<b>Reporting Units</b>	Spike	Recovery	Acceptanc	ce		

	<b>Reporting Units</b>	Spike	Recovery	Acceptance
Analyte		Level	LCS	Criteria
Diesel Extended	mg/kg (ppm)	5,000	107	74-139

#### ENVIRONMENTAL CHEMISTS

Date of Report: 01/08/15 Date Received: 01/05/15 Project: North Edge KV030772B, F&BI 501017

### QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR PNA'S BY EPA METHOD 8270D SIM

Laboratory Code: 501017-05 1/5 (Matrix Spike)

	oo no (maani op		Laboratory could contain spine,								
			Sample	Percent							
	Reporting	Spike	Result	Recovery	Acceptance						
Analyte	Units	Level	(Wet wt)	MS	Criteria						
Naphthalene	mg/kg (ppm)	0.17	< 0.01	89	44-129						
Acenaphthylene	mg/kg (ppm)	0.17	< 0.01	89	52-121						
Acenaphthene	mg/kg (ppm)	0.17	< 0.01	90	51-123						
Fluorene	mg/kg (ppm)	0.17	< 0.01	92	37-137						
Phenanthrene	mg/kg (ppm)	0.17	< 0.01	90	45-124						
Anthracene	mg/kg (ppm)	0.17	< 0.01	90	32-124						
Fluoranthene	mg/kg (ppm)	0.17	< 0.01	96	50-125						
Pyrene	mg/kg (ppm)	0.17	< 0.01	90	41-135						
Benz(a)anthracene	mg/kg (ppm)	0.17	< 0.01	89	23-144						
Chrysene	mg/kg (ppm)	0.17	< 0.01	93	45-122						
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	< 0.01	97	31-144						
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	< 0.01	99	45-130						
Benzo(a)pyrene	mg/kg (ppm)	0.17	< 0.01	88	39-128						
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	< 0.01	76	28-146						
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	< 0.01	75	46-129						
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	< 0.01	79	37-133						

Laboratory Code: Laboratory Control Sample 1/5

j	J		Percent	Percent		
	Reporting	Spike	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	LCS	LCSD	Criteria	(Limit 20)
Naphthalene	mg/kg (ppm)	0.17	91	93	58-121	2
Acenaphthylene	mg/kg (ppm)	0.17	88	92	54-121	4
Acenaphthene	mg/kg (ppm)	0.17	93	96	54-123	3
Fluorene	mg/kg (ppm)	0.17	89	95	56-127	7
Phenanthrene	mg/kg (ppm)	0.17	93	95	55-122	2
Anthracene	mg/kg (ppm)	0.17	89	92	50-120	3
Fluoranthene	mg/kg (ppm)	0.17	89	95	54-129	7
Pyrene	mg/kg (ppm)	0.17	101	101	53-127	0
Benz(a)anthracene	mg/kg (ppm)	0.17	86	87	51-115	1
Chrysene	mg/kg (ppm)	0.17	95	97	55-129	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.17	96	95	56-123	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.17	95	99	54-131	4
Benzo(a)pyrene	mg/kg (ppm)	0.17	84	84	51-118	0
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.17	80	79	49-148	1
Dibenz(a,h)anthracene	mg/kg (ppm)	0.17	80	74	50-141	8
Benzo(g,h,i)perylene	mg/kg (ppm)	0.17	87	85	52-131	2

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.

 ${\bf b}$  - 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.

 ${\rm ip}$  - 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.

 ${\rm J}$  - 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.